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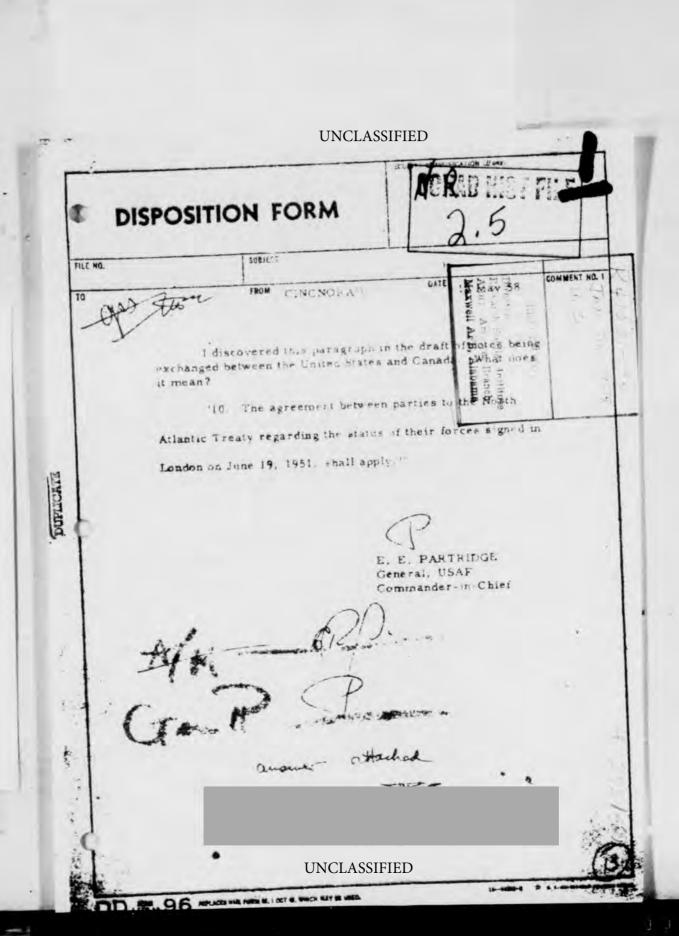
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Billy H. HIX

Chief, Technical Systems Branch The Albert F. Simpson Historical Research Center

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DISPOSITION FORM

FILE NO. SUBJECT "P" Note re NATO Agreement

TO CINCNORAD FROM DCS/PAC CANTOR Smith/2163/kmt "Cantor Smith/2163/km

- 1. The agreement between parties to the North Atlantic Treaty, signed in London on 19 June 1951, defines the status of the forces of one Party while in the territory of another Party.
- 2. The most important aspect of this agreement is that it defines the extent of civilian jurisdiction of a host country over MATO Forces stationed in it. In most instances (security especially) the laws of the host country are paramount. However, the right is given the military authorities of the sending State to exercise all criminal and disciplinary jurisdiction over all persons subject to the military law of that State. Offenses punishable by the law of the receiving State but not by the law of the sending State are under the exclusive jurisdiction of the receiving State.
- 3. Article II of this agreement states, "It is the duty of a force and its civilian component and the members thereof, as well as their dependents, to respect the law of the receiving State, and to abstain from any activity inconsistent with the spirit of the present Agreement, and, in particular, from any political activity in the receiving State. It is also the duty of the sending State to take necessary measures to that end." Succeeding articles cover such matters as entry and departure formalities, dress, vehicles, possession and carrying of arms, jurisdiction (military and civilian), claims for damages, purchases, exemption from taxation, customs, monetary exchange, and technicalities pertinent to the agreement itself.

Major General, SSAF DCS Flans & Operations

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DEPARTMENT OF STATE FOR THE PRESS

No. 274

May 19, 1958

EXCHANGE OF NOTES BETWEEN UNITED STATES AND CANADA ON ORGANIZATION AND OPERATIONS OF NORTH AMERICAN AIR DEFENSE COMMAND

On May 12, 1958, Canada and the United States concluded an exchange of Notes regarding the principles to govern the future organization and operations of the North American Air Defense Command (NORAD). The Notes were signed by Acting Secretary Christian A. Herter for the United States and Ambassador N. A. Robertson for Canada. The Canadian Note sets forth the principles to be adopted under this agreement. The United States reply expresses concurrence with the principles and agrees that the exchange of notes shall constitute an agreement between the two governments.

Announcement of the establishment of an integrated Canada-United States Air Defense Command (NORAD) was made August 1, 1957. Since that time, NORAD has been operating on an interim basis with headquarters at Colorado Springs, pending the conclusion of the formal governmental agreement between the two countries. General Earl E. Partridge, USAF, and Air Marshal C. Roy Slemon, RCAF, who have been serving as Commander-in-Chief and Deputy Commander of NORAD respectively, will continue in their present capacities.

The text of the exchange of notes is as follows:

No. 263

Washington, D. C. 12th May 1958

Sir,

I have the honour to refer to discussions which have taken place between the Canadian and the United States authorities concerning the necessity for integration of operational control of Canadian and United States Air defences and, in particular, to the study and recommendations of the Canada-United States Military Study Group. These studies led to the joint announcement on August 1, 1957, by the Minister of National Defence of Canada and the Secretary of Defense of the United States indicating that our two Governments had agreed to the setting up of a system of integrated operational control for the air defences in the continental United States, Canada and Alaska under an integrated command responsible to the Chiefs of Staff of both countries. Pursuant to the announcement of August 1, 1957, an integrated headquarters known as the North American Air Defence Command (NORAD) has been established on an interim basis at Colorado Springs, Colorado.

The Honourable John Poster Dulles, UNCLASSIFIED Secretary of State of the United States, Washington, D. C.

-2-

PR 274

For some years prior to the establishment of NORAD, it had been recognized that the air defence of Canada and the United States must be considered as a single problem. However, arrangements which existed between Canada and the United States provided only for the coordination of separate Canadian and United States air defence plans, but did not provide for the authoritative control of all air defence weapons which must be employed against an attacker.

The advent of nuclear weapons, the great improvements in the means of effecting their delivery, and the requirements of the air defence control systems demand rapid decisions to keep pace with the speed and tempo of technological developments. To counter the threat to achieve maximum effectiveness of the air defence system, defensive operations must commence as early as possible and enemy forces must be kept constantly engaged. Arrangements for the coordination of national plans requiring consultation between national commanders before implementation had become inadequate in the face of the possible sudden attack, with little or no warning. It was essential, therefore, to have in existence in peacetime an organization, including the weapons, facilities and command structure, which could operate at the outset of hostilities in accordance with a single air defence plan approved in advance by national authorities.

Studies made by representatives of our two Governments led to the conclusion that the problem of the air defence of our two countries could best be met by delegating to an integrated head-quarters the task of exercising operational control over combat units of the national forces made available for the air defence of the two countries. Furthermore, the principle of an integrated headquarters exercising operational control over assigned forces has been well established in various parts.

The Canada-United States region is an integral part of the NATO area. In support of the strategic objectives established in NATO for the Canada-United States region and in accordance with the provisions of the North Atlantic Treaty, our two Governments have, by establishing the North American Air Defence Command (NORAD), recognized the desirability of integrating head-quarters exercising operational control over assigned air defence forces. The agraed integration is intended to assist the two Governments to develop and maintain their individual and collective capacity to resist air attack on their territories in North America in mutual self-defence.

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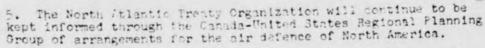
PR 274

The two Governments consider that the establishment of integrated air defence arrangements of the nature described increases the importance of the fullest possible consultation between the two Governments on all matters affecting the joint defence of North America, and that defence cooperation between them can be worked out on a mutually satisfactory basis only if such consultation is regularly and consistently undertaken.

In view of the foregoing considerations and on the basis of the experience gained in the operation on an interim basis of the North American Air Defence Command, my Government proposes that the fell wing principles should govern the future organization and operations of the North American Air Defence Command.

- 1. The Commander-in-Chief NCR.D (CINCNORAD) will be responsible to the Chiefs of Staff Committee of Canada and the Joint Chiefs of Staff of the United States, who in turn are responsible to their respective governments. He will operate within a concept of air defence approved by the appropriate authorities of our two Governments, who will bear in mind their objectives in the defence of the Canada-United States region of the NATO area.
- 2. The North American Air Defence Command will include such combat units and individuals as are specifically allocated to it by the two Governments. The Jurisdiction of the Commanderin-Chief, NORAD, over those units and individuals is limited to operation control as hereinafter defined.
- 3. "Operational control" is the power to direct, coordinate, and control the operational activities of forces assigned, attached or otherwise made available. No permanent changes of station would be made without approval of the higher national authority concerned. Temporary reinforcement from one area to another, including the crossing of the international boundary, to meet operational requirements will be within the authority of commanders having operational control. The basic command organization for the air defence forces of the two countries, including administration, discipline, internal organization and unit training, shall be exercised by national commanders responsible to their national authorities.
- 4. The appointment of CINCNORAD and his Deputy must be approved by the Canadian and United States Governments. They will not be from the same country, and CINCNORAD staff shall be integrated joint staff composed of officers of both countries. During the absence of CINCNORAD, command will pass to the Deputy Commander.

5. The



- 6. The plans and procedures to be followed by NORAD in wartime shall be formulated and approved in peacetime by appropriate national authorities and shall be capable of rapid implementation in an emergency. Any plans or procedures recommended by NORAD which bear on the responsibilities of civilian departments or agencies of the two governments shall be referred for decision by the appropriate military authorities to those agencies and departments and may be the subject of intergovernmental coordination.
- 7. Terms of reference for CINCNCRAD and his Deputy will be consistent with the foregoing principles. Changes in these terms of reference may be made by agreement between the Canadian Chiefs of Staff Committee and the United States Joint Chiefs of Staff, with approval of higher authority as appropriate, provided that these changes are in consonance with the principles set out in this note.
- 8. The question of the financing of expenditures connected with the operation of the integrated headquarters of the North American Air Defence Command will be settled by mutual agreement between appropriate agencies of the two governments.
- 9. The North American Air Defence Command shall be maintained in operation for a period of ten years or such shorter period as shall be agreed by both countries in the light of their mutual defence interests, and their objectives under the terms of the North Atlantic Treaty. The terms of this agreement may be reviewed upon request of either country at any time.
- 10. The Agreement between parties to the North Atlantic Treaty regarding the status of their forces signed in London on June 19, 1951, shall apply.
- 11. The release to the public of information by CINCNORAD on matters of interest to Canada and the United States will in all cases be the subject of prior consultation and agreement between appropriate agencies of the two Governments.

If the United States Government concurs in the principles set out above, I propose that this note and your reply should constitute an agreement between our two governments effective from the date of your reply.

Accept, Sir, the renewed assurances of my highest consideration.

(Signed) N.A. Robertson

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PR 274

May 12, 1958

Excellency:

I have the honor to refer to your Excellency's note No. 263 of May 12, 1958 proposing on behalf of the Canadian Government certain principles to govern the future organization and operation of the North American Air Defense Command (NORAD).

I am pleased to inform you that my Government concurs in the principles set forth in your note. My Government further agrees with your proposal that your note and this reply shall constitute an agreement between the two Governments effective today.

Accept, Excellency, the renewed assurances of my highest consideration.

For the Secretary of State:

CHRISTIAN A. HERTER

His Excellency

Norman Robertson,

Ambassador of Canada.

State--FD, Wash., D.C.

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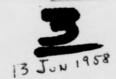
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REVISED TL.MS OF REFERENCE FOR THE COMMANDER IN CHIEF, NORTH AMERICAN AIR DEFENSE COMMAND

- 1. The North American Air Defense Command (NORAD) is established as an integrated (United States-Canada) command. NORAD will include, as component commands, the United States Air Force Air Defense Command, United States Army Air Defense Command, United; States Naval Forces, Continental Air Defense Command, and the Air Defense Command of Canada.
- 2. The mission of the Commander in Chief, North American Air Defense Command (CINCNORAD), is to:
- a. Defend the Continental United States, Canada, and Alaska against air attack.
- b. Support other Continental United States and Canadian commands.
- 3. CINCNORAD is responsible to the United States Joint Chiefs of Staff and the Canadian Chiefs of Staff Committee and will operate within an agreed Canada-United States concept of air defense and in accordance with the agreed Canada-United States intelligence.
- 4. CINCNORAD will exercise operational control over the component commands, the air defense forces of these commands, the air defense forces in Alaska, and over all other air defense forces assigned, attached, or otherwise made available to him by proper authority.
- 5. "Operational control", as used in this paper, is defined as the power of directing, coordinating, and controlling the operational activities of forces assigned, attached, or otherwise made available. Permanent changes of station, especially

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across national boundaries, will be contained in CINCNORAD deployment plans and will require approval of higher authority in peacetime. Temporary reinforcements from one area to another, including crossing of international boundaries to meet operational requirements, is within the authority of commanders having operational control.

- 6. CINCNORAD will exercise operational control over the Mid-Canada Line and the land-based portion of the Distant Early Warning Line through designated subordinate commanders. Forces and operations of the seaward extensions of the Early Warning Systems will remain under CINCPAC and CINCLANT in accordance with existing agreements. However, CINCPAC and CINCLANT will ensure that plans for, and the operation of, the seaward extensions of the DEW Line will be responsive to the needs of CINCNORAD.
- 7. CINCNORAD will organize and maintain a NORAD headquarters. The staff of this headquarters will include appropriate U.S. and Canadian representation.
- 8. CINCNORAD and his Deputy Commander will not be of the same nationality. The appointment of officers to fill the positions of Commander in Chief and Deputy Commander of NORAD will be agreeable to the Governments of both the United States and Canada.
- 9. During the absence of CINCNORAD, command will pass to the Deputy Commander, NORAD, or, in his absence, to the next senior officer regardless of nationality or Sec. e affiliation, eligible for command and present for duty, who is assigned to NORAD headquarters, or to one of the component command headquarters.

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- 10. In carrying out his mission CINCNORAD will:
- a. Develop and submit to the Joint Chiefs of Staff and to the Chiefs of Staff Committee plans for the deployment and operational use of all forces, weapons, and equipments UNCLASSIFIED allocated, attached, or otherwise made available to him, including augmentation forces and those forces to be employed in the extension to seaward of the contiguous radar cover.
- b. Develop and submit to the Joint Chiefs of Staff and to the Chiefs of Staff Committee studies and recommendations concerning the size, composition, and deployment of air defense forces, and types and numbers of air defense weapons and equipments for all elements of the air defense system. The provision of forces and the development and procurement of air defense weapons and equipments will be responsive to the recommendations of CINCNORAD as approved by the Joint Chiefs of Staff for U.S. forces, and by the Chiefs of Staff Committee for Canadian forces and will be accomplished as practicable by the Services in accordance with existing national and Service procedures. Changes contemplated by the Services which affect present or planned NORAD air defense force levels, or present or planned types or numbers of air defense weapons and equipments, will be coordinated with CINCNORAD. Normally, such coordination will be accomplished through the component commanders concerned.
- c. Coordinate with appropriate commanders in the development and implementation of plans and in the establishment of procedures for early warning systems which provide early warning of air attack for the defense of North America, to ensure that these systems are designed and operated in a manner responsive to the requirements of North American

 Air defense and in consonance with national policies.— UNCLASSIFIED

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- d. Establish such subordinate organizations as are necessary for the accomplishment of his mission.
- e. Assign tasks, designate objectives, and issue directives concerning operational matters to component and subordinate NORAD commanders.
- f. Exercise operational control over all air detense forces assigned, attached, or otherwise made available to the component commands, and over the air defense forces in Alaska.
- torces (i.e., those forces temporarily made available from

 other commands) in the event of the likelihood of or actual airattack on North America. Commanders making augmentation
 forces available may place restrictions on the deployment
 of these forces to prevent confliction with their primary
 Service mission. Operational control over such forces will
 be relinquished when the likelihood of air attack has ended.
 In the event that the commander who made the augmentation
 forces available to CINCNORAD considers that his primary
 mission requires the return of the forces, an appropriate
 request will be made to CINCNORAD. If such request is not
 granted, next recourse will be to the Joint Chiefs of Staff
 or the Chiefs of Staff Committee, as appropriate.
 - h. Establish procedures and methods for conducting the tactical air battle, for exercising operational control of forces assigned, attached, or otherwise made available, and for directing the engagement and disengagement of weapons
 - i. Specify the conditions of combat readiness, to include states of alert, to be maintained by all forces assigned, attached, or otherwise made available including augmentation forces while under the operational control of CINCNORAD. UNCLASSIFIED

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J. Determine and announce conditions of air defense warning, and establish appropriate procedures for advising other military commands and appropriate U.S. and Canadian civil defense authorities concerning conditions of air defense warning.

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- k. Plan for and conduct air defense exercises, including participation by augmentation forces.
- 1. Coordinate with appropriate U.S. and Canadian agencies in the development of policy and broad plans for the security control of air traffic, the control of electromagnetic radiations and the control of illumination and, when appropriate, initiate implementing actions therefor.
- m. Coordinate with appropriate National civil defense agencies on matters directly related to air defense.
- 11. CINCNORAD as the commander responsible to the Joint Chiefs of Staff and the Chiefs of Staff Committee for air defense of the United States, Canada, and Alaska, will make recommendations concerning present and/or proposed North American air defense concepts. In discharging this responsibility, CINCNORAD will give due consideration to the views and recommendations advanced by component commanders and other agencies concerned with air defense.
- and the Joint Chiefs of Staff and the Chiefs of Staff Committee only, on matters of combined United States-Canada interest.

 Normally, matters affecting individual Services will be handled through the component commanders concerned.
- 13. Directives promulgated by CINCNORAD in consonance with these terms of reference will govern all air defense operations involving those forces assigned, attached, or otherwise made available to CINCNORAD.

- 14. Any revision of these Terms of Reference which may be required will be agreed between the Joint Chiefs of Staff and the Chiefs of Staff Committee.
- 15. The responsibilities of the component commanders and of the Commander in Chief. Alaskan Command, are contained in attached annexes:
 - Annex "A" Air Defense Responsibilities of Component
 Commanders
 - Annex "B" Air Defense Responsibilities of Commander in Chief. Alaskan Command.

ANNEX "A"

AIR DEFENSE RESPONSIBILITIES OF COMPONENT COMMANDERS

- Command and provide for the administration, training,
 and support of their forces and place under operational control
 of CINCNORAD, or his designated subordinate commanders, all units
 of their command having a combat capability.
- 2. Serve as principal advisors to CINCNORAD on matters pertaining to the Services they represent. In this connection, make recommendations to CINCNORAD concerning forces, deployments, tactics, techniques, procedures and equipments for the air defense of North America.
- 3. Coprdinate on matters of mutual interest and refer matters of disagreement to CINCNORAD for resolution.
- 4. Perform the detailed planning, programming and specific siting for air defense units in accordance with the basic plans of and tasks assigned by CINCNORAD.
- 5. Arrange with their respective Service departments and other agencies for the support, administration, and equipping of component command units assigned or otherwise made available. Recommend, in accordance with established national or Service procedures, development or procurement of air defense weapons and equipments for use by these units in conformance with recommendations, stated or concurred in by CINCNORAD, and approved by the Joint Chiefs of Staff or the Chiefs of Staff Committee, as appropriate.

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- 6. Advise CINCNORAD of those forces of the Services they represent (other than assigned forces but including Reserve.

 National Guard, and auxiliary forces) which have an air defense

capability and which can temporarily augment the continental air defense forces in an emergency and arrange for their use by CINCNORAD in accordance with prescribed policies and procedures.

7. Arrange for the provision of required information to appropriate NORAD Commanders concerning the status and operating characteristics of all component command forces assigned, attached, or otherwise made available for air defense of North America.

ANNEX "B"

AIR DEFENSE RESPONSIBILITIES OF COMMANDER IN CHIEF, ALASKAN COMMAND

- 1. CINCAL is responsible to CINCNORAD for all air defense activities in Alaska.
- CINCAL is designated the NORAD commander to exercise operational control over all air defense forces assigned or allocated for the air defense of Alaska.
- 3. CINCAL serves as the advisor to CINCNORAD on matters pertaining to the air defense of Alaska.
- 4. CINCAL will supervise the support, training and deployment of air defense forces in Alaska to ensure proper support of CINCNORAD's mission.

HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorado

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3 Jul 1958

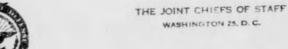
SUBJECT: Policy Guidance (U)

Chairman Canadian Chiefs of Staff Committee Department of National Defence Ottawa 4, Ontario, Canada

- The policies, plans, and operational con-cepts of this command must be based on, and in accordance with, bilateral policy directives and strategic guidance from appropriate United States and Canadian authorities. Air defense responsibilities and relationships are defined in the recently approved Terms of Reference, but as yet we do not have a comprehensive document stating the agreed policies and concepts of the two countries upon which we can depend for guidance.
- 2. Lacking such a document, we have to date drawn our guidance from a number of current United States and Canadian national and binational documents and statements. Based on these, the following is what we have considered to be the guidance for CINCNORAD:
- a. The United States and Canada must maintain a defensive posture at all times adequate to deter Soviet aggression, or, in the event of war, to insure the survival of the United States and Canada as free nations. In this connection, the requirements for air defense should not be considered in isolation from, or in competition with, the requirements for offensive forces, since it is only the proper combination of these capabilities that can achieve the stated objectives.
- b. Further, to accomplish these objectives, the United States and Canada intend to achieve and to maintain at an appropriate state of readiness an effective integrated air defense system capable of detecting and destroying hostile forces approaching or operating over the North American continent in order to deny to the enemy the possibility of destroying a critical number of vital targets.

- c. To this end, CINCNORAD should submit to the United States Joint Chiefs of Staff and Canadian Chiefs of Staff Committee studies, recommendations, and periodic long-range objective plans designed to accomplish the national objectives relative to air defense. In the event that budgetary, manpower, or other limitations preclude the approval of such recommendations or plans, the Joint Chiefs of Staff and Chiefs of Staff Committee will so inform CINCNORAD and request his further recommendations.
- 3. It is requested that the Joint Chiefs of Staff and the Chiefs of Staff Committee approve the text of paragraphs 2a, b, and c above, as standing policy guidance for CINCNORAD.
- 4. An identical letter is being forwarded to the Chairman of the United States Joint Chiefs of Staff.

/s/t/ E. E. PARTRIDGE General, USAF Commander-in-Chief





SM-36-58 10 January 1958

AF

MEMORANDUM FOR THE COMMANDER IN CHIEF, CONTINENTAL AIR DEFENSE COMMAND

Subject: Terms of Reference for CINCONAD (U).

- 1. Reference is made to the proposed Terms of Reference for the North American Air Defense Command (NORAD), developed by CINCNORAD and his Deputy, and presently under consideration by the United States Joint Chiefs of Staff and the Canadian Chiefs of Staff Committee.
- 2. The United States Joint Chiefs of Staff have agreed that provision should be made for a U.S. national command in order (a) to insure continuance of the present U.S. responsibilities for the air defense of U.S. installations in Greenland, and for assisting in the air defense of Mexico, and (b) to coordinate and implement purely national matters.
- 3. Enclosed herewith is a revision of the Terms of Reference for CINCONAD which will serve as your Terms of Reference, upon final approval of the NORAD Terms of Reference. It is requested that you submit comments and recommendations on these enclosed Terms of Reference, for consideration in the final formulation of these Terms of Reference.

For the Joint Chiefs of Staff:

AV/

R. D. WENTWORTH, Brig. General, USAF, Secretary.

Enclosure:
Appendix w/Annexes "A", "B", "C" & "D"

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ATPANTIX

TERMS OF REFERENCE FOR THE COMMANDER IN CHIEF, CONTINENTAL AIR DEFENSE COMMAND

1. The Continental Air Defense Command (CONAD) is estab-	1 -
lished as a U.S. Joint Command under the Joint Chiefs of Staff	2
with the mission of defending the-Gentinental-United-States;	3
Alaska-and-the-Nertheast-area-(fermerly-the-USNEG-area) U.S.	4
installations in Greenland against air attack, assisting in	5
the air defense of Mexico, and coordinating and implementing	6
purely national matters pertaining to the air defense of the	7
Continental United States and Alaska. The Department of the	8
Air Force is the executive agency therefor.	9
2. The Commander in Chief, Continental Air Defense Command	10
(CINCONAD) will be the senior U.S. officer in Headquarters,	11
North American Air Defense Command (NORAD). He will exercise	12
operational control over the USAF Air Defense Command, the	13
U.S. Army Antiaircrast Air Defense Command and the U.S.	14
Maval Forces, Continental Air Defense Command and the forces	15
assigned, attached or otherwise made available to these com-	16
mands, in carrying out his national responsibilities.	17
CINCONAD will not serve as a component commander of CONAD.	18
The commander of each Service component command of CONAD will	19
be the principal advisor to CINCONAD in matters of his Service	20
which pertain to CONAD. An appropriate Marine Corps repre-	21
sentative will be assigned to the Staff of CINCONAD as	22
principal advisor on Marine Corps matters pertaining to the	23
CONAD. In the Lemporary absence of the CL.CONAD from his	24
command, the inserim command will pass to the next senior	25
officer present for duty who is eligible to exercise commend,	26
regardless of Service affiliation.	27

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3. The CINCONAD will establish and maintain a joint head-	1
quarters, separate from the headquarters of each of the	2
component commands. In addition, the CINCONAD will establish	3
and maintain a joint staff, using U.S. personnel assigned to	4
NORAD, as prescribed in paragraph 30244, Joint Action Armed	5
Forces (JAAF) to operate under the basic principles set forth	6
in paragraph 30302, JAAF. The size of the staff will be	7
limited to the number of personnel required to permit CINCONAD	8
to exercise over-all operational control and to accomplish	9
broad over-all planning functions, with detailed operational	10
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and planning functions to be accompliance by	12
respective component commanders and subordinate joint com-	13
manders, as appropriate, in accordance with the policies and	14
procedures prescribed by the CINCONAD.	17
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tional-control-ever-all-forces-assigned; -attached-or-otherwise	16
made -available -to-him-by-the-Joint-Ghiefo-of-Staff-or-other	17
proper-authority-fer-his-air-defense-mission This-authority	18
includes - those - Functions - of -command - involving - the -composition	19
of-subordinate-forces; -the-assignment-of-tooks; -the-designatio	m20
of-objectives and the authoritative direction necessary to	21
accomplish the air defense mission : - Specifically ; -it -includes	+22
a The -responsibility -to -determine -the -best -procedures	23
and-methods-for-conducting-the-tactical-air-battle;-for	24
exercising-the-operational-control-of-all-assigned-forces	5
and-for-directing-the-engagement-and-disengagement-of	26
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bThe-a-thority-to-centralize-operational-control-of	28
all-air-defense-forces-assigned;-attached-or-otherwise	2
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from Greenland to the Azerse, as well on the present extension	13
from Gree land to the AZC. S. However, the above	14
from lewfoundland to the Janes Islands. However, the above	15
commanders will support CINCORAL in accordance with plans	16
approved by the Joint Shiefs of Staff and mutual agreements by	17
the commerders concerned, to insure that plans for, and the	
operation of, these elements of the carly warning systems will	18
te responsive to the needs of THECHAL.	19
and the same of th	20
5. The mission of CINCONAD is to:	21
E. Maintein-the-seeurity-ef-the-Centimertal-Air-Defense	22
Germane, -and-defend-the-Gastinental-United-States,-Slaska	
and-the-Nertheast-area Island U.S. installations in	23
Greenland against air cttack.	24
b. Assist in the decemen of Carada-and Mexico against	25
air attack in accordance with approved plans and agree-	26
air attack itt actorum	27
men*".	

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Gdi	nate and impleme	ent purely national matters	1
c. Coordi	the and improm	se of the Continental United	2
			3
States and A	laska.	CINCARIE and	4
		NCPAC, CINCLANT, CINCARIB and	5
CINCSAC in t	heir missions,	as appropriate.	-
i - ani	out his miss	ion. CINCONAD will:	6
o. In carryl	ng out his mire	inate <u>U.S.</u> joint organizations	7
a. Establ	isn such subors	he accomplishment of his assigned	8
as he deems	necessary for c	eessary-to-permit-centralized	9
mission,-ine	luding-those-ne	de Comme-weamans-assigned;	10
		11-air-defense-weapons-assigned;	11
attached-or	-otherwise-made	-available.	12
b. Assign	n tasks, designa	ate objectives and provide	
authoritati	ve direction for	r component commanders and sub-	13
ordinate U.	S. joint sir de	fense commanders, where	14
appropriate			15
c. Devel	op and submit t	o the Joint Chiefs of Staff	16
toint plans	for the deploy	ment and utilization of all	17
U.S. forces	s, weapons and e	equipments allocated, attached or	18
otherwise n	made available t	to him, te-include-those-forces	19
to be ample	aved-in-the-exte	ension-to-seaward-of-the-con-	20
69-8e-cmp1	dan-sever- for	the purpose of carrying out his	21
			22
national r	esponsibilities	ation-with-commanders-of-the	23
₫ - Frep	are,-in-eserein	mit-to-the-Joint-Shiefs-of-Stoff	21
Ferees-een	eerned; -and-sub		25
fer-apprev	al,-plans-fer-b	he-full-utilization-of-all-other	26
military-f	forces, -includin	g-forees-of-the-reserve-com-	2
penents; -	which-have-an-ai	r-defense-eapability-and-which	
ean - bempor	rerily-augment-t	the -air-defense-forces -in-the-ever	
of-on-eme	rgeney:	UNCLASSIFIED	2

	-
the operational requirements for forces, air defense	16
weapons and equipments of-all-elements-of-the-continental	2
air-defense-system: necessary to carry out his mission.	3
The development and procurement of air defense weapons and	4
equipments will be responsive to the requirements laid down	5
by CINCONAD as approved by the Joint Chiefs of Staff and	6
will be accomplished by the Lepartment of the Army, Navy	7
and Air Force in accordance with existing procedures.	8
fr g. Implement appropriate plans approved by the Joint	9
Chiefs of Staff and exercise such emergency powers as may	10
be delegated by proper authority.	11
5: f. Prescribe policies and procedures governing the	12
detailed operational and planning functions to be accomp-	13
lished by the staffs of the respective component com-	14
manders and subordinate joint commanders in the furtherance	15
of CINCONAD's over-all operational control and planning	16
	17
functions. h: g. Establish Insure that procedures and methods for	18
h. g. Establish insure that processing the	19
conducting the tactical air battle, for exercising the	g20
operational control of all assigned forces and for directin	21
the engagement and disengagement of weapons are in	22
consonance with those established by CINCNORAD.	23
1. h. Exercise operational control over all forces	24
assigned, attached or otherwise made available to him	25
for the purpose of carrying out his mission.	26
1- 1. Specify the condition of combat readiness, to	27
include states of alert, to be maintained by forces	28
assigned, attached or otherwise made available and-by	
augmentation-forces-while-under-the-operational-control-of	29
GINGONAB: to carry out his mission.	30
kIn-event-of-the-likelihood-of-or-actual-air-attack	3
on-North-America, -assume-operational-control-of-those	3
forces-specifically-made-temporarily-available-from-other	3

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commands - (augmentation - forces) Operational -control - over	1
such-forces will-be-relinquished-when-the-likelihood-of	2
such-forces will-be-refindurance when the stack-ts-ended:	3
the-threat-has-dissipated-or-when-the-attack-is-ended:	4
En-the-event-the-commander-who-made-the-augmentation-forces	5
awattable-to-GINGONAD-considers-that-a-primary	6
requires -the -return -of -the -forees -to -their -permanent	7
mand-assignments;-an-appropriate-request-will-be-made-to	8
GINGONAB:If-such-request-is-not-granted;-next-recourse	
ta-to-the-Joint-Chiefs-of-Staff:	9
1. 1. Coordinate with appropriate United States and	10
allied commanders in the development and implementation of	11
plans and in the establishment of procedures for early	12
warning systems which will provide early warning of air	13
attack for the defense of North America, to insure that	14
these systems are designed and operated in a manner respon-	15
sive to the GINGOHABLE CINCHORAD's air defense requirements	16
	17
and in consonance with national policy.	18
k. Coordinate with appropriate Mexican military	19
authorities in the development and implementation of plans	20
for the provision of necessary warning and surveillance	21
systems in accordance with appropriate agreements and pro-	22
cedures between the United States and Mexico to insure that	23
these systems are designated and operated in a manner	24
responsive to the requirements of CINCONAD and in con-	
sonance with national policy.	25
m. 1. In coordination with CINCNORAD, Edetermine and	26
appounce conditions of air defense warning in his areas	27
of responsibility, based on the likelihood of air attack	n 28
the -Continental - United - States; - Alaska -or - the - Northees t - area	. 29

m. Flan for a decent appropriate air defense	: 30
exercises, including-participation-by-augmentation-forces;	31
coordinating such plans with ether-commands-established	32
ty-the-seint-Shiefe-ef-Staff DINCHORAD and with military	33
agencies of Ganada-and Mexico, as appropriate.	34

6 - Appendix

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n. Establish procedures for the control of U.S. classi-	1
fied information and the release thereof to Canadian repre-	2
sentatives in NORAD, in accordance with the authorization	3
delogated by competent authority.	4
er-Goordinate-with-appropriate-military,-governmental	5
and-nen-governmental-agencies-in-the-development-of-policy	6
and-broad-plans-for-the-accurity-control-of-air-traffic,	7
the-control-of-electromagnetic-radiations-and-the-control-of	£ 3
illumination-and, -when-appropriate, -initiate-implementing	9
actions-therefor-in-the-defense-of-the-Gontinental-United	10
States, -Alaska-and-the-Northeast-ares-against-air-attack.	11
Pr-Coordinate-with-the-Federal-Sivil-Befence-Administra-	12
tion,-State-Givil-Defense-Agencies,-and-other-non-military	13
ageneies-en-matters-ef-participation-in-air-defense.	14
7. CINCONAD will normally communicate through the desig-	15
ated executive agency. However, direct communication with	16
he military Chiefs of Services is authorized on uni-Service	17
atters, although these matters should normally be handled	18
hrough the component commanders concerned.	19
3. Directives promulgated by CINCONAD in consonance with	50
hese terms of reference will govern all air defense opera-	21
ions concerning the Gentimental-United-States, -Aleeka-and-the	22
ertheast-ares his areas of responsibility in matters not	23
therwise covered by joint plans, doctrines or procedures ap-	24
roved by the Joint Chiefs of Staff or by appropriate inter-	25
ervice agreements.	26
9. The CONAD organization, command relationships and the	27
esponsibilities of component commanders relating to the	28
articipation of forces provided by each Service are contained	29
the annexes hereto as follows: UNCLASSIFIED	30

Annex	" A"	_	Army Forces	3
			Naval Forces	2
			Air Force Forces	
Annex	"D"	-	Organization and Command Arrangements	•

ANNEX "A"

RESPONSIBILITIES OF THE COMMANDING GENERAL, U.S. ARMY ANTIAIRORAPT AIR DEFENSE COMMAND

1. Serve as the Commander of the Army component command of	1
the CONAD.	2
2. Serve as the principal advisor to CINCONAD on U.S. Army	3
matters pertaining to the CONAD.	4
3. Establish and maintain an appropriate Army headquarters	5
and staff located in the immediate vicinity of the CONAD head-	6
quarters to accomplish detailed planning functions in	7
accordance with the policies and procedures prescribed by	8
the CINCONAD.	9
4. Coordinate with the other Service component commanders	10
on matters of mutual interest and refere matters of disagree-	11
ment to CINCONAD for resolution.	12
5. Provide for the specific siting of Army units at	13
tactical air defense position in accordance with the basic	14
deployment plans of and the tasks assigned by CINCONAD.	15
6. Place under the operational control of CINCONAD, or	16
his designated subordinate joint air defense commanders,	17
the-cembat-ready appropriate units of the U.S. Army Anti-	18
aireraft Air Defense Command having a combat capability,	15
including their surveillance and control elements, upon their	20
emplacement at tactical air defense positions.	2
7. Arrange with the Department of the Army and other appro-	2
priate agencies for the support, administration, and equipping	5
of Army units assigned or otherwise made available for the	5
air defense of the continental United States and arrange for	5
	20

the action and the action action and the action action action action action action action action and the action	1
equipments-fer-use-by-these-units-so-as-te-be-responsive-te	2
the-requirements-isid-dawn-by-GINGGNAB-as-approved-by-the	3
Joint-Shiefs-of-Staff: to CINCONAD in the carrying out of	4
his mission.	
8. Recommend to CINCONAD the forces, deployments, tactics,	5
8. Recommend to CINCONAD the techniques, procedures, and equipments for Army Forces which techniques, procedures, and equipments for Army Forces which	6
techniques, procedures, and equipments	7
contribute to the air-defense-of-the-continental-W-S-1-Alaska	8
and-the-Northeast-area accomplishment of CINCONAD's air defense	9
responsibilities.	
9Recommend-to-OINOONAD-plans-and-policies-for-the	10
91-Heesmand-30-0110-0110-0110-0110-0110-0110-0110-	11
U-SArmy-which-contribute-to-the-air-defense-of-the	12
U-SArmy-which-con-contribute	13
continental-United-Statesy-Alaska-and-the-Northeast-areas	* h
10-Advise-GINOONAD-of-these-forces-of-the-U-SArmy;	14
including-Reserve-and-National-Guard-forces;-which-have-an	15
atr-defense-capability-and-which-can-temporarily-augment	16
the-continental-air-defence-forces-in-an-emergency-and-	17
arrange-for-their-use-in-accordance-with-the-policies-and	18
	19
procedures-prescribed-by-GINGONABT	- 20
11. 9. Provide appropriate Joint Air Defense Commanders wit	11 20
required information regarding the status and operating	
abaracteristics of all Army forces assigned or otherwise	53
made available to CINCONAD and-Army-augmentation-forces-and	2
facilities-eapable-of-employment-in-an-emergency.	2
	2
12Provide-or-arrange-for-the-necessary-legisticsupport	
for-Army-augmentation-forces-when-employed-in-the-air-defens	2
of-the-continental-United-States;	-

"MNIX "B.

RESPONSIBILITIES OF THE COMMANDER, NAVAL FORCES CONTINENTAL AIR DEFENSE COMMAND

1. Serve as the Commander of the Naval component command of	1
the CONAD.	2
2. Serve as the principal advisor to CINCONAD on U.S. Naval	3
matters pertaining to the CONAD.	14
3. Establish and maintain an appropriate Naval headquarters	5
and staff located in the immediate vicinity of the CONAD head-	É
quarters, to accomplish detailed planning functions in accord-	7
ance with the policies and procedures prescribed by the CINCONAD	. 3
4. Coordinate with the other Service component commanders on	9
matters of mutual interest referring matters of disagreement to	10
CINCONAD for resolution.	11
5. Provide for Naval forces in the-extension-to-seaward-of	12
the-eestigueus-radar-eeverage-to-be-stationed-and-operated-in	13
aseerdance-with support of the basic operational plans of and	12
the tasks assigned by CINCONAD.	15
6. Make available to CINCONAD for his operational control	16
while on station, the naval forces employed in the extension	17
te-seaward-of-the-centiguous-radar-severage-of-the-centimental	18
air-defense-system. support of CINCONAD's mission.	19
7. Arrange with the Department of the Navy and other appro-	20
priate agencies for the support, administration and equipping	21
of naval forces assigned or otherwise made available for	55
employment-in-the-extension-to-seaward-of-the-contiguous-radar	23
eaverage-and-arrange-for-the-development-and-prosurement-of	2.
communications and surveillance equipments for wee-by-assigned	25

units-se-as-te-be-respensive-te-the-requirements-laid-dewn	1
by-GINGONAD-as-approved-by-the-Joint-Ghiefs-of-Staff, to	5
CINCONAD in the carrying out of his mission.	3
a company and tractice feebriques	14
8. Recommend to CINCONAD deployments, tactics, techniques	5
and procedures for Naval Forces made-available-fep-the-air	
defense-of-the-continental-W.S.,-Alaska-and-Northeast-area,	6
which contribute to the accomplishment of CINCONAD's air	7
defense responsibilities.	8
9:-Recommend-to-GINGONAD-plans-and-policies-for-the-employ-	9
ment-ef-the-forees-ef-the-reserve-sempenents-ef-the-U-SNavy	20
	11
United-States,-Alaska-and-the-Nertheast-area-	12
10Advise-GINGONAD-of-those-forees-of-the-U-SMavy;-in-	13
eluding-forces-of-the-reserve-components-which-have-an-air	14
defense-eapability-and-which-ean-temperarily-augment-the-eenti-	15
nental-air-defense-forces-in-an-emergency-and-arrange-for-their	18
use-in-accordance-with-the-policies-and-procedures-prescribed	17
by-Gineenad-	18
11. 9. Provide appropriate Joint Air Defense Commanders with	19
required information regarding the status and operating charac-	
teristics of all Naval forces assigned or otherwise made avail-	
able to CINCONAD. and-Naval-augmentation-forces-and-facilities	2
eapable-ef-empleyment-in-an-emergency-	5
12Provide-or-arrange-for-the-neessary-legistie-support-for	2
Naval-augmentation-forces-when-employed-in-the-air-defense-of	5
the-eentimental-United-States+ UNCLASSIFIED	0

ANNEX "C"

RESPONSIBILITIES OF THE COMMANDER US F TO SEFENSE COMMAND

1. Serve as the Commander of the Air Force component com-	1
mand of the CONAD.	2
2. Serve as the principal advisor to CINCONAD on U.S. Air	3
Force matters pertaining to the COMAD.	4
3. Establish and maintain an appropriate Air Force head-	5
quarters and staff located in the immediate vicinity of the	6
CONAD headquarters to accomplish detailed planning functions	7
	3
in accordance with the policies and procedures prescribed by	9
the CINCONAD.	2
4. Coordinate with the other Service component commanders	10
on matters of mutual interest and refer matters of disagree-	11
ment to CINCONAD for resolution.	12
5. Provide for the specific siting of Air Force units at	13
tactical air defense positions in accordance with the basic	14
deployment plans of and the tasks assigned by CINCONAD.	15
6. Place under the operational control of CINCONAD, or	16
his designated subordinate joint air defense commanders, the	17
eembat-ready appropriate units of the USAF Air Defense Com-	15
mand having a combat capability, including air surveillance	19
and control elements, upon their deployment to tactical air	21
defense positions.	2
7. Arrange with the Department of the Air Force and other	22
appropriate agencies for the support, administration, and	5
equipping of Air Force units assigned or otherwise made	2
available fer-the-eir-defense-ef-the-continental-United-States	5

weapons-and-equipments-for-use-by-these-units-so-so-so-to-be	1
responsive-to-the-requirements-laid-down-by-GINGONAD-ss-ap-	2
proved-by-the-Joint-Ghiefs-of-Staff, to CINCONAD in the carry-	3
ing out of his mission.	4
8. Recommend to CINCONAD the forces, deployments, tactics,	5
techniques, procedures and equipments for use by Air Force	6
forces which contribute to the air-defense-of-the-continental	7
United-States, -Alaska-and-the-Nertheast-area accomplishment of	3
CINCONAD's air defense responsibilities.	9
9:-Recommend-to-GINGONAD-plans-and-policies-for-the-employ-	10
ment-of-the-forces-of-the-reserve-components-of-the-U-Sr-Air	11
Force-which-can-contribute-to-the-air-defense-of-the-conti	12
nental-United-Statesy-Alaska-and-the-Northeast-arear	13
10Advise-GINGONAD-of-these-forces-of-the-U.SAir-Feree,	11
including-Reserve-and-National-Guard-forces,-which-have-an-air	15
defense-capability-and-which-esn-temperarily-augment-the-esn-	1
timental-air-defence-forces-in-an-emergency,-and-arrange-for	1
their-use-in-accordance-with-the-policies-and-procedures-pre-	1
aastbad-by-CINGONAD	1

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11-9. Provide appropriate Joint Air Defense Commanders with	50
required information regarding the status and operating charac-	21
teristics of all Air Force forces assigned or otherwise made	55
available to CINCONAD. and-Air-Feree-augmentation-ferees-and	23
facilities-capable of-employment-in-an-emergency	24
12,-Pravide-or-orrange-for-the-necessary-legistic-support	25
	26
defense-of-the-continental-United-States.	27
3-10. Plan for, organize, equip, administer and operate neces-	28
sary elements of a Ground Observer Corps, including the mann-	29
ing of the military portion thereof.	30
- 14 - Annex "C"	

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ANNEX "D"

ORGANIZATION AND COMMAND ARRANGEMENTS

1. The mission of air defense is a functional mission	1
	5
of CINCONAD do not have specific Service combat mission.	3
Service component commanders under CINCONAD provide combat	4
	5
for combat operations. Since time of reaction to the threat is	6
all-important, successful air defense must be predicated upon	7
decentralization of authority to the greatest extent compatible	8
with the optimum effective control and application of the total	9
	10
	11
	12
trolled in the most effective manner as a part of an over-all	13
	14
	15
	16
2Commanders-making-augmentation-forces-available-may-place	17
restrictions-on-the-deployments-of-these-forces-in-the-event	18
they-are-required-for-their-primary-Service-missions-	19

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from the

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24 January 1998

SUBJECT: Terms of Reference for GINCOND

Coi Chief of Staff, United States Air Force
As -vective Agent for CONAD,
washington 25, D. C.

1. Reference:

A. Hevised Torms of efforence fde Tact. AD, Atmendix to Inclosure "A," JCS 15/1/132.

b. St 36-58, subject as shove, deted 10 danuary 1958.

2. Although reference is was forwarded to this beadquarters for information only, I wish to advise you that this headquarters is in agreement that the proposed MRAD forms of Pefer nce are adequate and that the North American Air befores system can be made to operate effectively under this charter.

3. eference paragraph 3 of reference 1b above. The revised Terms of Reference promoted for ms as a M.S. national commander (CINCONAL) have been carefully studied, particularly in relation to the promoted NOMAD Terms of Reference. It is my conclusion that the promoted CONAD Terms of Reference introduce unnecessary dumlication and confusion into what should be a relatively simple arrangement with a clear division of tasks and responsibilities between CINCONAD.

4. Since it is apparent that the U.S. Joint Chiefs of Staff consider that provision must be made for a U.S. national commander, it is suggested that, instead of issuing detailed COMAD Terms which suplicate in part the WORAD Terms, a letter, merely sugmenting the WORAD Terms, as the senior U.S. officer, which defines the tasks and responsibilities of the United States national commander, substantially as follows:

mational com ander (OI COMEN) responsible to the Joint Chiefs of Staff for the following purely U.S. air decembe responsibilities:

"a. Defend ". installations in reemland against mir attack.

"b. Assist in the defense of fexico against air attack in accordance with approved plans and agreements.

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CONAD X

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INFO SEPVICES

Hq COMAD, Subj: Terms of deference for CINCONAD

Those forces of the USAF Air Defense Command, the U.S. Army Air Defense Command and the U.S. Naval Forces, Continental Air Defense Command which are assigned, attached or otherwise made available to these commands for assisting in the air defense of mexico, for defending U.S. installations in Greenland against air attack, and discharging his national responsibilities in those sees.

the DEW Line to steed in Greenland.

"e. Coordinate and implement purely national natters per sining to the sir defense of the Continental initial tates and Alasks.

suthorities in the development and implementation of plans for the provision of necessary warning and surveillance systems in accordance with appropriate agreements and procedures to insure that these systems are designed and operated in a manner responsive to the requirements of CTUCNOTAD and in consonance with national policies.

classified information and release thereof to Canadian representatives in WORAD in accordance with authorisation delegated by competent authority.

Executive agency (becartment of the Air Force); however, direct communication with the military chiefs of services is authorized on uni-Service matters although these matters should normally be handled through the component commander concerned."

5. In view of the fact that considerable progress has been made with respect to the successful operation of the North A erican Air Defense to mand and since the channels of communications and procedures for accomplishing NONAD business are gradually becoming recognized, it is strongly recommended that the procedure outlined in paragraph 4 above to adopted and that the proposed CONAD Terms of Reference be withdrawn. It is believed that the simplified CINCONAD instructions will permit the development of a workable system which will produce satisfactory results.

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Seneral, RAF Commander-in-Chief



TERMS OF REFERENCE FOR THE COMMANDER IN CHIEF. CONTINENTAL AIR DEFENSE COMMAND

- 1. The Continental Air Defense Command (CONAD) is established as a U.S. Joint Command under the Joint Chiefs of Staff with the mission of defending U.S. installations in Greenland against air attack, assisting in the air defense of Mexico, and coordinating and implementing purely national matters pertaining to the air defense of the Continental United States and Alaska.

 The Department of the Air Force is the executive agency therefor.
- 2. The Commander in Chief. Continental Air Defense Command (CINCONAD) will be the senior U.S officer in Headquarters, North American Air Defense Command (NORAD). He will exercise operational control over the USAF Air Defense Command, the U.S. Army Air Defense Command and the U.S. Naval Forces. Continental Air Defense Command and the forces assigned, attached or otherwise made available to these commands, in carrying out his national responsibilities. CINCONAD will not serve as a component commander of CONAD. The commander of each Service component command of CONAD will be the principal advisor to CINCONAD in matters of his Service which pertain to CONAD. An appropriate Marine Corps representative will be assigned to the Staff of CINCONAD as principal advisor on Marine Corps matters pertaining to the CONAD. In the temporary absence of the CINCONAD from his command, the interim command will pass to the next senior officer present for duty who is eligible to exercise command, regardless of Service affiliation.
- quarters, separate from the headquarters of each the component commands. In addition, the CINCONAD will establish and maintain a joint staff, using U.S. personnel assigned to NORAD, as prescribed in paragraph 30244, Joint Action Armed Forces (JAAF) to operate

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under the basic principles set forth in paragraph 10302. JAAF.

The size of the staff will be limited to the number of personnel required to permit TPS UNAD to exercise over-all operational control and to accomplise broad over-all planning functions.

With detailed operational and planning functions to be accomplished by the staffs of the respective component commanders and subordinate joint commanders as appropriate in accordance with the policies and procedures prescribed by the TINCONAD.

- The property of the DEW Line on Gree land. Forces and operation of the seaward extensions of the early warning systems will remain under "INCIAST and CINCPAC" in approximance with existing inter-Service agreement, i.e., CINCPAC is responsible for the seaward extension from Prock Island to Midway Island and CINCIANT is responsible for the prospective seaward extensions from Greenland to the United Ringdom and from Greenland to the Azores, as well as the present extension from Sewfoundland to the Azores Islands. Powever, the above commanders will support CINCONAD in accordance with plans approved by the Joint Chiefs of Staff and mutual agreements by the commanders concerned to insure that plans for, and the operation of these elements of the early warning system will be responsive to the needs of CINCONAD
 - 5 The mission of CINCONAD is to
- a. Defend U.S. installations in Greenland against air attack.
- b Assist in the defense of Mexico against air aliack in accordance with approved plans and agreements.
- c. Coordinate and implement purely national matters pertaining to the air defense of the Continental United States and Alaska.

1 1 1 5

- d. Support CINCAL. CINCPAC, CINCLANT, CINCARIB and CINCSAC in their missions, as appropriate.
 - 6. In carrying out his mission, CINCONAD will
- \underline{a} . Establish such subordinate U.S. joint organizations as he deems necessary for the accomplishment of his assigned mission.
- b. Assign tasks, designate objectives and provide authoritative direction for component commanders and subordinate U.S. joint air defense commanders, where appropriate.
- c. Develop and submit to the Joint Chiefs of Staff
 joint plans for the deployment and utilization of all U.S.
 forces, weapons and equipments allocated, attached or otherwise
 made available to him for the purpose of carrying out his
 national responsibilities.
- d. In consultation as appropriate with component commanders, develop and submit to the Joint Chiefs of Staff the operational requirements for torces, air defense weapons and equipments necessary to carry out his mission. The development and procurement of air defense weapons and equipments will be responsive to the requirements laid down by CINCONAD as approved by the Joint Chiefs of Staff and will be accomplished by the Department of the Army. Navy and Air Force in accordance with existing procedures.
- e. Implement appropriate plans approved by the Joint Chiefs of Staff and exercise such emergency powers as may be delegated by proper authority.
- f. Prescribe policies and procedures are ning the detailed operational and planning functions to be accomplished by the staffs of the respective component commanders and sub-ordinate joint commanders in the furtherance of CINCONAD's operational control and planning functions.

Declassified

- g. Insure that procedures and methods for conducting the tactical air battle, for exercising the operational control of all assigned forces and for directing the engagement and disengagement of weapons are in consonance with those established by CINCNORAD.
- h. Exercise operational control over all forces assigned, attached or otherwise made available to him for the purpose of carrying out his mission.
- \underline{i} . Specify the condition of combat readiness, to include states of alert, to be maintained by forces assigned, attached or otherwise made available to carry out his mission.
- j. Coordinate with appropriate United States and allied commanders in the development and implementation of plans and in the establishment of procedures for early warning systems which will provide early warning of air attack for the defense of North America, to insure that these systems are designed and operated in a manner responsive to the CINCNORAD's air defense requirements and in consonance with national policy.
- k. Coordinate with appropriate Mexican military authorities in the development and implementation of plans for the provision of necessary warning and surveillance systems in accordance with appropriate agreements and procedures between the United States and Mexico to insure that these systems are designated and operated in a manner responsive to the requirements of CINCONAD and in consonance with national policy.
- 1. In coordination with CINCNORAD, determine and announce conditions of air defense warning in his areas of responsibility, based on the likelihood of air attack.
- m. Plan for and conduct appropriate air defense exercises, coordinating such plans with CINCNORAD and with military agencies of Mexico, as appropriate.

Declassified

- n. Establish procedures for the control of U.S. classified information and the release thereof to Canadian representatives in NORAD, in accordance with the authorization delegated by competent authority.
- 7. CINCONAD will normally communicate through the designated executive agency. However, direct communication with the military Chiefs of Services is authorized on uni-Service matters, although these matters should normally be handled through the component commanders concerned.
- 8. Directives promulgated by CINCONAD in consonance with these terms of reference will govern all air defense operations concerning his areas of responsibility in matters not otherwise covered by joint plans, doctrines or procedures approved by the Joint Chiefs of Staff or by appropriate inter-Service agreements.
- 9. The CONAD organization, command relationships and the responsibilities of component commanders relating to the participation of forces provided by each Service are contained in the annexes hereto as follows:

Annex "A" - Army Forces

Annex "B" - Naval Forces

Annex "C" - Air Force Forces

Annex "D" - Organization and Command Arrangements

ANNEX "A"

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RESPONSIBILITIES OF THE COMMANDING GENERAL, U.S. ARMY AIR DEFENSE COMMAND

- Serve as the Commander of the Army component command of the CONAD
- Serve as the principal advisor to CINCONAD on U.S. Army matters pertaining to the CONAD.
- 3. Establish and maintain an appropriate Army headquarters and staff located in the immediate vicinity of the CONAD headquarters to accomplish detailed planning functions in accordance with the policies and procedures prescribed in the CINCONAD
- 4. Coordinate with the other Service component commanders on matters of mutual interest and refer matters of disagreement to CINCONAD for resolution.
- Provide for the specific siting of Army units at tactical air defense position in accordance with the basic deployment plans of and the tasks assigned by CINCONAD.
- 6. Place under the operational control of CINCONAD. or his designated subordinate joint air defense commanders, appropriate units of the U.S. Army Air Defense Command having a combat capability, including their surveillance and control elements, upon their emplacement at tactical air defense positions.
- 7. Arrange with the Department of the Army and other appropriate agencies for the support, administration. 'equipping of Army units assigned or otherwise made available to CINCONAD in the carrying out of his mission.

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- Recommend to CINCONAD the forces, deployments, tactics, techniques, procedures, and equipments for Army Forces which

contribute to the accomplishment of CINCONAD's air defense responsibilities.

9. Provide appropriate Joint Air Defense Commanders with required information regarding the status and operating characteristics of all Army forces assigned or otherwise made available to CINCONAD.

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ANNEX "B"

RESPONSIBILITIES OF THE COMMANDER, NAVAL FORCES CONTINENTAL AIR DEFENSE COMMAND

- Serve as the Commander of the Naval component command of the CONAD.
- 2. Serve as the principal advisor to CINCONAD on U.S. Naval matters per taining to the CONAD.
- 3. Establish and maintain an appropriate Naval headquarters and staff located in the immediate vicinity of the CONAD headquarters, to accomplish detailed planning functions in accordance with the policies and procedures prescribed by the CINCONAD.
- 4. Coordinate with the other Service component commanders on matters of mutual interest referring matters of disagreement to CINCONAD for resolution.
- Provide for Naval forces in support of the basic operational plans of and the tasks assigned by CINCONAD.
- 6. Make available to CINCONAD for his operational control while on station, the naval forces employed in support of CINCONAD's mission.
- 7. Arrange with the Department of the Navy and other appropriate agencies for the support, administration and equipping of naval forces assigned or otherwise made available to CINCONAD in the carrying out of his mission.
- 8. Recommend to CINCONAD deployments, tactics, techniques and procedures for Naval Forces which contribute to the accomplishment of CINCONAD's air defense responsibilities.

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9. Provide appropriate Joint Air Defense Commanders with required information regarding the status and operating characteristics of all Naval forces assigned or otherwise made available to CINCONAD.

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ANNEX "C"

RESPONSIBILITIES OF THE COMMANDER USAF AIR DEFENSE COMMAND

- 1. Serve as the Commander of the Air Force component command of the CONAD.
- 2. Serve as the principal advisor to CINCONAD on U. S. Air Force matters pertaining to the CONAD.
- 3. Establish and maintain an appropriate Air Force headquarters and staff located in the immediate vicinity of the CONAD headquarters to accomplish detailed planning functions in accordance with the policies and procedures prescribed by the CINCONAD.
- 4. Coordinate with the other Service component commanders on matters of mutual interest and refer matters of disagreement to CINCONAD for resolution.
- 5. Provide for the specific siting of Air Force units at tactical air defense positions in accordance with the basic deployment plans of and the tasks assigned by CINCONAD.
- 6. Place under the operational control of CINCONAD, or his designated subordinate joint air defense commanders, appropriate units of the USAF Air Defense Command having a combat capability, including air surveillance and control elements, upon their deployment to tactical air defense positions.
- 7. Arrange with the Department of the Air Force and other appropriate agencies for the support, administration, and equipping of Air Force units assigned or otherwise made available to CINCONAD in the carrying out of his mission. Declassified

- 8. Recommend to CINCONAD the forces, deployments, tactics, techniques, procedures and equipments for use by Air Force forces which contribute to the accomplishment of CINCONAD's air defense responsibilities.
- 9. Provide appropriate Joint Air Defense Commanders with required information regarding the status and operating characteristics of all Air Force forces assigned or otherwise made available to CINCONAD.
- 10. Plan for, organize, equip, administer and operate necessary elements of a Ground Observer Corps, including the manning of the military portion thereof.

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ANNEX "D"

ORGANIZATION AND COMMAND ARRANGEMENTS

The mission of air defense is a functional mission carried out on a geographical basis. The component commanders of CINCONAD do not have specific Service combat mission.

Service component commanders under CINCONAD provide combat ready forces joint commanders under CINCONAD are responsible for combat operations. Since time of reaction to the threat is all-important, successful air defense must be predicated upon decentralization of authority to the greatest extent compatible with the optimum effective control and application of the total defense force available. It is essential that all forces of the military establishment, which have an air defense capability and which can be made available, be operated and controlled in the most effective manner as a part of an over-all coordinated air defense system.

- UNCLACOUTION

21 Juli 450 3742

COOPE

SUBJECT: Ad Noc Completes for the Reorganization of the Concinental Air Defense Corrend

Compander, U.S. Air Force Air Delumna Command Comminer, U.S. Barre Forces, Comp TO: Commanding General, U.S. Army Afr Decembe Command

1. The Commander-in-Chief, CONep. defired they a proposed plan be prapared for the reorganization of the Configural Air

Defense Comend which could be consistent with the fresident's proposed bill for the reor anisation of the Department of Defense now being considered by the Congress

2. It to the design of this handehatters that the plan for the recremination of COMAD he given edequate inputs from sach of the component convends of comes and that an ad hoe committee be designated for whis special purpose. The committee will be chaired by a general officer of this headquarters, with membership to be manufitted at officers from this bandquarters and two afficers from rech of the components. It is therefore requested that your headquarters appoint a senior colonel and enother efficie, one of whom should be convergent with component organizational entress, who will be placed on temporary duty to this handquarters for a period of two weeks commencing 28 July 53. ority togetilize the genources of the component staff for whatever C. Kekoa The sentor officer designates should be empowered with the authessistince that may be required. 21 Jul 58

3. Riffers the two-week period, the appointed officers will be expected to spend full time at this headquarters, divorced from that's ducies at the component headquarters. Work space and the necessary clerical assistance required for the soccaplishment of the gomenittee task will be provided by this headquarters.

POR THE COMMANDER IN-CRISE:

MARSHALL S. CARTER

Major General, USA

Chief of Start

Chief of Start

M/R: This letter requests the components of CONAD to sene two representatives the development a plan for he reorientzation of CONAD.

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GENERAL ORDERS) NUMBER 6)

5 August 1958

Section

ESTABLISHMENT OF NORTH AMERICAN AIR DEFENSE COMMAND REGIONS...... I ESTABLISHMENT OF NORTH AMERICAN AIR DEFENSE COMMAND DIVISIONS..... I I

I. ESTABLISHMENT OF NORTH AMERICAN AIR DEFENSE COMMAND REGIONS--1. North American Air Defense Command Regions (NORAD Regions) are established and assigned to the North American Air Defense Command effective 10 June 1958 with headquarters at locations indicated:

Establishment

Location

Eastern NORAD Region

Stewart Air Force Base Newburgh, New York

Central NORAD Region

Richards - Gebaur Air Force Base

Grandview, Missouri

Western NORAD Region

Hamilton Air Force Base

California

Northern NORAD Region

RCAF Station

St. Hubert, P. Q., Canada

Alaskan NORAD Region

Elmendorf Air Force Base

Alaska

- Commanders of the North American Air Defense (NORAD) Regions will be designated by separate orders.
- 3. Authority: Terms of Reference for North American Air Defense Command, dated 10 June 1958.
- II. ESTABLISHMENT OF NORTH AMERICAN AIR DEFENSE COMMAND DIVISIONS--1. North American Air Defense Command Divisions are established effective 10 June 1958, with headquarters at locations and with command assignments indicated below:

Establishment

Location

Command Assignment

26th NORAD Division

Roslyn AFS, Roslyn, N. Y.

Eastern NORAD Region

30th NORAD Division

Willow Run AFS Belleville, Mich. Eastern NORAD Region

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PLICATE

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GO 6, Hq NORAD, Ent AFB, Colorado Springs, Colorado, 5 Aug 58, Section II, para. 1 cont.

Establishment	Location	Command Assignment
32nd NORAD Division	Syracuse AFB Syracuse, N.Y.	Eastern NORAD Region
35th NORAD Division	Dobbins AFB, Marietta, Ga.	Eastern NORAD Region
37th NORAD Division	Truax Fld, Madison, Wis.	Eastern NORAD Region
58th NORAD Division	Wright-Patterson AFB, Ohio	Eastern NORAD Region
85th NORAD Division	Andrews AFB, Maryland	Eastern NORAD Region
20th NORAD Division	Richards-Gebaur AFB, Mo.	Central NORAD Region
29th NORAD Division	Great Falls AFB Great Falls, Montana	Central NORAD Region
31st NORAD Division	Fort Snelling AFS St. Paul, Minn.	Central NORAD Region
33rd NORAD Division	Tinker AFB, Oklahoma	Central NORAD Region
34th NORAD Division	Kirtland AFB Albuquerque, New Mexico	Central NORAD Region
9th NORAD Division	Geiger Fld, Spokane, Wash,	Western NORAD Region
25th NORAD Division	McChord AFB, Wash.	Western NORAD Region
27th NORAD Division	Norton AFB, Calif.	Western NORAD Region
28th NORAD Division	Hamilton AFB, Calif.	Western NORAD Region
lst NORAD Division	Lac St. Denis, P.Q., Canada	Northern NORAD Region
2nd NORAD Division	St. Margarets, N.B., Canada	Northern NORAD Region
3rd NORAD Division	Edgar, Ontario, Canada	Northern NORAD Region
5th NORAD Division	Vancouver, B.C., Canada	Northern NORAD Region
64th NORAD Division	Pepperrell AFB, Nfld.	Northern NORAD Region
10th NORAD Division	Elmendorf AFB, Alaska	Alaskan NORAD Region
11th NORAD Division	Ladd AFB, Alaska	Alaskan NORAD Region



GO 6, Hq NORAD, Ent AFB, Colorado Springs, Colorado, 5 Aug 58, Section II, cont.

 $_{\rm 2.}$ Commanders of the North American Air Defense (NORAD) Divisions will be designated by separate orders.

3. Authority: Terms of Reference for North American Air Defense Command, dated 10 June 1958.

FOR THE COMMANDER-IN-CHIEF:

OFFICIAL:

E. W. METZGER, IR. Lt Col, USAF

Director of Administration

DISTRIBUTION:

ABCEF

MARSHALL S. CARTER Major General, USA Chief of Staff

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CINCNORAD

COMCFECR STEWART AFB NY

COMCFCCR RICHARDS-GEBAUR AFB MO

COMCFWCR HAMILTON AFB CALIF

INFO: COMDR USAF ADC ENT AFB COLO (COURIER)

CG USARADCOM ENT AFB COLO (COURIER)

COMNAVFORNORAD ENT AFB COLO (COURIER)

CANAIRDEF ST HUBERT QUEBEC CANADA

UNCLASSIFIED FROM NOOPR 035

This message in four parts. PART I. By authority of the Terms of Reference for CINCNORAD, 10 June 1958, Eastern, Central, and Western CONAD Regions are established as the Eastern, Central, and Western North American Air Defense (NORAD) Regions, effective 0001, 1 Jul 58, with no change in headquarters locations. Commanders of the Air Defense forces of the USAF Air Defense Command at the respective region headquarters are designated as NORAD Region Commanders.

PART 2. Conad Divisions comprising the above regions are designated as North American Air Defense (NORAD) Divisions, effective 0001,

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NOOPR

Jun 1958

CURTIS KEKOA, Lt Col, USAF

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1 July 1958, with no change in headquarters locations. Commanders of USAF ADC Air Divisions (Defense) at the respective division headquarters are designated as NORAD Division Commanders. PART 3. Air Defense Sectors (SAGE) will be designated as NORAD Sectors with no change in headquarters location. USAF ADC Commanders of such sectors are designated as NORAD Sector Commanders. PART 4. General orders will be published in the near future confirming the above. It will be necessary that the component staff of designated NORAD Commanders perform such NORAD tasks as may be required until such time as the manning documents of subordinate NORAD organizations are approved.

MEMO FOR THE RECORD: This message establishes the NORAD Regions in the U.S. as well as the NORAD Divisions and Sectors comprising these Regions. Commanders of these organizations have also been designated. The retention of the disestablishment of these organizations as CONAD organizations will be determined when the finalized CONAD Terms of Reference are received.

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	JOINT MESSAGEF		UNCLASS!	7180	12	-
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	STEED FROM BOOFS	036				
She and	hority of the Terms	of Reference	for CINCHORAD,	10 Jun 58, the		
SAPE C	OMAD Division is ad	ditionally des	ignated as the	64th North		
1 americ	en Air Defense (1808	AD) Division e	ffective 0001,	1 Jul 58, with		
no che	mee in beadquarters	location. Up	on activation,	the 64th MCRAP		
Divisi	ion is placed under	the operations	l control of th	mission of		
BORAD	Region for the acc	complishment of	the air cereme	tasks as vill		
CINC	crab. The 64th COM	AD Division VI	hen the Terus o	f Reference for		
be sp	man have been final	by CINCOMD	F ABC Commender	of the 64th		
CINC	oivision (Defense)	a designated a	s the 64th NORA	D Division		- 727
Air	ender in addition to	o his designati	ion as the 64th	COMAD Division	30	18:
Course	ander. It will be	necessary that	the component	staff of the	Jun	14
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64th BORAB/COMES Division Commander perform such BORAB/COMES tasks as will be required until such time that the sunning document of the 64th BORAB Sivision is approved.

Memo for Record - Self explanators

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CLASSIFICATION OF REFERENCE

SPECIAL INSTRUCTIONS

CANAIRBED OTTAWA CANADA

COMUR 64th COMAD/NORAD ADD PEPPER ELL AFB NF

COMMITTEN STEWART AFB NEWFURCH NT

COMMITTEN HAMILTON AFB CALIF

COMMITTEN RICHARDS-GEBAUR AFB MO

COMDR USAF ADC EFT AFB COLO (COURIER)

COMMAVIORNORAD ENT AFB COLO (COURIER)

UNCLASSIFIED FROM NOOPR 033

CANAIRDEF ST HUPERT QUEBEC CANADA

JOINT , ESSAGEFORM

PRECEDENCE

CINCHCRAD

ACTION ROUTINE

FROM:

INFO TO:

TO:

ROUTINE

By authority of Terms of Reference for GINCHORAD, 10 Jun 1958, the Northern NORAD Region is established as of 0001, 1 July 1958, en-

compassing that geographical area of responsibility of the AOC RCAF
ADC. The AOC RCAF ADC is designated as the Commander, Northern

NORAD Region, responsible to GINCHOLAD for the operational control of Canadian and U.S. air defense forces. Headquarters location

30 21302 MONTH YEAR June 1958

		SIGNATURE	
	NOOPR		
w	Curtis Kekoa, Lt Col, Kall NR. OF PHONE 21.37	TYPED (- HAMPER) NAME AND TITLE	
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FORM 173 REPLACES UD FORM 173. 1 OCT 49. WHICH WILL BE USED UNTIL EXHAUSTE

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CINCHOSAD

will be at RCAF Station St. Subert, P.Q., Canada. It will be necessary that the staff of the EGAF ADC be utilized to perform such NORAD tasks as may be required until such time as the Northern NORAD Region headquarters manning document is approved. NCRAD general orders covering details of the geographic organisation of the Sorthern Region will be published subsequent to consultations between CINCHORAD and the Northern MoRAD Region Commander.

MEMO FOR RECORD - This message establishes the Northern NORAD Region as well as the Northern NORAD Region Commander. The sub-divisions of the Northern NORAD Region will be discussed with AVH Wray when he visits this Hq on 8-9 July 1958.

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JOINT MESSAGEFORM UNCLASSIFIED SPACE BELOW RESERVED FOR COMMITTED ATION CENTER ACCOUNTING DRIG DR REFERS TO PRECEDENCE ACTION ROUTINE Orig SPECIAL INSTRUCTIONS INFO FROM CINCHORAD CINCAL ELMENDORF AFB ALASKA UNCLASSIFIED FROM NOOPR 034 CINCAL has been designated NORAD Commander responsible to CINCNORAD for all air defense activities in Alaska PLICATE by Annex B to Terms of Reference for CINCNONAD. By authority of the Terms of Reference for CINCNORAD, the Alaskan area of air defense responsibility is hereby designated the Alaskan NORAD Region. Confirming General Orders will be forthcoming. Memo for Record: This message is to establish the Alaskan area of air defense responsibility as the Alaskan NORAD Region. TIME DATE 30 1500Z 1958 SIGNATURE NOOPR TYPED (or Hamped) NAME AND TITLE TYPED NAME AND TITLE Standard If required; CURTIS KEKOA, Lt Col USAF SECURITY CLASSIFICATION UNCLASSIFIED REPLACES DD FORM 173, 1 OCT 49, WHICH WILL BE USED UNTIL EXHAUSTED

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TYPE MEG ICHNA) ACCUINTING CRIG LE REFERS TO CLASSIFICA CF FEFEREI PRECECENCE ACTION ROUTINE Declassified AFX20 57024 FROM CINCUNAD TC: COFS USAF TASH DC COMUSAFADO ENT AFB COLO (COURTER) INFO: ROM COOPE X 001 Chief of Staff, USAF, as Executive Agent for CCNUD. Your AFXID 27024. Neither of your proposals is completely acceptable to this headquarters. Hoving the ADCG to Harmon would effect savings in cost or operation by virtue of closing down Pepperceil, but not maximum savings, and would involve considerable outlay or capital to construct the ADCC at Harmon. Furthermore for the Mortheast area this headquarters would prefer a NORAD Conmander operating a NORAD subordinace headquarters properly located at a Canadian installation. Greenland should be established as a separate command with the Commander responsible directly to CINCONAD for the air defense of his area. Our objection to your alternative solution TIME is based on our belief that the RCAF would be rejuctant to assume TEAN. the cost of operating repperrell. It would probably be more APR SYMECL W TYPED NAME AND TITLE (A WHITE I PRODUCT) UNCLASSIFIED

REPLACES ED FORM 172 1 CCT 45 WHICH WILL BE USED UNTIL EXHAUSTED

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CINCORAD

acceptable to the RCAF to move the ADCC and the MORAD subordinate beadquarters to St Margarets, which is now the location of a Canadian ADCC. St Margarats is ten miles from a fighter base at Chathen in the Province of New Brunswick on the mainland. Wa recommend this solution as satisfactory for the type organization we visualize for the Mortheast area and as more logical to the ECAF then the proposal to operate Pepperrell. It does not solve the problem of the economic impact on St Johns nor does it consider probable increased U.S. communications costs. However, from the manpower and construction cost considerations this alternative constitutes the most desirable MORAD solution.

MEMO FOR RECORD:

AFXPD 57924 asked for CINCONAD's views on movin: the 64th AD Hq & the ADCC from Pepperrell to Harmon. The alternative proposal was to move the 64th AD Hq to Harmon, leaving the ADCC at Pepperrell to be manned, operated and supported by the RCAF. Location at Harmon would mean a continuation of the present type of staff organization instead of a predominantly Canadian staff with a Canadian Commander. Also, providing facilities at Harmon will be expensive. Canadian officers of the NORAD staff are of the opinion that the RCAF will not want to operate Pepperrell.

Air Marshel Slemon suggested the move to St. Margarets, where facilities are already in place. This would appear to be more suitable from the Canadian standpoint than operation of Pepperrell and far more economical than moving the ADCC to Harmon.

Since most communications in that area are either AACS or Canadian assems, NOELC cannot give an immediate answer to the facility and costs of a move to St. Margarets, It it is narrassary to contact the EGAF investigation of these matters should not precede the formal approach that USAF intends to make.

SECURITY CLASSIFICATION

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A suggested arrangement for command and control in Greenland would be to establish Thule as a separate command. CINCOMAD could than designate the Commander as responsible to him for the air defense of Greenland.

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HEADQUARTERS

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

TEL: MELROSE 2-5511 EXT 2933

MAY 9 1958

IN REPLY REFER TO ADLAN

ADC Comments on CINCONAD Message COOPR X 001

TO:

Commander-in-Chief North American Air Defense Command

Ent Air Force Base, Colorado

1. On 14 March 1958, Headquarters, USAF, in message AFCAVC4783-W, announced the decision to place Pepperrell on a caretaker status. This message directed that the ADCC be constructed at Ernest Harmon Air Force Base and that the phase-out of Pepperrell be accomplished as soon as possible. This headquarters is engaged in developing programs to implement this action.

- 2. Reference your message COOPR X 001, the placing of the ADCC at Ernest Harmon has certain advantages over the proposed St. Margarets deployment in that it enables the NORAD combat commander to exercise and train his units with the assistance of a complete staff. On the other hand, space limitations at St. Margarets would allow the movement of only a few staff personnel to that area.
- 3. The assignment of small numbers of Canadian personnel to the NORAD 64th Air Division at Ernest Harmon will pose no problem. This headquarters will maintain close contact with your staff on the development of programs and phase dates for the closing of Pepperrell.

FOR THE COMMANDER:

Dolf Muchleisen Major General, USAF Deputy for Plans

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DE RJEDDII 23A
FII COMDE 6ATH CADD
TO RJEDDIN/CINC HORAD INFO RJEDDN/COIDR ADC READING FILE

ACTION: COOPR INFO: COEIC COCOP

CCOPO

PRIORIT

FROM G-DOG

SUBJECT: YOUR PROPOSAL TO MOVE 64TH ADCC AND NORAD RESPONSIBILITIES.

TO ST. MARGARETS ADDC. USAF MAS INJECTED THIS PROPOSAL AS A QUESTION MARK IN OUR PLANNING WITH SAC FOR THE MOVEMENT TO MARMON AFB. I FEEL THAT AS LONG AS SUCH A MOVE REMAINS A QUESTION, OUR EFFORTS TO PROMULGATE A COORDINATED SUPPORT PLAN WITH SAC BASES VILL BE IN VAIN. PROMULGATE A COORDINATED SUPPORT PLAN WITH SAC BASES VILL BE IN VAIN. PROMULGATE A COORDINATED SUPPORT PLAN WITH SAC BASES VILL BE IN VAIN. PROMULGATE ACCORDINATED SUPPORT PLAN WITH SAC BASES VILL BE IN VAIN. THAT CURRENTLY PLANNED AND/OR DESIRED. DURING MY APRIL VISIT THAT CURRENTLY PLANNED AND/OR DESIRED. DURING MY APRIL VISIT TO YOUR MEADQUARTERS MY INFORMAL COMMENTS ON THIS PROPOSAL WERE SOLICITED BY COLOMEL KIRKEMBALL AND G/C AUSTIN. MY NON-CONCURRENCE WAS



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BASED UPON: (1) YOUR BASIC ASSUMPTION THAT ST. MARGARETS IS A STANDARD RCAF/ADDC LAYOUT SIMILAR TO LAC ST. DENIS AND THEREFORE COULD
ASSUME AN ADCC ROLE UITHOUT MAJOR CONSTRUCTION IS IN ERROR. ST.
ASSUME AN ADCC IS ONE OF A KIND, DIFFERENT FROM OTHER ADDC'S. THEIR
HARGARETS ADDC IS ONE OF A KIND, DIFFERENT FROM OTHER ADDC'S. THEIR
COMMANDER, U/C BRIESE, AND RCAF/ADC HQ PERSONNEL AGREE WITH THIS
STATEMENT. MAJOR COMETRUCTION UOULD DE REQUIRED TO MANDLE THE GATH
AREA RESPONSIBILITIES. (2) OFF ISLAND (NFLD) COMMUNICATIONS REARMAND
ARE INADEQUATE TO PROVIDE ST. MARGARETS THE CAPABILITY TO FUNCTION
ARE INADEQUATE TO PROVIDE ST. MARGARETS THE CAPABILITY TO FUNCTION
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SORT OF HEADQUARTERS IN THE AREA TO COMMAND AND SUPERVISE USAF/ADC
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UNITS: THIS WOULD ACT TO DILUTE THE NORAD ROLE SINCE FUNCTIONS OF
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TRAINING, ETC. VERY DIFFICULT. (4) RECENT RCAF/ADC DECISION
AREA UNICH MUST DE RESOLVED PRIOR TO ACCEPTANCE OF THIS PROPOSAL.

(5) THE THULE, DEV EAST AND ICELAND AIR DEFENSE AREAS WOULD BE MOST
OF THE REQUIREMENTS TO ODTAIN EMERGENCY FUNDING THROUGH BOB FOR CONOF THE REQUIREMENTS TO ODTAIN EMERGENCY FUNDING THROUGH BOB FOR CONSTRUCTION OF GATH AIR DIVISION FACILITIES AT HARMON TO MEET USAF

DEADLINES, REQUEST THE PROPOSAL TO ELIMINATE THE ADCC AT HARMON DE FINALIZED ONE WAY OR ANOTHER AS SOON AS POSSIBLE. ALL ACTION BEYOND PLANNING HIST BE HELD IN ABEYANCE WITH THIS QUESTION IS RESOLVED. DELAYS OF EVEN A FEW MONTHS WILL PUSH OUR MOVE TO HARMON BACK AN ENTIRE CONSTRUCTION SEASON THUS DELAYING THE PHASE-OUT OF PEPPERRELL AFE ANOTHER YEAR.

DETIGIAZ TIAY ROENTA



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MEMO FOR RECORD:

There seems to be no question that the communications problem is the greatest single obstacle to a move to St Margarets, both timewise and costwise. It might be two or three years before satisfactory communications would be completed. Reference 64th AD msg SECRET G-006, the Commander at St Margarets and RCAF/ADC Hq personnel state that major construction would be necessary at St Margarets to accommodate the NORAD Div Hq and the ADCC. Separation of the administrative and operational headquarters would not be an insurmountable difficulty if communications were completely satisfactory, but, under the circumstances, communications would be substandard for an extended period. For maximum operational effectiveness, at the least XXXX cost in the shortest possible time, co-location at Harmon is our best bet.

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his Hq has received a str	ong recommendation	from the	Commander,		-
4th Air Division, in favo	or of moving the Aix	CC to Harm	on and against		-
oving it to St Margarets.					,
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and operations - would be separated by several hundred miles, making coordination in training, atc., very difficult. (4) Recent BCAF/ABC decisions to accept \$450 will create new problems in the St Margarets/64th area which must be resolved prior to acceptance of this proposal. (5) The Timbe, BEW east and Iceland air defense areas would be most difficult to integrate into the St Hergarets sector.

Additionally, USAF ABC Eq favors the Earmon location. In view of these recommendations and USAF original proposal, this Eq is prepared to concur in moving the ABCC to Bermon. However, it is suggested that this matter should be examined in conjunction with the BCAF prior to final decision, to ensure that the above ventioned factors enumerated by the Commender, 64th Air Division, are substantiated by the Canadians who may have some additional information which might influence the decision. If the decision is then to move the ADCC to Harmon, the Commender, 64th AD Defense, will be designated as the Commander of 64th MURAD Division and in these circumstances this Be will subsit a proposed the Yor City but, unde, the circu stances, course the swell of sussained administrative and operations, readquarters would not be at in an

the staff to the Manie and a abec. Se gratta, of state that hajor consumont - while is occased, at St Mat areas SECRET G-30 , are Cora ande un S M. ... a RCAP/ADC Mg ; ecse tactor comunications or of the explose. Reserved of AD its is the pracest sin te - Since in i e S. Ad. a c's, ath. fiere seers to e o que dir in e constitute pro-les

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BT

FROM AFXPD DIAGO

REFERENCE YOUR MESSAGE CCS-C-24, 14 MAY 1957, AND HQ USAF MESSAGE AFXDC 50418. CINCHORAD HAS RECONSIDERED HIS SUGGESTION TO USE SY. MARGARETS FOR THE MORTHEAST AREA CONTROL CENTER AND MOW RECOMMENDS USING HARMON AS WAS OUTLINED IN HQ USAF MESSAGE AFCAV

C 4783-M. THIS CHANGE IS BASED ON A

(1) MAJOR CONSTRUCTION WOULD BE REQUIRED TO HANDLE THE GATH AREA OPERATION RESPONSIBILITIES.

(12) OFF ISLAND (NEWFOUNDLAND) COMMUNICATIONS REARWARD ARE INADEQUATE TO PROVIDE ST. MARGARETS THE CAPABILITY TO FUNCTION AS

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A CONTROL CENTER FOR THE NORTHEAST AREA-

AREA TO COMMAND AND SUPERVISE USAF UMITS. THIS WOULD ACT TO DILUTE
THE NORAD ROLE; FUNCTIONS OF COMMAND ON BOTH SIDES OF THE

FENCE - ADMINISTRATIVE AND OPERATIONS - WOULD BE SEPARATED BY

SEVERAL HUNDRED MILES MAKING COORDINATION IN TRAINING, ETC., VERY
DIFFICULT.

(4) RECENT RCAF/ADC DECISIONS TO ACCEPT SAGE WILL CREATE
NEW PROBLEMS IN THE ST. MARGARETS/64TH AREA WHICH MUST BE RESOLVED
PRIOR TO ACCEPTANCE OF RELOCATION TO ST. MARGARETS.

(5) CINCNORAD/CONAD WOULD RATHER INTEGRATE THULE, DEW EAST
AND ICELAND AIR DEFENSE AREAS WITH THE NORTHEAST AREA AT ONE
LOCATION WHICH COMPROMISES USING ST. MARGARETS.

CINCNORAD HAS SUGGESTED CONFIRMATION OF ITEMS (2) AND (4) WITH
HE RCAF PRIOR TO FINAL DECISION. REQUEST YOU ACCOMPLISH THIS
CONFIRMATION INFORMALLY SO THAT FURTHER ACTION MAY BE TAKEN HERE.

NNNN

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FROM CCS-C-25: FOR AFXPD. REF AFXPD 51440. INFORMAL CONFIRMATION HAS BEEN OBTAINED. RECEEEEEE OBTAINED. RCAF CONCURS THAT PARAS (2) AND (4) YOUR MSG TEND TO PRECDUDE SELECTION OF ST. MARGARETS AS SUITABLE LOCATION. BT. 03/020532 JUN RFEPAY

DUPLICATE

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23 May 1958

Plans for Collocated Missile Master/ADC SUBJECT:

Radar Sites (U)

TO:

Chief of Staff, United States Air Porce As Executive Agent for NORAD Washington 25, D.C.

1. Inclosed are revised site adaptation plans for the collocated Missile Master/ADC radar facilities at Los Angeles, Philadelphia and Pittsburgh. The initial adaptation plan for Fort Meade is also inclosed.

2. These referenced plans, and the recommendations in the attached joint USARADCOM/USAF ADC letters, are approved.

3. Request appropriate implementing action be taken. Further request Department of Defense authorization be given immediately to the Civil Acronautica Administration to proceed with the installation of the ABER-1 radars at Los Asgeles and Pitts-

FOR THE COMMANDER-IN-CHIEF:

4 Incle

1. Ltr, dtd 16 May 58, subj: Nov. Site Adaptation Plan for JEDC at San Pedro Hill, (Ft. MacArthur) Calif. w/5 inclu.

3. Ltr, dtd 20 May 58, subj: Rev. Site Adaptation Plan for JEDC at Gibbsboro (Pedricktown, M.J.) w/8 incls.

3. Ltr, dtd 20 May 88, subj: Rev. Site Adaptation Plan for JERC at Cakdale, Pa. w/4 inche. 4. Ltr, dtd 7 Way 58,

(Joint) Dir. Center. UNCLASSIFIED F. K. NICHOLS Lt. Colonel, USA subj: Plans for COMAD HOLDE Experien [] W.S. INGLAND

MARSHALL S. CARTER Major General, USA Chief of Staff

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F. K. NICHOLS

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COMEBACK NOELC

M/R: ARADCOM and ADC have resurveyed the collocated facilities at Philadelphia, Los Angeles and Pittsburgh. For Philadelphia land problems necessitated a resurvey and it has been recommended that radar remoting be employed at this facility. For Los Angeles the restudy results in the recommendation that radar remoting be employed. For Pittsburgh land acquisition problems existed for the originally selected site; therefore, a new location has been recommended within the near vicinity of the original site. The additional detailed plan for Fort Meade had not been previously prepared and has consequently been incorporated as a part of this submission of plans. Unless a decision is rendered to change the current implementation concepts, this correspondence should complete all required NORAD action relative to the construction and layout plans for all Missile Master sites.

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HEADQUARTERS
U. S. ARMY AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

HEADQUARTERS
AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs Colorado

MAY 16 1958

SUBJECT: Revised Site Adaptation Plan for Joint Manual Direction Center at San Pedro Hill, (Fort

MacArthur) California

TO: Commander-in-Chief

North American Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

1. References:

a. Joint letter, (Secret) Hq USARADCOM and Hq ADC, 30 April 1957, Subj: Plans for CONAD (Joint) Direction Centers at Ten (10) Locations, to CINCONAD.

b. Letter, (Secret) Hq ADC, 22 October 1957, Subj: Site Adaptation Plan for CONAD (Joint) Direction Center and Hq NORAD's 1st Indorsement, to CofS USAF, as Executive Agent for NORAD, 31 October 1957.

c. Letter, (Secret) Hq NORAD, NOESS-E, 8 November 1957, Subj: Amendment to Plans for CONAD (Joint) Direction Centers, to CofS USAF, as Executive Agent for NORAD.

d. Letter, (Secret) Hq NORAD, NOESS-E, 14 March 1958, Subj: Collocation and Compatibility of Radar with Ground Control Centers.

2. The attached revised site adaptation plan for the Joint Manual Direction Center at San Pedro Hill, (Fort MacArthur) California, has been prepared jointly by Hq USARADCOM and Hq ADC and is forwarded for your approval.

3. Inclosure 1 is the minutes of the Joint Direction Center Conference, held at Fort MacArthur on 18-20 March 1958, concerning the San Pedro Hill site. The minutes contained detailed explanation of Site Adaptation Plans and discussion of problem areas encountered at this particular location by the site adaptation team.

4. Inclosure 2 is the Site Adaptation Plan, referred to as Plan C in Conference Minutes, for San Pedro Hill and

Hq ARADCOM & Hq ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at San Pedro Hill (Fort MacArthur), California

Fort MacArthur, showing physical location of technical and support facilities. Plan C is the preferred plan of both commands. The reason for reconsideration of the siting of this Joint Facility was excessive high land acquisition cost, as indicated by the recently completed Real Estate Planning Report. This plan is a result of an "on-site" survey performed jointly by USARADCOM and ADC.

- 5. Inclosure 3 is a list of facilities for Plan C to be constructed or installed at San Pedro Hill and Fort MacArthur sites.
- 6. Inclosure 4 is a plan and cost estimate obtained by ADC from American Telephone and Telegraph Company for microwave facilities. It is possible that this facility will be utilized jointly by USARADCOM and ADC for remoting radar data from San Pedro Hill to Fort MacArthur.
- 7. Inclosure 5 is a plan and cost estimate for microwave facilities obtained by USARADCOM from Motorola and the Martin Company. It is possible that this facility will be utilized jointly by USARADCOM and ADC for remoting radar data from San Pedro Hill to Fort MacArthur.
- 8. Plan C is the preferred plan due to cost considerations. Considering the microwave costs (Inclosures 4 and 5) and the construction cost (Page 9, Inclosure 1) the most economical solution for accomplishing the installation is Plan C, utilizing United States Army's purchased microwave equipment.
- 9. Plan C indicates the electrical generating power plant will be two separate buildings. Two-thirds of the power will be generated at San Pedro Hill and the other one-third will be generated at Fort MacArthur.
- 10. Space will be provided in the Air Force Operations Building for long lines telephone terminations, digital data transmitter and receiver equipment, (Bell A-1 System) and coordinate data transmitting equipment (AN/FST-2). However, if it is determined by commercial telephone representatives that space provided in the building is inadequate, the construction of a telephone building will be necessary. Space is available on San Pedro Hill for construction of this separate facility.

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Hq ARADCOM & Hq ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at San Pedro Hill, (Fort MacArthur) California

11. The minutes indicate that the AN/FST-2 was planned to be located at Fort MacArthur and radar data microwaved to it from San Pedro Hill. However, for greater reliability of SAGE data and to preclude unforeseen technical difficulties when the FD radars are installed, the AN/FST-2 was relocated to San Pedro Hill.

12. Radiation hazards have been taken into consideration in conducting this survey. If it is determined that the technical equipment cannot be operationally limited to preclude undesirable effects on the surrounding facilities in accordance with guidance criteria, action will be required to relocate the affected facilities.

13. It is requested that the revised Site Adaptation Plan for the Joint Manual Direction Center to be located at San Pedro Hill, (Fort MacArthur) California, be approved.

D. B. JOHNSON Brig Gen GS Chief of Staff R. W. PUEYEAR Major General, USAF Chief of Staff

5 Incls

1. (C) Minutes, dtd 18-20 Mar 58

2. Site Layout San Pedro Hill Plan C, Rev 19 Mar 58 (3 sheets)

3. Site Facility List, San Pedro Hill, Plan C

4. Radar Remoting Costs (Leased Microwave)

5. Radar Remoting Costs (Purchased Microwave)

HEADQUARTERS U. S. ARMY AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorado

HEADQUARTERS AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorad

Revised Site Adaptation Plan for Joint Manual SUBJECT: Direction Center at Gibbsboro (Pedricktown, N. J.)

Commander-in-Chief TO: North American Air Defense Command

Ent Air Force Base Colorado Springs, Colorado

1. References:

a. Joint letter, Hq USARADCOM and Hq ADC, 30 April 1957, Subject: Plans for CONAD (Joint) Direction Centers at Teu (10) Locations, to CINCONAD.

b. Letter, Hq ADC, 22 October 1957, Subject: Site Adaptation Plan for CONAD (Joint) Direction Center, and Hq NORAD's 1st Indorsement, 31 October 1957, to COFS USAF, as Executive Agent for NOWAD.

c. Letter, Hq NORAD, NOESS-E, 8 November 1957, Subject: Amendment to Plans for CONAD (Joint) Direction Centers, to COFS USAF, as Executive Agent for NORAD.

d. Hq USAF message, 30 January 1958, to Hq ADC and Hq USARADCOM, HJMAC-E/A 55905.

e. Letter, (Secret) Hq NORAD, NOESS-E, 14 March 1958, Subject: (U) Collocation and Compatibility of Radars with Ground Control Centers.

2. The attached revised site adaptation plan for Joint Manual Direction Center at Gibbsboro-Pedricktown, New Jersey, has been prepared jointly by Hq USARADCOM and Hq ADC and is forwarded for your approval.

3. Inclosure 1 is the Minutes of the Joint Direction Center Conference, held at Philadelphia Defense Area on 10-11 March 1958, concerning the Gibbsboro, New Jersey, and Pedricktown sites. The minutes contain detailed explanation of site adaptation plans and discussion of problem areas encountered at this particular location by the site adaptation team.

Hq ARADCOM and Hq ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at Gibbsboro (Pedricktown, N. J.)

- 4. Inclosure 2 is the Site Adaptation Plan for Gibbsboro and Pedricktown, New Jersey, showing physical location of technical and support facilities. This plan is a result of a jointly performed "on-site" survey.
- 5. Inclosure 3 is a list of facilities to be constructed or installed at the Gibbsboro and Pedricktown Sites.
- 6. Inclosure 4 is a plan and cost estimate obtained by ADC from American Telephone and Telegraph Company for microwave facilities. It is possible that this facility will be utilized jointly by USARALCOM and ADC for remoting radar data from Gibbsboro to Pedricktown.
- 7. Inclosure 5 is a plan and cost estimate for microwave facilities obtained by USARADCOM from Motorola and the Martin Company. It is possible that this facility will be utilized jointly by USARADCOM and ADC for remoting radar data from Gibbsboro to Pedricktown.
- 8. Inclosure 6 is a cost comparison between locating the complete facility at the Gibbsboro site and a split arrangement with the JMDC and operational facilities at Pedricktown and the radar facilities at Gibbsboro.
- 9. The plan for construction of this facility is to locate the radars at Gibbsboro and remote the radar data to the JMDC activity (AN/FSG-1 and AN/GPA-37) to be located at Pedricktown, (Delaware Storage Activity) New Jersey. Considering the microwave costs (Inclosures 4 and 5) and the construction costs (Inclosure 6), the most economical solution for accomplishing the installation at Gibbsboro-Pedricktown is utilizing the United States Army's purchased microwave equipment.
- 10. It is recognized that a frequency diversity radar is programmed by the Air Defense Command for the Gibbsboro, New Jersey, location, at which time space will have to be allocated for this installation. In addition, a possibility exists that the CAA will use the radar data from this site and might require space for construction purposes.
- 11. Space will be provided in the Air Force Operations Building for long line telephone terminations, digital data transmitter and receiver equipment (Bell A-1 System) and coordinate data transmitting equipment (AN/FST-2). However, if

Hq ARADCOM and Hq ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at Gibbsboro (Pedricktown, N. J.)

it is determined by commercial telephone representatives that space provided in this building is inadequate, the construction of a telephone building will be necessary. Space is available at Gibbsboro for construction of this separate facility.

12. Radiation hazards have been taken into consideration in conducting this survey. If it is determined that the technical equipment cannot be operationally limited to preclude undesirable effects on the surrounding facilities in accordance with guidance criteria, action will be required to relocate the affected facilities.

13. It is requested that you approve this Amended Site Adaptation Plan for the CONAD (Joint) Manual Direction Center to be located at Gibbsboro-Pedricktown, New Jersey.

D. B. JOHNSON Brig Gen GS Chief of Staff

R. W. PURYEAR Major General, USAF Chief of Staff

6 Incls

- 1. (C) Minutes
- 2. Site Adaptation Plan (2 sheets)
- 3. Site Facility List 4. Radar Remoting Costs (Leased Microwave)
- 5. Radar Remoting Costs (Purchased Microwave)
- 6. Cost Comparison

21

U. S. ARMY AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorado HEALQUARTERS
AIR PEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado
MAY 2 0 1958

SUBJECT: Revised Site Adaptation Plan for Joint Manual Direction Center at Oakdale, Pennsylvania

TO: Commander-in-Chief
North American Air Defense Command
ant Air Force Base
Colorado Springs, Colorado

1. References:

a. Joint letter, USARADCOM-ADC, 30 April 1957, Subject: Plans for CONAD (Joint) Direction Centers at Ten (10) Locations, to CINCONAD.

b. Letter, Hq ADC, 22 October 1957, Subject: Site Adaptation Plan for CONAD (Joint) Direction Center, and Hq NORAD's lst Indorsement, 31 October 1957, to COFS USAF, as Executive Agent for NORAD.

c. Hq USAF message, 31 October 1957, AFOAC-E/A 52250, to Hq AIX and Hq USARADCOM.

d. Letter, (Secret) Hq NORAD, NOESS-E, 14 March 1958, Subject: Collocation and Compatibility of Radar with Ground Control Centers.

2. The attached Revised Site Adaptation Plan for Joint Manual Direction Center at Oakdale, Pennsylvania, has been prepared jointly by Mq USARADCOM and Hq ADC, and is forwarded for your approval.

3. Inclosure 1 is the Minutes of the Joint Direction Center Conference held at South Park Military Reservation on 17-18 February 1958 concerning the Oakdale, Pennsylvania site. The minutes contain detailed explanation of site adaptation plans and discussions of problem areas encountered at this particular location by the site adaptation team.

4. Inclosure 2 is a copy of a message received from the Pittsburgh District Engineer. As indicated in Inclosure 1, Page 2 and 4, the Oakdale site was not initially selected due

Letter, ARADCOM and ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at Oakdale, Pennsylvania

to unknown status of the subterranean conditions. The above referenced message indicates that core borings were made and shows that the site is satisfactory for the location of the Oakdale JMDC. The Oakdale site is, therefore, selected as the best solution to the problem.

- 5. Inclosure 3 is the Site Adaptation Plan for Oakdale, Pennsylvania, showing physical location of technical and support facilities. This plan is a result of a jointly performed "on-site" survey.
- Inclosure 4 is a list of facilities to be constructed or installed at Oakdale site.
- 7. As indicated in Inclosure 3, an area has been designated for use by Second United States Army to provide support facilities for the Pittsburgh Dofense Area as requested by representatives of that headquarters.
- 8. Subsequent to completion of the Site Adaptation Survey, CINCNORAD, by secret message, NOESS-E-X035, 10 March 1958, and USAF secret message AFODC-58813, 31 March 1958, as Executive Agent for NORAD, approved joint use of an ARSR-1A Surveillance Radar at the Oakdale (Pittsburgh) JMDC. This equipment will be installed, maintained and operated by the Civil Aeronautics Administration.
- 9. Cable Lengths. If possible, the cable length between the Air Force building (AN/FST-2) and the ARSR-1A radar should not exceed 400 cable feet. The following cable lengths govern the location of Army tactical facilities at the site:
- a. 350 feet maximum, to include tower height from prime radar to radar termination and monitoring building.
- b. 150 feet minimum to 450 feet maximum, to include tower height in the latter distance, between Army height finding radar and the prime radar.
- c. 450 feet maximum, to include tower height between Army height finding radar and radar termination and monitoring building.

Letter, ARADCOM and ADC, Subj: Revised Site Adaptation Plan for Joint Manual Direction Center at Oakdale, Pennsylvania

d. 150 feet minimum between all height riading radars.

e. 90 feet minimum between generator building and Missile Master building.

10. It is requested that the Revised Site Adaptation Plan for the Joint Manual Direction Center to be located at Onkdalo, Pennsylvania, be approved.

D. B. JOHNSON Brig Gen GS Chief of Staff

R. V. PURYEAR Hajor General, USAF Chief of Staff

4 Incls

1. (C) Minutes

2. Msg, OVPVV 09308
3. Site Adaptation Place
4. Facility Mst

U. S. ARMY AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorado HEADQUARTERS
AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado
MAY / 1958

SUBJECT: Plans for COHAD (Joint) Direction Center

TO: Commander-in-Chief

North American Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

1. References:

a. Hq USAF message AFODC 53056, 15 March 1957, to

b. Department of Army message DA 919461, 15 March 1957, to Hq CONAD.

c. Hq USAF message AFODC 53057, 15 March 1957, to Hq CONAD.

d. Hq CONAD message COESS X0014, 22 March 1957, to Hq ADC and Hq USARADCOM.

 The plan for CONAD (Joint) Direction Center at Fort George G. Mcade, Maryland, has been prepared jointly by Hq USARADCOM and Hq ADC, and is forwarded for your review in accordance with reference ld.

a. Inclosure 1 is a copy of Minutes of Meeting of CONAD Joint Direction Siting Team, held at Fort George G. Meade, Maryland, on 13-14 February 1958.

b. Inclosure 2 is the proposed site adaptation plan for Fort George G. Meade, showing the physical layout of facilities at this location. This proposed layout is a result of the joint on-site survey performed at Fort Meade, Maryland.

c. Inclosure 3 is the site adaptation plan of the operations area at Fort George G. Meade, Maryland. This drawing affords a detailed and expanded view of the overall plot plan. This plan shows the existing equipment and the proposed additions.

d. Inclosure 4 is a copy of the JMDC operations room layout and indicates the location of consoles within

Hq ARADCOM & Hq ADC, Subj: Plans for CONAD (Joint) Direction Center

the joint operations room. As indicated in the attached drawing (Incl 4) and paragraphs 2a and b of the Minutes (Incl 1), the major change to the operations room as proposed is lowering the flooring level in front of the presently installed plotting board. This will permit installation of ADC's primary consoles (AN/GPA-37s), which will then be on the same elevation as the trackers. It will be noted that the installation of the plotting board will require the removal and extension of a portion of the present wall. This will aid visual acuity and afford additional space in the operations room.

- e. Inclosure 5 is a copy of the list of facilities to be constructed or installed at Fort Meade, Maryland.
- 3. Cable Lengths. If possible, the cable length between the Air Force building (AN/FST-2) and the AN/FPS-20 radar should not exceed 400 cable feet. The following cable lengths govern the location of Army tactical facilities at the site:
- a. 350 feet maximum, to include tower height from prime radar to radar termination and monitoring building.
- b. 150 feet minimum to 450 feet maximum, to include tower height in the latter distance, between Army height finding radar and the prime radar.
- c. 450 feet maximum, to include tower height between Army height finding radar and radar termination and monitoring building.
- d. 150 feet minimum between all height finding radars.
- e. 90 feet minimum between generator building and Missile Master building.
- 4. Antenna farm and TX-RX building final location will be sited by the Installations and Engineering Air Force Agency with coordination from Eastern Air Defense Force. The Army facility has already been sited; if technically feasible, these sites will be collocated. (Reference paragraph 2e(4) of Inclosure 1.)
- 5. Radiation hazards have been taken into consideration in conducting this survey. If it is determined that the

Hq ARADCOM & Hq ADC, Subj: Plans for CONAD (Joint) Direction Center

technical equipment cannot be operationally limited to preclude undesirable effects on the surrounding facilities in accordance with guidance criteria, action will be required to relocate the affected facilities. (Reference paragraph 2e(8) of Inclosure 1.)

6. Recommend that Site Adaptation Plans for Fort George G. Meade, Maryland, be approved as submitted.

D. B. JOHNSON Brigadier General, GS Chief of Staff

ROY H. LYNN Lieutenant General, USAF Vice Commander

5 Incls

- 1. Minutes of Meeting, dtd 13 Feb 58
- 2. Dwg of CONAD Jt Dir
- Cen, dtd 2 Apr 58
 3. Dwg 26-03-1, dtd 15
 Feb 57, redated 13-14 Feb 58
- 4. Dwg Proposed Mod of AAO Rm at AN/FSG-1 Tact Fac at Ft Meade, dtd 13 Mar 58
- 5. List of Instla Fac Rgrs for CONAD Jt Dir Cen at Ft Meade.

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PRIORITY ROUTINE

CGARADCOM ENTAFB COLO

CG2RGNARADCOM FTMEADE MD

INFO; CINCHORAD ENTAFB COLO (BY COURIER)
COMDADC ENTAFB COLO (BY COURIER)
DCSLOGDA WASHDC
DCSOPSDA WASHDC
COFENORSDA WASHDC
CGUSARTWO FIMEADE MD
DIVENGR USAENGRDIV OHIORIV CIN OHIO
DISTENGR PITTSBURGDIST PA
COLSAACP SOPARKMILRES BROUGHTON PA

11APR 1958

322 ADGDI.

1, Based ob comparative cost estimates on construction of JMDC at sites considered at February 17-13 meeting at South Park and information feceived from Pittsburg District Engineer on 8 April that test borings completed at Oakdale are favorable, the Joint Siting Team has met and agreed to recommend approval of the takdale site. The Installations-Engineer Division, Air Defense Command, is now preparing site adaptation plans on the Oakdale site for approval by Commanding General, ARADCOM, Commander, Air Tefense Command, and CINCNORAD.

2. Pending finalization of site plans by "eadquarters U.S. Air Force Air Defe.se Command, it is desired that you request the Pittsburg District Engineer to prepare and submit Real Estate Planning Report on the Cakdale site using expedited procedures.

ADGDI

D. W. TOMAW, Major/iv 2047

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ROUTINE

FROM CGARADCOM ENTAFB COLO

O COMDADC ENTA B COLO (BY COURIER

COSRGNARADCOM FTBAKER CALIF

INFO: DCSOPSDA WASHDC

DOSLOGDA WASHDC

CINC NAD ENTAFB COLD (BY COURIER)

CGUSARSIX SFRAN CALIF

CGL7ARTIBRIG FTMACARTHUR CALIF

CG108ARTIGP FTMACARTHUR CALIF

DIVENGR USAENGRDIV SOUTHPACIFIC SFRAN CALIF

DISTENCE LOSANGELES DIST LOSA CALIF

321 ADGDI. COFENGE FOR ENGL. a. My 239 AD SIGNED HART, MARCH, NOTAL. b. My 4508 ADGDI, NOTAL. c. My 303 ADCCL, NOTAL.

- 1. As stated in reference b, the USARADCOM/USAFADC Joint Siting Team met on 2 April 1958 and agreed to the concept of remoting radar data from radars located on minimum acreage atop San Pedro Hill to Joint Direction Center at Fort MacArthur. The Installations Engineer Division, Air Defense ommand, is now preparing revised site adaptation plans for submission to CINCNORAD for approval. Revised site plans will require acquisition of approximately 15 acres on San Pedro Hill in accordance with preliminary site plan (Flan C) developed at Los Angeles meeting on 18-20 March.
- 2. (FOR COSRGNARADCOM). In order to minimize administrative delay and expedite real estate acquisition, it is desired that the following actions be taken:
- a. Request Los Angeles District Engineer prepare and submit to addressess of Real Estate Planning Report of 7 March 1958, a revised cost estimate and real estate map for the 15 acres as sated in paragraph 1 above.
- b. Information received from Chief of Engineers is that Real Estate Planning Report can be administratively revised in that office.
 - c. Final approval of revised Real Estate Planning Report by

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CGARADCOM ENTAFB COLO

CGARADCOM, reference a above, will be expedited as soon as revised site plans are completed and approved by CINCNORAD.

3. (FOR CGGRGNARADCOM). Request that you and the Commanding General, 17th AAA Brigade, coordinate with all interested agencies and assist the Los Angeles District Engineer, as required, in preparation of cost estimate.

h. (WF COMPADO). Nr. Manson, Manager of the Palos Verde Properties, in conversation with Major Tomaw, Ch Installations, this headquarters, on 7 April 1958, agreed to issue a lease permitting the Civil Aeronautics Administration to proceed with installation of the ARSR-1 radar without delay provided such lease contains a clause stipulating that lease interest is subsequently superseded by fee title acquisition by Department of the Army. As stated in reference c, this headquarters recognized the urgency of expediting installations of Civil Aeronautics Administration radar and agrees that it is in the best interests of the Government to assist Civil Aeronautics Administration in acquiring land lease at San Fedro Hill for this purpose as soon as possible. It is recommended that you approve the foregoing procedure and advise Civil Aeronautics Administration accordingly.

5. (FOR CG6RGNARADCOM). Request that you assist Civil Aeronautics Administration, as required, in obtaining required lease.

ADGDI

D. W TOMAW, Major/iv 2017

T. F. HONN CWO, W-3, USA Asst Adj Gen



HEADQUARTERS UNITED STATES ARMY AIR DEFENSE COMMAND Ent Air Force Base Colorado Springs, Colorado

MEMORANDUM FOR RECORD

11 Feb 58

SUBJECT: Radar Meeting between General Partridge and General Hart (U)

A meeting was held at 0900, 11 February 1958, in Room 410, to discuss the radars to be used at the CONAD Control Centers.

General Uhrhams opened the meeting and stated that its purpose was to discuss and reestablish the CONAD position on radars for use with JMDC. He then introduced Lt Colonel Nichols who gave a rundown on the history of the radar problem.

General Uhrhane then discussed the problem areas as follows:

Low pulse repetition rate. Tests have been run on this and information received at 0900 this date indicate that it is no problem. The results of these tests should be in soon.

Vertical coverage. We feel that targets should be turned over to the batteries at long range. Since long range and high angle coverage cannot be obtained, we feel that the choice should go to range. (General Lynn stated later in the meeting that the dead area of every radar was covered by three other radars and that this information would be available through SAGE).

Antenna Rotation Rate. SAGE needs 5 RPM and Missile Master wants 10. (Mr Kelleher brought out the fact that tests had been directed at Fort Meade system to determine the results of this.)

Colonel Nichols then presented the latest operational dates of the CONAD Control Centers. These are:

New York	May	1960
Miagara-Buffalo	Jun	1960
Detroit	Jul	1960
Boston	Oct	1960
Philadelphia	Nov	1960
Pittsburgh	Dec	1960
Chicago	Jan	1961
Washington-Baltimore	Feb	1961
Seattle	Mar	1961
Los Angeles	Apr	1961

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SUBJECT: Radar Meeting Between General Partridge and General Hart (U)

The availability of the An/FPS-7, AN/FPS-35 and ARSR-1A (with amplitron) was also discussed. These are:

AN/FPS-7 1 - Nov 59; 1 - Dec 59; 1 - Jan 60 AN/FPS-35 1 - Feb 59; 1 - Jan 59; 1 - May 60; 1 - Jun 60 ARSR-1A 1 - Mar 60.

General Uhrhame stated that the Army plans to install a Missile Master in Seattle with an operational date early in 1959 and since the ARSR-1 would not be available it was possible that CONAD might want to modify their thinking and install an AN/FPS-7 or AN/FPS-33 in Seattle. General Uhrhane suggested the AN FPS-7 be installed since the 1st one became available in 1959. (Colonel Gleed stated. however, that all the AN/FPS-7 radars had been programmed and if one were changed it would mean a complete reshift of the entire program.) General Uhrhame suggested that ARADCOM advise CONAD of its plans on this site and of any other site that we intend to change. He also stated that immediate release of the AN/FPS-33 radars corresponding to the sites where AN/FPS-20 radars were scheduled might be made. He also recommended that ARADCOM make specific recommendations of the radars to be installed for interim and ultimate use, and that CONAD should push for an accelerated program for the frequency diversity radars.

General Hart then stated that he had found that the program had been retarded well over a year due to various obstacles and that it had come to his attention that the Missile Master had been designed for the AN/FPS-33; that the technical information available to him indicated that there was some technical incompatibility and degradation would result in using other radars. He stated that he had asked if the Missile Masters could be modified and never got a satisfactory enswer, and that this information had caused him to nonconcur in the use of other radars before tests could be accomplished. He stated, however, that he now had information that the necessary modifications could be made to the Missile Master so that it could accept any of the radars under consideration. General Hart also stated that he personally felt that if the AN/FPS-7, AN/FPS-20 or ARSR-1A were installed without testing and we found there was incompatibility we could either modify or install another radar. General Hart then introduced Mr. Kelleher to give a technical evaluation of the problem.

SUBJECT: Radar Meeting between General Fartridge and General Hart (U)

Mr. Kelleher stated that the system was designed for 10 RPM ... and 360 PRF and that when used with other radars there would be some inaccuracies in the tracking system. That the poor vertical coverage of some radars was a technical characteristic and that what it meant operationally the Signal Corps couldn't decide. He stated that the Missile Master could be modified to work with any of the other radars but that "how well it will work remains to be seen."

General Hart again made the point that we wanted to put the Missile Masters in with the modification to accept the radar which is going to be installed.

General Partridge then said that he gathered that the program would work and was told that technically it would, but the question was, would the operational results be acceptable.

General Partridge said that when he was at Fort Meade they were painting targets at 160 miles at 40,000 feet and that he was sure that if the set had additional scope presentation they would have been painting further out. He said he was very pleased with the AN/FPS-33 and asked, "Why don't we use it?"

General Lynn answered his question by stating that they (ADC) had better radars programmed, that they were trying to get the AN/FPS-7, 27, 28 and 35 radars into the field so that they would have 100,000 feet coverage and that he thought it was a step backward to use the other equipment (meaning the AN/FPS-33). General Lynn stated that CAA would make the required changes to the ARSR-1 when given a date when changes would be required.

General Uhrhans then recommended that the AN/FPS-20 for Fort Meads be re-programmed and installed as soon as possible so that tests of this radar could be conducted.

Discussion was held on the installation of the CAA radars and General Partridge indicated that he wanted the problems regarding this solved within 30 days. There was some discussion of utilizing the ARSR-1 at Pittsburgh General Partridge stated that if ADC and ARADCOM decided to use an ARSR-1 at this site he would concur.

General Hart then raised the point of some of the collocated sites being located strictly on the desirability of the site as a radar site

SUBJECT: Radar Meeting between General Partridge and General Hart (U)

and said that since learning of the remoting capability he would like to have his people get together with ADC and take another look at these areas (meaning Los Angeles, Philadelphia and Pittsburgh) before we spend the money.

General Partridge said that if we could save some money by using remoting to move the CONAD control center to existing military installations he had a completely open mind on the subject. He stated that ARADCOM and ADC should take a good look at the plans for these sites and decide what they wanted to do along these lines and that he would back them up.

Decisions reached:

 To continue with the NORAD approved plan for installing the:

ARSR-1 at Boston (Fort Heath), Seattle (Fort Lawton), Los Angeles (San Pedro Hill).

AN/FPS-7 at New York (Highlands) and Niagara (Lockport)

AN/FPS-20 at the remaining 5 sites.

- If the above radars cannot be utilized or made to work with Missile Master another and suitable radar be provided to work with this system.
- 5. Tests be conducted as early as practicable to determine radar suitability largely these will be operational tests.
- 4. Look at sites programmed for Los Angeles, Philadelphia and Pittsburgh to determine if economies could be effected by placing all facilities on government owned land. If government owned land is not suitable as a radar site then study the possibility of remoting the radar data to the facilities on government land and locate only the minimum essentials on the site of the radar.
- 5. Take an immediate check on the recommended action above as regards the Los Angeles site in order that an early answer be given CAA on going ahead with their program.

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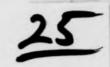
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SUBJECT: Radar Meeting between General Partridge and General Hart (U)

- If programmed radars are not available at the time Missile Master requires them then FPS-33 will be installed on an interim basis.
- 7. During the conference CINCNORAD indicated that he wished the reprogramming of the Fort Meade Control Center studied with a view toward an earlier operational date.

Copies furnished: CofS, ARADCOM ACOfS, Gh, ARADCOM SigO, ARADCOM ORAN SWAIN Colonel GS ACofS G3



13 March 1956

MOEDBAR I'M FOR REGULD

The Continue to STATE and Continent Jon anders on 11 February 1953

1. Suring the briefing of CTTTLE and component con unders on the subject of the Basile Master, the following conclusions were formed from the discussion which transpired:

- a. The next decisions made by TMMUDAU for establishment of COMAD Control Enters, for the selection of emigment, and for joint use of radars by the Army, Air Force and TAA are still valid. There effort must be made by the Market staff and the component commands to insure that these decisions are implemented.
- b. ANC sade a verbal recommendation to CTNONCRAD that a MA radar, dSN-14, be used at the littsburch joint radar site. ANC was instructed to forward to "CMO" SNAD a written recoest to that effect. It was specified that the concurrence must be obtained on changes in plans for joint use of radars and A must arthorize the right-of-entry to SNA at all sites where MRSN-1A radars are to be used.
- c. I WEED AD approved A MANUAL proposal to re-examine the Los angules site requirement. ACC and ANABOM were directed to investigate the fessibility and desirability of radar remotion and the desirability of utilizing existing army land and facilities in this area.
- d. INLYCAL and the component commanders deemed it essential to advance the operational dates of all COMAD Control Centers where possible especially Fort Meade.
- c. DISCHOUGH was informed that construction of the Scettle dissile Master site may be accelerated. DOS/MS recommended that AND review the deployment plan and exhecule of installation of AN/MS-7 radars and determine the desirability and the feasibility of amploying an AN/MFS-7 at the Seattle site.
- f. CIMENDIAN approved Analogue's proposal to conduct tests with the dissile theter, AN/FIS-20 and AN/FIS-7, to determine the modifications necessary to insure optimum performance of the dissile taster. However, these tests should be commisted concurrently with the building program and should not delay the operational dates of the CONAL Control Centers.
- g. CTMCHOTAL and the component commanders considered interim use of the AN/TO-33 radar at Fittsburgh, Teattle, Los Angeles, Rocton and Fort Heade until such time as modified ANSR-IA's were available at the first four of those sites. Since AN/FFS-7's and AU/FFS-20's will

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Memorandum for tocomi, Subj: dissile Master Priefing to SING WAR and Component Commanders on 11 February 1958

be used at the other five collocated Missile Aster/ADEC sites, no requirements were foreseen for the five remaining Arry AM/FIG-33's in the MODAN system. CINCHAD requested that component commanders make appropriate recommendations for use or release of Arry AM/FPS-33's.

2. To insure joint use of radars and operational C MAD Control Centers at the earliest practical date, it is concluded that the following actions should be taken:

a. Highlands

- (1) AIC take appropriate action to program the first available AM/FPS-7 at this site for the purpose of providing compatibility checks between the AM/FTS-7 and the Missile dester at the darliest possible date.
- (2) ARADOW take appropriate action to assign first priority to this Missile Master installation.
- (3) ANC and ARADOM provide MORAD with firm equipment operational dates. Based on the new dates, the CONAD Control Center operational date should be advanced.

b. Buffalo

- (1) ADC program the second available AM/FTS-7 at this site.
- (2) ANALOGY take appropriate action to assign second priority to this Hissile Master installation.
- (3) ADC and ANADOM provide NONAD with firm equipment operational dates. Rased on the new dates, the ODNAD Control Center operational date should be advanced.

c. Fort Mede

- (1) AIC take immediate action to represent and install an AN/FPS-20 at this site to permit compatibility checks between this radar and the Missile Master at the earliest possible date.
- (2) ADC take priority action to provide all Air Force facilities required for the CUMAD Control Center so the operational date can be advanced.

d. Alcago

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(1) Use an AM/FIS-20 at this site.

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Memorandam for Record, Subj: Missile Waster Oriefing to THONOMAD and Component Commanders on 11 February 1958

(2) AIC and ARAICOM provide NU-AD with firs equipment operational dates. Based on the new dates, a firs COMAD Control Center operational date should be established.

e. Tetroit

- (1) Use an AN/F 3-20 at this mite.
- (2) ADC and AMADOOM provide "MAD with firm equipment operational dates. Based on the new dates, a firm "MAD Control Center operational date should be established.

f. Philadelphia

- (1) Use an AM/YIN-20 at this site.
- (2) Piroct ADC and ARADOM to investigate immediately the feasibility and desirability of radar remoting in this area. Upon appropriate recommendations from the components, World should make the decision on the site location and configuration and notify the lantagen of this decision.
- (3) Upon resolution of the site problems, a firm operational date for the STAD Control Lenter should be established.

g. Hittsburgh

- (1) Spon receipt of ARC's request to use an ARSR-LA radar at Fittsburgh, NEWAD should advise the Recentive Agent that:
- (a) An ARBR-14 radar will be used at this site and that immediate 14 concurrence is requested on this charge in plans.
- (b) The listrict Engineer should be provided authority for the progressent of land for joint use in this area.
- (c) MA must be provided the right-of-entry and the authority to install an ASSN-LA redar at this installation.
 - (2) ALC and ARADOUM
- (a) Patablish the exact site location and recommend realistic operational dates for the CUMAD Control Danter to WUMAD.
- (b) Recommend whether interim use of an AN/T/9-33 is required in this area pending the availability of a modified ARSR-LA.

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h. Boston

- (1) Use an ASB-LA at this site.
- (2) 10 % should advise the 'meoutive Agent that AA aust be provided the right-of-entry and the authorization to proceed with the installation of an ARR-LA at this site.
 - (3) NOC and ARAICOH
- (a) Provide "USAD with firm equipment operational dates so a firm NETAD Control Senter operational date can be established.
- (b) second whether interim use of an AM/FFS-33 is required in this area pending the availability of a modified ANNA-IA.

1. Los Ampeles

- (1) Use an ARSH-LA at this site.
- (2) HOMAD should advise the Executive agent that CAA must be provided the right-of-entry and the authorisation to proceed with the installation of an ARSR-LA at this site.
- (3) ADG and A ALGON be directed to investigate in mediately the feasibility and desirability of radar remoting and the desirability of utilizing existing Army land and facilities in this area. Upon receipt of recommendation from the components, NOMAD should make the decision on the site location and site configuration.
- (h) Upon resolution of site problems, a firm operational date for the GUNAD Control Center should be established.
- (5) ADC and AMADOM should recommend whether intering use of an AMADOM area produced the availability of a modified AMSA-IA.

J. Senttle

- (1) ADD should review deployment plans and installation schedules for AH/FFS-7's to determine desirability and feasibility of using an AD/FFS-7 at this site.
- (2) AMADOUM should provide MOPAD and ANG with fire Missile Master operational date for this site.

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Memorandum for Memord, Subj: "Mastle Master Ortefing to CTONI AD and Jomponent Compandors on 11 February 1958

(3) ACC and A ADC 31

(a) Recommend to MFAD the type radar to use at this site and the desirability of interincuse of an AM/FFS-33 in this area, if appropriate.

(b) Recommend to NAA. a firm S. MAD Control Denter operational date for this site.

> F. W. HERMANE Brig Gen, USA ICS/Journ and Fleat

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NORTH AMERICAN AIR DEFENSE COMMAND

28 January 1958

MEMCRANDUM FOR: Chief of Staff

SUBJECT:

THE RELL OF CHANGE PARTY

Collocation and Compatibility of Radars
With Ground Control Centers

I Today I discussed again with General Hart and at considerable length the matter of collocating the control centers for fighters and missiles and concurrently the compatibilities of radars with Missile Master equipment. These two problems seem to tie themselves together, and I should like to make sure that we have missed nothing in our explorations concerning them.

.. There seems to be a feeling that the Air Force has issued instructions concerning the construction of the conveniences and recreational facilities to be placed in the field for the support of the ADDC personnel of the Air Force. I should like to run this statement to earth and find out exactly what was said by whom and about what.

- 3. General Mart raises the point that the development of equipment to transmit raw radar data to remote scopes may have a profound effect upon the future locations of both Army and hir Force installations in the Air Defense System. If it is indeed possible to transmit this data and provide the necessary control arrangements so that the operation of the ladar equipment is not materially downgraded, then we can take advantage of the existing military installations and avoid the necessity for acquiring additional real estate with the inherent delays and high costs related to real estate acquisition. Furthermore, we can, in some cases, get our people together at a single location without the necessity for physically moving the surveillance radar gear.
- 4. I should like to consider every location which is under discussion by the Army and the Air Force and come to firm conclusions as to the best program for collocation.

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Memo for C/S

28 Jan 58

Subj: Collocation and Compatibility of Radars with Ground Control

Centers

- 5. The compatibility of radar equipment with the Missile Master gear still bothers General Hart. He is cognizant of the fact that technical experts have said that field of the radar; that is, the FPS-20, FPS-7, FPS-33, and ARSR-31, can be made to work with Missile Master. However, he feels that the matter of the cost involved and the amount of degradation in Missile Master and radar performance which may result may not have been adequately explored. For this reason, he objects to the release of the FPS-33 radar pending firm determination that this gear is not needed. General Hart would like to push hard on achieving a test before going ahead with the radar installations which may later prove to be unsatisfactory.
- 6. I am convinced that General Hart's concern is genuine and I am anxious to insure that we have not inadvertently overlooked any of the factors connected with these two problems. Will you please have our staff prepare in conjunction with the Army and Air Force people and any one else who may be required, a complete review of these matters for presentation to General Hart. General Atkinson, and me, together with the three staffs in the early part of the week starting 10 February. I do not know how much time is required for such a presentation but I am willing to devote the entire week to the problem if necessary, for it must be settled once and for all.

E. E. PARTRIDGE General, USAF Commander-in-Chief

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AGAM-P (M) 600.12 (27 Mar 38) DOSLOG

2 April 1958

SUBJECT: Joint Manual Direction Centers - Resolution of Major Problem Areas Affecting Land Acquisition, Design and Construction Planning (U)

To: Deputy Chief of Staff for Logistics
Deputy Chief of Staff for Military Operations
Comptroller of the Army
Chief of Engineers
Chief Signal Officer
Commanding Generals
US Army Air Defense Command
US Continental Army Command

- The attached inclosures contain Department of the Army policies, guidance, and decisions relative to each of the following major problem areas immediately affecting land acquisition, design, and construction planning for Joint Manual Direction Centers:
 - a. Microwave radiation safety distance criteria.
- b. Civil Aeronautics Administration radar projects at selected Joint Manual Direction Center sites, designated by Headquarters, North American Air Defense Command.
- c. Relocation of certain existing facilities at the proposed Joint Manual Direction Center site, Fort Lawton, Washington.
- d. Final site selection, Los Angeles, Pittsburgh, and Philadelphia projects.
- e. Authorized scope of facilities for Joint Manual Direction Center installations.
- f. Future processing of detailed engineering problems and requirements.
- 2. It is desired that designated action agencies take the most direct and expeditious action in the implementation of directives contained in the inclosures. Attention of all agencies concerned is invited to the fact that in order to avoid further costly and deleterious slippage in the Joint Manual Direction Center Program, maximum effort must be exerted to assure award of construction contracts for the:

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a. New York, Niagara Falls-Buffalo, Detroit, Seattle, and Boston projects by end of FY 1958, preferably in May 1958.

b. Los Angeles, Pittsburgh, Philadelphia, and Chicago during the 1st Quarter, FY 1959.

By Order of Wilber M. Brucker, Secretary of the Army:

6 Incl

1. Microvave Radiation Safety Distance Criteria

 CAA Radar Proj at Selected Joint Dir Cen Proj

 Relocation of Certain Existing Facs at Prop Joint Manual Dir Center, Ft Lawton

4. Delay in Final Site Sel and Dev of Fac Rqr for LA, Phila and Pittsburgh Joint Dir Center

5. Auth Scope of Fac for Joint Manual Dir Centers

 Est of Emer Working Group Sub-Committee of Joint Collocation and Technical Steering Group

Copies furnished: Chief of Staff, US Air Force

- 1. Subject: Microwave Radiation Safet Distance Criteria
- 2. References:
 - a. ARADCOM Mag 176 ADS30, 21 Feb 3d to Calko (DA IN 95309).
 - b. ARADCOM Mag 129 ADGDI, 11 Feb 58 to Thier of Engra (DA IN 92423).
 - c. ARADCOM Msg 198 ADSSO, 27 Feb 55 to DCSOPS DA IN 96606).
 - d. ARADCOM Mag 2466 ADSN4, 26 Feb 8 to Chief of Engrs (DA IN 642684).
- e. Laief of Rigineers Ltr. ENGEM 57-155, 31 Dec 57, subject: "Information for Protection Against Microwave Radiation in Connection With DA Circular 40-2".
- f. Hos. USARADCOM Ltr ADSCI, o Mar 50, subject: Radar Meeting Between General Partridge and Joneral Eart (U), to Headquarters, DA.

3. Problem:

- a. In references da to d inclusive, CGARADCOM:
- safety distance criteria contained in reference Ze, above, insofar as the prime and height finder radars specifically designated for use at Joint Manual Direction Centers are concerned.
- will require restud, and revision of previously submitted site survey plans, which could possibly result in substantial delass, additional land acquisition, major relocations of existing facilities, and increased costs. The Los Angeles and Seattle projects were cited as being immediately affected.
- (3) Requested that microwave radiation safety distance criteria contained in reference de, be reviewed and re-validated in relation to the specific radars and methods of operation to be used at Joint Manual Direction Centers.
 - 4. Department of the Army Findings, Policy and Guidance:
- a. Based on the findings and recommendations determined during the 7 March 1956 meeting of the Joint Collocation and Technical Steering Group, Department of the Army has determined that:
 - (1) Objections raised by COARADCOM are valid.
- (2) Suidence on microweve radiation safety distance criteria contained in reference 2e represents maximum distances at which a particular radar will produce power densities quoted in Circular 40-2. The suidance in reference 2e is not sufficiently comprehensive as to what waivers or reductions could be made insofar as to the special toint radars to be used at Joint Direction Centers. To avoid further misinterpreselves in use of criteria contained in

Inclosure No. 1

Revisitor Data and the Fredeterwised

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reference 2d as applied to Joint Direction Center radars, it is desirable that reference 2e be rescanded and revised guidance be issued.

- (3) Air Force radar safety distance criteria as established and applied by Headquarters, North American Air Defense (NCRAD) will be considered to govern in siting Joint Direction Center radars. Site layouts approved by Headquarters NORAD will be considered by the Department of the Army as prima facie approval by that Headquarters as to the adequacy of microwave radiation safety distances.
- (4) In the final analysis, the extent to which optimum safety distances can be reduced should be determined on the basis of actual tests of individual sites. Assessment of each site should prescribe not only distance separations, but also the special operating procedures to which should be adopted, uniquely at each site, which in combination with the safety distances selected, will assure safety.
- (5) Headquarters, Department of the Army concurs in Headquarters, Department of the Air Force position on this matter that construction and real estate planning proceed on the present facility layouts which were developed in accordance with current Air Force microwave radiation safety distance criteria, and that final safety measures and refinements be determined on the basis of actual test by qualified medical and technical teams of each operational site. Microwave radiation safety tests should be made part of the overall operational tests agreed in reference of to determine the suitability of presently designated joint radars.

5. Department of the Army Directives:

a. Chief of angineers:

(1) Rescind reference be above, and issue to all DA technical engineering and operational agencies concerned, revised, special guidance applicable to Joint Direction Jenter radars, based on Department of the Army policies and guidance contained in paragraph + above. (This Directive confirms advance instructions issued to the Chief of Engineers in DF, LOG, M4 11294, dated 12 March 1958, Subj: "Special Instructions Joint Direction Center Construction Program".

b. CGUSARADCOM:

(1) Fonding issuance of revised guidance by the Chief of Engineers apply the Directment of the Army findings, clicles and cuidance outlined in paragraph , move in all further actions relating to the final development of Joint Direction Seater facility requirements.

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Inclosure No. 1

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1. SNBJECT: Civil Aerecouties a right ration adar increate at Selected Joint Direction Center Projects.

2. References:

- a. DA Message 936671 dated 7 February 19 to TYSKLAPCOM.
- b. Hq USAFADCON Letter APGCL, dated = Larch 1983, to DA, Subject: "Radar Meeting between General Partridge and General Fart" (U).
- 3. PROBLEM: At the 6 March 1958 meeting of the Joint Collocation and Technical Steering Group, representatives of the Cavil Aeronautics Administration reiterated previous requests that Tevartment of the Army clearance be expedited to permit start of construction by Tivil Aeronautics Administration on NCRAD approved APSR-1 Radar projects at the Boston, Seattle and Los Angeles Joint Direction Center sites.

4. Department of the Army Findings, Policy and Guidance.

- a. In reference 2 a above, the Deputy Chief of Staff for Military Operations advised the CG USARDCOM that further delay in accepting the NCRAD approved ARSR-1 radars of the Civil Aeronautics Administration for joint use at the Boston, Seattle and Los Angeles

 Joint Direction Center projects "could place the Army in the position of obstructing progress toward greater safety in civil air operations."
- b. Reference 2 b above, advised Headquarters, Department of the Army that decision had been reached at a meeting on 11 February 1958 between representatives of Hq NORAD and Hq, USARADCOM to continue with the NORAD approved plan for installing the ARSR-1 prime radar at the Boston, Seattle, and Los Angeles Joint Direction Center sites.

Inclosure No. 2

c. The Department of the Army considers the CAA radar projects as an integral element of the respective Joint Direction Center facility projects for Boston, Seattle and Los Angeles and that the start of construction should not be delayed pending advertising and award of the army and Air Force elements of the Joint Direction Center project.

. Department of the Army Directive.

In order to indicate a clear recognition by Department of the Army that CAA radars projects are considered as an integral part of Joint Direction Center projects, and to permit prompt initiation of the CAA radar projects, the Department of the Army requests that:

a. OGCOHARC.

- (1) Authorize the Chief of Engineers, through CGUS Sixth

 Army and CGUSARADCOM, to issue a land-use permit to the Sivil Aeronautics

 Administration for their radar project at Fort Lawton, Seattle, Washington.

 Provided, that the CAA radar project is sited in accordance with overall

 Joint Direction Center layout class and has been cleared by the Corps of

 Engineers field agency designated to design and construct the Joint

 Direction Center.
- (2) Authorize the Chief of Engineers through the COUS First Army and CO USARADION, to issue a land-use permit to the Civil Aeronautics Administration for their radar project at Fort Heath, Poston, Massachusetts, subject to the same provise indicates in paragraph 5 a (1) above.

b. CO SARADCOM.

(1) Advise the Civil Aerorautics Administration of the current status of special action regarding the Los Angeles project, indicated in paragraphs 1 and 1 of paference 2 b, which is precluding

Inclosure No. 2

27

final determination of land requirements on San Pedro Fill and therefore initiation of the CAA radar project. If firm agreement cannot be reached by 5 April 1958, among ARADCOM, ADC and NORAD, as to siting, layout, land and facility requirements for the Los Angeles Joint Manual Direction Center project, Department of the Army suggests that consideration be given to advising the Civil Aeronautics Administration to proceed unilaterally with its radar project, including land acquisition. If firm agreement is reached, by ARADCOM, ADC and NORAD prior to 31 March 1958, the Department of the Army requests that COUSADARCOM advise the Chief of Engineers, through COUS Sixth Army, to permit issuance of land-use permit to the CAA with authority for immediate right of entry on acquired lands, subject to the proviso indicated in last sentence of paragraph 5 * (1) above.

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Inclosure No. 2

27

1. Problem: Relocation of Vertain existing Facilities at the Proposed

Joint Manual Pirection Center, Fort Lawton, Seattle, Washington

2. References:

- a. Headquarters, ARADCOM Message 129 ADGDI, dated 11 Feb 1958 (DA IN 92423).
- b. Headquarters, Sixth United States Army Message AMENG-I BX-18 dated 7 Feb 1958 (DA IN 91644).
- c. Basic ltr, Headquarters, Sixth United States Army, file AMENG-I, 600.1/Ft Lawton, S-11 dated 23 Jan 58 to DCSLOG, DA, through CGUSCONARC and DA 2nd Ind, file AGAO-CC 600.12 (23 Jan 53) DCSLOG, dated 4 March 1958 to CGUSCONARC, subject: "Joint Fire Direction Center Construction".

3. Problem:

In references 2a and b above, OGUSARADCOM and OG Sixth U. 3. Army advised that under current microwave radiation safety distance criteria, 9 existing family quarters structures (7 double quarters and 2 single quarters) and 4 Bachelor Officers' quarters at Fort Lawton must be demolished, relocated or replaced. The CG, Sixth U. S. Army requested that the 9 existing family quarters be either replaced by new MCA housing, or relocated to new locations on-site, preferably the former. In addition, it was recommended that the 4 BOQ's be relocated on-site.

4. Department of the Army Findings, Policy and Guidance.

- a. Attention is invited to the preceding Inclosure No. 1 regarding microwave radiation safety distance criteris. Subject to guidance contained in Inclosure No. 1, and in order not to delay the award of construction contracts for key operational facilities, the following policy and guidance is hereby established relative to the Fort Lawton structures:
- (1) If the 9 existing family quarters and 4 existing BOQ's are determined to interfere with the Joint Direction Center project, the existing structures will be relocated to new locations on Fort Lawton, at positions selected by CG Sixth U. S. Army.
 - (2) Structures will be relocated only if the:
- (a) Physically occupy the ground of the planned key operational structures of Joint Direction Center project (i.e., Operations Building, Power Generator Building, Air Force Annex Building, and CAA, Army or Air Force radar towers).
 - (b) Seriously conflict with construction thereof.
 - (c) Seriously interfere with future operations and security.

Inclosure No. 3

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- (d) Fall sithin the microwave radiation safet distance criteria prescribed b "INCORAL (Attentio, invited to the preceding Inclosure 1).
- (3) The cost of quarters relocation and resulting rehabilitation thereof will not exceed the statutory allowable cost of comparable new construction.
- (4) Relocation projects will be considered as jart of site preparation for the Joint Direction Center project and will be included in the basic project contract with view toward obtaining the most economical price and to facilitate phasing of this work with the main operational project.
- b. The guidance contained in the preceding Inclosure No. I relative to microwave radiation safety distance criteria, constitutes the special guidance promised on this matter in the Department of the Army 2d Indorsement cited in reference 2c above.
- c. Pursuant to approval obtained from the Department of Defense, the Department of the Army has been authorized to expedite the design of all Joint Direction Center projects.

5. Department of the Army Directives.

a. CGUSARADCOM

(1) Advise Chief of Engineers and CG Sixth U. S. Army as to final installation layout requirement, based on policy and suidance furnished in paragraph 4 above, and in the preceding Inclosure No. 1.

b. CG Sixth U. S. Army and Chief of Engineers

 Take all necessary expedited design actions to permit award of basic contract prior to 1 June 1958.



1. SIEJECT. Delay in Final Site Selection and Development of Facility Requirements for the Los Angeles, Philadelphia and Pittsburgh Joint Direction Tenter.

2. REFERENCES:

a. Letter, Hq USARADCOM, ADGCT. dated 6 March 58, subject: "Radar Meeting Between Jeneral Partridge and aral hart (U), to DA.

b. Meeting of Joint Coll and Technical Steering Group, 7 March 1958, Pentagon, Washin,

3. PROBLEM. Reference 1 a, an endered by representatives of Hq USARADCOM and Hq ADC during mee reference 2 b) indicated that final site locations and facility recomments and layouts for the 3 JMDC projects: Los Angeles, Pittsburgh as a ladelphia are under scrutiny and study with view to:

b. Employ the concept of adars. In view of the above situation, firm ____ g for land acquisition, site adaptation of designs, and scheduling an enstruction is being held in abeyance. Failure to crystallize fit mirements by 31 March 1958, will further slippage in this program. _______ tion is complicated by the fact that DA has not received a formal reques to hold in abeyance all action on requirements previously submitted on three projects.

a. Placing JMDC facilities star government facilities.

4. Department of the Army Findings, Policy and Guidance.

a. DA concurs in the above action, provided it can be accomplished on an urgent priority basis.

b. The concept of remoted radars is considered technically feasible;

Inclosure No. 4

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however, approval and adoption of this concept is contingent upon costs involved. Costs must be based on actual site-by-site analysis, and should consider the expected delays involved, and cost of equipment storage during such period of delay.

5. Department of the Army Directive:

a. CGUSARADCOM.

- (1) Expedite development and submission of coordinated final site selection, facility requirements, layout for the Los Angeles, Philadelphia and Pittsburgh project sites.
- (2) Advise DA without delay whether action on joint requirements on the above three projects previously submitted to DA for engineering action should be held in abeyance pending result of studies indicated in paragraph 5 a (1) above.

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Inclosure No. 4



1. SUBJECT: Authorized Scope of Facilities for Joint Manual Direction Centers.

2. Reference:

- a. Memorandum of 5 March 1958 from the Assistant Secretary of Defense (Properties and Installations) for the Assistant Secretary of the Army (Civil-Military Affairs), Subject: "NOPAD Joint Direction Benters (U)" (Attached herewith as TAB A).
- 3. FROBLEM. In the above reference, the Department of Defense advises DA as to the JRDC facility items, approximating AS million, considered sufficient to meet initial needs. Deleted items, approximating Sh million, involving host service facility items including family housing, are to be rejustified to Department of Defense on a site-by-site basis. Department of Defense guidance place great emphasis on the maximum use of existing government installations, and facilities.

4. Department of the Army Directives:

a. Chief of Engineers:

- (1) Continue with the expedited preparation of preliminary layout plans based on the approved list of facilities contained in TAB A.
- (2) Proceed with land acquisition, however, on the basis of the entire original Joint facility requirements submitted by NORAD, in anticipation that both DA and DAF will rejustify the remainder of requirements temporarily deleted by Department of Defense in TAB A.
- (3) Upon completion of preliminary layout plans in each District Office, request that the field agencies take initiative in arranging for comprehensive joint reviews to be made at appropriate District Offices

Inclosure No. 5

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by representatives of Chief of Engineers, ARADCOM, ADC, NORAD, ZI Armies and government installations concerned, to assure that:

- (a) Maximum utilization of existing government installations and facilities has been achieved.
- (b) Effective siting of facilities has been achieved insofar as compatibility with existing facilities, and operational, engineering and safety aspects are concerned.
- (c) Firm need and justification is established for additional facilities beyond those contained in the approved Department of Defense list contained in TAE A, to permit a realistic basis for appeal by the two Departments.

b. USALADCOM, ZI Army Commands:

(1) Cooperate with and assist Engineer field agencies to the maximum extent possible in conducting the site reviews indicated in paragraph 4 above.

c. USARADCOM:

(1) Submit list of additional requirements and justification therefor (reference paragraph 4 a (3) (c) above, coordinated with appropriate ZI Army Commands, installation Commander and with NOMAD to permit further reclama programming and funding actions by the Department of the Army.

1 Incl
TAB A - Memorandum 5 Mar 58
ASD (PGT) to ASS (TV)

Inclosure No.

JOSISTANT SPORESTY OF PERSON Takento or 15, p. c. 27

Properties & Installations

5 March 1958

NEMORANDUM FOR THE ASSISTA . SECRETARY 5 THE ARMY (CMA)

SUBJECT: NORAD Joint Direction Centers (U)

Reference is made to your renorandur sate: 14 January 1958, requesting approval of the scope of CINCALAD facilities requirements for ten (10) NORAD Joint Direction Centers.

The Summary of "Facilities Requirements for Typical NORAD Joint Direction Center", forwarded with the above referenced memorandum, has been reviewed. In order to assure an equitable distribution of the military construction funds available from the army and Air Force appropriations, authorized or proposed, for the subject facilities, and achieve the establishment of all ten of the NORAD Joint Direction Centers, it will be necessary to use all available support facilities in existence at military installations of the host service, when these Centers are sited in close proximity to permanent defense establishments.

A list of the items approved, and deemed sufficient to meet the initial facilities requirements for the est blishment of the 1 TAD Joint Pirection Centers follows:

	Scope	Estimated Cost
Helicopter Pad	tho si	2 5,000
Communications Building	187) SF	17,000
Tower, Radar FFS-7	1 5a	160,000
Tower, Radar FFS-6	4 Ea	138,000
Tower, Radar AN/TPS-10	5 Ea	115,000
Tower Tadio	1 Ea	23,000
Fire Station	300 SF	6,000 *
Operations Building	33,370 SF	2,000,000
Operations Tuilding Annex	6,500 SF	260,000
Maintenance Shop	1,672 SF	31,000 *
Hardstand (Auto Open Storage)	1,050 SY	6,000 *
Hardstand (Engineer Open Storage)	575 SY	4,000

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TAB A to Inclosure No. 5

0 1 2 2



Electric Station (Radar) Piesel Storage Cost Storage Eldg Headquarters Eldg (AAA Pattery) Group Headquarters Eldg Squadron Headquarters Eldg Flar Pole W/Base Parracks Occurred Book Base Security Control & Identification Eldg Sanitary Sewage Pispesel System Vater Storage & Distribution System Energency Power Plant Eldg (Flec) Electric Generators Electric Power & Distribution System	760 SF 10,000 Sb1 17,000 SF 2,000 SF 7,000 SF 1,083 SP 1 Ea LOO EW 15 Men LE6 Men L36 SF	30,0 96,0 20,0 1,0 768,0 106,0 689,0 7,0 255, 39h, 692, 5h0,	000 * 100
Stear Heating Plant & Tistribution System Roais, Malks, Parking & Drainage Fences (Roundary and Security) Utilities Heal Estate, Fee Purchase Real Estate, Right-of-Way Estimated total cost for typical Distribution Center # Estimated cost includes utility		254 29 587 520	,000 ,000 ,000 ,000 ,000

The above list of approved items will in certain instances require expansion; to include the provision of support facilities that are not available at the selected sites; for additional operational facilities for which requirements may materialize as the result of advancements in research and development, or such changes as might be required to implement improved operational techniques developed subsequent to facility testing. For the purpose of budget accounting, and in order to achieve the necessary legree of flexibility in programming facilities within the authorized cost limitation, it will be necessary to analyze the facility requirements for each of the Joint Direction Centers on an individual case basis. In this connection, it is not to be intended that the amount shown as the estimated total cost for a typical NORAD Joint Direction Center be interpreted as an average approved cost for all of the proposed sites.

/S/ Floyd S. Bryant



SUBJECT: Establishment of an Engineering Working Grou, Subcommittee of the Joint Collocation Steering Group

- 1. REFERENCE: Joint Collection and Technical Steering Group Meeting, Pentagon Building, 5 Mar 1995.
- 2. PROBLEM: At referenced meeting, as in previous meetings, need was expressed for establishment of expedited procedures for the processing, review and resolution of detailed technical matters relating to equipments, facilities and operations.

3. ACTION TAKEN:

- a. At referenced meeting, it was proposed that a sub-group of the Joint Collocation and Technical Steering Group be established to meet the problem outlined above. This group, chaired by DAF will consist of representatives of DA and DAF technical agencies and the CAA. The Department of the Army supports this proposal.
- b. Formal announcement, relative to the establishment, functions and responsibilities of the proposed sub-group will be made by the Department of the Air Force in coordination with the Department of the Army.

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Inclosure No. 6

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28

HEADQUARTERS
AIR DEFENSE COMMAND
United States Air Force
Ent Air Force Base, Colorade

28 Feb 1958

ADOBQ-E

SUBJECT: Use of the CAA ARSR-I Radar At Pittsburgh

TO:

Commander-in-Chief North American Air Defense Command Ent Air Force Base Colorado Springs, Colorado

- 1. The NORAD meeting, 11 February 1958, indicated that the CAA ARSR-la radar would be used at the Pittsburgh Joint radar location.
- 2. This headquarters concurs in the use of the iRSR-1 with smplitron at Pittshurgh. Your approval of this action is requested.
 - 3. Army Air Defense Command concurs in this request.

FOR THE COMPANDER

HARCED W. GRAWT Major General, USAP Deputy for Operations

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PLICATE

aDOMG-E, Eq aDC, 28 Feb 53, subj: Use of the CAA ARSH-1 Redar at Pittaburgh

NOESS-E

Let Ind

vav. He North American Air Defense Commund, Dat AFE, Colorado Springe,

TO: Commander, USAF Air Defense Governed, But APR, Colorado Springe,

- 1. Reference: 1st indormanment AFORC, Hq REAF, dated 11 Feb 58, subjects Assendment to Plane for OURAD Joint Direction Centers.
- 2. This headquarters approves your request for an ARSR-IA radar at the Pittsburgh joint radar location provided you comply with the provisions of the reference listed above.
- 3. A message has been dispetched to Chief of Staff, Eq UMAF, as Executive Agent for MCRAD, to assend the plane approved by this beadquarters for the collected Wasila Mester/All site at Pitteburgh to reflect the use of a MA radar, ARSTHA.

FOR THE CUM- A HORR- DN-CHICK!

Copy Paraished GOODA WIDOOM

F. P. UPTIANE Brig Den, USA Dis/Com and Meet

Maj F.S. Ociocki

COMMERACE NORTH

2039 11 Mar 58

M/R: This indorsement approves ADC's request to use an ARSR-LA radar at the Pittsburgh joint radar site. This request was werbally presented to CIRCHORAD at the 11 February 1958 commanders' conference. ARADCOM has concurred in ADC's request.

0036 pdj

JOINT MESSAGEFORM

PRECEDENCE Declassified ROUTIME

CINCHORAD

COPS USAF WASH DO

INFO: TAO WASH DC

ACTION

INFO FROM

to.

COMUSAFADO ENT AFB COLO SPRINGS COLO (COURTER)

COUGARADOOM ANT AFB COLO SPRINGS COLO (COURTER)

X035 TOM NOESS-E

S, USAF, AS EXECUTIVE AGENT FOR NORAD. REFERENCES: (A) MESSAGE TIS HEADQUARTERS, WESS-E X-OLI DATED 24 JANUARY 1958; (B) MESSAGE THIS HEADQUARTERS, MORSS-E I-012 DATED & FEBRUARY 1958; (C) 1ST IND AFODO HQ USAF, DATED 11 PEREDARY 1958, SUBJECT: AMENDMENT TO PLANS FOR COMAD DIRECTION CENTER. THIS MESSAGE IS IN TWO PARTS. PART I. THIS BEADQUARTERS ADPROVED COMUSAFADO'S REQUEST TO USE ABSR-1A RADAR AT PITTSBURGE JOINT RADAR LOCATION SUBJECT TO PROVISIONS OF REFERENCE C. REQUEST THAT THE FLANS APPROVED BY THIS HEADQUARTERS FOR THE COLLOCATED MISSILE MASTER/ADIC SITE AT PITTSPURCH BE AMENDED TO RE-PLEOT THE USE OF A CAA, ARSB-LA RADAR RATTIER THAN AN AN/FFS-20.

22302

INDEDITATE DA CONCUERONCE FOR THIS CHANCE IS LISO DOCUMENTO. HOESS-E %j. P.S.Osicoki, Elec. Staff Officer

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AM FORM 173 MIP ACES U FORM 175 1 OLT 49 WHICH WILL BE USED UNTIL TENAUSTED

JOINT MESSAGEFORM - CONT 'ATION SHEET

SECURITY CLASSIF

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CINCHORAD

PART II. TO IMPLEMENT PLANS THIS HEADQUARTERS HAS FOR ESTABLISHING JOINT WORLD DIRECTION CENTERS AND JUINT USE OF RADARS, REQUEST THAT DEPT OF DEPERSE AUTHORIZE APPROPRIATE AGENCIES TO PROCURE LAND FOR CAA, AUTHORIZE RICHT-OF-ENTRY TO CAA AND AUTHORIZE INSTALLATION OF ARSA-LA RADARS AT BOSTON, SEATTLE, LOS ANGELES, AND PITTSBURGE SITES AT EARLIEST PRACTICAL DATES.

JUMBACK YOURS

Ma: See demorandum for Moord, Sunfect: desile Master Friefing to DEFEND AN and Domont Demanders on 11 February 1958.

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RUEDDNI/CGARADCON ENT AFE COLO

ACTION: COELC X8-4352

ROW AFODE 50.13

THIS IS AN EMECUTIVE ANGENCY NESSAGE. REFERENCE MOMAD WESSAGE
NOESS-E M 035, 10MMARCH 1950. YOUR APPROVAL OF USE OF CAA MADAR
ARSK-1A FOR PITTSBURGH JOBIT MANUAL DIRECTION CENTER IS CONFIRMED.
ACTION HAS DEED TAKEN TO AMEND JUDE PLANS ACCORDINGLY. 31/1700 Z HAR RJEP'C

AC-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTION-PHYSICALLY REMOVE ALL ENTERNAL REFERENCES OF DATE-TIME GROUP PRIOR TO DECLASS FICATION- NO UNCLASSIFID REFERENCE IF DATE-TIME GROUP IS CUOTED.

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NOESS-E

16 MAD MESS

SUBJECT: Collocation and Compatibility of Radars with Ground Control Centers (U)

TO: Commander
USAF fir Defense Command
Ent Air Force Base
Colorado Springs, Colorado

1. References:

a. Message this headquarters NAESS-E X-Oll, dated 2h January 1958.

b. Hessage this headquarters WOBSS-E X-012, dated 4 February 1950.

2. Attached is the Memorandum for Record for the briefing presented to CINGMONAD and acaponent commanders on 11 February 1958. In consonance with the conclusions derived, it is requested that commander take the following actions:

a. ATC

(1) Resembetule the AN/FFS-7 program to insure that the first available AN/FFS-7 is installed at the Highlands site (New York complex) and the second available AN/FFS-7 is installed at the Loukport site (Miagara-Buffelo complex).

(2) Beview the AN/FFS-7 schedule of installation and deployment plan. Recommend to CINCNOMAP desirability and feasibility of using an AN/FPS-7 at the Seattle site rather than the CAA ARSR-LA presently scheduled for this site.

(3) Take immediate action to reprogram and install an AN/FFS-20 at the Fort Meade site.

(h) Take appropriate action to reschedule the AN/FPS-20 operational availability dates for the Chicago, Detroit and Philadelphia sites. This should be accomplished in coordination with ARADON to insure availability of radars based on the advanced operational dates of Missile Master emipment at these sites.

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DUPIGOATE y History WOESS-E, subj: Collocation and Compatibility of Radars with Oround Control Centers (U)

b. ARADCOM

- (1) Take appropriate action to advance the operational availability dates for all Missile Master sites. Friority one, two and three will be given the Mighlands, Loskport and Seattle sites respectively.
- (2) Take appropriate action to advance the operational date of the CoMAD Control Center at Part Meade.
- (3) Take such departmental action as is necessary to facilitate installation of ARSA-IA radars in the Beston, Los Angeles and Pittsburgh areas. If appropriate, the same action will be taken for the Seattle area.

c. Ale and AMADEM

- (1) Coordinate with CAA the installation of the ARSR-IA radar at the Boston, Los Angelas and Pittsburgh sites. If appropriate, the same action will be taken for the Seattle site.
- (2) Determine the feasibility and desirability of radar remoting at the Philadelphia and Los Angeles sites and make appropriate recommendations to NOTAD. Also make appropriate recommendations for the state the locations and site configuration for these two areas. These recommendations will cover the desirability and feasibility of utilizing existing Army land and facilities in both areas.
- (3) Received to CINCHORAD the desirability of using AM/PPS-33's at the Pittsburgh, Boston, Los Angeles and Scattle sites on an interim casis until such time as the modified ARSH-IA's are available.
- (h) deordinate compatibility tests of the AN/TRO-7 and AN/TRO-20 with the Hissile Master at the Hisblands and Fort Made sites when equipment is made available. These tests should not in any way delay construction or proposed operational dates for these sites.
- (5) Recommend to GIRCHONAD submitted operational dates for the GuMAN Control Centers at collocated Essile Master/ARIC sites.

31

NORSS-E, Subj: Collocation and Compatibility of Radars with Oround Control Centers (U)

3. Your recommendations for the problem areas listed in paragraph 2 should be provided to this headquarters not later than 15 April 1958.

FOR THE COMMANDER-IN-CHIEF:

- Min H

l Incl

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F. F. UHTHANE Brig Gen, USA DCS/Comm and Flect

2 3 WHM.

M/R: See Memorandum for Record, Subj: Missile Master Briefing to NAVFORCONAD and Component Commanders on 11 February 1958.

75. Oriela

NOESS-E, NORAD, 14 Mar 58, Subject: Collocation and Compatibility of Radars with Ground Control Centers (U)

ADORQ-E

1st Ind

24 APR 1958

Hq Air Defense Command, Ent AFB, Colorado Springs, Colorado

THRU: Commanding General, U.S. Army Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, North American Air Defense Command, ATTN: NOESS-E, Ent Air Force Base, Colorado Springs, Colorado

- 1. Reference basic letter, the following answers are by item as follows.
- 2. Reference paragraph 2a(1). The AN/FPS-7 Program schedule has been revised to install the first available equipment at the Highlands, New Jersey (New York Complex) site, the second AN/FPS-7 will be installed at the Lockport site (Niagara-Buffalo Complex).
- 3. Reference paragraph 2a(2). The installation of an AM/FPS-7 at the Seattle site rather than the ARSR-IA is not recommended by this headquarters based on the following:
- a. The ARSR-1 will be operational at Seattle as early as June 1958, and the ARSR-1A will be operational prior to the operational date of the JMDC.
- b. The ARSR-1A at Seattle is to be replaced by the AN/FPS-28 Frequency Diversity radar in September 1962. The installation of the AN/FPS-7 would require complete readjustment of the Frequency Diversity Program in the Northwest area.
- 4. Reference paragraph 2a(3). An AN/FPS-20 has been programmed to be installed at the Fort Meade site during May 1960.
- 5. Reference paragraph 2a(4). All ADC radars programmed for JMDC's are scheduled to be installed 8 months prior to presently established operational dates.
- 6. Reference paragraph 2c(1). Necessary coordination has been and is continuing to be effected with Civil Aeronautics Administration on the installation of the ARSR-lA radars at Boston, Los Angeles, Pittsburgh and Seattle. It is our

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PLICATE

NOESS-E, NORAD, 14 Mar 58, Subject: Collocation and Compatibility of Radars with Ground Control Centers (U)

understanding that the CAA has received clearance or will soon receive clearance to begin installation of their radars and attendant facilities at all of the above sites. These equipments will be oriented in accordance with USARADCOM/USAFADC jointly approved plans for these sites.

- 7. Reference paragraph 2c(2). It appears that radar remoting at the Philadelphia and Los Angeles sites is feasible with available commercial microwave equipment. Microwave remoting techniques can be made compatible with both manual and SAGE requirements. Site adaptation surveys have been reaccomplished at Los Angeles and Philadelphia and plans are now being prepared for forwarding to CINCNORAD.
- 8. Reference paragraph 2c(3). The installation of the AN/FPS-33 radar at the Pittsburgh, Boston, Los Angeles sites is not recommended by this headquarters. The ARSR-1 will be operating at each JMDC several years prior to the JMDC operational date. The CAA has advised this headquarters that the AN/FPS-33 will not meet their operational requirements. The CAA has stated that amplitron delivery schedules are as follows:

Site	Delivery				
Pittsburgh	Dec 1960				
Boston	Oct 1960				
Los Angeles	Apr 1961				
Seattle	Mar 1961				

- 9. Reference paragraph 2c(4). This headquarters will recommend to the Jeint Technical Steering Group that a committee consisting of representatives from Rome Air Development Center (RADC) and Signal Corps Electronic Laboratory (SCEL) and other interested agencies be established to coordinate compatibility tests of the AN/FPS-7 and AN/FPS-20 with the Missile Master equipment.
- 10. Reference paragraph 2c(5). Headquarters ADC does not recommend advancing the operational date of the CONAD Joint Manual Direction Centers. While it may be entirely feasible to advance the operational dates for radar facilities, it does not appear to be feasible to fund for and construct necessary not appear to be feasible to fund for and construct necessary support facilities in advance of the presently established schedule. In addition, the difficulty of providing manpower

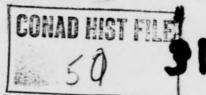
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NOESS-E, NORAD, 14 Mar 58, Subject: Collocation and Compatibility of Radars with Ground Control Centers (U)

for operating these sites in advance of established operations dates does not appear practical.

FOR THE COMMANDER:

1 Incl n/c HAROLD W. GRANT Major General, USAF Deputy for Operations



ADGCL 413.68 (14 Mar 58) 2d Ind (U)
SUBJECT: Collocation and Compatibility of Radars with Ground Control
Centers (U)

HEADQUARTERS U. S. ALWY AIR DEFENSE COMMAND, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado 10 MAY 1958

1. Contents of 1st Indorsement have been noted.

2. Attention is invited to letter ADGCL h13.68, this headquarters, dated 30 April 1958, subject as above, which furnished USA-ADCOM comments to a letter identical to basic communication except that it was addressed to this headquarters.

FOR THE COMMANDER:

F. f. FOLK Colonel, GS Deputy Chief of Staff

1 Incl n/c

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HEADQUARTERS
UNITED STATES ARMY AIR DEFENSE COMMAND
ENT AIR FORCE BASE
Colorado Springs, Colorado

ADGCL 413.68

30 Apr 1958

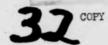
SUBJECT: Collocation and Compatibility of Radars with Ground Control Centers (U)

TO:

Commander-in-Chief Continental Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. References:

- a. Letter, NOESS-E, Headquarters NORAD, 14 March 1958, subject as above.
 - b. Message NOESS-E XO12, Headquarters NORAD, 7 Feb 1958.
 - c. Message AFODC 56870, Headquarters USAF, 27 Feb 1958.
- d. 1st Indorsement, AFODE, Department of Air Force, 11 Feb 1958, subject: Amendment to Plans for CONAD (Joint) Direction Centers, dated 8 November 1957.
- 2. Information and discussion contained in subsequent paragraphs is submitted as requested by reference a, and follows the sequence of paragraph 2b and c of that reference.
 - 3. Paragraph 2b(1).
- a. This headquarters must concur in reference c, which was given in answer to reference b, in regard to the feasibility of improving the anticipated JMDC operational dates. Every effort will continue to be made, within the framework of reference c, to insure that unnecessary delay does not accrue.
- b. Inasmuch as the establishment of priorities is based upon construction of facilities and installation of equipment, which are controlled by the Departments, it is recommended that your desires in this regard be forwarded to the Executive Agency.



ADGCL 413.68
SUBJECT: Collocation and Compatibility of Radars with Ground Control
Centers (U)

- 4. Paragraph 2b(2). The Joint Siting Team has visited Ft. Meade. Joint agreement on plans for this location has been reached. COMDRADC is presently completing the plans prior to forwarding for approval.
- 5. Paragraph 2b(3). This headquarters has agreed that CAA be permitted to install the ARSR-lA radar at the four locations provided that CAA agrees to reference d.
- 6. Paragraph 2c(1). The comment given in paragraph 5 above, applies in this instance.
- 7. Paragraph 2c(2). The Joint Siting Team has visited these locations. Joint Siting Team agreement to remote radar data has been reached. Final plans are being prepared by COMDRADC prior to forwarding for approval.
- 8. Paragraph 2c(3). The position of the Department of the Army is that the AN/FPS-33 will be installed in any location where COMDRADC has not provided a suitable radar in time to meet operational dates.
- 9. Paragraph 2c(4). Because coordination and accomplishment of this effort must be handled at Departmental level, it is recommended that this action be accomplished through the Executive Agency.
- 10. Paragraph 2c(5). The comment given in paragraph 3 above, applies in this instance.
- 11. This headquarters has no recommendations other than those given in the above paragraphs.
- 12. Authority has been given by NORAD (NOESS-E), to extend suspense date to 29 April 1958.

FOR THE COMMANDER:

Copy furnished w/l Incl: /s/t/ RAYMOND E. KANE
Ltr NOESS-E, Hq NORAD,
14 Mar 58, subj: Collocation Asst Adjutant General
and Compatibility of Radars
with Ground Control Centers (U).
DCSLOGDA
DCSOPSDA
COMDRADC (w/o Incl)

MEMORANDUM FOR GENERAL WERRANE

SUBJECT: Collocation of Missile Masters and ADDC's

- 1. This memorandum is for your information.
- 2. References:
- Collocation and Compatibility of Radars with Ground Control Centers, dated 14 March 1958, with lat Ind. dated 24 April 58.
- (b) Latter ARADCOM, dated 30 April 58, same subject as reference a.
- 3. As a result of the 11 February 58 meeting of CINCNORAD and the component commanders, a letter (reference a) was dispatched to the components requesting recommendations for the problem areas existing in the establishment of MORAD Control Centers at the sites where the Missile Macters are to be deployed.
- 4 In reply to MORAD's letter, the following actions and recommendations were forwarded by the components:
- a. ADC and SRADCOM did not recommend adwanced operational dates for the NORAD Control Centers.
- b. ARADCOM recommended that compatibility tests of the AF/FPS-7 and AN/FPS-20 with the AN/FSG-1 be handled at Departmental leval. ADC stated that they would have the Joint Technical Steering Group set up a committee to coordinate the compatibility tests.
- at those sites where the ADC radar program cannot meet the operational dates for the MORAD Control Centers. ADC recommended that AM/FPS-33's not be used at any of the collocated sites. ADC's present program calls for installation of radars approximately nine months prior to the present MCC operational date. CAA has advised

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Memo for Gen Uhrhane, subj: Collocation of Missile Masters and ADDC's. 7 July 1958

ADC that the AN/PPS-33 will not meet their operational requirement. In addition CAA advised ADC that the amplitron delivery schedules are as follows:

Site	Delivery				
Boston	(3,3,5)	1960			
Pittsburgh		1960			
Seattle Los Angeles	-	1961			

- d. Both components recommended remoting radar data at the Philadelphia and Los Angeles sites.
- e. ARADCOM has taken action to facilitate installation of CAA radars (ARSR-1) at Boston, Los Angeles, and Seattle. Since no military land is involved at the Pittsburgh site. CAA has already taken action to start installation of their radar at this site.
- f. ADC recommended that the radar (ARSR-IA) for the Scattle site bot be changed to an AN/FPS-7. In addition, ADC stated that the first two AN/FPS-7's have been programmed for Highlands and lockport.
- g. Site adaptation plans for the Ft. Meade site, submitted by the components, were approved by this head-quarters and forwarded to the Executive Agent. ADC has scheduled the installation of the AN/FPS-20 at Ft. Meade for May of 1960.
- 5. In addition to the replies received from the components, additional progress on the collocation program is as follows:
- a. MORAD received from ADC and ARADCOM site adaptation plans for the Pittsburgh, Philadelphia and Los Angeles sites. These plans have been approved by CINCNORAD and forwarded to the Executive Agent for NORAD.
- b. ARADCOM and ADC have requested their respective departments that host agency responsibilities be changed for the Pittsburgh and Philadelphia sites. The proposal is that the Army be host agency for the Philadelphia site and the Air Force be the host agency for the Pittsburgh site. Tentative agreements on this problem area are as follows:

Memo for Gen Uhrhane, subj: Collocation of Missile Masters and ADDC's, 7 July 1958

- (1) Pittsburgh army host agency.
- (2) Philadelphia Gibbsboro Air Force host agency for radar site.

 Pedricktown Army host agency for NCC.
- (3) Los Angeles San Adro Hill Air Force host agency for radar site. Ft. MacArthur Army host agency for NCC.
- c. Information has been received from the USAF Installations Representatives Office that Army Division Engineers have been authorized to prepare contract plans which are to be placed before the end of CY 1958 for the Chicago, Pittsburgh and Detroit NORAD Control Centers.
- d. Informal information has been received from ARADCOM that contracts for the construction of Missile Master facilities will be let by 30 June 1958 for the following sites:

(1)	Highlands	(N.Y.)	(P-9)
	Lockport	(Buffalo)	(2-21)
(3)	Selfridge	(Detroit)	(P-20)
(4)	Ft. Heath	(Boston)	(MH-1)
(5)	Ft. Lawton	(Seattle)	(RP-1)

- e Firm BOD dates for the above sites will be available once the contracts are let; however, estimated BOD dates are shown in inclosure 1.
- f. Review of the ADC program for GPA-37 equipment reveals that GPA-37's are programmed for the ten collocated sites. Schedule for installation of GPA-37 equipment is shown in inclosure 1.
- g. Review of ADC Master Direction Centers concept indicates that ADC does not plan to fully man with ACC personnel the collocated facilities during the SAGE era. With maintenance personnel and a limited number of operator personnel at the heavy radar sites, it will not be possible to go into Mode III operations expeditiously.
- 6. The following actions are required reference to the collocation of Missile Master and manual ADDC's:
- a. Upon receipt of information from ARADCOM, reference to letting of contracts for NORAD Control Centers and construction completion data, NORAD will initiate a message

Memo for Gen Uhrhane, subj: Collocation of Missile Masters and ADDC's, 7 July 1958

to the DA and DAF recommending that the operational dates for the NORAD Control Centers be advanced. Recommended dates are shown in inclosure 2.

- b. Upon receipt of firm BOD dates based on contracts let a message will be dispatched to ADC requesting that installation dates for radars, including CAA ARSR-1A, and GPA-37's be adjusted to insure operation of NCC based on advanced operational dates. (See inclosure #2).
- Technical Steering Group set up a committee to coordinate compatibility tests of the AN/FPS-7 and AN/FPS-20 with the AN/FSG-1.
- d. Hold in abeyance the decision on the use of the AN/FPS-33's until such time as advanced NCC operational dates are established.
 - e. Accept ADC recommendation for use of the ARSR-IA at Seattle; however, ADC must notify CAA that the operational dates of the NCC's may be advanced and this will necessitate an advance in the installation of the amplitron at Seattle, Boston, Pittsburgh and Los Angeles sites.
 - f. Request ADC to schedule installation of the AN/FPS-2G and GPA-37 equipment for the Ft. Meade site early in CV 1959. (Exact date to be determined at a later date based on letting of contract and construction time).
 - g. A requirement must be established with ADC to insure adequate manning of Air Force equipment and facilities at NCC during the SAGE era.
 - b. A representative from NORAD should visit the Pentagon to coordinate NCC operational dates with the DA and DAF.

2 Incls

1. Status of NORAD Control Centers

2. Rec. Ope Dates for MORAD Control Centers

JOHN A. GAHR Lt. Colonel, USA Act'g Director of Systems

STATUS OF NORAD CONTROL CENTERS

Location Highlands, N.Y. (P-9)	Est. BOD Jan 1960	M/M Ops Date Mar 1960	Radar Install. FPS-7 Kar 59	PPS-6 (AF) Ops Date In- stalled	GPA-37 Install Date **In- stalled	NCC Ops Date May 1960	Host Agency	Site Plan Mapvil 2 May 1957	** To be moved
Lockport (Buffalo) (P-21) Selfridge	Jan 1960	Apr 1960	FPS-7 Mar 59	Apr 58	**In- stalled	June 1960	AF	2 May 1957	from present installation into new ops building.
Detroit (P-20)	Nov* 1959	May 1960	PPS-20 Oct 59	Aug 58	**In- stalled	July 1960	AF	2 May 1958	*Completion Date Dec 59
Ft. Reath, Kass. (WH-1)	Nov 1959	Aug 1960	ARSR-IA Oct 60 ARSR-1 War 60	Apr 80	War 60	Oct 1960	Army	31 Oct 1957	
Gibbsboro, N.J. Philadelphia (RP-63)	***********	Sept 1960	FPS-20 Feb 60	Not avail- able	Apr 60	Nov 1960	Army &	May 58	*Components recommended change to Army
Oakdale Pittsburgh (RP-62)		Oct 1960	ARSR-1A Dec 60	May 60 (A2)	May 60	Dec 1960	Acmy	May 58	onauge to aimy
Arlington Hts. Chicago (RP-31) Ft.Meade	**	Nov 1980	FPS-20 Apr 60	July 60 (A2)	June 60	Jan 1961	Army	1957	**Est.of BOD is July 60. No dir- ective issued.
(RP-54) Ft. Layton		Dec 1957	FPS-20 Mar 60	June 60	July 60	Feb 1961	Army	May 58	
(Seattle) (RP-1)	July 1959	Dec 1960	ARSR-1A Mar 61 ARSR-1 Jul 60	Sept 60 (A2)	Aug 60	Mar 1961		1 Oct	
San Ped.Hill (Los Angeles) (RP-39)		Jan 1961	ARSR-1A Apr 61 ARSR-1 Aug 60	Oct 60 (F2)	Sept 60	Apr 1961		1 Oct	Ital

RECOMMENDED OPERATIONAL DATES FOR NORAD CONTROL CENTERS

Defense	Site	Host	tion	struc- n o.Date	ati	Oper ons	GPA-	37 In- led		ar In	- FPS-6		c. Opns.
New York	Highlands (9-9)	AF	Jan	1960	Mar	1960	Mar	1960	Mar	1959	In- stalled	*Mar	1960
Buffalo	Lockport (P-21)	AF	Jan	1960		1960	Apr	1960	Mar	1959	In- stalled	*Apr	1960
Detroit	Selfridge (P-20)	AF	Sep	1959	Rec ⇒Jan	1960	Jan	1960	*Re	0	hug 1958	*Rec	1960
Boston	Ft. Heath (MM-1)	Army	You	1959	*Feb	1960	*Peb	1960	ARSI	I-IA	*Feb	*Rec	1960
Philadelphia	Gibbsboro Pedricktown (RP-63)	AF	**						Apr	1960	1960		
Pittsburgh	Oakdale (AP-62)	Army	4 9			-							
Chicago	Arlington Hts. (RP-31)	Army	**						-				
WashBalt.	Ft. Meade (RP-54)	Army											
Seattle	Ft. Lawton (RP-1)	Army	Jun	1959	*Rec Oct 1959		*Rec Oct		*Rec		*Rec Oct	*Rec	
Los Angeles	San Pedro Hill (RP-39)	Army	**				100		130	3	1959	195	9

^{*}Changes from present schedule.

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^{**}Construction comp. dates unknown. Operational dates to be established when contracts are let.

CONAD HIST FILE 15 JAN 1958

RR WEDDN PR RUBDIN WEFYB R 1521483 WIN PEDUSAR WASH DO

TO SEN/CHIEF SLECT DEP SES DIV SAGE INCO OFFICE NEW YORK IN SUPERIES COMMERCE BALTO MD

FROM AFOAC-P/A. 55112.

RE ARROW SOLDER MEYER-12-8-5. SERVICER 1957 AND
INCLASSIFIED ASSAGE SERVED-12-203-5, 31 DOT GRA 1957. THIS DESSAGE
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REFROGRAM ANYFES-7 AT SITES F-9 and 21. PART IV. A SER-1, GAA
RADARS HAVE BEEN APPROVED BY MARK FOR THE MAIN ANY FOSTOM,
LOS ANGELES AND SEATTLE. DEPARTMENTAL JACCHERONGE IS BEING PROGESSED
AT THIS TIME. AT THIS TIME. 15/22112 JAN RUEFHQ

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ROUTINE X

AFOAC E/A 55112

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CINCNORAD

COFS USAF WASH D C

INFO: TAG WASH D C

CGUSARADCOM ENT AFB COLO SPRINGS COLO (COURIER)
COMUSAFADC ENT AFB COLO SPRINGS COLO (COURIER)

ROM NOESS-E XO12 .

COFS USAF, AS EXECUTIVE AGENT FOR NORAD. REFERENCE YOUR MESSAGE
AFOAC E/A 55112, 15 JAN 58 WHICH HAS BEEN PROVIDED TO NORAD FOR INFORMATION. PART I. NORAD CONSIDERS THAT DATES IN REFERENCE MESSAGE
REFLECT INSUFFICIENT PRIORITY FOR IMPLEMENTATION OF JOINT MANUAL
DIRECTION CENTERS. OPERATIONAL REQUIREMENT JUSTIFIES EARLIER AVAILABILITY OF ALL TEN FACILITIES. IN ADDITION, SAGE COMPATIBILITY AND
RELATED TECHNICAL/OPERATIONAL PROBLEMS WILL BE GREATLY REDUCED IF ALL
JMDC'S ARE AVAILABLE BY 1960. STRONGLY RECOMMEND DEPT OF ARMY AND
AIR FORCE PLACE HIGHER PRIORITY ON COMPLETION OF THIS PROJECT SO THAT
ALL TEN JMDS'S WILL BE OPERATIONALLY AVAILABLE NOT LATER THAN END CY
1960. PART II. WASHINGTON-BALTIMORE SITUATION WARRANTS SPECIAL

29 22202

Jan 1958

NOESS-E

Lt Col. F.K. Nichols, Chief, Elec. Div. 2039 1 2

JOINT MESSAGEFORM - CON. JATION SHEET

SECURITY CLASSIFICATION

CINCHORAD

CONSIDERATION. FACILITIES NOW AT PT. MEADS ARE SICE TRAT IT APPEARS ENTIRELY PRASIBLE TO COMPLETE A JANUE AT THIS LUCATION BY 1959 WITH RELATIVELY MINOR EFFORT. RECONSEND JUDIT ADMI/AIR FORCE ACTION TO THIS SPENCY. PART III. WE ARE THANARE OF REASONS WET HURE THAN 36 MOSTES (FROM THIS DATE) ARE MERIED TO CONFLITE AFT OF THESE FACILI-TIES. BEQUEST YOUR CONSIDERATION REING GIVEN TO RECOMMENDATIONS MADE ABOVE. ALSO REQUEST WE BE ADVISED OF THE OFFI-CIAL SCHEDULE OF INITIAL OPERATIONAL DATES FOR ALL JADO'S AND (EXCLIDING FT. MEADE) IF THESE ARE THE BARLIEST DATES AT WEIGH MISSILE MASTERS CAN BE USED TO RELAY SACE DATA TO BATTERIES.

COMEBACK NOELC

WR: Information contained in the reference message, plus that received through other sources, indicates that there is a general attitude at the departmental level to proceed with the Massile inster program on a non-priority basis. There is every reason to believe that the implementation schedules could be advanced by closer attention and higher priority resolution of the minor prob-lems that are arising. This message is for the basic purpose of informing the Service Departments of NOTAD concern. It is also intended to force the Departments to provide WOWD with information as to why faster progress is not being achieved.

Supporting Supporting Supporting Supporting Supporting Declaration and Parkell ALB Vol. II

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SEE CRYPTO SECTION BEFORE DECLASSIFYING

24 Feb. 1958

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READING FILE

PH HQ USAF WASH DC

TO RJEDDN/CINCHORAD ENT AFB COLO

RJEDDN:/CGARADCOL ENT AFB COLO

ACTION: CORLC 18-2551

/ FROM AFODC 56870 THIS IS AN EXECUTIVE AGENT NESSAGE. REFERENCE NCESS-E X012, DATED U
FEDRUARY 1956. MESSAGE AFOAC-E/A 55112, DATED 13 JANUARY 1956NOTAL
STATED OPERATIONAL DATES OF JMDC'S BASED ON CONSTRUCTION BENEFICIAL
OCCUPANCY DATES. ECONOMIC CONSIDERATIONS PRECLUDE SIGNIFICANT SPEED
UP OF THIS PROGRAM. EXTENSIVE TESTS OF AN/FSG-1 AT FT. MEADE,
MARYLAND, PRECLUDE USE OF THIS EQUIPMENT FOR JMDC AT THIS THE. CAREFUL
INVESTIGATION BY THE JOINT TECHNICAL STEERING GROUP LED TO THE
OPERATIONAL DATES REFLECTED IN MESSAGE AFOAC-E/A 55112. THESE DATES ARE
CONSIDERED OFFICIAL AND ARE SUDJECT TO HIMOR CHANGES AS THE PROGRAM

PAGE TUO IJEPHQ 37 PROGRESSES. EVERY EFFORT IS BEING MADE TO PRECLUDE DELASY. DIGITAL SIGNAL CONVERTERS ARE BEING PROCURED BY DAF TO MEET OPERATIONAL DATES AT ALL SITES EXCEPT FT. MEADE. PROCUREMENT OF CONVERTERS FOR FT. MEADE HAS BEEN DIRECTED TO MEET OCTOBER 1959 DATE SPECIFIED IN SAZE- MISSILE MASTER TEST PLAN. FINAL JEDG SITE SELECTION, SURVEYS AND CONSTRUCTION REQUIREMENTS FOR THE PITTSBURGH,
WASHINGTON-DALTHORE AND PHILADEELPHIA DEFENSE AREAS SHOULD BE
COMPLETED AND FORWARDED AS SOON AS POSSIBLE TO AVOID FURTHER DELAYS
AT THESE SITES. YOU VILL BE INVITED TO SEND AND OBSERVER TO FUTURE
MEETINGS OF THE JOINT TECHNICAL STEERING GROUP. THE NEXT MEETING HAS BEEN TENTATIVELY SCHEDULED FOR 27 FEBRUARY 1958. YOU HEADQUARTERS WILL BE ADVISED UNEN DATE IS FINALIZED. BT

AC-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY D ENCRYPTION-PHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR TO DECLASSIFICATION- NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS QUOTED.

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READING FILE

24 FEB 1958

NORSS-E

SUBJECT: Joint Use of GAA Tadar ATSR-1

TOS

to ander USAF Air Defense Commend Ent Air Forge Base Colorado Springs, Colorado

1. Remost your headquarters take the peasury action per-taining to the joint use of the GAA radar ADDRel, of perfected in the inclosed copy of correspondence exchanged between NORAD and Chief of Staff, USAF, as becouting agent.

2. Reference paragraph le. of the inclosed first indersement, your headquarters is to take appropriate action with CAA to provide for a 10 rpm rotation rate of the ARSR-LA for use when SAGE Hodes III and IV are explayed.

3. Yequest provide the continuously advised of the actions being taken in this reports

FOR THE CONTAINED IN-GIRE

Ltr in Loud to
Coff, WAF, sub.;
Amendment to Flans for
UNAD (Joint) Direction
Contemp, 6 Nov 57 and
let Ind its Coff, USAF,
11 Peb 58

F. F. URITHANE Brig Gen, USA DCS/Comm and Elect

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19 Feb 58

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M/R: On 8 Nov 57 NORAD advised the Executive Agent by letter that use of the ARSR-1 at 3 sites was approved. On 11 Feb 58 the Executive Agent replied by 1st indorsement and stated that the use of this radar was approved, provided that appropriate modifications were made to the radar "on initial installation" and that Headquarters ADC specify maintenance standards and schedules. CINCNORAD was also to specify the rotation rate needed for SAGE Modes III and IV. This indorsement also stated that a suitable radar would be substituted for the ARSR-1 if it proved unsatisfactory for military use. ADC, therefore, will be required to take the action as reflected in this letter.

7. Dos

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NOESS-E, Hq NORAD, 24 Feb '58, Subject: Joint Use of CAA Radar ARSR-1
ADOCE-ED lst Ind MAR 24, 1958

HQ AIR DEFENSE COMMAND, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, North American Air Defense Command, ATTN: NOESS-E, Ent Air Force Base, Colorado Springs, Colorado

- 1. The following is a summary of the action taken or to be taken by this command regarding the joint use of CAA's ARSR-lA radars in those areas outlined in 1st Indorsement, 11 Feb 58, from Chief of Staff, Hq USAF, to letter from North American Air Defense Command, 8 Nov 57, Subj: Amendment to Plans for CONAD (Joint) Direction Centers, attached as Inclosure 1.
- a. Reference Paragraph la, inclosed 1st Indorsement. At Fort Heath, Massachussetts; San Pedro Hill, California and Fort Lawton, Washington, the amplitron will not be available for the initial installation of the ARSR-1. Civil Aeronautics Administration will install the surveillance radar without amplitron for their utilization prior to the proposed operational dates of the joint sites. However, CAA has indicated in "Minutes of CAA/ADC Joint Radar Planning Group Meeting No. 8, October 1 to 3, 1957," that the "amplitron will be procured and installed, converting the ARSR-1 radar to an ARSR-1A to meet operational dates of the above mentioned Joint Manual Direction Centers".
- b. Reference Paragraph 1b, inclosed 1st Indorsement. On 16 December 1957, this command furnished Hq USAF a summary of the desired anti-jam circuitry to be incorporated in the ARSR-1A by the time the radar is to be utilized jointly by CAA/ADC/USARADCOM. Hq USAF forwarded this request to Air Research & Development Command on 13 January 1958 in order that they may determine the feasibility and costs of this additional circuitry. During the week of 13 March 1958, a representative of this directorate will visit Hq ARDC and request the status of this investigation.
- c. Reference Paragraph lc, 1st Indorsement. A maintenance agreement for joint use radars is outlined in the "Ground Rules for Air Defense Command and Civil Aeronautics Administration Joint Use of Redar Facilities", dated 16 November 1956. Paragraph 12 states, "Where CAA is responsible for maintenance of a joint use facility, CAA is also responsible to the Base Commander for proper maintenance of the facility." This particular agreement does not adequately cover the maintenance situation, if the Base Commander is not a representative of the Air Defense Command. Therefore, an agreement will be discussed with CAA representatives to cover this particular situation at the next scheduled Joint Radar Phasing Group Meeting.

37 COPY

NOESS-E, Hq NORAD, 24 Feb 58, Subject: Joint Use of CAA Radar ARSR-1

- d. Reference Paragraph ld, inclosed 1st Indorsement. Maintenance schedules should not have to be specified for the ARSR-1A radar as it is a dual channel radar. However, on occasion, it is realized that "shut down" of radar operation will result on common components of equipment, i.e., antenna. Paragraph 3 of above cited JRPG Ground Rules states that "Radar shutdowns, other than emergency shut downs, will consider the requirements of ADC and CAA with respect to ADC missions, weather and traffic conditions." It is felt that this arrangement complies with the request by Hq USAF, in referenced 1st Indorsement, that maintenance schedules be specified by this command.
- e. Reference Paragraph le, inclosed 1st Indorsement. Appropriate action will be taken at the next scheduled CAA/ADC Joint Radar Planning Group meeting to provide for 5 RPM rotation rate of ARSR-1A for use when SAGE Modes I and II are employed, and for 10 RPM rotation rate for the ARSR-1A when SAGE Modes III and IV are employed.
- Your Headquarters will be advised of the results of action being taken by the Joint Radar Planning Group regarding items mentioned in paragraphs lc and le above.

FOR THE COMMANDER:

1 Incl:

/s/t/ HAROLD W. GRAWT
Major General, USAF
Deputy for Operations

NOESS-E, Hq NORAD, undtd, Subject: Joint Use of CAA Radars

ADORQ-E

1st Ind

Jan 15 1958

Hq Air Defense Command, Ent AFB, Colorado Springs, Colorado

TO: Commander-in-Chief, North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- 1. The general policy governing funding responsibilities was established in the jointly approved Ground Rules for Air Defense Command/Civil Aeronautics Administration Joint Use of Radar Facilities, dated 16 November 1956. This policy has been followed in all of our negotiations with CAA since that date.
- 2. It has been agreed that CAA and ADC both require amplitron power amplifiers for the ARSR-1 radar; therefore, CAA has contracted for this modification to meet the ADC operational time schedules, with CAA funds. It has also been agreed that CAA and ADC require Instantaneous Sensitivity Time Control Modification on the ADC radars; consequently, ADC has programmed and funded for ISTC Modifications for all of the FPS-20 radars.
- 3. It is well understood that, where CAA radars are installed for joint use, they must be compatible with the SAGE system, the AN/FSG-1 (Missile Master) and they must possess an Electronic Counter-Countermeasures (ECCM) capability. These are all modifications required by the military and must be funded by USAF.
- 4. This headquarters has recently forwarded to USAF our modification requirements for the ARSR-lA radar. We desire that the BCCM receiver fixes proposed for installation in the AN/FPS-20 be incorporated in the ARSR-lA radar, if feasible, and within the state-of-the-art. These fixes include Automatic Video Noise Limiting (AVNL), Instantaneous Sensitivity Time Control (ISTC) log receiver, including Constant False Alarm Rate (CPAR), Fast Time Constant (FTC) and Long Time Constant (LTC), an Amplitude versus Azimuth (AVA) display, also Pulse Interference Eliminator (PIE), Moving Target Indicator (MTI), MTI-PIE (Dicke Fix), anti-chaff receiver and Anti-Jamming (AJ) receiver cabinet.
- 5. Initial investigations by Air Research and Development Command indicate that the ARSR-lA is generally compatible with the SAGE and AN/FSG-l systems; however, certain modifications will be required for Air Defense use. Further review will determine the absolute requirements for some of the following possible modifications:
- a. A buffer amplifier similar to the AM-1379/FPS developed for SAGE.

MCESS-E, Hq MCRAS, undtd, Subject: Joint Use of CAA Radars

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- t. An azimuth change pulse generator for attachment to the antenna rotating machinery.
- c. A Wark & IF "eacon will be supplied by tGAr. A trigger celay unit such as the WI-1790/FFS will be required to accompany this.
- d. The balanced video cutput of this radar must be converted to unbalanced output.
- e. Antenna gear box modification is required to make the rotation rate compatible with MARE and Missile Master systems.
- f. ARSR-1A pulse to pulse jitter must be maintained at less than 0.1 micro sec.
 - g. SABL requires that these radars have radores.

It is understood that all of these modifications, if required, will be funded by USA?.

- f. In forwarding our proposed modifications to USAF, we requested that ARDC be directed to coordinate with UAA and United States Army Signal Corps to obtain necessary technical details for determination of feasibility and cost of the required modifications.
- 7. Finally it has been agreed that CAN will permit replacement of the ARSR-1 radar by improved or Frequency Diversity radars as long as subject radars are fundamentally capable of meeting CAA requirements. Any necessary modifications will be accomplished in accordance with the approved "Ground Rules."

FOR THE COMMANDER:

1 Incl w/d

Copy furnished: Mr. Pyle, CAA Admin CHARLES G. TESCHNER Colonel, USAF

sirector of Requirements

Lun by Col I, Han U + Systems 70 a I File 14 Jet 60

CFS U. Minutes of the CAA/ADC Joint Radar Planning Group Meeting No. 12 April 17-18, 1958

The following personnel participated in the Joint Radar Planning Group meeting held at Washington, D. C.:

	Organization
-	CAA W 630

CAA - W-630 CAA - W-636 Joe S. Turner A. T. Golla CAA - W-636 Frank S. Kadi CAA - W-512 J. V. Flanagan CAA - W-512 * James E. Dow CAA - W-512 Fred C. Glaes Hq. ADC - ADORQ Lt. Col. Edward C. Gleed Hq. ADC - ADCRQ Capt. Hartley C. Dewey Hq. ADC - ADOCE-EG Major Richard W. Bettls Hq. ADC - ADOOP-CA Major Louis C. Sadek Hg. ADC - ADMEL-P Capt. H. D. Liles Hq. ADC - ADAIR Oran S. Emrich Hg. USARADCOM Lt. Col. David C. Miss Hg. USARADCCM Major W. V. Sinkovic Hq. USARADCOM * Capt. R. C. Clark USAF-CAA Liaison W-52B # Col. F. D. Sharp AF Div. NGB # Major James W. Kelly

* Attended on 17th only

Attended on 18th only

The meeting was opened by extending an official welcome to the ARADCOM representatives as advisors to the Joint Radar Planning Group.

CAA expressed their appreciation for the excellent cooperation received in expediting action on the joint use CAA/ADC/ARADCOM sites.

1. Amplitron Schedules

Name

Desired amplitron schedules at the CAA/ADC/ARADCOM joint use sites were provided by ADC/ARADCOM as follows:

2/1/60 7/1/60 Seattle Boston 8/1/60 Pittsburgh 4/1/60 Los Angeles

CAA stated that amplitron schedules as stated in JRPG meeting #8 can be met and possibly improved upon to some extent to meet present operational dates, if necessary. ADC (ADCCE) will reconfirm their amplitron requirement schedules and provide CAA with same at the earliest possible date.

2. Conditions Regarding Use of ARSR-1

The JRPG reviewed the 1st Indorsement dated February 11, 1958 from Hq. USAF to Cinconad letter, subject: classified, dated November 8, 1957.

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DUPLICATE

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It was agreed that there are no apparent reasons why the conditions listed therein, regarding the use of ARSR-IA radars, cannot be met. Technical and operational details regarding antenna rotation rates will be resolved on a coordinated ADC/ARADCOM/CAA basis.

3. Security

ADC (ADCOP) is presently staffing correspondence on the various aspects of security that will be required for joint use of military radars. The JRPG recommends that interim measures to satisfy this requirement be placed in effect by June 1, 1958.

4. Establishment of JRPG Engineering Sub-group

The JRPG has determined that a requirement exists for an engineering subgroup which will study, coordinate and initiate implementation action on technical and logistical matters relating to joint use of radar facilities by ADC/CAA/ARADCCM.

Hq. ADC (ADORQ) will take the necessary action to secure appropriate military representatives from all military agencies concerned. This group will include, but not be limited to, representatives from Hq. AMC, ARDC, ARMY and ADC.

CAA will designate appropriate representatives. This sub-group will be formed at the earliest practicable date. It is expected that this sub-group will maintain close coordination with the engineering sub-group of the USAF/USARMY. Joint Technical Steering Group for the NORAD Joint Manual Direction Centers.

5. Beacon

ADC (ADMEL) will expedite furnishing a beacon delivery schedule to CAA at the earliest possible date. CAA has given ADC the latest operational dates for the first 15 ARSR-1 radars.

6. Anti Jam - ECCM Circuitry

ADC (ADCCE) will furnish to CAA a list of total AJ ECCM modification requirements for their information. This same list has already been supplied to USAF as a basis for technical and cost study.

7. Weather Bureau

A copy of ADC letter regarding coordination with the Weather Bureau on joint use of radars has been received by CAA and necessary action will be taken.

8. Test Equipment

Assurance was given that test equipment will be available for Kansas City (Olathe) prior to the operational data. The test equipment list furnished to CAA by ADC was a proposed list sent to USAF for approval.

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CAA has forwarded their test equipment requirements, on the basis of this list, to ADC. ADC (ADMEL) will reply to this letter and include a supplemental list of test equipment to replace those items that have not yet been authorized.

9. Ground Rules

Representatives will be appointed by ADC (ADORQ) and CAA to prepare a proposed list of changes to the ground rules. These proposed changes will be presented at the next ${\sf JRPG}$ meeting.

10. Press Release

CAA (Mr. Golla) and ADC (Major Sadek ADCOF) representatives will coordinate preparation of a press release regarding joint use of radars.

11. Fine Grain Data Processing (FST-2)

Further action on CAA evaluation of FST-2 and RAPPI data at Kansas City will be deferred until results of the preliminary examination at the Boston ARTC are completed.

12. Status of CAA/ADC/ARADCOM Joint Use Sites

a) Los Angeles (San Pedro Hill)

Information received on April 17 indicates that the land owners have agreed and are preparing a lease for CAA on San Pedro Hill. This will include an option to buy within three years. CAA in coordination with the District Engineers will locate the prime radar in accordance with the latest site adaptation plans. CAA has agreed to provide power and radar data for the existing Army operation on San Pedro Hill until it is withdrawn upon completion of the JMDC facility.

b) Boston (Ft. Heath)

Latest information indicates that CAA has received a right of entry and can proceed with construction.

c) Seattle (Ft. Lawton)

A right of entry has been procured by CAA and construction is proceeding in accordance with the latest revised siting plans.

d) Pittsburgh, Pa.

ADC/ARADCOM are currently preparing a coordinated site adaptation plan for the JMDC which will be located at Cakdale, the site where CAA is currently proceeding with an ARSR-lA installation.

e) Philadelphia

Present planning indicates that Gibbsboro will be the location for the prime military radar. Palermo FPS-20 will then be phased out. Data from Gibbsboro will be microwaved to Pedricktown for ADC/ARADCOM use and to the New York Control Center for CAA use. Reference letter from ADC to EADF dated April 8, 1958, paragraph 3 states: This joint use (Palermo) is not to interfere with current SAGE System. This should have read "SAGE System testing". This testing should be completed by July 1, 1958. ISTC is in and operating.

f) Chicage

CAA will improve the FPS-8 at Chicago and continue to use this radar. The FPS-20 should go in as planned at the JMDC facility in this area. CAA will determine later if they will have a requirement for the FPS-20 data.

13. Status of CAA/ADC Joint Use Sites

a) Spokane

Progress at this site was reviewed and no problems exist at the present time.

b) Houston

The JRPG recommends that CAA schedule the installation of an ARSR-1A at this site instead of the programmed FPS-20 radar. The date for installation of the ARSR-1 is tentatively set for October 58. Order of priority of the amplitron installation will be at the discretion of ADC (ADCOP). CAA recommended that CAA funds originally obligated for the Needles (Kingman) installation be transferred to the Houston ARSR-1 project.

c) Clathe (Kansas City)

Installation is 75% complete and radar is expected to be turning May 20, 1958. This includes both Quick Fix and ISTC. ADC (ADAIR) will provide CAA with floor plans of the proposed office and maintenance storage space within the FPS-20 tower. Headquarters ADC (ADAIR) will be notified by CAA of their concurrence. If approved, plan will be adopted for all joint use sites where applicable.

d) Olathe Radar Approach Control Facility

Although the operational space at the Olathe Radar Approach Control Facility is inadequate, operations will continue within the existing space at this time. The CAA plans to relocate the facility to the new Kansas City Center building when it is constructed.

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The JRPG recommends that property accountability of all USAF equipment will remain with USAF, except USAF purchased CAA type equipment which will be turned over to CAA. Logistical support of military equipment will be the responsibility of USAF. CAA will operate and maintain all equipment in the Olathe Approach Control facility. CAA will take action to answer Hq. USAF's letter dated March 19, 1958, endorsing the above recommendations.

e) Atlanta, Georgia

Construction at this site is being delayed due to lack of right of entry permit. As a result of action taken at the time of this meeting, right of entry is expected to be granted by April 21, 1958.

ADC (ADOCE) will request AMA assistance to resolve possible interference problems which might be generated as a result of the close proximity of the FPS-8 and ARSR-1.

f) Salt Lake City

The following is a summary of the agreements as they exist between CAA and ANG at Salt Lake City, today. Information contained herein supersedes the conclusions or agreements reached at the implementation meeting held on March 11-12, 1958 at Salt Lake City.

A letter of agreement is now in the process of being prepared by CAA (Fourth Region) and the Utah ANG. It will provide for CAA contracting for the following on a pro-rata basis.

- (1) Excavation of Francis Peak to a level of 9515 feet.
- (2) Construction of buildings.
- (3) Construction of tower footings for FPS-6 radar.
- (4) Construction of an access road.
- (5) Procurement of commercial power (85 KW for CAA and 115 KW for ANG)

All facilities belonging solely to CAA or ANG will be funded by the agency using the facility.

ANG has furnished CAA with the microwave requirements for remoting the FPS-6 data. CAA will contact the Collins Co. to determine the best method of meeting this requirement. A final decision on the microwave installation with necessary funding will be made based on Collins recommendations.

Right of entry agreements are presently being made between CAA Fourth Region and the Utah National Guard.

Three 100 KW generators are required to meet the total emergency power requirement. The ANG will request ADC to furnish these generators.

g) Denver (Parker site)

The following revisions affect this location. The height finder will be at the Parker site. All other ANG operations will be conducted from Buckley Field. ANG desires to tie into CAA's present microwave link for necessary radar data. A separate microwave system may be required when the CAA Center becomes operational at Golden.

h) Jacksonville, Florida

A meeting will be held on May 6, 1958 at Washington, D. C. to provide the latest planning information available on this site. All necessary implementation actions to allow function as a joint use site should be possible after this meeting.

i) Elkhorn, Wisconsin

This will become a gap filler radar. The JRPG has no further interest in this location as a joint use site.

j. Needles, Arizona

ADC stated that this site has been phased out as a prime site and will revert to gap filler status. An FPS-20 radar cannot be made available for this site.

k) Miami, Florida

ADC now has a requirement for radar in this area. This is presently being staffed. The ARSR-I being installed at Richmond NAS should again be considered for possible future joint use. It is anticipated that data from the ARSR-1, being installed at Richmond, will satisfy this requirement.

1) San Juan, Puerto Pico

shipped to a site (Punta Sali are available and an agreemer pleted. This information was site.

The foregoing minutes have be reviewed and concurred in.

The ANG has indicated that an PS-8 and an FPS-6 are presently being 10 miles west of San Juan. Utilities or use of Punta Salinas has been comrnished for consideration as a joint use

For ADC

/s/ Harold W. Grant Maj. General, USAF Deputy for Operations

For CAA

/s/ Joe S. Turner

/s/ James V. Floragan

Declassified

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Headquarters
North American Air Defense Command
Colorado Springs, Colorado
21 November 1957

VCCUP-T

SUBJECT: Integration of functions performed by the AADCP and the ADDC.

1. PROBLEM. To determine the feasibility of integrating the operational functions performed by the Army Air Defense Command Post (AATCP) and the Air Defense Direction Center (ADDC). This would constitute a "poor man's" CONAL control center and would be an interim measure pending the construction of the ten missile masters and/or other suitable buildings which could house these facilities.

2. ASSUMPTION.

That all AA gun battalions will be inactivated on 20 December 1957.

- 3. PACTS BEARING ON THE PRO-LEM.
- a. Under the current system, surveillance and identification information transmitted from the ADDC to the AADCF and then to the missile batteries causes unacceptable time delays. Thus, the battery commander usually has untimely information and an inaccurate portrayal of the existing air situation.
- b. Current estimates indicate that the ten missile master facilities will be operational in approximately 35 years. The first missile master will be operational 5 December 1957 and the tenth will be operational about April 1961.
- c. The ultimate NORAD objective is a C NAD control center responsible to CINCNCRAD through the NORAD operational chain, which serves as a detection, identification and control facility where the over-all air situation is displayed for a geographical area, and where integrated control of all weapons can be exercised.
- d. There are 22 ARADCOM defense areas in the Continental United States with an AADCP (See Annex A).
- 4. DISCUSSION. a. The current manual mode of operation for disseminating surveillance and identification information from

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the ADDC to the AADCP and then to missile batteries, has many inherent advantages. The current operations and functions of the MADCP are outlined in Annexes B and C. At its inception, it was an excellent system and it has served a very useful purpose. It has provided the means for an initial step toward full achievement of the basic principles outlined in CONAD Regulation 21-1. This system has also served as an excellent training vehicle for supervisory personnel. Further, this method has provided for a degree of cooperation between the services, which has been highly beneficial. However, in this era of rapidly advancing technology, the potential enemy has the capability of attacking this country with little or no warning and with such a destructive force as to make the current system obsolete. Under the current system, surveillance and identification information transmitted from the ADDC to the AADCP and then to the missile batteries causes macceptable time delays. Experience has indicated that in many instances, target tracks reported by AN/FPS-36 and acquisition radar operators have taken six to twelve minutes before the operator was informed whether his track was friendly or hostile. This undesirable time delay is caused by the requirement of having to pass surveillance information from the radar site through the AADCP to the ADDC and again in passing the identified track through the AADCP to the battery or radar site. This condition could be alleviated by integrating the operational functions performed by the AADCP and the ADDC. To accomplish this integration, the following actions would be required:

- (1) Patch the existing communication networks from the batteries and the radar sites directly to the ADDC. The communication links among the agencies of a defense are indicated in general in Annex D.
- (2) Place the following AADCP personnel on temporary duty with the ADDC. These are the requirements for one shift.

Antiaireraft Operations Officer
Missile controllers (1 per 8 fire units)
Tellers (1 per 4 fire units)
Journal clerk
Status clerk
Operations plotter (1 per 4 fire units)
AN/FPS-36 plotter (1 per 2 radars)

(3) The CCMAD control center internal operating procedures, equipment layout and design (See Annex E) will have to be developed to permit the operational concept outlined in Annex F, to be

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accomplished with cost cost additional and equipment, and the all the all of duplication of accilities and effort.

t. Dur to the complication of the job of sim defense, resulting from the increased variety, specu, altitude and lestructive power loca, my, it is increased that the NCMAD system should be burdened with such an outspoked facility as the AADCP. If the integrated facility was all their following advantages would account to the NOLAD system.

- air intelligence will be available to an facilities and weapon systems within the JOHAD livision.
- better operational control of all the forces, as air defense functions within each designates room, heal area of majonsibility will be united into one confinate air defense entity.
- perience will be gained, as the altimate NORAD objective is a CONAD control center which corvers as a retection, identification and control facility where the over-all air cituation is displayed for a geographical are a sure where in egrate's control of all weapons can be exercised.
- (h) Approximately 70 percent of the personnel currently assigned to the AADUP could be utilized for other assignments.

5. CONCLUSIONS.

The effective ero of AA weng an and, in turn, the over-all air defense capability, their, seriously impaired by deficiencies in the existing system. The pain in operational capability to be achieved pointe station of the operational functions of the AADCF and the ALDCF is potentially so great that action to implement this program should be taken with the least practicable delay.

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6. ACTION RECOMMENDED.

That the conclusion in paragraph 5 be approved.

6 Annexes.

- a. APADCOM Defense Areas
- b. Operation of AADCP
- c. Functions of AADCP
- d. ARADCOM Communications Diagram
- e. Floor plan of ADDC
- f. Concept of operations

Total Value	ARADOM I	RECOMES APPLAS		
Defense	AAA Nissile Buttelions	ACH 8g		DDC (Miles)
3 New York	66, 483, 505, 526 à 737	646	Highlands, E. J.	88
A - Hoston - Providence	24, 514, 605, 739 & 751 .	762	Morth Turo, Mass.	141
Hartford-Bridgeport-	. 548-	766	Commell AFB, No.	0
Westorer	11, 967, 34 & 741	773	Mostauk AFB, E. Y.	245
9- Miagara-Buffalo	465 a 44	763	Lockport AFB, M. Y.	51
/ - Washington -Baltimore	36,71,75,54 & 600 ×	647	Manageas, Va.	85
veland	351 & 508	662	Brookfield, Ohio	. 65
g - k. etabarah	1, 74 6 509	662	Brookfield, Ohio nalk	ew about
Morfolk	38 & 56	771	Cape Charles, Va.	45
5 - Philadelphia	176, 506 & 738-	770	Palermo, H. J.	79
- sevenneh River	425 & (75 MK) *	861	Aiken, 8. C.	20
· Ellsworth AFB	531 *	740	Elleworth AFE, S. D.	0
4 - Chicago - Gary	13, 78, 79, 86, 485 & 49-	755	Williams Bay, Wisc.	82
6 - Detroit	18, 85, 50 & 516 -	661	Selfridge AFB, Mich.	6
*Scult Ste Marie	8 (75 MW) «	753	Soult Sta Merie, Mich	
Milwaukee	852 4 401	755	Williams Bay, Wisc.	50
+ Ban Francisco : pot	9, 441 & 740"	666	Mill Valley, Calif.	14
Travis AFB	436 *	668	Mather AFB, Calif.	57
10-1 Senttle	28, 433 & 513×	635	McCord AFB, Hash.	60
# Hanford	83 4	637	Othello, Wesh.	69
Fairchild AFB	10 4	1 43 639	Gerger	
7 Los Angeles	551, 554, 865, 933	670	San Clemente, Calif.	59

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Operation of AADCP

The AADCP receives information from three primary sources, i. e., the ADDC, the AM/TPS-ID radars and the acquisition radars located at battery sites.

- a. The early warning which is received from the ADDC is transmitted to the AADCP by the Antisircraft Lisison Officer (AALO) or one of his assistants stationed at the AADC. A plotter in the AADCP, who is connected by direct communication to the teller at the ADDC, plots information concerning approaching targets on the situation board or in the early warning rings on some operation boards. This initial location information is recorded as a plot, and next to it or on a separate data display board are recorded pertinent details which the warning source is able to offer. Each target so recorded is assigned a target number which serves to identify it for the remainder of the enpagement. When further location information is received, the plot becomes a track and continues to be recorded until it is at a sufficiently close range to be picked up by the AM/TFS-1D radar and plotted on the operation board. The track may then be erased from the situation board to make room for new ones. The AALO should thereupon be advised to cease telling on that track.
- b. Each AE/TPS-ID radar and acquisition radar is connected directly to a plotter at the operations board in the AADCP. This plotter records as a track all target information which he receives from his radars. These targets are then passed to the ADCC for identification. After the track is identified, the information is given to the AADCP. Target information is disseminated to batteries by the intelligence teller in the AADCP.
- c. The antiaircraft operations officer disseminates conditions of Air Defense Warnings, weapons status, IFF code changes, special flight regulations of interest to AAA, identification of aircraft, and other essential elements of information which the AECC reports over the operational control net.
- d. Fire direction is the responsibility of the defense commander. Fire direction includes, but is not limited to, selection of targets, distribution of fire, the allocation of amountation, and direction as to the engagement or disengagement of targets. The function of fire direction may be delegated from the AADCP to batteries. These batteries would then engage targets at their own discretion, using information displayed on their boards as received from the AADCP.

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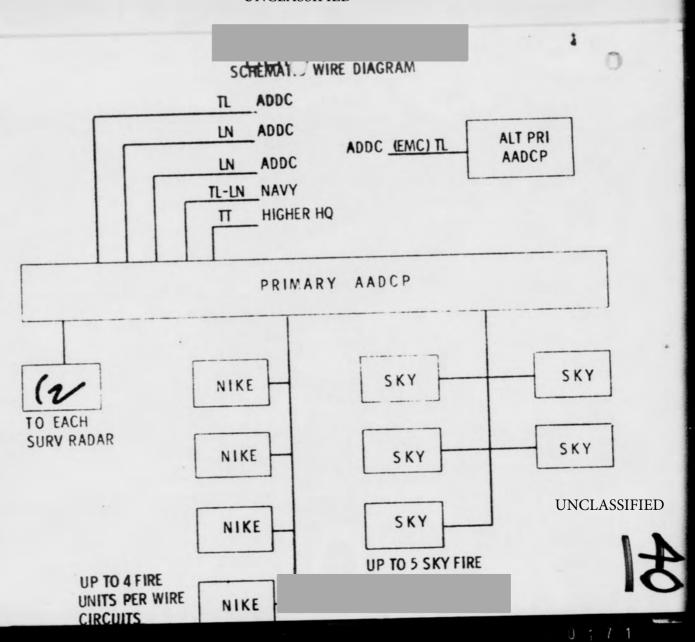
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FUNCTIONS OF AADCP

- 1. The AADCP coordinates all of the antiaircraft artillery available so as to engage an enemy with maximum effectiveness. To accomplish this, the AADCP has the following primary functions:
- a. Collection and evaluation of information, and dissemination of intelligence.
- b. Exercise of tactical control, including fire direction, when and as necessary.
 - 2. The secondary functions of the AADCP are to --
- a. Act as a center for liaison and coordination with other agencies.
- b. Provide higher, lower, and adjacent headquarters with pertinent information.
- c. Make available warning of the approach of hostile aircraft for other arms and services to monitor with their equipment as they see fit.
- d. Provide the AA Defense Commander with information on the effectiveness of the defense.
- e. Perform certain routine functions, such as the preparation and maintenance of necessary statistics and records, and the submission of reports.
 - f. Aid in training of all elements of the AAA defense.

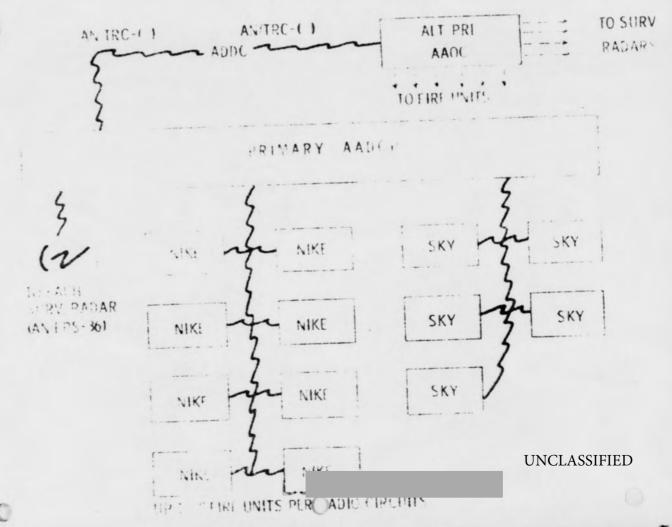
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SCHEMATIC RADIO DIAGRAM



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ARADCOM Communication Plan

1. Wire

a. One (1) two-x.y wire circuit between the primary AADCP and each group of up to four missile fire units.

b. one (1) two-way wire circuit between the primary AADCP and up to five Skysweeper file units.

c. One (1) two-way wire circuit between the primary ANDOF and each surveillance radar. (AN/FPS-36)

d. An intercommunication system is provided within the primary AADCP. This consists of a group of internal point-to-point circuits.

e. One (1) two-way wire circuit between the primary AADCP and ADDC (telling circuit). Where the AADCP requires information from two ADDCs, separate telling circuits are provided from each ADDC.

r. One (1) two-way wire circuit between the primary AADCP and ADDC (limison circuit). Only one (1) limison circuit is provided from the ADDC having primary early warning responsibility for the defended area concerned.

g. One (1) two-way wire circuit between the primary AADCP and ADCC (lisison sircuit).

h. One (1) engineered (EMC) two-way wire circuit between the alternate AADCP and ADDC (telling circuit).

 One (1) two-way wire circuit between the primary AADCP and Navy AA Control Center, if appropriate.

 One (1) 60 speed teletypevriter circuit between the primary AADCP and the next higher headquarters.

2. Radio

a. One (1) push-to-talk single frequency radio circuit between the primary AADCP and up to eight missile fire units. This circuit will operate from the alternate AADCP should the primary AADCP become inoperative.

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b. One (1) push-th-talk single frequency radio circuit between the primary AADOF and up to six Skysweeper fire units. This circuit will operate from the alternate primary AADOP should the primary AADOP become insperative.

c. One (1) push-to-talk single frequency radio circuit between the primary AADCF and each surveillance radar at permanent sites.

d. One (1) two-way radio circuit between the primary AADCP and the ADDC.

CONCEPT OF OPERATIONS



- A 2. The CONAD division commander will designate the commander of the CONAD Control Center (CCC) in his area of responsibility. It is contemplated that the commanders of the CCCs will be equally divided between Army and Air Force officers. The commander of the CCC and his deputy will not be of the same service.
- 72. The commander of the CCC will designate a battle staff to function within the CONAD facility during hostilities or an emergency. The following officers will constitute the CCC battle staff:

Representative of Army group or brigade concerned Commander of ACW Squadron Senior Controller Antiaircraft Operations Officer

- 3. In a defined geographical area, a CONAD Direction Center will be designated as the primary detection and identification facility, and will exercise weapons control and/or assign targets for all weapons in that area.
- A). The Commander of the CONAD Direction Center will be responsible to the appropriate CONAD Division Commander or equivalent for all radar air surveillance, target identification, air defense weapons control and target assignment functions in the assigned geographical area.
- 5. Individual weapons control systems will be operated by the respective component services, but will be under the operational control of the Commander of the COMAD Direction Center only.
- 7 6. Centralised control to the maximum extent possible is the prime operational objective; however, weapons centrol may be temporarily decentralised due to tactical reasons or equipment failure.

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Integration of Punctions Performed by the AADCP and the AUDC

EDOPO

26 March 58 Major Reeves/2088/def

NOHO 3

- 1. Transmitted herewith is a chronological list of events that have transpired in attempting to determine the feasibility of integrating the operational functions performed by the AADCP and the ADDC.
- a. On A February 1957, GINCONAD proposed to the J 3 the implementation of the first ten collocated-integrated AD.CO's-ALTCE's. On 25 Merch 1957, the implementation of these ten sites was approved by the JCS.
- b. On 12 April 1957, COMAD directed the Regions to study the feasibility of collocating and interesting AAICP's and ADDO's not included in the first ten MM/ADDO facilities.
- c. On 3 May 1957, replies from the SOUND Regions concerning collocation indicated that:

CFFT: Collocation was feasible only at Geiger-Fairchild.

CPTR: Collocation was not feasible at any of the sites.

CPEC: Collocation was feasible at Loring AFB, Sault Ste Marie and Savannah Siver

- d. On 11 July 1957, CFEC: informed CONAC that ARADCOM personnel stationed in ADDC's were being phased out on an attrition basis.
- e. On 25 July 1957, COMAD recuested AM 30.54's comments on withdrawal of AMA personnel from direction centers.
- f. On 26 September 1957, ARADOO affirmed the fact that AN personnel were being withdrawn from AD.C's.
- g. On 8 October 1957, NORAD Birected AUGON to retain a full complement of liaison and teller personnel in appropriate AUGO's.
- h. On h Movember 1957, WOLAD requested ADC and ARADCUP to conduct a logistical feasibility study on collocating the Fairchild AFB (FABCE) with the Geiger Field (ADCC).
- i. On 21 November 1957, a study was prepared by MOCOP-T on the feasibility of integrating the operational functions performed by the AACOP and the ADCO. The implementation of this study would be an interim measure for those sites at which the Missile Master and ADCO will be constructed, and a permanent integration at other sites at which it is possible to accomplish the integration. Informal discussions with ADC concerning this study disclosed that ADC concurred in the plan and recommended that the concept of operations outlined in the study be implemented at the earliest practicable dat Declassified

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Internation of Functions Performed by the AADCP and the AVE 1 NOOPO NOHCS

1. On 16 December 1957, this study was referred to your office, recommending that letters be dispatched to AND and finite, inviting these commands to send representatives to this residuarters for a conference to determine the sites at which ADD's and the operations sections of the associated AA EF's could be integrated at the earliest practicable date.

k. On 3 January 1958, letters were dispatched to 1.5 and 196077, inviting these commands to attend an 47 /477 conference to be held at this headquarters on 7 January 1958. This usto was subsequently than ed to 10 January 1978, per requests from ANC and AN Det.

1. On 8 January 1958, by lst indorsement to letter this headquarters, subject: "Interration of Operational nunctions of the 4000s and the A' CPs", file NOOP-T, 3 January 1958, ATA ON stated:

(1) "This headcustters does not accept as appropriete for discussion those portions of the study which effect a change in the or anixation of Army units and uni-service doctrine.

(2) "The position of this headquarters is that there is no requirement for the formation of joint CONAD control centers. If STONAD determines that a need exists for such a joint headquarters, it is considered that the erocedures for its establishment, operation, staffing and equippin should be identical to those taken previously to establish other joint healquarters subordinate to CONAD.

(3) Withis headquarters has been informed that the conference has been postponed until 10 January 1968. Prancher representatives to attend will be: Colonel K. L Yarnall and Lt Col H. M. Page."

m. On 10 January 1958, AD.G/MANCP conference was held at this headquerters. At the outset of the conference, Colonel Tarnall, A LACOM representerive, stated that AMACAN's position remained as stated in 1st Indorsement, 8 Jamery 1958 to letter, this meadcuarters, File TO TOF-T, subject: Intecration of Operational Summations of the As. SPs and A 1928. Re Curther stated that ARANGOM is opposed to the whole idea of integrating the operational functions of these two facilities. PART believes that defense commanders have tos

- (1) Control the mir defense bottle
- (2) Provide the combat-ready forces.

He further stated, "We (Ad JC?") don't believe the defense commander should be relieved of the responsibility of firing his units. This WORAD proposal relieves the defense commander of his job, people, etc. The proposed plan contradicts long established Army policy and we do not believe A MOCON would be able to derive any benefits from this concept of operations."

n. On 10 January 1958, the conferees agreed that another meeting be scheduled for 1900 hours, 21 January 1958 to determine the additional fecilities

Integration of Functions Performed by AADDP and ADDC

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- o. On 11, January 1958, ARA.COM stated fray ligison personnel would be maintained at associated ATOC's.
- p. On 20 January 1958, I instructed the Committee Chairman to postpone indefinitely the AANCP/ACTO conference scheduled for 21 January 1958, pending a change in the AMADCOM position as outlined in paragraph m., above.
- g. On 21 January 1958, the undersigned recommended that STICKOFA) discuss the matter of collocation with TC, ALACON and endoavor to achieve resolution of this problem at the earliest practicable date.
- r. On 2h January 1958, during a briefing on Exercise Fir FLT, General Hendrix stated that AMADON did not oppose collocation. I then directed General Stayton to reopen the meetings on collocation.
- s. On 25 January 1958, While conducted another meeting on collocation. ANC and ANADOF were requested to report jointly on the sites at which collocation was feasible. ARAGON requested that the five new ARADOOM defenses to be constructed in CY 1959 be considered for collocation. ADC and AMA. COM were directed to report to NC 400 on 28 January 1958 on the femaibility of collocating at the five new AMA CON defenses, i.e., St. Louis, Kensas City, Cincinnati, Ballas and Minnespolis-St. Psul.
- t. On 2º January 1958, another collocation conference was held. It was agreed by ASC and ANACCH that collocation at Geignr-Fairchild was feasible. It was also agreed, informally, based upon current ALC information, that collocation at the AUC was feasible at Dallas, St. Louis, Kansas City and Minnespolis-St. Paul. Collocation was not considered feasible at Cincinnati.
- u. On 14 February 1958, ATA COM and AND stated collocation at Travis AFE, Seattle, Savannah River and Sault Ste Marie was not feasible.
- v. On 21, February 1956, ADC and ARADOD: were requested to report jointly, as a matter of priority, on the feasibility of collocating the AALOP's and FODO's at the following sites: Minnespolis, St. Louis, Dallas and Kansas City.
- w. On 6 Merch 1958, 6th ARANGE Region informed ARANGE that action on collocation at Geiger Field was being suspended because Air Force communications terminal equipment (GTA key box) is not designed to terminate the Army four-wire circuits of the manual mode system. Air Force equipment will handle only two-wire circuits.
- x. On 7 Narch 1958, A M_COM requested information on whether the associated Alic's at Minneapolis, it. Louis, Dellas and Ransas City would be master direction centers.
- y. On 10 Herch 1958, A 40000 informed North of communications difficulty at beiger [Army and USAF equipment not being compatible and that ARADC No. would not degreie their system by terminating their communications equipment into a TA key box).

Integration of Pumotions Parfor_d by WACP and ADDC

I NORCS I NOOPO

s. On 10 March 1958, NO:AD authorized ARADODM to move their community cations equipment from Fairchild to Geiger.

sa. On 17 Harch 1958, AW COM was requested to re-examine the Seattle defense to determine a practical solution for collocation at that site.

bb. On 21 March 1958, AUGC Was informed that AUC indicated that the associated AD C's for the four new A AUGON defenses would be master direction centers.

- 2. The current status of collocation is as follows:
- is slated to commence in April 1998. Since the official establishment on 27 November 1957 of the NOVAD operational requirement for a TV collocation test in the Norfolk/Cape Charles aren, technical and operational plans for this test have proceeded on schedule. Excellent cooperation has been received from UBAHA CON and THAF ATC.
- b. Geiger/Fairchild. This collocated facility is scheduled to be operational o/a 15 April 58. Problem area: In 19 March 1958, NO.AD prepared a reply to CFWCR approving their operational plan for this CONAD control center at Geiger, except as indicated below:
- (1) COMAD Division Commander should appoint the commander of the COVAD control center in accordance with paragraph 5.b., COMADR 21-1. For planmin purposes, it is contemplated that commanders of CONAD control centers (CCC) will be equally divided between Army and Air Porce officers. The commander of the GOO and his deputy will not be of the same Service.
- (2) The commander of the C:C will designate a battle staff to function within the COMAD facility during hostilities or an emergency. The following officers will constitute the CC battle staff:

Representative of Anticircraft defence area concerned Commander of AC# Squadron lenior Controller Antiaircraft Operations Officer

ARADCON concurred in the letter; however, I.G has informally notified NOWAD that they object to an Army officer commanding the JC. This correspondence has been in ADC's possession since 19 Warch 1958.

c. ARADGOM's New Defenses. On 24 February 1958, ADC and ARADGOM were requested to report jointly, as a matter of priority, on the feasibility of collocating the AADCP's and ADDC's at the following sites: Minneapolis, St. Louis, Calles and Kansas City. A A COM stated on 20 March 1958 that it was feasible to collocate at the above listed sites. A.A.C. is letter was dispatched to NO AD through USAF ADC. Subject letter is currently in the possession of HIAF A.C.

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Interation of Functions Performed by AADCP and ADDC

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- d. Personnel in ADDC. A MADDOM does not have current status of Army personnel in essociated ADD's. They have dispatched a message to their Regions requesting same. I MADDOM expects to be sule to furnish the information o/a 28 March 1958.
- e. Inule, Greenland. On 8 October 1957, NOCAD rejuested ADC to proceed immediately with a detailed joint plan to include an on-site survey for the collocation of the AADCP and the associated ADDC at Thule. As of this date, the joint plan has not been received by NOCAD.
- f. Remaining Sites Scheduled for Collocation. Action on the following Act Com defense areas is being held in abeyence, pending the results of the tests at Geiger/Rairchild and Norfolk/Cape Charles:

Ellsworth AFd Hanford Scattle San Francisco

2 Incls:

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1. Collocation at Geiger/Fairchild

2. Collocation at Four New ARADCON Defenses

Major General, USAF IX3/Plans & Operations

Collection of Geiger F drehild

(11)

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NOOPO

Maj Reeves, wdm, 2075

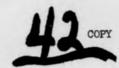
- 1. On 12 April 1997, NORAD directed the CONAD regions to study the fe sicility of call cating and integrating AADCPs and ADDCs not included in the first ten missile master, ADDC facilities.
- 2. On 3 May 1:07, the capty from CFWCH indicated collocation is feasible at Geiger/Faircaild.
- on 4 N vember 17.7, NORAD requested ADC and ARADCOM to conduct a 1 gistical feasibility study in call cating the Pairchild AFB (AADCP) with the Geiger (ADDC).
- 4. On 10 January 1900, during a collocation conference, ARADCON stated that collocation at Geiger was not reasible.
- on 25 Junuary 1400, NORAD conducted notice meeting on collocation. ADC and ARADCOM were requested to jointly report on the sites at which collocation was feasible.
- o. on 28 January 1990, another collection meeting was held. It was agreed by ADC and ARADCOM that collection at Geige, Fairchild was feasible.
- 7. On 6 March 170, but ARADOM Region informed ARADOM that action on collocation at Geiger Field was being suspended because Air Force communications terminal equipment (GPA key box) is not designed to terminate the Army four-wire circuits of the manual mode system. Air Force equipment will handle only two-vire circuits.
- 8. On 16 March 1990, ARADCOM informed MORAD of communications difficulty at Geiger (Army and USAF equipment not compatible and that ARADCOM would not degrade their system by terminating their assuming tions equipment into . GTA key box).
- 9. on 10 Moren 1990, MORAD outhorized ARADCOM to move their communications equipment from Pairchild to Gaiger.
- 16. It is anticipated that F is smild-Geiger will be collected and operationally ready as west madel on a about 1, April 1976.

Major General, USAP DCD Plans & Operations

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Collocation at Four New ARADCOM Defenses

NOHCS

NOOPO

26 Mar 58 Maj Reeves, wdm,2078

- 1. On 25 January 1958, during a collocation conference, ARADCOM requested that the five new NIKE-HERCULES defenses to be constructed in CY 1959 be considered for collocation. ADC and ARADCOM were directed to report to NORAD on 28 January 1958 on the feasibility of collocating at the five new ARADCOM defenses.
- 2. On 28 January 1958, another collocation conference was held. It was agreed, informally, by ADC and ARADCOM, that based upon current ADC information, collocation at the ADDC was feasible at Dallas, St. Louis, Kansas City and Minneapolis. It was decided collocation was not feasible at Cincinnati (No ADDC within 175 miles). At this time ADC and ARADCOM were requested to examine jointly the feasibility of collocation at these sites and to report to NORAD on specifics which would negate collocation concept. No report was received.
- 3. On 24 February 1958, General Stayton reviewed this situation and directed that ADC and ARADCOM be requested by letter to report jointly, as a matter of priority, on the feasibility of collocating the AADCPs and ADDCs at the following sites: Dallas, St. Louis, Kansas City and Minneapolis. Letter was dispatched on 25 February 1958.
- 4. On 7 March 1958, ARADCOM requested information on whether the associated ADDCs at Minneapolis, St. Louis, Dallas and Kansas City would be master direction centers.
- 5. On 20 March 1958, ARADCOM dispatched letter to NORAD through USAF ADC, stating it was feasible to collocate at Dallas, St. Louis, Minneapolis and Kansas City. Subject letter is currently in the possession of USAF ADC.
- On 28 March 1958, ARADCOM was informed by NORAD that the associated ADDCs for the four new ARADCOM defenses would be master direction centers.

/s/t/ HARVEY T. ALNESS
Major General, USAF
DCS/Plans & Operations

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HEADQUARTERS
NORTH AMERICAN AIR DEFENSE COMMAND
ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

MINUTES OF AADCP/ADDC CONFERENCE, 10 JANUARY 1958



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TER OF AADOP ADDO COMPERENCE

Building F . at 0-00 hours, 10 January 1958. The purpose of the conference was to Descriptor

- The specific Alors and ' MYs at which it might be practicable to accomplish the integration of the operational functions currently performed by these facilities
- b. The additional facilities required in my to implement the integration of the operations, functions of the ADDCs and the AADCPs.
 - 2. The following conference attended the conference

Rank	Finne	Headquarters
LTC	E MARCON	NORAD
LTC	F. K. WICHOUS	MORAT
LTC	D. G ROATE	NORAD
NA.TOP	F. D. REEVES IR	NOR T
COLOWEL	K. L. YARMALL	F()- (4)
LTC	B. W. PAGE	HONGE B
LTC	E. F. CROWELL	ADC
LTC	7. C GLEYO	ADC
WAJOR	E. J. SCHAFFER	ADC
CAPTAIN	P. F. HARM	ADC

- 3. Major Peeves opened the meeting by stating the purpose of the conference. Be then stated that under the unrent minual mode of operations, surveillance and to etimication information transmitted from the ADIC to the AADCP and then to the missile batteries causes unacceptable time dalays Experience has indicated that in many instances, target tracks reported by AN/FPS-36 and acquisition radar operators have taken six to twelve minutes before the operator was informed whether his track was friendly or hostile. This undesirable time delay is caused by the requirement of having to pass a reveillance information from the radar site through the AADCP to the ADD; and again in passing the identified track through the AADCF to the battery or radar site. He further state' that this condition could be alieriated by integrating the operational functions currently performed by the AADCP and ADDC. To accomplish this integration, the following actions would be required:
- a. Patch the existing communications natworks in the AADCP so that the battery communicat and radar operator could talk directly to a teller in the ADCC.
- b. Place the following AADCP personnel on temporary duty with the ADDC. These are the requirements for one shift:

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Apriaircraft Operations Officer

Missis controllers (1 per 8 fire units)

Tellers (1 per 4 fire units)

Yournal clerk

Status clerk

Operations plotter (1 per 4 fire units)

AN/FPS-36 plotter (1 per 2 radars)

- c. Operating procedures would have to be developed for this joint facility and the present equipment layout would have to be revised to askingmod the the personnel and equipment from the Army.
- 4. Major Reeves stated the proposed concept of operations for this joint facility is as follows:
- a. The CONAD division commander would designate the commander of the CONAD Control Center (CCC) in his area of responsibility. It is contemplated that the commanders of the CCCs will be equally divided between Army and Air Force officers. The commander of the CCC and his deputy will not be of the same service.
- b. The commander of the CCC would designate a battle staff to function within the CONAD facility during hostilities or an emergency. The following officers will constitute the CCC battle staff:

Representative of defense area concerned

Commander of ACW Squadron

Senior Controller

Antiaircraft Operations Officer

- c. In a defined geographical area, the CCC would be designated as the primary detection and identification facility, and will exercise weapons control and/or assign targets for all weapons in that area.
- d. The commander of the CCC would be responsible to the appropriate CONAD Division Commander for all radar air surveillance, target identification, air defense weapons control and target assignment functions in the assigned geographical area.
- e. Individual weapons control systems would be operated by the respective component services, but will be under the operational control of the Commander of the CCC only.

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- f. Centralized control to the maximum extent possible is the prime operational objectile; however, weapons control may be temporarily decentralized due to tabulcal reasons or equipment failure.
- Major Resea stated that it is believed the following advantages would accrue to the NORAL system if this plan were adopted:
- a. Timely and accurate transmission of evaluated air intelligence would be available to key facilities and weapon systems within the CONAD division
- b. The COMAD Marision commander would be afforded better operational control of all his forces as air defense functions within each designated geographical area of responsibility will be united into one coordinated air defense entity.
- c. Approximately three years of operational experience would be gained, as the ultimate NORAD objective is a CCC which serves as a detection, identification and control facility where the over-all air situation is displayed for a geographical area and where integrated control of all weapons can be exercised.
- d. A substantia, number of the personnel currently assigned to the AADCP could be utilized for other assignments.

Major Reeves then reviewed the 22 defense areas concerned and acquainted the conferees with the physical layout of a typical ADDC.

- 6. Colonel Yarnali stated that APADCOM's position remained as stated in 1st indorsement, 8 January 1958 to NORAD letter, Subject: "Integration of Operational Functions of the ADDCs and the AADCPs," file NOOOP-T, 3 January 1958. He further stated that ARADCOM is opposed to the whole idea of integrating the operational functions of these two facilities. AFADCOM believes that defense commanders have to:
 - a. Control the air defense battle
 - b. Provide the combat-ready forces.

He further stated, "We 'ARADOM' don't believe the defense commander should be relieved of the responsibility of firing his units. This NORAD proposal relieves the defense commander of his job, people, etc. The proposed plan contradicts long established Army policy and we do not believe ARADOM would be able to derive any benefits from this concept of operations."

- 7. Lt. Col. Matteson stated that CINCNORAD's operational control doctrine is expressed in the following documents:
- a. JCS Terms of Reference which state that CINCNORAD's exercise of operational control specifically includes the authority to

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centralize operational control of all defense forces assigned, attached, or otherwise made available, including the assignment of individual antiaircraft batteries to designated targets.

- b. CONAD Segulation 21.1 states that in order to provide for fully integrated control of all weatons within a specified geographical area, individual weapon control systems will be collocated and integrated at a CONAD Control Center, whenever operationally and economically feasible. This concept of collocation was clarified by CINEMORAD on 25 Fanuary 1957 when USARADCOM and ADC were informed that connection and integration meant one and the same thing, i.e. the ADTO and AADC? located in the same building, with operating functions in a single operations room. Further, this directive stated that individual weapons control systems at the CCC would be operated by the respect, a component services under the operational control of the commander of this facility.
- c. On 4 February 1957 TIM NOPAD proposed to the JCS as Executive Agent for MORAD, the unplamentation of the first ten collocated-integrated ADDCs-AADCFs. On 25 March 1957, the implementation of these ten sites was approved by JCS.
- 8. The conferees agreed that as broad planning criteria the defense areas in which the JOS had approved collocation-integration of the AACCP/ADDCs and or in which the SAGE system would be operational within two years should not be considered in this study. This decision was made because it is believed that by the time funds were allocated for altering the communication networks, the work accomplished, and operational procedures established, there would not be sufficient time remaining to warrant changing the system. The following defense areas are included in this category:

Defense Area SAGE Operational Date

New York	July 1958
-Boston-Providence	Sep's 1958
Loring	March 1959
Hartford-Bridgeport- Westever	Sept. 1958
Cleveland	Aug. 1959
Philadelphia	July 1958
-Chicago-Gary	Oct. 1959
-Betroit	Aug. 1959
-Niagara-Buffalo	Jan. 1959
_Pittsburgh	Jan. 1959

- The conferees do not consider it feasible to integrate the eperational functions of the following defense areas for the reasons indicated.
- a. Norfolk. An AADCP/ADDC TV test is to be conducted in the immediate future. Action to integrate the operational functions should be held in abeyance until completion of this test.

b. Los Angeles. It is quite obvious that the AADCP should not be collocated at San Clarents Island and no other ADDC is suitably located for integration in this area.

c. Milwanker. The associated ADDC for this defense is to be deactivated and will be relocated at the JMDC at Chicago. No other ADDC is suitably located for integration in this area.

10. The conferees except ARADXOM representatives believe that the operational functions of the AADXFs and the ADDCs could be integrated in the following defense areas:

Travis AFB

Pairchild AFT (tiges)

_Ellsworth AFR

Hanford

-Seattle

San Francisco

11. The conferees believe that action should be taken to integrate the operational functions of the ADDC at Manassas, Virginia, with the associated AADCP at Fort Meade, Maryland. In this situation, the missile master building at Fort Meade should be utilized to house the two facilities. At ADC/ARADCOM team will convene at Fort Meade on 20 January 1958 to study this problem.

12. The conferees except ARADCOM representatives believe that it is a waste of manpower to have AANCPs for the Savannah River and Sault Ste Marie defense areas. It is believed that the Air Force personnel within the associated APDCs could assume the functions currently performed by these AADCPs.

13. The conferees agreed that another meeting be scheduled for 0900 hours, 21 January 1958, in Roam 410, Building P-1, to determine the additional facilities required and the impact on the ADDC in implementing this plan.

14. The meeting was adjourned at 1215 bours.

BRED D. REEVE

DISTRIBUTION:

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Major, G. S.

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NOOOP-T

24 February 1958

Collocation of ADDCs and AADCPs SUBJECT:

Commander TO:

USAF Air Defense Command Ent Air Force Base Colorado Springs, Colorado

U.S. Army Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. In consonance with the NORAD concept of exercising operational control and as a result of a map reconnaissance made by Headquarters Army Air Defense Command and your headquarters, it appears that collocation and integration of the operational functions of the following AADCPs and their associated ADDCs are feasible.

USARADCON Defenses

ADDC

Minneapolis

674th ACW Squadron Osceola AFS, Wisconsin

St. Louis

798th ACW Squadron Belleville AFS, Illinois

Dallas

745th ACW Squadron Duncanville AFS, Texas

Kansas City

738th ACW Squadron Olathe AFS, Kansas

2. Accordingly, it is requested that addressees jointly report, as a matter of priority, on the feasibility of integrating and collocating the above mentioned AADCPs and ADDCs. In the event serious logistic complications, not presently foreseen, should arise, which would preclude action desired above, the problem will be immediately brought to the attention of CINCNORAD for resolution.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ Maj. Reeves 20 Feb 58

blom

M/R Not Required /s/t/ MARSHALL S. CARTER Major General, USA Chief of Staff

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This letter is releasable to Canada M/Sgt Everett

9CDCSO, Hq 9th CONAD Div, 4 Dec 57, Subject: Co-Location at Geiger Field, Washington

CWDPL

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14 Feb 1958

CWDPL Hq CONAD Forces, Western CONAD Region, Hamilton AFB, Calif

- To: Commander-in-Chi f, North American Air Defense Command Ent AFB, Colorado Springs, Colorado
- 1. The colocation of the Fairchild Air Force Base AADCP and the ADDC at Geiger Field, Washington, is considered to be operationally desirable and logistically feasible.
- 2. Recommend approval of the colocation plan proposed in the basic letter and inclosures thereto, with the exception of the recommended installation of a second landline from the ADDC/AADCP to each AA missile and radar site as specified in paragraph 6 of the basic communication. such a second landline is not presently installed in other AA defen es and experience does not indicate that such an additional line is needed.
- 3. In view of the desirability of colocation and the attendant increase in operating efficiency which can be expected, the Commander, 9th Continental Air Defense Division (CONAD Division), has urged that action necessary to implement the proposed Geiger Field ADDC/AADCP colocation be taken at the earliest possible date.
- 4. Recommend that your headquarters take appropriate action to direct the colocation of the Gieiger Field ADDC and the Fairchild Air Force Base AADCP as socon as poss lbe.

3 Incls n/c

HUGH A. PARKER Major General, USAF Commander

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bth Ind

Eq North American Air Defense Command, Ent Air Force Base, Goloredo Springs, Coloredo

TO: Commander, Continental Air Defense Forces, Western Conta Region, Hamilton Air Force Base, California

- 1. The 9th CADD plan for collocation and integration of the Fairchild Air Force Base ANDEP and the ADDC at Seigar Field, Washington is approved, except as indicated below:
- a. Paragraph 5. The communications equipment currently at Fairchild should be moved to Gaiver Field and installed in the GGC. This will include all telephone company leased equipment now installed in the Fairchild AADCP, including VHF radio.
- b. Paragraph 6. A second landing from the COC to each missile battery and the AM/PPS-36 rader will not be installed at this time.
- 2. In view of the fact that this AADEP/ADDC will be a CCC, it is requested that the following be adopted:
- a. Comment of Operations. (See paragraphs 7.s. and 7.c., COMADR 21-1, 3 September 1997).
- b. Functions of Commender, WMAD Control Center. (See Attachment #3, COUADT 21-1).
- c. Definition of CONAT Control Center. (See paragraph 5.1.
- d. Appointment of Commanders. (See paragram 5.1, 19412 21-1). The appointment of this observable will be based upon his qualifications for the position, without regard for service affiliation. Seniority and the preporterance of air force/ing air defense weapons in the area will be considered.
- o. The commander of the CCC will designate a battle staff to function within the COMAN facility during hostilities or an extraction within the cllowing officers will constitute the CCC battle staff.

Representative of Antialroraft defence area concerned Commander of ACW squadron Senior controller Antiaircraft operations officer

FOR THE COMMANDER-IN-CHIEF:

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MARSHAU S. CARTER Major General, USA Chief of Staff

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UPLICATE

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DISPOSITION FORM

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- 1. Reference your memorandum concerning firm dates for the completion of NORAD projects, 20 March 1953.
- The following actions have owen taken in connection with the collocation at Geiver Field.
- a. An order has been published by CFWCR designating the commander of the ODMAN Control Center (CCC) (Lt. Colonel N. Hunt, USAF, formerly Chief of the Exercise and Training Division of CPWCR).
- b. A battle staff and working organization has been developed and approved by NORAD and the component commands for this CCC. This organization will be utilized in developing UMDs for future collocated sites.
- c. The firm concept of internal operations for the CCC at Geiger will be developed o/a 25 April 1958 and these procedures will be utilized at future sites scheduled for collocation. The functions of the commander of the CCC are enumerated in Attachment #3, CCMADH 21-1. (see Incl 1)
- 3. The leight CCC is scheduled to be operational 1 June 58. The slippage in the operational date is due to the moving of the Army communications equipment from Fairchild AFJ and installing same at Geiger Field. ARADCCM will commence to move communications equipment on 8 April 1958. The communications equipment should be installed on 5 May 58. On 5 May 58, USAF ADC will begin their retrefit program (marriage of the MFS-7 and GPA-58 radars to make the FPS-20 radar). This program will be completed c/a 1 June 58.

It is believed the only action NOPAD could take to establish an earlier operational date for the COO would be to have CTHCHORAD request USAF ADC to accomplish their retrofit radar program during the current wonth. MODOP-T discussed this subject informally with USAF ADC with negative results.

1 Incl CONADR 21-1 HARVSI ALNESS Lajor General, USAF DOS/Plans & Operations

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//C O N F I D E N T I A L//CUDPL SC-503G. (1) THE FOLLOWING

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CUDPL SC-5038. (1) THE FOLLOWING
INFORMATION RELATIVE TO THE GRIGER FIELD CQ-LOCATED ADDC-AADCP
IS FORWARDED PER TELEPHONE CONVERSATION DETVICE MAJ REEVES,
NORAD P 4 O DIV, OPERATIONS, AND LT COL KELTON, THE MEADQUARTERS.

(2) THE DIRECTION CENTER PORTION OF THE GRIGER FIELD COMAD CONTROL
BEGAN OPERATIONS ON 1 APR WITH RADAR SET ANYMPS 7. ON 1 MAY THE
PRESENT RADAR WILL BE CONVERTED TO FPS 20 WHICH WILL REQUIRE
FROM 5 TO 15 DAYS AT THE END OF WHICH TIME THE DIRECTION CENTER
PORTION OF THE FACILITY WILL BE FULLY OPERATIONAL. (3) THE MOVE OF
THE AADCP TO THE ADDC MAS BEEN DELAYED AS PREVIOUSLY INDICATED

PAGE TWO RJUPSD 690

BY MESSAGE, THIS HEADQUARTERS, CHOCE 14354, 10 MAR. HQ MADE AND
THE 9TH ADD OBJECTED TO ARADCON'S PLAN OF INSTALLING IN THE
ADDC-AADCP ALL THE TELEPHONE COMPANY COMMERCIAL EPHIPMENT NOW
AT FAIRCHILD AADCP. THIS PROBLEM WAS RESO

TO WADE ON 31 HAR IMICE AUTHORIZED THE ARRY TO HISTALL THEIR
COMMERCIAL TERMINAL EQUIPMENT AT NO COST TO ADC SINCE THE ARRY
REQUIRED 4 WIRE CIRCUIT TERMINATIONS AND THE GTA- A EQUIPMENT
COULD ONLY PROVIDE 2-WIRE CIRCUIT TERMINATIONS. NOWEVER, ADC
STATED THAT THIS WOULD ONLY DE FOR AN HITERIN PERIOD WITLL IT IS
DETERMINED METHER THE GTA EQUIPMENT CAN BE MODIFIED ON WETHER IT
WILL BE DESIRABLE TO CHANGE OVER TO A COMPLETE COMMERCIAL SYSTEM.

(4) THE COMMERCIAL TELEPHONE COMPANY WASTHE MECESCARY WORK
ORDER TO PROCEED WITH THE COMMUNICATIONS HOVE AND A 30 APR TARGET
DATE HAS BEEN SPECIFIED. HOWEVER, THE COMPANY MAS INDICATED TO STU
RAADCON THAT ALTHOUGH THEY WILL ATTEMPT TO MEET THIS TARGET DATE,
THEY ACTUALLY DO NOT EXPECT TO DO SO. ME STU RAADCON'S ESTIMATE IS
THAT THE COMMUNICATIONS WILL BE INSTALLED BY 15 MAY. (5) DASED ON THE
ABOVE, THIS ME ESTIMATE THAT THE FARMEST OPERATIONAL PATE FOR THE
COLLOCATED FACILITY WILL BE 15 MAY SU.

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NOOPO

Visit to CONAD Control Center, Geiger Field, Wash. 26 May 1958 Maj Reeves/2078/bkm

1. Major Reeves, NOCOP-T, visited the CONAD Control Center, Geiger Field, Washington during the period of 19-22 May 1958.

- 3. The purpose of the visit was to observe the operations within a CONAD Control Center.
- 4. The joint operations of the AADC and the ADDC within the CONAD Control Center are as indicated:

a. EARLY WARNING.

- (1) Early warning intelligence is told to the missile fire units by the missile teller reading from the Air Force operations board.
- (2) Subsequent track information carried by defense acquisition radar, and judged by the AAOO to be more current than that on the AF board may be told to the fire units from the AA board.
- b. IDENTIFICATION AND CORRELATION OF AA TRACKS. All tracks acquired by AA radar will be plotted on AA board. When tracks appearing on the AA board require identification by current regulation, the AAOO directs that they be placed on the AF board. (This may be accomplished by the AAOO, the E.W. teller, or by the AA plotter using AF Communications.) When the track appears on the AF board, it will be identified by the M. I. Section.

c. COMPULSORY REPORTING TRACKS.

- (1) All hostile, unknown, or faker tracks which are carried by AA radar, are plotted as follows:
- (a) If track is being carried by AF radar on AF board, AA track information will, in addition, be carried on the AA board. In the event the AF track and the AA track fail to correlate, it will be brought to the attention of the senior director by the AAOO.
- (b) In the event the track is not being carried by AF radar, AA track information will be plotted directly on the AF operations board.

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Subj: Visit to CONAD Control Center, Geiger Field, Wash. (Cont'd).

d. FRIENDLY TRAFFIC DURING PERIODS OF WEAPONS FREE OR WILD FIGHT.

- (1) Friendly interceptors under GCI Control.
- (a) When friendly fighters are penetrating, or on a penetration heading toward the Fairchild-Geiger defenses, they will be conveyed by the AF intercept coordinator to the AA radar operator. These friendly tracks will be carried on the AA board, and in turn told to the fire units by the missile teller. The exception to the above, is in the event the Geiger sector is in effect, and the interceptor is within, and remains within, the limits of the sector. (see paragraph 4e below).
- (2) All other friendly traffic will be plotted on the AF board, and will be conveyed as such to the fire units by the missile teller.

e. IMPLEMENTATION OF GEIGER SECTOR.

- (1) When traffic is such as to render the correlation of individual tracks impractical, the CONAD Control Center Commander may implement the Geiger sector:
 - (a) The Control Center Commander will:
- 1. Notify the AADC that the Geiger sector is in effect, and designate the direction of the corridor.
- 2. Relay the same information as 1. above, to the CADD Commander.

(b) The AAOO will:

- 1. Direct the missile teller to transmit this information, including the direction of the corridor, to the fire units.
- 2. Indicate the implementation of the Geiger sector in the operations room by so indicating on the lighted "status of fire" panel.
- 3. Confirm the implementation of the sector, and the direction of the corridor to the fire units by command radio.
- 4. Check to see that the NIKE plotter has indicated on the AA board the existence of the sector, and the direction of the corridor.
- (c) The NIKE plotter, when hearing the instructions pertaining to the sector told to the fire units by the missile teller, will trace on the AA board the outline of the sector.
 - 5. Problem Areas.

a. COMMUNICATIONS.

(1) The AF communications terminal equipment (GTA-6 key boxes) are not

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MCCOP Subj: Visit to CUTAD Control Center, weight Field, Wash. (Cont'd.)

designed to terminate the Army four-wire circuits of the manual mode system. The AF equipment will namely only two-wire circuits. ARADOM stated that if their communications equipment were terminated in AF JFA-6 key boxes, it would degrade their communications equipment from Pairchild to Deiger Field. Goneequently, the Deiger CONAF Control Center has two different communications systems within the building. This communications set up will allow no means of communications with the AF portion of the operations room. This will seriously hamoers smooth operation within the sollocated area and will nullifusment of the advantages of collocation. (Example: No means for putting AA track information on AF board.)

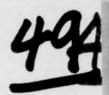
Resonmendation: That the current Army circuits be routed through the AF OTA-6A equipment within the Control Center and terminations be made on the ter line key units (TA 277A). This would provide a uniform system within the COMAD Control Center, eliminate duplication and simplify internal communications. It would also provide the flexibility that should be available in the inauguration of a new operational concept.

- (2) There is one (1) two-way wire circuit between the ALCP and the four missile fire units of the defense. This two-way circuit must carry the following traffic:
 - (a) From AADCP missile teller to all fire units.
- 1. All early warning intelligence and identification (This includes friendly traffic under a wempons free situation).
- 2. Status of meapons control, condition of readiness, and action status.
 - (b) From each of the four (h) fire units to the missile plotter.
 - 1. Back tell on tracks being sarried by the fire control
- 2. Track information on all tracks acquired by fire units for identification or correlation.
- 3. All reports of amquisitions, lock one, and Ma's or soleshes. It is encarent that this circuit will become enturated with anything approaching a realistic raid.

Recommendation: That a second lendline be saided to each AA missile and radar site, to be utilised for talling to the Sentral Ce-ter. In the case of the Fairchild Defense, this improvement is submanely secondary due to the fact that friendly fighters will overate in and out of the defense continuously.

(3) All Army radio circuits are terminated in loud-speakers for the purpose of si-mailing. Although it is obvious that three loud-speakers are not

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MOTOP Subj Field to Orbal control Center, Geiger Pield,

operations by fearible in the collocated area, no deviations are authorized. Sweetheast these monators are bypassed they have been installed and rental is being paid.

Recommendation: That ARADOR have the telephone dompany remove loadspeakers at the earliest practicable date.

b. Gewnander, CUMAD Control Center

(1) The correct instructions concerning the appeintment of the COMAD Control Control Control Commander state that he will be "a sector officer designated by the CTMAD division commander to exercise or enational control over designated units from his duty station at the CTMAD Control Control. The appointment of this sommader will be hased upon his qualifications for the notition, without regard for service affiliation. Semicrity and the presconderence of his force/Army air defense weapons in the area will be considered."

(2) CPMCR informed the 9th CADD that the ACW Squadron Commander should be appointed the CPNAT Control Center Commander and thus function in a dual capacity Obviously, on ACW Squadron Commander with the responsibility for administration, logistics and training cannot perform the duties required of a CCMAT Control Center Commander. It is realised that until the CCMAT DEDE are an rowed, the CCMAT Center Commander will have so be assigned an additional duty but certainly not that of an ACW Squadron Commander. It is believed that the CCMAT Center Commander should be appointed from the CCMAD cirimin staff and possibly should be the Ass't. Operations officer.

Recommendation: That the instructions for the aupointment of the COMAD Control Center Commender be smended by adding the following: "Commenders of ACM Squadrons and AA missile battalions will not be appointed COMAD Control Center Commenders."

RUBERT S. DE ILI, JR. Celomel, UCA Director of Operations

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MM LONDON 4477 ALSIM/ADHIR

CORS USAF WASHDC for AFOIE. This is a Joint U. S. Air Force Air Pefense Command/Army Air Defense Command message.

1. These two headquarters have concurred in collocating Army
AAPCPs at existing U. S. Air Force ADJA facilities to constitute
doint CONAD Control Centers as follows:

ARAIC M Defense Joint G.MAI Control Center Location

Dallas-Ft North Euncanville AFS

Kansas City Olatus MAS

St Louis Hellsville AFS

Minneapolis-St Paul Occeola ArS

2. U.S. Air Force Air lefense Command concurrence is applicable only to the operational elements of the point defense (battalion) headquarters and headquarters battery, i.e., the AMICP and personnel to man it. It mees no operational requirement for the collocation of the entire point defense headquarters on site. U.S. Air orce Air Defense Command will not object, however, to locating the entire point defense (battalion) headquarters and headquarters battery on any of the above U.S. Air force si as if real estate and potential water supply permit and Department of the Army funds all its own design and construction, including expansion of at it is facilities and utilities systems required by the increased population of the site, and if onsite location will obviate the necessity of procurement of additional real estate.

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- 3. Army Air Lefense Command concurrence is predicated on the assumption that if the entire headquarters and headquarters battery cannot be accommodated on the site other real estate can be obtained offsite at a close emough distance that the headquarters and headquarters battery can be located thereon and the personnel to man the MADOP commute between this area and the Joint Bunk. Direction Conter without under inconvenience to the point defense commander. Since this distance will vary in each defense its acceptability must be determined in each case by the Commanding C. ficer, but make the ageneral muide, Commanding General, Army Air Lefense Command considers that it should not exceed the minutes travel time by light military motor vehicle.
- L. Additionally, concurrences of both U.S. Air force Air Defense

 Command and Army Air Defense Command are based on the fact that Army

 Air Defense Command units will occupy space on U.S. Air Force Air

 Defense Command sites on a tenant basis subject to joint regulations

 governing such tenancy.
 - these two headquarters in the matter of the size of the Army Air

 Defense Command activity involved in "collocation", both headquarters

 are desirous of complying as completely and quickly as possible with

 CINCNORAD's directive to establish joint CONAD Control Centers. To

 this end, it is requested that two Commander, Central Air Defense

 Force, U.S. Air Force Air Defense Command, and the Commanding Officer,

 Lith Region, Army Air Defense Command, as a matter of priority, obtain

 detailed studies from appropriate district engineers on he feasibility

 of locating entire headquarters and headquarters batteries on he four

 U.S. Air Force Air Defense Command sites listed in paragraph 1,

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construction and facilities expansion. The study for Olathe NAS should include approval or comments of Commanding Officer, Olathe NAS.

Upon completion of the engineer studies, copies will be forwarded simultaneously, to reach each of these two headquarters not later than 21 April 1958, with recommendations of both Commander, Central Air Defense Force, U. S. Air Force Air Defense Command as to the extent to which headquarters and headquarters betteries should be located on the U. S. Air Force Air Defense Command as to the extent to approval on each location will be made by these two headquarters after review of the studies and recommendations.

6. (FOR COMPRANDERM). Where it appears that an entire headquarters and headquarters battery cannot be accommodated on the U.S. Air Force Air Defense Command site or where construction costs of such location will exceed the costs of constructing Army facilities offsite your recommendations will include an alternate location for the headquarters and headquarters battery and your views on the operational feasibility of personnel to man the AAICP commuting between such alternate location and the U.S. Air Force Air Defense Command site.

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SUBJECT: Collocation MIKE Hercules and MANCE with Used for Mir's Force Stations (that)

Communder 70: U.S. Army Air Defense Commund Ent Air Force Rase, Colorado

1. This headquarters concurs in collocation of the shows surfect facilities at four locations with the following comments and or recommendations:

E. Olstne Mir Forre Station

- (1) It is recommended that the addition to the operations building be so designed that a future second story could be added at a later date, should it be necessary.
- (2) Refer to paragrapt 4c of Peasibility Report dated 16 April 50. The Mavy Commandant has informed this headquarters that after 1 July 58, due to the increased power demands, it will not be able to supply the ACRA site through its substation. Negotietions are under way with the K.C. Power and Light Company to provide three 333 KVA transformers. This installation will provide 400 KVA excess capacity until January 62. The Army may tap this substation for use while excess power is available, or negotiste directly with the Nevy for power requirements.

n. Osceola Air Force Station

- (1) Pefer to paragraph 5e (1) Feasibility Study dated April 1950. Sewage treatment and disposal facilities (oxidation pond) are being constructed by protect approved this headquarters on 22 April 50. This project is designed for all known Air Force and Army requirements. No additional land will be required.
- (2) Refer to paragraph Se (3). This headquarters recommends deletion of the new well since adequate water is available. It is not normal practice to use a capacity factor of 1.5



ADAIR-R, Eq ADC, Subject: (U) Collocation NIKE Hercules and AADCP with USAF ADC Air Force Stations (Continued)

when determining the adequacy of the water supply of a site.

- (3) Administrative vehicle parking: It is recommended that additional vehicle parking be provided under Air Force criteria. This provides 30 square yards of parking for each vehicle. The number of vehicles is based on a factor of one vehicle for each two permanent party military and civilian personnel assigned to the base.
- (4) It is recommended that the 61-man dormitory be resited, as shown on the attached plan. The location as shown on the plan violates distance criteria from the receiver building.

c. Duncanville Air Force Station

- (1) Only one well is available for water supply at Duncanville. It is recommended that the Army provide one additional well. This well will provide emergency service during repair or failure, as well as additional supply.
- (2) There are no other problems of collocation at Duncanville Air Force Station.

d. Belleville Air Force Station

- (1) Refer to paragraph &L Siting Report dated 1 March
 58. This headquarters concurs with the report that an adequate sanitary sewage system should be provided.
- (2) The existing and proposed water storage will be adequate for both Air Force and Army requirements.
- (3) The water supply from the lake is only approximately 60% adequate to support Air Force and Army requirements. This information was obtained from "Report on Water Supply and Sewage Disposal Systems at 798th ACAW Station, Belleville, Illinois, Contract No. DA-11-032-Eng-k109," dated 4 December 57. It is recommended that the District Engineer thoroughly restudy the water supply and treatment to insure that the existing source is adequate.
- (4) The location of personnel facilities within 500 feet of the Transmitter and Receiver Buildings violates Air Force criteria. The remaining area at Belleville is very congested, therefore, it is the recommendation of this headquarters that the Army purchase a nominal amount of land north and contiguous with the Air Force Station. The attached plan indicates the proposed siting for Army facilities. This



ADAIR-R, Hq ADC, Subject: (U) Collocation FIRE Hercules and AADCP with USAP ADC Air Force Stations (Continued)

layout will provide the Army with a better operation and does not violate the distance criteria.

- 2. This headquarters will grant USARADCOM a right-of-entry to Olathe, Duncanville, and Osceola Air Force Stations, so that construction may proceed as scheduled. It is believed that further study should be made at Belleville to determine the cost of increasing the capacity of the lake to assure adequate supply for both Air Force and Army requirements. This cost may be prohibitive and preclude collocation at Belleville. The use of water should be based on Air Force criteria, which is 150 gallons per day per person, plus an industrial requirement of approximately 12,000 gallons per day.
- This headquarters reserves the right to review and approve preliminary plans for these sites as they are completed by the District Engineer.

FOR THE COMMANDER:

2 Inclosures
1. Site Plan, Osceola AFS (U)
2. Site Plan, Belleville AFS (U)

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ADD 319.1 (4 Mar 58) SUBJECT: Collocation of ADDCs and AADCPs (U)

HEADQUARTERS, 4TH REGION, US ARMY AIR DEFENSE COMMAND, Richards-Gebaur Air Porce Base, Missouri, 14 March 1958

- TO: Commanding General, US Army Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado
- 1. Personnel of this headquarters, Installations Division, Headquarters, CADF, and those shown in inclosures visited the following ADDC sites and determined that collocation of the air defense handquarters and headquarters battery and AADCP with the ADDC is feasible and will accomplish the purpose of collocations

Duncanville AFS, Texas Osceola AFB, Wisconsin Belleville AFS, Illinois Clathe Baval Air Station, Kansas

- 2. It is understood by this headquarters that the above ADDC sites have been designated as Master Direction Centers (MDC).
- 3. Attached siting team reports contain information reference present utilization of facilities, proposed Army use of facilities and construction required to effect collocation.
- 4. Headquarters, CADF, has no objections to this collocation and have provided assistance in making this survey; hovever, they have stated that approval to collocate the headquarters and headquarters battery including AADCPs at the ADDCs must come from Headquarters ADC. This headquarters will incorporate this collocation requirement in a supplemental real estate planning report when approval authority has been received from your headquarters.

4 Incl:

1. Siting Report, Duncanville AFS

2. Siting Report, Osceola, APS 3. Siting Report, Belleville APS

4. Siting Report, Olathe MAS

/a/t/ LESLIE J. STAUB Colonel, Arty Commanding

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ADGCL 319.1 (4 Mar 58) 3d Ind (C) SUBJECT: Collocation of ADDCs and AADCPs (U) 20 Mar 1958

HEADQUARTERS U. S. ARMY AIR DEFENSE COMMAND, Ent Air Force Base, Colorado Springs, Colorado

THRU: Commander, Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-In-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- Reference letter ADGCL 319.1, this headquarters, 7 Mar 58, subject: "Collocation of ADDCs and AADCPs".
- 2. It is recommended that the four AADCPs and ADDCs listed in basic communication be collocated in the manner outlined in 2d indorsement, provided that the ADDC's listed are to be Master Direction Centers.
- 3. Upon receipt of ADC and NORAD concurrence, this headquarters will initiate the necessary actions to provide the facilities required to accommodate the Army personnel to be located at these sites.
- 4. For the reasons outlined in letter, reference paragraph 1 above, it is requested that action be completed on this matter in sufficient time to permit this headquarters to advise Department of the Army by 31 March 1958 of the final location of subject AADCPs.

FOR THE COMMANDER:

4 Incl n/c /s/t/ D. B. JOHNSON Brig Gen, GS Chief of Staff

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NOCOP-T, Rq NORAD, 24 Feb 53, Subj: Collecation of ADDCs and AADCPs (U)

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4th Ind

21 MAR 1958

Hq Air Defense Command, Eat AFE, Colorado Springs, Colorado

TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- 1. This headquarters concurs in the collocation of the operational functions of the AADCPs and ADDCs listed in the basic letter. It is understood that the Army will provide funds for whatever new construction and facilities that are required to support the USARADCOM operational functions at these sites.
- 2. Although this headquarters has no requirement for the location of Battalion headquarters at ADDCs, and this appears to be outside the intent of the basic letter, it has no objection in principle to such an arrangement if it will save the Army the expense of procuring land in areas where space and facilities support can be made available on radar sites. Final concurrence, by this headquarters, of the location of Battalion headquarters at specific sites will await detailed study of the feasibility reports (Inclosures 1 through 4 to the 2d Indorsement) by the Corps of Engineers. These arrangements are a separate subject and should not be termed "collocation" but should fall under the joint tenancy regulation. It should be understood that, where Army units are located on ADC radar sites, their status will be that of tenant organizations.

FOR THE COMMANDER:

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MAJOR GENERAL, USAF Deputy for Operations

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Copy furnished CG USARADCOM w/o Incl

N COP-7, Mg MDRAD, 2h Feb 58, Subj: Collocation of All Co and AANCPs (0)

NOOP-"

5th Ind

2 HFR 1958

la North American Air Defense Command, ant Air Force Base, Colorado Springs, Colorado

To: Commanding General, 1.S. Army dir Defense Command, Ant Air Force Mass, Colorado Springs, Colorado

1. Approved in accordance with joint USAF AIC - USAFAIROM messare No. 4477, 4 April 1958.

2. In the event serious logistic complications not presently foreseen, sould arise, which would preclude action indicated in message referenced above, the oroblem will be immediately brought to the attention of CINCMORAD for resolution.

FOR THE COMMANDER-IN-CHISF!

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Cony Furnished: Conwir USAF AUG w/o incls. MARCHALL S. CAPTER Major General, MSA Chief of Staff

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HEADQUARTERS
UNITED STATES ARMY AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

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ADOCL 600

14 FEB 1968

SUBJECT: Collocation of AADCP's and ADDC's (")

THRUI

Commander Air Defense Command Ent Air Force Base Colorade Springs, Colorado ATTN: ADOOP

10:

Commander in Chief Continental Air Defense Command Ent Air Force Base Colorado Springs, Colorado ATTN: COCOP

- 1. Reference: Minutes of NOWAD AADCP/ADDC Conference, 10 January 1958.
- 2. It is recommended that the AADT's at Travis Air Force Bess, Seattle, Sevannah River and Sault Ste Marie be removed from the list contained in reference above of defenses being considered for collocation with the associated ADDC for the following reasons:
- out. The San Francisco AADCF will then be utilized to control an integrated San Francisco-Travis defense.
- b. Sattle This is a planned Missile Master defense. It is not considered practicable to collocate the existing facilities at a time when new facilities for a JHDC are already programmed. This is especially true in view of CENCHAD message NCESS-E XO12, February 1956 which recommended the Departments of the Army and Air Force give sufficient priority to the JHDC program to have all ten programmed JHDC's experational in CY 1960. Furthermore, the fifty mile distance of the magnetic existing ADDC from the Seattle defense is considered excessive and actually beyond the distance considered feasible for collocation at subject conference.

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STRUCTS Collocation of AADT's and ADD's (%)

- c. Savannah River There is only one skysmeper battalion at this defense. It has a primary mission as a part of the Strategic Army Corps with a readiness status for overseas shipment of A A lays. In preparation for this high priority overseas mission, the commander must, of measity, goar his command nost to the nontrol of field army type training in addition to the normal AAD F functions. Such an AADCP would not be desirable in the ADDC. The Army desires to move this battalion to a training center, but has agreed to station the unit at the Sevannah River Defense merely to maintain continuity of the occupancy until it is determined whether or not Army miss be units are to be deployed.
- d. Soult Ste Marie. The status of this defence is the same as that at Sevannah River. Therefore, the same comments apply.
- 3. In coordination with "SAF ADC, this headquarters is investigating the logistic fearbility of collocation at the remaining three defenses listed in reference above San Francisco, Hauford, and Elisworth.

FOR THE COMMUNDER:

Anna-

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let Ind

28 FEB 1968

By Air Dofense Command, But Air Force Bess, Colorado Springs, Colorado

70: Commader-in-Chief, Continental ir Defense Corrand, ATTN: COCCF, Est Air Porce Dase, Colorado Springe, Colorado

This beachuserters agrees with he proposal of the Army Air Defense Command memograting the collocation of these particular ADCF's and ADDC's.

FOR THE COPP AND THE

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SUBJECT: Collow true of "Auche ni office (".

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1. Reverences:

.. Minutes of PANNU AADOP/ANDC Conference, 10 Junuary 1950.

NOCL 600, 1- Pebruary 170, with 1st Indirector, headquarters USAF Air Defense Cumend, 2 February 198.

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tional date for the missile metter in the Secrete are to the secretary time from the penditting CONAL Control Conter to be entered at the first penditting CONAL Control Conter to be entered at the content of the penditting the control conter to be entered at the content of the secretary that the content of the secretary in advancing the operational date of the Sectile Missile Mester, tenest this information be furnished this needquarter at the carliest protein ble interest.

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3 APR 1958

SUBJECT: Collocation of AAN T's and ADNO's (U)

TO:

Commander-in-Chief Continental Air Defense Command Ent Air Force Base Colorado Springs, Joiorado

1. Reference:

a. Letter NCCOP-T, Headquarters, North American Air Defense Command, 17 March 1958, subject: "Collocation of AADD"s and ADDO's (C)".

b. Letter ADGCL 800, this realguarters, 14 February 1958, subject as above.

2. Information available to this seriouarters indicates that the Seattle District Engineer has been directed to obligate PY 58 funds for the Seattle Missile Master installation. Construction of the site could begin on 10 July 1959 with earliest 500 on 15 July 1959. Assuming some concurrent construction of the Missile Master building and installation of equipment, an operational date of 15 January 1900 could be met.

3. Reference paragraph L, reference a, it is requested that your headquarters reconsider our recommendation to delete Seartle along with Sault Ste Marie, Travis AFB and Savannah River.

FOR THE COMMANDER:

OF ICHION

Copy furnished: OOMDRADC

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ADCCL 670, 4g USAFADCOM, 3 April 58, Subj: Collocation of AADCPs and ADDCs (U)

HOLOP-T

lst Ind

11 1958

Hq North American Air Defense Command, ant Air Yorce Hase, Colorado Sorings, Colorado

TO: Commanding leneral, US tray Air Defense Command. ent Air orce Jase, Colorado Sorings, Colorado

1. This headquarters has approved the deletion of Sault Ste Marie, Travis AFS and Savannah miver.

2. The Smattle situation is under advisement pending a witional information requested in paragraph h of reference la, basic communication, as to a firm operational date.

TOR THE CONTANDER-DI-CHIEF!

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HARVET I. ALDESS Major General, USAF DCE/Mans & Operations

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HANT W

M/R: DA through USAF has informed this ho that it is not possible to advance operational tate (CY 61) for the Seattle JMDC. If ARADCOM is able to convince DA to advance the Seattle JMDC to the 1958-1959 time frame, NOTAD will reconsider ARADCOM's recommendation.

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HORTH AMERICAN AIR DEFENSE COMMAND

ENT AIR HUSCE SASE EGLORADO SPRINGS COLORADO

BOXXP-T

6 JUN 1958

SUBJECT: Cullocation to Abdos and AADOPS (U)

Commander

USAF Air Derense Command Ent Air Porce Base

Coloredo Springs, Coloredo

1. References:

a. Minutes of MONAD ANDER, ANDE Conference, 10 January 1950.

b. Letter Headquarters United States Army Air Defense Command, subject as above, 14 February 1958, with 1st Indorse-ment your handquarters, 26 February 1958.

2. It is requested that your headquarters in conjunction with USARADCON jointly report, as a matter of priority, on the feasibility of integrating and collocating the following AADCPs and ADDCs:

AADCP

ADDO

San Francisco, California 666 ACM Squedron, Mill Valley

AFS, California

637 ACW Squadren, Othello APS, Henford, Washington Wan Ington

Ellsworth AFB, South Dekota

740 ACH Squadron, Elisworth AFB, 8. D.

3. In the event cerious logistical complications, not presently foreseen, should arise, which would preclude notice desired store, the problem will be immediately brought to the attention of CINCHORAD for resolution.

FOR THE COMMANDER-IN-COTES:

Copy Furnished: CO UBARADOCH

MARVEY T. ALERES Me.jor General, USAF DCS/Flons & Operations

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W. D. See revense class.

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---- Brater No.....

61

M/R: 1. Letter is in r sponse to memo from CINCHORAD to collocate the ADDCPs and ADDCs at the above mentioned locations at the earliest practicable date.

2. Ref. la states that the conferees except ARADCOM representatives recommend that the operational functions of the AADCPs and the ADDCs should be integrated in the following defense areas:

Ellsworth AFB Hanford San Francisco

- Ref 1b states that ARADCOM in coordination with USAF ADC is investigating the logistic feasibility of collocation at the above mentioned defenses.
- 4. 1st Ind. to ref 1b states that USAF ADC in coordination with ARADCom is investigating the logistic feasibility of collocation at San Francisco, Hanford and Ellsworth Defenses.
- 5. Currently a communications problem exists at the SONAD control center at Geiger Field. However, NOELC stated that action is being taken to rectify the situation and that the problem would be resolved prior to the date collocation could be effected at the three above mentioned defenses.

62

THE GASTE AS to 0 VIS. TO DE V AS - 1 A TES ALL FORTE AS 1 D. S. SCHOOL

> 10 MAR 1958 Office of the Commander

SUMBLITE Collegestion of aDDC and sACC at This a

58A to (2

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Communier
Air Defense Communi
Ent Air Corce . s
Colors o Eprin r, Colorato

1. In accordance with paragraph L of your letter ADAGE-EG, Dated LT Septe ber 1957, the "dimender and taff representatives of this Division met with representative of issignature lst RAADGE and Commander 4083rd Strategic sing, at Tunle on 18-2 Pebruary 195. The following concept of six defense operations was agreed upon:

The concept of nountlines for air defense provides for a single air defense commander [Tital Commander] who under the overstional control of the Commander, both Louis Division, will conduct the air defense of Thele air Rese. The Air Defense Command components will be responsible for detection, identification, weapons assignment and control and operation of organic weapons. They will also be responsible for the tester display board and target information. The Army air Defense Command Commonnts will be responsible for control and operation of organic weapons spaints are lived targets. The air Defense Sattle Staff will command to the TOTAD Commander, the IF Operations Difficer."

2. This concept is in seeing with the desire of Shariland and provides for more coordination in the detection, identification and destruction phases of air defense. The air defense of the Thile Compler requires close, on the sict, cordination with the SAC Wing Commander and it is rost desire he me me kent billy awars of local air defense operations. This is necessary measure theme air have in the only operational case in the only operational base in the Thule Complex which must accommodate SAS as well as all operations during combat or emergency conditions. In order that ADG and SiC can accomplish their assigned missions, each commander must closely coordinate his operations with the other, Since Thule goes at have the air novement information normally provided by the in the states, nor is there a SCATER plan for this area, air povement information of SAO strengt must be readily available to the COMA Commander. This is essential for rapid and accurate identification of aircraft, many of which could be doll Task Force Aircraft. The required close coordination and lisison between the SAC Commander and the 10 sab commander and this respective staffs can best be achieved by collocating the carment post of each. The Commander of the SAC Wing at Thile also deems a Joint command post

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and (2) Far 3 to revise of Larited and read, a fine normal rost
which to id include the converse and persolousi an elementative
space for the S.I Wings. He shally space as, the latter reside a
centrally located that a recent of the 15 converder and to the tof
display perds. Converse, and increase will have access to the
air referre display boars. Therefore the mest out it liagrams for
each an incls flant far, they the joint course tout, the relationship between the air defense and operations round, a fine joint
facilities, such as are united as to ter, whiter, stocking uses shown
on the diagrams for the personnel in line \$2. It is felt that if and
and that approve the joint commune out concert, to will justify their
requirement for operational and stabilitate the spect. In either event,
the sport of army and partitions in the personnel of the
abbornance will remain the same as shown in Incl # 3.

- 4. The site selected for incation of this joint facility is on the main base see Incl vis. It is centrally located and is in smithely adjacent to berracks which could a made available for operations person el, and within a block of a possibilities it ingitable and into af covered walk ways connecting the extracts and the aDD-aACI could revide for availability of operations draw, repartless of wather, had located will also permit the use to be contracted facilities, thus minimizing the overall cost.
- 5. A C.E engineering team row Ails was to ave taken part in the site survey but failure of part of the team to arrive precluded our being able to include, at the time, a list of E equipment, remoting requirements and pretinent costs. The atlantal requirements for internal communications and the parameter for external communications and the parameter for external communications and vides remoting (see and set are being forwarded to MAAL with a request that an engineering study be accomplished as soon as possible.
- 6. The estimated construction costs, exclusive of communication and remoting requirements of the joint narual ADDC-a.J is \$ 1,000,000 (Plan A). The estimated cost, exclusive of the requirements of a joint manual ADDC-AAOC, joint com and post and SaC addition is \$3,309,000 (Plan I). While the initial cost of the latter Flan P) is greater, it would permit realisation of savings that would not be possible if IAC and aDC were to construct separate facilities. Savings could be accomplished by providing the following on a joint basis: communications center, utilities, weather office, and by reduced costs through construction of one building rather than two. Estimated construction costs by line item are indicated in Incl P4.



Ltr, Hq 64th AD(2), dib; Collocation of ADDC and AAOC at Thule

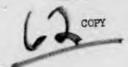
7. Inclosure #7 citlines the manpower requirements based on the operating positions in the ADDC-AACC, the fact that one crew will remain on standby at "F" hountain, and an educated guess on maintenance requirements. It is appreciated these requirements will have to be revised as several variables, such as the specific types of equipment, are defined. However, it does provide an initial planning factor.

8. It is recommended that:

A. That Plan & (Incl ol) for the collocated ADDS-AAOC be approved.

B. Burther, that the collocated facility be expanded to include the SAC Strategic Wing, as shown in the second attached Flam (Incl #2), in order to obtain the maximum in operational efficiency and economy.

Solonel, US.P Commander



C, Hq 64th AD (D), APO 862, N.Y., N.Y., 10 Mar 58, subj: Collocation of ADDC and AAOC at Thule

ADOOP-0

1st Ind

21 Apr 1958

Hq Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- Forwarded as inclosure is feasibility study by 64th Air Division of collocation of AAOC (ADDCP) and ADDC at Thule, Greenland.
- 2. This headquarters concurs with the recommendations made that collocation be accomplished with AAOC (ADDCP), ADDC and SAC Strategic Wing all in the one building. This is shown as "Plan B."
- 3. As indicated in basic letter a C&E engineering study is pending, having been requested of MAMMA as soon as possible. This study will determine the feasibility of remoting video and communications from the present locations to a central location on Thule proper. The results of this study will be the final determination whether collocation, as proposed by the 64th Air Division, can be effected.

FOR THE COMMANDER:

7 Incls

/s/t/ JOHN M. KONOSKY Colonel, USAF Director of Operations Deputy for Operations

62

Hq 64th AD (D), APO 862, N.Y., N.Y. 10 Mar 58, Subj: Collocation of ADDC and AAOC at Thule

NOOOP-T

2d Ind

1 May 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commanding General, U. S. Army Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

Your comments and recommendations are desired. In view of the time which has elapsed since the initiation of this study, receipt of your comments on or before 12 May 1958 is requested.

FOR THE COMMANDER-IN-CHIEF:

7 Incls

/s/t/ HARVEY T. ALNESS
Major General, USAF
DCS/Plans & Operations

M/R The plan for the collocation of the ADDC and the AADCP was formulated by 64th CADD. USAF ADC tentatively concurred in the plan pending the results of a C&E study on this problem by the engineering team from MAAMA. NORAD desires the ARADCOM's comments on the plan.

/s/t/ ROBERT S. DINGLE, JR. Colonel, USA Director of Operations

63

Hq 64th AD (D), APO 862, N.Y., N.Y., 10 Mar 58, Subj: Collocation of ADDC and AAOC at Thule

NOOOP-T

4th Ind

30 June 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- TO: Commander, USAF Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado
- Plan "B", submitted by the 64th CADD for the collocation of the AADCP and the ADDC at Thule, Greenland is approved with the following exceptions:
- a. The concept of operations for the CONAD control center will be as prescribed in CONADR 21-1.
- b. The commander of the CONAD control center will be a senior officer designated by the CONAD division commander to exercise operational control over designated units from his duty station at the CONAD control center. The appointment of this commander will be based upon his qualifications for the position, without regard for service affiliation. The commanders of the ACW squadron and the Army Air Defense battalion will not be designated as the CONAD control center commander.
- c. The commander of the CONAD control center will designate a battle staff to function within the CONAD facility during hostilities or an emergency. The following officers will constitute the CONAD control center battle staff:
 - (1) Army Air Defense Commander or his representative
 - (2) Commander of ACW squadron or his representative
 - (3) Senior Controller
 - (4) Army Air Defense Operations Officer
 - d. The plan for an alternate AADCP will be eliminated.
- e. The gun teller positions and circuits will be eliminated.
- f. The circuit for the Army Meteorological Station will be eliminated.

63

Hq 64th AD (D), APO 862, N.Y., N.Y., 10 Mar 1958, Subj: Collocation of ADDC and AAOC at Thule

MOOOP-T, 4th Ind (cont'd.)

g. With regard to paragraph 2c, 3d Indorsement, true integration of communications cannot be achieved utilizing the system referenced in paragraph 1b, 3d Indorsement. Best results at the CONAD control center at Geiger Field emphasize the requirement for a common system of internal communications to support the collocation principle to the required degree. Further, the communications plan for the CONAD control center will not degrade the Army Air Defense communications system. Therefore, the comment outlined in paragraph 2c, 3rd Indorsement, is not concurred in by this command.

 Request your headquarters in conjunction with Army Air Defense Command, take appropriate action to implement the plan for the collocation of the AADCP and the ADDC at Thule Greenland at the earliest practicable date.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ Maj Reeves 2078 18 June 58

/s/t/ MARSHALL S. CARTER Major General, USA Chief of Staff

7 Incls

Copy Furnished: CG US/RADCOM

M/R Plan "B" provides for a collocated AADC/ADDC, a joint command post which would include the SAC commander, and operational and administrative space for the SAC Wing. There will be a glass enclosed CP where the CONAD control center commander will have immediate access to the SAC commander and the SAC display boards. The CONAD control center will be located on the main base. The CONAD facility is centrally located and is immediately adjacent to barracks for the operating personnel, and within a block of a consolidated mess hall. The CONAD control center would use the base power and heating facilities, thus minimizing the overall cost. The estimated cost, exclusive of CAE requirements,* is \$3,309,000.

*The requirements for internal communications and the guide lines for external communications and video remoting were forwarded to MAMA by USAF ADC on 9 June 58 requesting that an engineering study be conducted to determine: a. C&E equipment required

b. Remoting requirements c. C&E estimated cost This study will be completed o/a 18 July 58.

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14 MAY 1958

SUNJUTE origination to come by comment ster

The Chief of "taf", L. -1 tate Mir Forme to Page 11 to 25, . . .

1. Reference is male test

n. Teoret let a, hig lasken Command to MM u, subject as above, 26 October 1977, with 1st indersement to Chief of Staff, United States for York, or Exemptive Lent for 1 . M. 15 November 1977.

b. Confident of latter free Executive 's may to 1986, subject as alone, 5 for older 1987.

- 2. Reference th outlines we organization and objectives of an interservice foodination is our widen as evaluating the MC-Land Table 1988 systems. The future planning is largly dependent upon advance informatic relative to operational availability dates of air defence emigrant. It is felt that the information required for future planning.
 - 3. Request this head marters to informed of:
- formulated by the Interservice Coordinating Group for Pactical Mir Control and Field Army intdeferent investion paters.
- b. Expected or estimated date when Joint Direction Centers at Elecadorf and Fielson will be operational using BUDGE/180-1 type equipment.

FOR THE COMMEND ALTER-CHIEF

Major Demonal, To Chief of Starf

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advised that there were incompatibilities inherent in BADGE/MSG-LA for Joint Direction Center use. On 15 Nov 1957, CTICNCRAD indorsed this basic letter to Executive Agent requesting investigation and resolution at Departmental level. On 5 Dec 1957, Executive Agent informed CTICNCRAD that a DOD-chaired Interservice Coordinating Group for evaluation of FilmE/MSG-LA had been formed and he would be advised as to what the Group accomplished. On 13 Dec 1957, CTMCNORAD advised CTMCAL of above.

Six months have elapsed and there is no known progress in establishing an adequate air defense control system for Alaska. It is appropriate to find out what is going on. If the Coordinating Group has made progress, we should obtain an interim report. If there has been no progress, then the Executive Agency should be made aware of this.

29 November 1957

NORSS-E

Evaluation of Closed Circuit TV Between SUBJECT: AADCP/ADDC Facilities

TO:

Chief of Staff, United States Air Force As Executive Agent for NORAD Washington 25, D. C.

1. This headquarters has requested that USARADCOM establish a closed circuit TV environmental facility between an Army AADCP and an Air Force ADDC. The purpose of this facility is to determine whether or not closed circuit TV will enhance the operational capability of integrated AADCP/ADDC facilities sufficiently to warrant the expenditure of funds to support a system such as this in areas where collocation and integration cannot be effected.

- 2. USARADCOM had indicated that the Department of the Army probably will not provide for funds or equipment until this headquarters expresses a requirement for same.
- 3. This correspondence is to advise that this headquarters has a requirement for a closed circuit TV environment to support an evaluation of two air defense facilities in the Norfolk/Cape Charles area.
- 4. Request Department of Army approval be obtained at the earliest possible date in order that USARADCOM and Air Defense Command may proceed with the environment evaluation.

FOR THE COMMANDER-IN-CHIEF:

/st/ Maj WR Goodrich 2039 21 Nov 157

egl

Copy furnished COUSARADCOM COMADC

/s/t/

MARSHALL S. CARTER Major General, USA Chief of Staff

COMEBACK NOELC

M/R: This letter requests the Executive Agency obtain approval from the Department of Army for funds and equipment to support an environ-mental closed circuit TV facility on the East Coast to determine the operational effectiveness of a system using closed circuit TV.



Chronology on Test of Closed Circuit TV

25 Mar 58 Major Rumpf/2078/daf

NOHOS

- 1. On 16 July 1957 COVAD requested that USARADCOM immediately initiate a program to test closed circuit TV between an MAY and ADDC to determine if TV will provide sufficient increase in operational effectiveness to justify cost of such a system. The ADDC at Cape Charles, Virginia and the AADC at Norfolk, Virginia were surgested for use as the test facility. COMAD also informed ADC of the request for such a test and requested that action be taken to insure availability of space and facilities required at the ADC installations involved. Direct coordination between ADC and USARADCOM was authorized.
- 2. USAF ADC stated on 26 August 1957 that no plans or arrangements for testing had been accomplished, for the following reasons:
- a. USARADCOM stated that the test was not required to prove technical feasibility of the proposal. Further, Department of the Army would not provide funds since an operational requirement had not been established by CONAD.
- b. The use of closed circuit TV between ADDC and AACC was not considered to be an operational requirement, due to SAGE time period and difficulty in funding for changes to the Manual S stem in critical target areas.
 - 3. USARADCOM recommended on 14 August 1957 that:
- a. GIMMONAD establish an operational requirement for closed circuit TV between appropriate CONAD ADOC and AADOP.
- b. This requirement be forwarded to the Joint Chiefs of Staff, through the Executive Agent, for approval and implementation.
- c. Upon approval, an experimental closed circuit TV facility to determine operational and maintenance procedures be installed at (listed in order of priority):
 - (1) 28th Division ADCC San Francisco AADCP
 - (2) 37th Division ADGU Milwaukee AADGP
 - (3) 85th Division ADCO Worfolk AACCP
- h. On 29 November 1957 CONAD established the requirement for a closed circuit TV environment between AATCP and ATCC in the Norfolk/Cape Charles area and requested that the Executive Agent obtain approval from Department of the Army in order that the test might proceed.
- 5. On 22 January 1958, Department of the Army informed USAF as Executive Agent that DA equipment and funds were svailable to support a limited TV co-location test in the Nor olk/Cape Charles area, and simultaneously instructed IDA WCON to deal directly with N TOO recording equipment availability.

Declassified

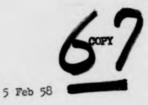
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Subject: Chronology on Test of Closed Circuit

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- 6. On 30 January 1958 a meeting of representatives from NORAD, ARADCON and ARC was held to discuss the technical aspects of this test. At this meeting, the following agreements were reached:
- a. Over-all supervision and evaluation of the test will be exercised by NORAD.
- b. A TAXOM will arrange for necessary funds and TV equipment to conduct
- c. ANC will provide Cape Charles ADDC personnel, facilities and technical advice in support of the test.
- d. Project Officers from ADC and ARADCOM would be appointed to work out the detailed test plan and to conduct the test.
- e. Results of the test, together with recommendations, would be prepared jointly by ADC and ARADCOM and submitted to NORAD for review and evaluation no later than 30 days following completion of the test.
- 7. Preliminary survey of the test site was conducted beginnin, 19 February 1958 by OCSIGO.
- 8. Microwave feasibility testing for OCSIGO was conducted in early March by a DA Pictorial Service Team.
- 9. Upon notification that micrownve feesibility testing was completed, NORAD set up a meeting to be held on 25 March 1953, to:
 - a. Receive the technical feasibility report from 303100 personnel, and
 - b. Finalize detailed test plans.
- 10. Technical shakedown and full-scale operational testing is slated to begin in April 1958.
- 11. Summary. Since the official establishment on 27 November 1957 of a MORAD operational requirement for a TV co-location test in the Norfolk/Cape Charles area, technical and operational plans for this test have proceeded on schedule. Excellent cooperation has been received from USATADCOM and USAF ADC.

HARVEY T. ALNE'S Major General, USAF DCS/Plans & Operations



NOESS-E

SUBJECT: Closed Circuit TV Test Between AADCP/ADDC Facilities

in the Norfolk/Cape Charles Area

TO: Commanding General

U. S. Army Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

1. A Closed Circuit TV Test will be conducted in the Norfolk/ Cape Charles area on or about 15 March 1958 under the direction of this headquarters.

- 2. The purpose of this test will be to determine the advantages and disadvantages of data interchange by means of TV between the ADDC and AADCP at non-collocated sites. The results of this test will be compared with the results of the Geiger/Fairchild collocation project.
- 3. To insure early implementation and successful completion of the TV test the following will be accomplished:
- a. ADC and ARADCOM will appoint project officers for detailed planning, conducting and reporting results of the test. The names of officers will be submitted to DCS/Plans and Operations this headquarters.
- b. ARADCOM will take such actions as are necessary to insure that the TV test team and equipment will be available during the time period specified to obtain concurrent results from this test and the Geiger/Fairchild collocation project.
- c. ADC will support ARADCOM for this test with facilities, personnel and technical advice.
 - 4. The following operational requirements should be met:
 - a. At the ADDC:
- (1) A fixed TV transmitter should send a continuous picture of the ADDC Early Warning Board to the AADCP.
- (2) A movable (in azimuth) TV transmitter with a Zoomar lens should be available to the NORAD Air Battle Commander

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NOESS-E, Hq NORAD, subj: Closed Circuit TV Test Between AADCP/ADDC Facilities in the Norfolk/Cape Charles Area

which could "blow-up" and focus attention on any portion of the Early Warning Board, Weapons Status Board or Tactical Action Board. Switch action would determine the information to be transmitted and arrowheaded flashlight indications (such as used at the SAGE DC) would focus attention on critical tracks.

b. At the AADCP:

- (1) A fixed TV transmitter should send a continuous picture of the AADCP Operations Board.
- (2) A movable (in azimuth) TV transmitter should be available to the AADCP commander which could send Weapon Acquisition and/or Engagement Status as well as information contained on the Weapon Status Board. In addition, the AADCP commander should have an arrowheaded flashlight with which he can focus attention on FPS-36 tracks as well as individually acquired battery tracks which do not correlate with established tracks.

c. At both ADDC and AADCP:

- One two-way audio communications circuit in conjunction with the two-way video. This would be backed up by the existing wire and radio communications.
- (2) Provisions for a large screen projection of the transmitted pictures.
- 5. Direct communication and coordination between ADC and ARADCOM is authorized.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ Maj F.S. Osiecki 2039 31 Jan 58

pdj

Copy Furnished NCOPO Identical Letter sent to COMUSAFADC /s/t/ F. F. UHRHANE Brig Gen, USA DCS/Comm and Elect

COMEBACK NOELC

M/R: This letter will implement the TV Test Program in the Norfolk/ Cape Charles area. ADC will provide the necessary facilities and personnel to insure that the Army TV test team will be able to conduct a test as required by NORAD. This action was initiated based on a meeting conducted by NOESS-E 30 January 1958.

UNCLASSIFIED HEADQUARTERS .. NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

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DOSTOR WAST DO ANDERSON WORLD CO 3RD AIR DEFRISE SETTLISHE CROTT WESTELL ARM BASE NORMOLE VA CO 77157 AGURON CAPS CHANGES VA COMSSGADD ANDROWS ATB MARTLAND COMOVECE STE ART APE HT CO ARRY PICTURIAL CONTER LOVE ISLAND CITY NI COUSARADOOM SHI AFS COLD (COURIER) O.MESATADO EFT AFB COLU (COURTER) DESIGO FOR LT CAL GRAY

UNCLASSIFIED From MODOF-T 092 ./MY Unclassified MODOF-T 089, 9 June 58. So much of referenced mag which extends test to 30 June is reseinded. This test will officially be terminated as of 1600 hours, 23 Jame 1958. JEAF ADC and BEASADOON will prepare and subsit, MLT 23 July 1956, the final report of test as specified in the best plan.

M/R The Raytheon Television Equipment being utilized in this test is required elsewhere MLT 30 June.

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23 June

COMNAYFORCONA

RECT DEPICINCHORAD

+ Att

Prince

NED SERVICES

Des det

18:00 F-T

Med Run f 2078

86-06 R. E. GARVEY, IR. Major AGC USA

Record Evaluation Information on long Term Visite

Asst Du o. Administration



MINUTES OF MEETING

ON

CLOSED CIRCUIT TV TEST

22-24 APRIL 1958

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Inclosure

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- 69
- A meeting was held in Norfolk, Virginia, on 22 and 23 April for the purpose of presenting the NORAD TV Collocation Test Plan to all interested headquarters and agencies. Attached as Inclosure 1 is the list of conferees.
 - 2. The agenda was as follows:
- a. The conferees were welcomed by Colonel Dodson, CO of the 3d Artillery Group (Air Defense) who was nost for the conference. Colonel Dodson expressed considerable interest in the forthcoming test and assured full cooperation of personnel and availability of facilities at the Norfolk AADCP.
- b. Lt. Col. Gray, OCSIGO DA, then presented technical progress concerning the microwave feasibility testing phase and concluded with a summary of the current status of installation of the required TV equipment. All equipment (TV) except the large screen projectors at both the AADCP and the ADDC was on hand. The projectors are expected to be available not later than 10 May.
- c. Major Rumpf, Readquarters NORAD, then presented the NORAD TV Collocation Test Plan in detail and the plan was concurred in by all conferees with the following exceptions:
- (1) Colonel Dodson recommended that a NORAD representative be placed on TDY at Norfolk for the duration of the Test to actively monitor the Test and to resolve operational differences of opinion.
- (2) Specific multi-directional attacks be laid on during the conduct of the Test rather than rely solely on local air traffic.
- d. At 1300 hours on 22 April, the conferees visited the Norfolk AADCP to view the progress made on installation of TV equipment and to observe AADCP operations.
- e. The morning of 23 April was spent on a helicopter flight to, and a visit at, the ADDC at Cape Charles. (771st AC&W Squadron commanded by Major Harris).
- As a result of on-the-spot observations and discussions with key personnel concerned with the Test, the following pertinent facts apply:
- a. Excellent cooperation and enthusiastic support is being given this project by both the 3d ADA Group in Norfolk and the 771st AC&W Squadron at Cape Charles.
- b. Outstanding equipment and personnel support for this Test is being rendered by OCSIGO DA and the TV Branch of the Army Pictorial Service.

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- c. USAF ADC and USARADCOM are wnolcheartedly supporting this test.
- 4. The conference ended on the afternoon of 23 April with a round table discussion concerning problems encountered and progress made on this Test. The following conclusions were reached:
- a. Technical difficulties are being encountered in the 25-mile over-water microwave link.
- b. A NOBAD representative is required in the Norfolk/Cape Charles area during the entire test period (12-31 May) to coordinate the efforts of the T71st AC&W Equatron, 3d ADA Group, and the TV Branch of the Army Pictorial Service.
- c. Action is required to expedite the installation of a new display board at the ADDC.
- d. A requirement exists for a limited number of multi-directional atrikes in the Norfolk Cape Charles area during the test period.
 - 5. Accordingly, it is ceremended that:
- a. Continued aggressive action be taken by the TV Team to establish and maintain the two-way microwave link between Cape Charles and Norfolk.
- b. A representative from NORAD be present in the Norfolk/Cape Charles area during the period 12 May-31 May to actively supervise this Test.
- c. USAF ADC take immediate and positive action to insure that the new display board (now located at Cape Charles) is installed in the Cape Charles ADDC prior to 10 May 1938.
- d. NORAD make the necessary arrangements to have at least two multi-directional missions flown against the Norfolk-Cape Charles area during the period 12 May-31 May 1958.

1 Incl

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Major, GS Chairman, NORAD TV Test Committee

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23 April 1958

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1st Lt	JACK 9. UMITH	Army Pi torial Center
Capt	FIGUARD F. 1971	ps Officer si Arty Op (Air Def
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Meeting on Closed Circuit TV Test

NOOOP

29 Apr 1958 Maj Rumpf/wdm/2078

NOOPO

- 1. Attached are Minutes covering subject meeting held in Norfolk, Virginia, during the period 22-24 April 1958. (Inclosure 1)
- 2. Although the tentative date for commencing full-scale testing is 12 May 1958, it is requested that NOOOF be contacted by individuals desiring to witness the test prior to their departure for Norfolk due to unforeseen circumstances which could cause a possible delay in the starting date.
- 3. With respect to the recommendations contained in paragraph 5 of the inclosure, the following actions are being taken, or are recommended:
- a. Reference paragraph 5a, the IV team has raised the microvave "dish" height at Cape Charles from 190' to 250'. In addition, they are "panning-in" a considerably shorter over-the-water route which they believe will increase the reliability of the system.
- b. Reference paragraph 5b, it is recommended that Major Rumpf (
 and Major Osiecki (NORLC), split the active test period time as follows:

 (1) Major Osiecki 12 May 21 May b. Reference paragraph 5b, it is recommended that Major Rumpf (NOOOF-T)

 - (2) Mejor Rumpi 22 May 31 May
 - c. Reference paragraph 5c, this action is currently being taken by USAF ADC.
 - 4. Reference paragraph 54, per discussion with NAVFORNORAD (LDDR King), it is believed that informal arrangements can be made with Norfolk NAS personnel for setting up these missions.

1 Incl

ROBERT S. DINGLE, JR. Colonel, USA Director of Operations

DOCUMENT # 71

WAS NOT USED

DOCUMENT # 72
WAS NOT USED

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DOCUMENT # 73

WAS NOT USED

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DUPLICATE

UNITED STATES ARMY AIR DEFENSE COMMAND
OFFICE OF COMMANDING GENERAL
ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

ADGCL 413.68

12 DEC. 1957

SUBJECT: Relocation of AN/FPS-36 Radars (U)

THPU:

Commander Air Defense Command Ent Air Force Base

Colorado Springs, Colorado

TO:

Commander-in-Chief Continental Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. References.

a. Memorendum for Lt General Hart from General Partridge, 19 Nov 57, subject: Location of FPS-36 Radar.

b. Letter NOESS-E, Headquarters NORAD, 27 Nov 57, subject: Relocation of USARADCOM Support Radars.

 In accordance with instructions contained in reference b, proposed radar sites for 5RAADCOM are forwarded. Site locations are as follows:

Site	Location	GEOREF Coordinates	Owner
M-1R	Tisch Mills, Wis.	GKCQ2319	Federal
M-2R	Princeton, Wis.	GJAP6252	Private
C-1R	Argyle, Wis.	GJANO842	State
C-2R	Dixon, Ill.	GJAN3646	US Army
C-3R	Wenona, Ill.	GJAM5703	Private
	Rossville, Ind.	GJCL1923	Private
C-4R	Bunker Hill AFB	GJDL5440	USAF
C-5R	Ademsville, Mich.	GJEMO147	Private
C-6R C-7R	Grand Haven, Mich.	GJBP4604	Manieipel

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ADGCL 413.68 SUBJECT: Relocation of AN/FPS-36 Radars (U)

Site	Location	GEORET Coordinates	Owner
C-88	Ludington, Mich	GJDP2357	State
D-IR	Huron City, Mich	GJHQ1201	USCG
D-2R	Bay City, Mich	GJGP0342	State
D-3R	Lansing, Mich	GJFN23A3	State
D-AR	Morenci, Mich	GJFM4347	Private
D-5R	Port Huron, Mich	GJHP3500	USCG

- 3. In event that permission is obtained to locate radars in Canada, this headquarters desires to relocate site D-5R to Canada.
- 4. Siting plans for Sault Ste Marie defense are omitted because of the lack of firm plans for the defense of Sault Ste Marie.
- 5. Your concurrence is requested in the site selections proposed in paragraph 2 above. The operational dates of relocated radars will be approximately 6 months subsequent to your concurrence.

FOR THE COMMANDER:

JOHN F. PHILP Lt Col, AGC Asst Adjutent Ceneral

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or CI h13.44. USA: LCC., 12 Dec 57, Subjects Relocation of 1. / 755-35 Ramars (")

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The Greenster-in-Chief, Continental for Defense Consumbly Ent ir Perce base, Galerage Porings, Galerage

- 1. Admitional reference: # 123/ftc/25A12 AND Tenderence on 26 lovember 1,57, Subjects Selocation of Panel Support Store.
- 2. The proposed resitive of 5 hours of a raders has been given detailed study. Considerations outlined in references la and 1b of basic letter, as well as understandings reached in the above referenced conference, were utilized as basic 'uidance for our study.
- 3. The attached composite racar coverage charts for A.M. radars (Incls 1 1 1r) were orepared from individual radar cowrage diagrams. The information was derived from radar evaluation reports and siting reports on file in this headquarters. The coverage shown has been set at la nautical miles which is the raunr line-of-sight for 1000 feet over terrain, using a screening angle of -. l degree. In view of comments made by ArtaDCLA representatives at t'e 2 November 1957 meeting, a composite radar coverage chart for AMADON re-located "PS-X radars is portrayed in Inclosure 18, showing a verage of thirty (30) nautical miles. Having no validation for the ju-mile limits ion and in view of the known power and technical notential of the ANA PS-14, FPS-It and the FPG-36 racars, this leaucuerters believes that he nautical mile coverage can be achieved and therefore used this figure throw out the relocation study.
 - L. Evaluation of the existing and programmed UCAY-ALC radar environment disclosed certain comparatively small areas which do not have radar coverage at 1000 feet (Incl 14). However, the majority of the area in which army proposes to locate PP-X radars is already or is programmed to be covered by WiAF-ALC racers. The ALC radar coverage in this area is consistent with current coverage criteria and is complementary to and compatible with the Semi-submatic Ground Environment System which is in the process of installation as the primary surveillance and weapons control facility of the Air efense System.

a. It is concluded that the following proposed AudiCon sites can be deleted in view of their smerfluour overlap of existing and programed III rear covered

and 13. " - Dark 10 to 07, Surject: Selection of At/193-36 DESCRIPTION (F)

PROPOSIU SITE	30 Br.J. 3011 Tr.M
1-1: 0-76: 0-6: 0-1: 0-2: 1-3: 0-6:	7-175 2-170, P-170, P-67 P-710, P-3h, P-195 P-61, P-67A P-61, P-67A P-70, P-61, P-207

(Inclusive 11 and 11)

- b. It is also believed that, if evenered site bels were resited further south, G-CR could be deleted. These sites, as proposed, overlap with 2-47, 2-208, P-67d and P-670 (Incls 14, 1)
- c. Proposed stors C-1 and G-2% are very close to each and 10). other resulting in extreme overlap. Relocation of C-la approximately 15 miles northwest and C+2R approximately 15 miles northeast oculd result in closing this comparatively instanticent lack of 1000 foot coverage is this area. Also, site M-2R could no longer be necessary since P-176 will cover the same area (Incl 16). The remaining area of ren-coverage would be insignificant and will, in all probability, is covered by the prime radar planued for installation with the Joint Nemuel Pirretion Center at Arlington Heights, Illinois just northwest o' Chicago.
- . eference inclosure IA, the siter portrayed with operational dates have been approved, sited, funded, land acquired and contracts for equips of and construction have been let. It appears inappropriate and uncommonical to cancel any of these actions. These sites which show an unknown (link) operational date have been approved, programmed, surveyed and initial land procurement ne ctiations have been accomplished. However, they have not been funded in existing approved budgets. In all probability, the sy 59 budget will carry these funds; but, the sites will not be operational until approximately the years after funds are made available. In consideration of these unknown operational dates, a covera a study of the affected area was occorolished and is shown in Inclosure 10. Inclosure 11 portrays a logical orientation for installation or relocation of was-3 racars to meet and 100 feet coverage requirements, if deemed necessary. This a da only one radar more than those shown in Inclosure 16.

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pour hand , The man , 19 the 57, Subjects relocation of ANY 19-35 various in .

- entire combat come has been accomplianted in apportune with established all offense coverage criteria. Scincilentally, the surveillance data acquired of these ranges take one of a code of and utilized as imputs to the future SAC System in all ereas; however, SAC input capacity will be about and acquired of the sacrational range inputs. This acams that installable unable to accept similifical range inputs. This acams that installable unable to accept similifical range inputs. This acams that installable of And SON radges, over and above these already programmed in most areas will not possably be usable in the bar. Invironment.
- 7. The Mir before Cormand is fully countrant of its responsibility to a vice surveillance data for all accordance with establical ecverage criteria. Defense Jyste in accordance with establical ecverage criteria. Accordingly, programs have been establical environments produced, or programment for procurement, to carry out this responsibility. In recognition of systems concepts, standardisation and centralization of weapons control, and economy of produced to the designation of this responsibility to a similar appropriate, this responsibility to a similar appropriate. The PPS-36 Pacars are considered as purel, surveillance type receive. Prior to their introduction into the Air Lethon Types. It appears mandator, that two major changes must be effected.
- s. of the most first as moveledge the recovered arms radar surveillance requirements which, in some excess, differ from clinical time as are leftense requirements. If the in according to the radar coverage necessary for whom to officially revise the transfer radar coverage criteria and result ments accordingly.
- b. If the above actions are effectual, the kir beforee Command should be basediately advised of the surveillance requirements in order that action may be taken to provide same. Or, if CO AT so desires that the responsibility for revision of air streillance data be divided between the introduction of artificially actions. In any event, the introduction of artificially actions to the existing air defense dystem much as carefully decreased to preclam existing air defense dystem much as carefully decreased to preclam potential circumstate interference fracts of a well as to determine their operational effectivity.
- Command reserving the leasthility of AD. Linitation of A. -36 survillence information and whether the AD Filter raders can be used to meet the about the reces. Their versus at ly indicates that, with certain operational agreements and relocation of pertinent equipments, both associes a cess could be served. Frinar, consideration involved would be the occupied racticability of such operations.

 Official confirmation and details regarding this latter will be received and reviewed upon conclusion of the current had study.

MCCL M13.68, MSALEBUR, 12 Dec 57, Subject: Helocation of Address Radars (V)

- 9. If it appears that the army requirements dictate the installation of .Ph-X radars at or near those locations already programmed but not funded by USAC, then the following criteria and considers insmust be thoroughly evaluated prior to issuance of a CLNAL decision in the arms.
- requirement that surveillance and gap filter two reduces out have a dual channel capability with the score year wave guide writch.
- b. Gap filler raders must operate twenty-four hours ter may with a minimum switch-over time between charmels of 2 to 3 seconds. It is uncertain that the manner 175-3 rader is not a dual charmel rader and will require unaccentable of the-air maintenance. The lar Filler raders are unranged, dual charmel types which do not normally require off-the-air maintenance time.
- r. If the manual PPS+36 redar is to be used theu, is mucr to incorporate it into the existing Air befores Surveillance System, the following major requirements are generated:
- (1) The AN/PST-1 Dual Channel coordinate data transesting equipments must be installed at the designated site which will be in an information to the PPS-3. equipments, contunications and personnel.
- (2) tisc, a Remote Control Conitoring Set (cenate unit) will be required.
 - () commissely reliable over words in candatory.
- (b) Operational agreement, ust be reached in the following:
 - (a) kin rate (1 4-1) 10%.
 - (b) PF 60-2000 cyc/sec.
 - (a) relative to the effect of a se

as the primary and sole fir Defense Surveillance and Control System has input limitations which must be adhered to. Any additional available radar data cannot be accepted without the deletion of some other existing input. It is therefore concluded that additional surveillance radar information will be of duplous value to an individual weapons system under normal operating conditions.

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about 113.64, Will taken, 12 Dec 57, Surject: relocation of Associate natures (1)

11. If after a negation of the acove, and in let ring that the only recent of the utilization, the antiquent of receiving in Inchment of relating to require a coverage, and interference with the existing and process.

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WORT 13.68, STREET, 12 me 57, Subject: Entreating of a "Saje Hadara (7)

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Headquarters North tractions Air Lafense Command, Wat Art, Colorado Strings, Sola ado

For Commander, USAY Air refense Command, Many Jewy Coloredo Springe, Coloredo Springe,

1. The primary rest condition for prevision of radar surveillance data to NEAD forces rests with SEC in the eres with which
this correspondence is concerned. However, in the event SEC A D is
unable to provide this data, on a tissly backs, to the agencies
having valid mead, this Headquarters reserves the proragative of
authorizing interior installations by any New D scenery, so satisfy this
need. To damy these installations, would be be degrees the effectiveness of the agencies expressing the table, and bould thereby contribute
to the general degradation of the equipments.

2. Accordingly, the EPS-NG depleyment leas of USARALOW, as expressed to basic correspondence or she bin AA negica, are approved, subject to the fellowing descriptions.

a. The installations will be temperary in nature, and will be made in such manner surrepositive location as to not prevent timely completion of construction of congruence ACC returns.

6. The deployment of an ind-No redar to any specific site will not be made if the July 100 redar which is programmed for that sits will be operational with in six (0) mouths of the date of this correspondence.

c. The serveillance coverage requirements of USANADO'N in all defense areas of the US will be made known by that occurred to USAFATC, through dONAD, so come as possible, to permit inclusion by USAFATC through dONAD, so come as possible, to permit inclusion by USAFATC through dONAD are into the FI 1960 operating and funding required. Changes will be forwarded to USAFADO by SAFATC N, through NEAD, as they occur.

d. WHATALCH is actionized to deploy and operate interim installations of PRO-jo catars o movide required coverage as specified herein until such time as USAF A C raders can provide the approved coverage in the area conserved. At this juncture in events, the authorization to USAF AUR is to be considered as a different.

e. The fit-ju rather are to be considered as temperary augmentations to the Mir I i are nurvillance networks, and the outputs from these radars will be integrated into the master display.

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Hq HCRAD, Subject: Relocation of AN/FFS-36 Raders (U) Comt'd

famility of the ADDC concerned. They will be manned and maintained by USARADCOM personnel. The communications to the ADDC (master display famility) will be provided by USAF ADC.

f. Operating procedures will be in ascerdance with NORAD Manual 55-1.

g. Frequency interference problem will be resolved in accordance with surrent service procedures

h. It is the specific desire of this Readquarters that thepen be operated in a memor responsive to the node of the NCRAD integrated surveillance system. However, this statement bill not be construed as to require modification of these redains as indicated in paragraph 9c of your lat Indoresment. As an interfer many the actisfying USARADCON surveillance mode, this modification is paragraphed to be shelly many third in the state of the shelly as a surjustifiable.

3. Contents of your palegraph II we noted. In view of the coregoing policy statements, no special comment is considered appropriate. Close continuous between your headquarters and UBARADON, of your respective programs, is committal and urgest at this time.

1 Incl

MARGUALI S. CARTER Major General, PSA Clief of Staff

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Security of the control of the control

nel Hal Kiga and

DEAN G. ROATH Lt Col, WAF Act Dir Plans & Rormts Div

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Eq 1.701, Subject: delection of a/1 5-30 Vader (0) Commits

facility of the DB common ter, toy of a street end midst the C. StrateCOM personnel. The transmissations to the ADDC (master dieplay facility) will a provide a 2017 ADC.

- f. Operating procedures will be in accordance with MORANNE Manual 55-1.
- g. Frequency interference problems will be resolved An accordance with current service procedures.
- h. These radars (13-30 type) are apt to be construed as extensions of organic acquisition radars of USA-100K units, and it is the specific desire of tris Bendmanturn that they be operated in a same responsive to the mode of the DRM integrated surveillance system. However, this submated with poble construed as to require modification of these radars as indicated in paragraph 9c of your ist indorsement. As an interms there are satisfacting in the CCM surveils lance needs, this modification is considered to be shelly unjustifiable.
- 3. Reference your pay trops II. in view of the foregoing, Uis mesdquarters seclipes the apporte thy works specific custent. Close coordination between our respective programs, should minister the difficulties mentioned herein.

PULLES CHARLES SINGUE

1 Incl

NOOPR

20 March ,958

SUBJECT: NORAD Surveillance System

TO:

DUPLICATE

Commander, USAF Air Defense Command Commanding General, U.S. Army Air Defense Command Commander, Naval Forces, CONAD Air Officer Commanding, Air Defence Command, RCAF Station St. Hubert, St. Hubert, Quebec

- 1. This letter is a statement of policy regarding the furnishing of surveillance equipments and the responsibility for planning and coordinating the North American air defense surveillance system. Where conflict exists with any previous NORAD policy statements on this subject, this letter will govern. The provisions contained in this letter do not apply to the Distant Early Warning (DEW) Line.
- 2. The policies contained herein apply to all echelons of NORAD, military agencies under the operational control of CINCNORAD, and are for the guidance of other commands and agencies having collateral responsibilities in the conduct of air defense.
- 3. A surveillance radar, as used in the NORAD system, is one whose purpose is the detection of objects in the air mass, the data from which are passed to the air defense control facility, integrated into the master display, and used by the commander exercising operational control to evaluate the threat and make decisions on employment of weapons.
- 4. The siting of all radars used for surveillance purposes, regardless of the agency furnishing these radars, will be carried out in such a manner as to provide the best possible overall air surveillance system for the air defense of North America. This system will provide the surveillance data required for all system will provide the surveillance data required for all systems used by the North American Air Defense Command. Separate radars which duplicate the surveillance functions being performed by the NORAD surveillance system will not be used for individual weapons systems.
- 5. The following responsibilities are assigned to the component commands and agencies of the North American Air Defense Command.
- a. In the United States, the USAF ADC has primary responsibility for furnishing surveillance radars and associated communications.

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- b. In Canada, the RCAF ADC and the USAF ADC have primary responsibility for furnishing surveillance radars and associated communications. The ratio of equipments to be furnished by each command will be determined by government to government negotiation.
- c. Although the USAF ADC and RCAF ADC have primary responsibility for furnishing surveillance radar equipments, other commands and agencies may be required to furnish surveillance radars in the NORAD system. Or dinarily this will be on an interim basis pending installation of regularly programmed surveillance radars; however, they may be required on a permanent basis if deemed necessary by CINCNORAD.
- d. In the United States the USAF ADC will be the coordinating agency responsible to NORAD for establishing the U.S-based portion of the integrated surveillance system. This surveillance system will be established and operated in accordance with the overall requirements set forth by CINCNORAD.
- e. In Canada the RCAF ADC will be the coordinating agency responsible to NORAD for establishing the Canadian-based portion of the integrated surveillance system for North America. This surveillance system will be established and operated in accordance with the overall requirements set forth by CINCNORAD.
- f. In Alaska CINCAL is responsible to CINCNORAD for all air defense activities, including the provision of air surveillance information for the NORAD system. The commands and agencies responsible for furnishing surveillance radars and associated communication equipments in Alaska will be as determined by CINCAL.
- g. All agencies having primary responsibility for furnishing surveillance information will insure that such information is compatible with, and responsive to, the needs of the using agencies.
- 6. The following instructions will apply in coordinating activities:
- a. Component commands will coordinate their requirements for surveillance information with the appropriate coordinating agency.
- b. The command or agency furnishing radars for the surveillance system will be responsible for operating and maintaining these radar sets.

- c. Interim equipments will not be sited so as to prevent construction of permanent facilities. The output of interim surveillance radars will be integrated into the parent master display facility. Radars used on an interim parent master display facility will not be modified for data basis for surveillance purposes will not be modified for data link transmission.
 - 7. This policy directive is binding on United States components and agencies, and is furnished to the RCAF ADC for planning and guidance pending the publication of a NORAD regulation on this subject. A draft of this regulation will be lation on this subject in the near future for review and furnished your headquarters in the near future for review comment.
 - E. E. Partridge /signed/ E. E. PARTRIDGE General, USAF Commander-in-Chief

- c. Interim equipments will not be sited so as to prevent construction of permanent facilities. The output of interim surveillance radars will be integrated into the parent master display facility. Radars used on an interim basis for surveillance purposes will not be modified for data link transmission.
- 7. This policy directive is binding on United States components and agencies, and is furnished to the RCAF ADC for planning and guidance pending the publication of a NORAD regulation on this subject. A draft of this regulation will be furnished your headquarters in the near future for review and comment.

E. E. Partridge /signed/ E. E. PARTRIDGE General, USAF Commander-in-Chief



HEADQUARTERS 25TH AIR DIVISION (DEFENSE) UNITED STATES AIR FORCE

11 MAR 1958

In Reply Refer To 25005

SUDJECT: Duplication of Fadar Coverage

T.h:

Cornander Continental Air Defense Command Orces Western CONAD Region Hamilton Air Force Base, California

1. (UNCLASSIFIED) Reference your letter, subject as above, dated 6 February 1958 and letter, subject: Proposed AN/FTS-36 Radar Sites (U), 22 January 1958, Readquarters 26th AAR Crown, Fort Lewton, Vashington with our 1st Indorsement dated 23 January 1958.

No further proposals have been submitted to this headquarters of A.s. Commanders. To have in the reactine how-2. ever, prepared chart overlays to leternice the exect extent of radar coverage duplication involved with the Ask proposals. As depicted by the attached overlays, the duplication is practically identical at elevations of 500 to 1000 feet.

Based upon costs of 25th Air Divisio, primary radars and cost estimates of scheduled Gap Filler radars the expenditures indicated in the ANA proposal are tremendous. The cost of four (4) AN/?PS-36 radars installed to this area could well total approximately two million dollars. The implication of existing and programmed AX relar coverage by AAA facilities therefore deserves the most careful consideration as to requirement and practicability.

L. (UNCLASSIFIED) I am forwarding our chart overlays for whatever use they may be. All of my staff officers have been fully briefed in this astter. Your boadquarters will be informed immediately in the event of future developments.

3 Incls: 1. Radar Coverage Chart, Ask

(SECIET)

2. Radar Coverage Chart, 25AD1v (SECHET)

3. Map

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250CE, Hq 25th ADD, 11 Mar 58, Subj: Duplication of Radar Coverage

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4 APR 958

Hq CONAD Forces, Western CONAD Region, Hamilton AFB, California

TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- The attached chart overlays, prepared by the 25th Air Division, are forwarded for your information and use in developing a policy respecting the operation of surveillance type radars.
- 2. The 1,000 foot radar coverage chart, Inclosure 2, has been checked and is valid.
 - 3. This indorsement standing alone is unclassified,

FOR THE COMMENDER:

LYMAN L. WOODMAN Lt Col, USAF Adjutent

3 Incls:

250CB, Ho 25th ADD, 11 Mar 58, Subj: Duplication of Radar Coverage

NOESS-E

2nd

Rq North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

TO: Commander, CONAD Forces Western CONAD Region, Hamilton

- 1. The MORAD policy regarding the furnishing of surveillance equipments and the responsibility for planning and coordinating the North American Air Defense Surveillance System was outlined in letter, Subject: NORAD Surveillance System, file NOOPR dated 20 March 1958. A copy of referenced letter is attached for your information and guidance (Incl. #4).
- 2. This indorsement standing alone is Unclassified.

FOR THE COMMANDER-IN-CHIEF:

4 Incls
1 thru 3 n/c
Added 1 incl
4. Cy of 1tr fm
Hq MORAD, 20
Mar 58, subj:
NORAD Surveillance
System

V. F. DURNAME Brig Gen, USA DOS/Command Elect pat-

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CONTRACK -OFFIC

M. R: We tern CONAD Regi a submitted for WORAD information and use in developing a policy respecting the operation of surveillance radars' a series of chart overlays prepared by the 25th Air Div (Der) which showed the dupitation of existing and programmed ADC AAA showed the dupitation of existing and programmed ADC AAA radar coverage in the Searth area. We are advising Western conad Region that the NORAD policy regarding Surveillance Systems has alread, been published and we are furnishing them a map)

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MOEPR

21 March 1955

SUBJECT: (U) Deployment of AN/FPS-35 Radars

TO:

Commanding General U. S. Army Air Defense Command Ent Air Force Base Colorado Springs, Colorado

- Reference is made to your letter, subject: "Relocation of AN/FPS-36 Radars (U)," dated 12 Dec 1957, addressed to this Headquarters through Commander, USAF ADC.
- 2. By 2nd Indorsement to referenced correspondence, this Head-quarters advised USAF ADC of MORAD approval of the planned deployment of the AN/FPS-36 radar sets as proposed for the 5th Region, USARADCOM. Certain conditions were attached to this approval, however, which are quoted herewith for your guidance:
- "a. The installations will be temporary in nature, and will be made in such manner and specific location as to not prevent timely completion of construction of programmed ADC radars.
- "b. The deployment of an FFS-36 radar to any specific site will not be made if the USAF ADC radar which is programmed for that site will be operational within six (6) months of the date of this correspondence.
- "c. The surveillance coverage requirements of USARADCOM in all defense areas of the US will be made known by that command to USAF ADC, through NORAD, as soon as possible, to permit inclusion by USAF ADC of any additional required radars into the FY 1960 operating and funding programs. Changes will be forwarded to USAF ADC by USARADCOM, through NORAD, as they occur.
- "d. USARADCOM is authorized to deploy and operate interim installations of FPS-36 radars to provide required coverage as specified herein until such time as USAF ADC radars can provide the approved coverage in the area concerned. At this juncture in events, the authorization to USARADCOM is to be considered as withdrawn.
- "e. The FPS-36 radars are to be considered as temporary augmentations to the USAF ADC radar surveillance networks, and the outputs from these radars will be integrated into the master display

Hq NURAD, subject: (U) Deployment of IN/F S-30 Reders (Comt'd)

facility of the ADDC concerned. They will be named and maintained by USARADCOM personnel. The communications to the ADDC (master display facility) will be provided by USAF #DC.

"f. Operating procedures will be in accordance with NORAD Manual 55-1.

"g. Frequency interference problems will be resolved in accordance with current service procedures

operated in a manner responsive to the meeds of the FORD integrated surveillance system. However, this statement will now be construed as to require modification of these reders as indicated in paragraph 9e of your lat Indorsement. As an faterin posts of satisfying USARADCOM surveillance needs, this modification is considered to be wholly unjustifiable."

3. Reference pars 2s, above. The present surveillance coverage criteria for the continental U. S. provides for 500 feet above terrain in border areas and 2000 feet above terrain in interior air defense identification reads. In these bases wherein present criteria (which is the current basis for raise proposing used by USAF ADC) will not satisfy USARALCOM made, it will be necessary for this Headquarters to validate these requirements to USAF ADC for implementation.

Request diese coordisation of all phases of this project with USAF ADC.

> F -- ---Major te mml, A

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The Projector interior race problem will a resolved in encordance with correct terms of the encordance.

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3. defende the 20, done. The recent drys lines coverage criteria for the continuits of relation in the set above terrain in the set of the effect identification separa. In a course reven treat or teris (which is the dreat read of the set of the value of the set of

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24 April 1956

MEMORANDUM FOR: LT GENERAL ATKINSON, COMDR, WSAY ADC LT GENERAL HART, CO, USARADCOM

SUBJECT: FF3-36 Radars

1. In recent weeks there has been considerable discussion regarding the utilization of \$2 JPS-36 radars belonging to the Army Air Defense command. It seems to have been the position of the fray that they need the output of shore radars if order to insure the fullest possible billization of the Nike weapons system. In a new radars in General Hart last Hovember, I indicated that it was my desire that this equipment be used, but that it be used in places to be recommended by the Army Air Defense Command but where it would have a contribution to the surveillance system operated by the Air Force Air Defense Command. It appears that the USAF Air Defense Command is relation to saccept these radars into the surveillance system and make use of their output.

the 13-36 reder as a defense acquisition radar, the 13-36 reder as a defense acquisition radar, the apparently removing it from the surveillance category. The 153-36 is an improved TPS-1B radar which has been used for surveillance purposes for the last ten years to my certain knowledge. It is immaterial that the Army desires to call this particular set; it performs in a surveillance role as for as I am concerned.

3. Unless there appear to be most serious edictions on the part of the Air Force and Army components of MURAD, I propose to issue the following instructions, to be effective immediately:

a. The AADCP's and the Air Defense Direction Centers will be collocated in accordance with current plans and as rapidly as feasible.

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Record Evaluation: Personnel. Lung Time Value

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b. The FPS-36 is to be employed to its fullest capacity as a surveillance radar. It will be operated by Army personnel on a 24 hour-a-day basis and its output will be forwarded to an Air Defense Direction Center, as well as to the AADCP where such elements are not collocated.



appropriate arrangements will be used to insure that antimireraft fire units receive the output of the surveillance system on a timely, continuous, and accurate basis.

25 CH CA

d. Relocation sites for the FS-36 will be submitted to USAF Air Defense Command for coordination for those pites that will augment the NORAD surveillance system. The USAF Air Defense Command has already agreed to recent the output of five of the eleven FPS-36 pidars currently under discussion between Air Force Air Defense Command and Army Mir Defense Command. The location of the remaining six and any other FPS-36 radars which ARADCOS reals should be relocated, but which duplicate or would not augment the existing NORAD surveillance system, will be arranged with the NORAD division commanders concerned.

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between adjacent sites that cannot be resolved between your two badquarters, the matter will be referred to NORAD. Surventlance System, addressed to the component commanders and to the Air Officer Commanding the RCA iir Defense Command, continues in effect and applies to the FPS-36 as well as to all other radars bk

WHIME 24 Apr 58

or surveillance purposes.

E. E. PARTRIDGE General, USAF Commander-in-Chist

Copy furnished: DCS/C&E

m/R: See reverse sude - UNCLASSIFIED

Record Evaluation Personnel, Long Time Value

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MENO FOR THE RECORD:

A policy letter on the NORAD surveillance system was dispatched to the component commands including USARADCOM on 20 March 1958. A letter was prepared by DCS/C&E, Subj: Deployment of AN/FPS-36 Radars, and dispatched to USARADCOM on 21 March 1958. A letter was received from USARADCOM in response to our policy letter mentioned above. Subject of this letter: Relocation of USARADCOM Defense Acquisition Radars, dated 9 April 1958. It implies that since the name of the radar has been changed our policy letter will not apply. This memo is for the purpose of clarifying General Partridge's desires concerning the use of the 89 FPS-36 radars. It further delineates the action that General Partridge intends to take on this subject unless there are serious objections on the part of USAR ADC and USARADCOM

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLUMNO SPRINGS COLUMNO

	COLORADO SPRINGS, COLORADO			
HOOPE	5 June 1958	CIM	Deple L	1
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SUBJECT:	(U) AM/FPS-36 Radars and Surveillance Requirements of HIRE Defenses	Sce	HEIPE COMMISSION	
			CHENORAL	HEX
TOI	Commander, USAF Air Defense Command Commanding General, US Army Air Defense Command		眼儿	HCS
	Commanding General, us army and Commander, Each COMAD Region	-	T Card dense of	SEC ME
	Commender, Each Comme angloss		MIT	District (
	Reference to mide to URARADOUM letter, ARGL 413.68,	_	eta-Visur Six	SAV
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addresse	d to this basequerters, and the 2nd Indersement thereto.	IN	O SERVICES	ME
			N	
2.	Bendguarters MARADOM has stated a requirement for uni	3 00	My.	FLC
	and at to another hattand somulaition radar cous of	-	Table 1	£55
The State of the S			mare !	574
	beaming IMAY ADS 1 BULVESTIBLES INC.		Elef Lange	224
progress	has not been fully implemented, because site selection i		3	4
the mil	sting surveillance system has not always resulted in the overage required for NIEE defense systems, and because of	OX	3/1	DET
reder e	overage required for the existing surveillance system		Carl & State	KB
problem	in data mending from the data and	-	Rect & Estimates	185
12.5	WINE defenses.	-	Ope time!	XXI
as time between attempt	Many of the problems involving operational control, suc ly use of surveillance information and proper coordination Service elements of the sir defense system, stem from ing to operate from dispersed locations. Hence, it is at that the co-location of AARCP's and ARC's proceed as	20	Popriors Ambreio	000
			Committee Comm	_
- mprony	ment which adversely affects NORAD's operational capabili	Lty.	Des Analysis Des Evel	00
		-	Ola Cole	-
4.	. In order to insure full utilization of existing survei	-	G ARAD COMD	+
		-	CONAVECTION	AD
		T	CONUSAF ADC	
	The same and the s	_	CAA	
			PCDA	
This de	oes not proclude temporary scheduled shut downs for maint or constitute a requirement to modify the existing equipm	ents	Pepped ty	Verde
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for wh	ich the FPS-36 was sited, the FPS-36 will be withdrawn fr	000	Refers to	funted 8
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HEADQUARTERS HORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE

the surveillance systema composessors 1968 460r FFS -36 radar will be submitted by UBARADCOM to UBAP ADC for coordination and salection, from among the sites preposed, of those sites that can be used to sugment the surveillance system.

- 5. The location of those FPS-36 reder sites which, in the opinion of USAF ADC will not augment the surveillance system, but now still be required to assist the WINE battery acquisition radar, on will be coordinated with COMAD Division Commanders concerned to insure that electronic interference with other air defense radar does not exist. Wherever it is deemed necessary to site an FFS-\$5 which does not augment the surveillance system, the presumption exists that the present BSAF ABC surveillance system is inadequate to provide the radar coverage required for BIKE defenses either fromproperers standpoint of location or other reasons. Such deficiencies shall be reported by USARADCON to HOMAD, information to USAF ADC, in order that steps to rectify those deficiencies may be initiated.
- 6. Wherever an FPS-36 is sited, a potential back up for an existing or programmed WAF ADC surveillance radar exists. In order to utilize this potential in times of emergency or other ned it difficulties, provisions shall be made for cross-telling FPS-36 surveillance information to an appropriate Direction Center. In puts shall be compatible with the existing menual system.
- 7. One of the functions of the existing surveillance system is to provide the surveillance required for MIKE defenses to operate effectively. Basically, this requirement includes advance werning of impending hostile or faker tracks which may penetrate the WILL defense bettery acquisition radar range and continuous direct resing cross-telling to the AADCP on those tracks which do penetrate Contail fige Center that area, until such continuous tracking is no longer required. Con Evel Relay of information from a Direction Center vertical display board of occasional timed track information is insufficient. Back COMAD Regional Commander shall require an inspection to be made of cross-telling facilities presently svailable to AABCP's to ascertain course acc that the above requirement is not. Instances in which the problem CAL recommendations in order that remedial action may be initiated. Promote in Corpora
- 8. The completion of the programmed surveillance system in these areas where NIEE defenses exist, the correction of possible technical deficiencies in radar coverage, and the provision of appropriate data handling means will eliminate the requirement for Return to Faction 1 the FPS-36 in the air defense system. Existing FPS-36 sites, however,

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will previde a mixt are property of autonomous operation (Mode IV) in the provide directed by MORAD, this stand-by capability may be retained, if feasible, within the resources allotted to USARADCOM.

FOR THE COMMANDER-IN-CHIEF:

MARSHALL S. CARTER Major General, USA Chief of Staff

Copies furnished: Commander, Esval Forces COMAD Air Officer Commending Air Defense Command ECAF Station, St. Rubert, Quebec

See attached sheet for Memo for Record

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HEADQUARTERS HORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLUPADO SPRINGS, COLORADO

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SUBJECT: (U) AN/FFS-36 Radars and Surveillance Requirements of NIXZ Defenses

HOME FOR ARCORD:

An informal conference was held between Gen Fartridge and Gen Hart in November 1957 concerning the use of FPS 36 taders in the Morth American sir defense missile defenses. On 19 November, Cen Fartridge dispatched a memorandum to Gen Hart on this subject and indicated that these raders should be used in places to be recommended by the Army but where they would make a contribution to the surveillance system operated by the Air Force.

DEARABORN immediately instigated a program for re-siting these radars and action was taken to coordinate the site surveys with the USAF ADC division commanders concerned. Coordination with Commander, 37th ADIV, was completed for those sites in his division area. Coordination in other division areas is continuing. Their recommended site locations were furnished to USAF ADC for the 5th Army Air Defense Region on 12 Dec 57 and the 2d Army Air Defense Region on 18 Dec 57.

USAF ADC forwarded the recommendations from USARADOON for those sites in the 5th Army Air Defense Region by lat Indorsement to Eq WORAD on 29 Jan 58, with their comments and asking for additional policy guidance in the matter.

Open arrival in this headquarters of the above correspondence, it was decided that all policy actions that had been taken in the past on the subject should be reviewed and a new policy regulation be written, hased on previous policy statements, that would cover the current situation. Such regulation was written but due to the urgency in getting the current problems solved, it was decided that it would be published first in the form of a policy letter, to be followed later by a regulation. This policy letter was discussed with both USAF ADC and USARADCOM representatives. This policy letter was dispatched from this Eq on 21 Mar 58.

Choice were furnished Commander, URAF ADC, Commanding Openeral, USARADCOM, Commander, RAYTERCOMAD, Air Officer Commanding, Air Befonce Command, ECAF, and the Chief of Air Staff, ECAF.

Based on the policy letter mentioned above, a reply was written to the let Ind from USAF ABC, pertaining to the siting of the FFS-36 radars in the-3th Army Air Befonse Region. This letter was dispatched from this Eq on -21 March 58.

A letter was written to UMARABOUN on the deployment of FTS-36 radars and was dispatched from this Eq on 21 Mar 58. This letter commented on the UNIFAMOUN latter concerning relocation of FPS-36 radars in the 5th Army Air Defears Engion and delineated the policy of this headquarters concerning the as of these sets.

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MEMO FOR RECORD (continued)

On 17 Mar 58, Department of the Army notified USARADCOM that Department of the Army had sufficient funds on hand for the relocation of the FPS-36 radars at 11 sites. They were asked as a matter of urgency to inform the Department of the Army as to the locations of the sets to be re-sited.

On 20 Mar 58, USARADCOM verbally notified USAF ADC of this requirement.

On 24 Apr 58, General Partridge dispatched a memo to General Atkinson and General Hart stating certain actions he proposed to take, namely: proceed with co-location of AADCP's and ADDC's as rapidly as possible, to employ the FPS-36 as a full time surveillance radar where it would augment the surveillance system, to permit the utilization of FPS-36 as required to assist NIKE defenses, and to insure that NIKE defenses receive adequate and timely data from the surveillance system. Reply from General Atkinson, undated, was received stating no objections. Reply from General Hart, dated 29 Apr 58, was received stating no objections.

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HEADQUARTERS

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

TEL: MELROSE 2-5511 EXT_ 2680

ADORQ-E

F 114Y 1958

MEMORANDUM FOR GENERAL PARTRIDGE, COMMANDER-IN-CHIEF, NORTH AMERICAN AIR DEFENSE COMMAND

SUBJECT: FPS-36 Radars

- 1. Your Memorandum of 24 April 1958 makes reference to the utilization of FPS-36 radars belonging to the Army Air Defense Command. I agree wholeheartedly with your proposal to issue the instructions contained in Paragraph 3. It is suggested that the first sentence in Paragraph 3b read: "The FPS-36 is to be employed to its fullest capacity as a surveillance radar on an interim basis until the permanent surveillance radars are installed."
- 2. Upon receipt of your Surveillance Policy of 20 March and your instructions of 21 March 1958 on relocation of FPS-36 radars, I instructed the Air Defense Forces to expend every effort to comply with CINCNORAD guidance. At the same time, I returned the FPS-36 correspondence to ARADCOM for appropriate re-evaluation in view of CINCNORAD policy and guidance. I requested ARADCOM to submit any future proposals for FPS-36 radars to ADC to permit our initial coordinated review and simultaneous USARADCOM/ADC referral to appropriate field command for detailed analysis and concurrence. I further stated that, for expediency, the ADC Director of Communications could be contacted for information regarding existing and programmed radars of the Air Defense System.
- 3. To avoid any possible misinterpretation of your Memorandum, it is my understanding that your instructions in Paragraph 3d mean that the location of FPS-36 radars which will not augment the surveillance system but may still be required as acquisition radars in support of the Nike weapon system will be coordinated with NORAD Division Commanders to insure that electronic interference with other air defense radars does not exist.

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ADORQ-E, Subject: FPS-36 Radars

4. In all cases, immediate attention will be given to the surveillance requirements established by USARADCOM.

J. A. ATKINSON Lieutenant General, USAF

Commander

HEADQUARTERS AIR DEFENSE COMMAND AN FORCE MASE, COLORADO

TEL: MEL CE 42511 EXT _

31 JA 1951

SUBJECT: Master Direction Center Concept of Operations (Manual)

TO:

Commander-in-Chief Continental Air Defense Countad but Air force Base Colorado Springs, Colorado

- 1. The attached ADC "Meater Direction Center Concept of Operations (Manual)" outlines a method of manual ACW operations that this headquarters proposes to out into effect within the United States and the 64th Air Division. If approved, this concept will be made effective at the earliest possible date and will continue until the advent of SAGE. The changes in the deployment and employment of the ground environment system that will be brought about by this concept are a natural development of the AC+ system which is dictated by the improved performance of defense weapons, radars, and enemy bombers.
- s. The present "Decentral red Concept of AC+ Operations" was based on the ability of individual Direction Centers to detect a trace, identify it as friendly or unknown, acranite nearby fighters, and direct the interception. with the introduction of high speed jet hombers, this type of operation has become an exception rather than the rule. Coordination between several Direction Centers and an intercestor unit that is based outside of the area of responsibility of the detecting station is necessary to complete the required action. This coordination (in most cases) can only te accomplished with the help of the Control Centers and defeats the whole theory of decentralized operations. It was never intended that control Centers handle this amount of traffic and, as a result, evercises have shown the following:
 - (1) The large number of trac a teceived at the Control Centers car only be dealt with by combining them into raids, resulting in a tose of individual control.
 - (2) onsunications circuits become saturated and the Control Centers do not receive adequate, timely, and accurate 'rick information.

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ADORU-D. Subject: Waster Direction Center Concest of Operations (Manual)

(?) Postin of weapons status and respons loading at the Control Centers generally lays the actual status by 10 to 15 inutes due to the rechanics involved and the heavy worload on the status cler and the status communications.

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- (4) Progress and results of tactical action do not generally reach the Cantro: Senters in sufficient time to take additional action if the imitial action has been ineffective.
- b. The requirements of the Decentralized Concept of AC's Operations are not compatible with our present resources:
- approximately 2. A. Transport size authorizations to USAF by 31 July 1951. It is not possible to belete this samy spaces from the ground environment system without degrading our air defense capability unless hanges are made in the operational concept.
- (2) As each area phases into SAGE operations, we will be required to as noth the SAGE and the manual systems in those areas during the transition period and for a short period thereafter. The temporary increase in personnel that will be required for this transition will further appravate the problem described in the above paragraph.

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- have been made available to Air Defense Command have not been sufficient to provide the quantity of circuits to support the Decentralized Concept as it was originally conneived. As a result of this, the number or circuits authorized between adjacent Direction Centers and Letween Direction Centers and Letween Direction Centers and their Control enters has had to be reduced accordingly. Alternate Division Centers do not have circuitry to the AC. sites within their Division (encent adjacent sites) and many sites that are required to personn an identification function during unergencies do not have A-18 circuits.
- (4) The activation of new sites is causing many Divisions to have difficulty with the present method of oversations which requires each AC site within a division to forward-tell to the division for. The grob on faced by the Lu Air pivision is a good erangle. There is not room behind the plotting board for the number of plotters needed to receive forward-tell information from their to AC sites.

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ADORG-D, Subject: Master Direction Center Concept of Operations (Manual)

- c. Many of the Direction Centers in the present system could not effectively direct weapons in a combat situation because they are not in a position to receive early warning information and/or because weapons are stationed so far away that their range capability could not be utilized because of the time element. Not only is a part of the operations manpower being wasted at these sites, but the efficiency of the Aircraft Directors is deteriorating because of the insufficient number of opportunities for directing practice intercepts.
- 2. In an effort to correct the deficiencies of the present system, this headquarters has allowed several of the divisions to modify the Decentralized Concept to fit it to the varying conditions that exist in different areas. As a result of this, the 31st, 34th and 64th kir Divisions and all of the Air Divisions in WADF are operating under various Master DC Concepts. CADF has proposed a Master DC Concept to be applicable to all CADF divisions, and EADF has objected to the difficulties of operating under the Decentralized Concept. It can be seen that if higher headquarters continue to allow the Forces to modify the present procedures here and there on a piecemeal basis, the system will lose all semblance of stendardization and the advantages that go with it. The time has clearly cone to modernize our whole ACW system.
- 3. The "Master Direction Center Concept of Operations (Manual)" is the result of studies made by this headquarters and the Forces to solve the problems described in the preceding paragraphs. Requirements for SAGE Mode III Operations were taken into consideration during these studies so that the two systems would be compatible wherever possible in order to reduce the expense and technical problems of phasing the manual system into the Mode III configuration after the advent of SAGE.
- 4. The attached document is submitted for your comments and/or concurrence. It is requested that this action be accomplished as soon as possible so that distribution of the approved master DC concept can be made to the field at an early date.

1 Incl
Waster DC Concept of Ops
(Manual), 1 cy (U).

/s/t/ HAROLD W. GRANT Major General, USAF Deputy for Operations

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(DORQ-D, Hq (DC, 30 Jan 59, Subject: Master Direction Center Concept of Operations (Manual)

WOOOP

1st Ind

20 Feb 1958

Hg North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- TO: Commander, USAF Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado
- 1. An examination of the proposal to group radars into a complex for manual operations has been accomplished. The proposed arrangement appears to provide for some considerable improvement in the surveillance and identification systems in the manual system, but is less applicable as a method for allocation and control of weapons. The concept of a master radar station receiving radar surveillance information from associated "slave" stations, for the purpose of filtering and establishing tracks and providing identification of tracks, should improve the reliability and track continuity of the surveillance display at Master Direction Centers and ADCC's. Decisions to undertake intercept actions against high speed targets may have to be made while the targets are far removed from the environment of such a radar surveillance complex. Thus, the passage of threat warning from Region to Division, or Division to Division, is essential for full information on the air situation, The function of allocation of weapons for these targets can be accomplished at the ADCC. In addition, the decision to pass interceptor weapons to adjacent Divisions for control must be accomplished by, or within, the immediate cognizance of the ADCC.
- 2. In order that the allocation and control of weapons under the operational control of CONAD Divisions may not be jeopardized, it is recommended that the following changes be incorporated in the proposed plan (Inclosure #1):
- a. A description of the function to be performed at the ADCC's be included in paragraph 4 of the plan, to the effect that decisions will be made at ADCC's for allocation of interceptor weapons on inbound tracks received via threat warning tells from outside CONAD Division areas; on prearranged weapons employment plans; and on tracks with insufficient interceptor weapons commitments. Weapon control status of surface-to-air weapons of ARADCOM will be directed through CONAD (NORAD) CC's.
- b. The functions to be performed at the Master Direction Center be indicated to include surveillance display, track establishment, identification, allocation of fighter interceptor weapons, scramble/recovery of fighters, control of fighter interceptors, coordination of tracks with adjacent radar stations and Master Direction Center, and reporting to a CONAD Division Control Center.

20007, Subject: Mester Direction Conter Concept of Operations (Manual)

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- e. In all cases, A Tota which are associated with am AMOUTP
- d. Paragrap- k.b.(1)(a) be deleted as a limitation on selection of Hester Direction Centers.
- Center to associated AADCP's be indicated in paragraph. S of the plan.
- J. Instructions for the incorporation of rader subveillance data from appropriate ARADCOM raders will be forwarded separately. The implementation of the plan for prouping of the IN1 raders into the proposed complexes should proceed subject to possible later modifieation of arrangements at EDC's or APAC's associated with an ANADOM Defence Complex.
- h. Subject to the incorporation of the recommendations contained in paragrap: 2, above, this headquarters concers in the inclosed plan. It is requested that the plans for the support of the consept which are to be forwarded by ALC Perce Coveragers and Commander, bith A.r. Division, as outlined in paragraph 3. Inclosure \$1, be submitted to this headquarters for review and approval prior to implementation.

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1 Inel

MARSHALL S. CARTER Pajor General, USA Colef of Staff

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especially, owny, the sirveillance inputs from

ANACOM surveillance radams are not impluded in the ADF

plan. Action is maintage seasonable to solve the problem

of incomporation the higher surveillance rathers TPS 1-D

and TPS 350 into the inventor asystem; reference to this

matter is purposed withen number that the arrangement of

A'd radams in the Master Winston Center will ease may proposed

at once. Modification is some more within contain complexes

may be required liker.



ADDRG-D, Mg ADC, Ent AFS, Colo, 3C Jan 58, ambjs (U) Meater Direction Center Concept of Operations (Manual)

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2d Ind

BQ Air Defense Command, Int Air Force base, Coloredo Springs, Coloredo

- TO: Commonder-in-Chief, Continental Air Defense Command, Ent Air Force Bese, Colorado Springs, Colorado
- Attached hereto as Inclosure 2 is a copy of the Master Direction Center Concept of Operations (Manual) which has been revised in accordance with the recommendations contained in paragraphs 2s through a of the preceding indorsement. Copies have been distributed to the field with instructions to subsit detailed implementation plans to this headquarters not later than 15 April 1958.
 - 2. Reference is made to paragraph 2e or the preceding indorsement:
- a. In order to eliminate the dissoventages of becentralised Operations as enumerated in paragraph 1 of the basic letter, radar complexes should have a size and configuration (slipment of radars and respons to probable energy approach routes) that will enable them to carry out all of the required actions against a Mach 2 target. Such lactors as SAGE and manual toundaries, SAGE phasing requirements, existing facilities at radar sites (large operations rooms, on-base locations, adequate entrance facilities), radar and radio coverage and the locations of weapons, target complexes, AADCPs, ARTCCs, ADIZs, and MJCs are all taken into consideration in determining which radars should make up a complex and which reder in each complex should be the Master Direction Center (MIC).
- b. This headquarters agrees that JMLCs should be designated as MCs in all cases. However, if birection Centers that are associated with an AALCP are also designated as MLCs in every case, this will place severe limitations on the manner in which the radar system is organized into complexes. Studies have shown that this limitation will dictate the organization of many radar complexes that will be too small to deal with high speed targets.
- c. The creation of additional MuCs will also penerate a requirement for personnel and lessed wire communications that is not consistent with the resources of this command. This is because DCs that are designated as MDCs require the addition of five officers and tem airmen for identification jurioses plus the addition of lessed wire communications to the CCC, adjacent MICs and to the nearest APTCC. Since ARADCOM has programmed additional AARCOS that will increase the total to lifty within the United States, it can be seen

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ADCRC-D, Hq ADC, Fnt AFB, Colo, 3C Jan 58, sutit (L) Meater Lirection Center Concept of Operations (Manual)

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that this situation will place heavy decands on our resources if an MC is to be established in each of these areas.

- d. In view of the above, it is recommended that paragraph &c(1)(b) of Inclosure 2 te deleted.
- 3. Reference paragraph 4 of the preceding indorsement. The Air Defense Forces were instructed to summit their supporting plans for review and approval prior to implementation so that this headquarters can assure that they will be within the scope of the MCFAD-approved concept. Since time is of the essence in putting this plan into action, and in view of the fact that the supporting plans will contain a great amount of detail, it is felt that the requirement for MCFAD to review and approve these plans will result in a duplication of effort and a loss of valuable time. It is therefore requested that consideration be given to whether or not NCFAD requirements on this matter can be fulfilled by the receipt of information copies of supporting plans that have been reviewed and approved by this headquarters.

FOR THE COMMANLERS

1 Incl
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Added 1 Incl
2. Muster 1C Concept of
Ops (Munual), 19 Feb
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AUDRO-D, He ADC, Sa	ns AFU, Colo., 30 Jan 58, Subje (II) Hanton	Call
Mirection Center Co	mospt of Operations (Manual) 3d Ind 7 APR 1	1
Morth American	Air lefense Command, Ent Air Force Same, Colorado	sum often
TO a Commending Ser	neral, IS Army Air Defense Command, Base, Colorado Suringa, Colorado	Section Section
Barmant work	comments and/or recommendations concerning ceding indersement not later than 1h April	1958
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l Incl n/c	Colonel, USA Director of Operations	
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ADDOCF L13.65 (30 Jan 58) | Lin 1nd 3)
SUBJECT: Master Direction Center Loude; 1 Commissions (Manual) (8)

Springs, Colorado to ADD 1955

To: Commander-drawBhief, Scribertal & r. w russ Sommand, Ent Air Force Base, Colorade Springs, Colo

 As requested in preceding information, the following comments are supplified.

7. Except at a notification, and switching or white and about are physically joined to form a make (Moure, too roll dester under the operational conversity as a designated Guilai (Moure) demander, this command can exclude a requirement for a factor for the center at every ADDC associated with an AAAAA 1 to relie to the every warning, early identification and continuous servillation be available to the AADAP with the least possible only usual to three ending or retransmission, but since weapon control sixts of this is a middle-to-all waspons will be directed through Coral (MEAA) in the large a communications from separate AAAACPs to three centers which have provide infine the of early varying, identification, and switchilance atta.

3. At the direction of LTW Whit plans for all now TSAMADOM detences should consider the scannescen feast raity of ollocation of the Ander vito an ADDC to form a LONA. (MINAD) wonters' which is the replayment plan of USAMADOM units on those has defense was a sentent to your readquarters by letter, ADDP WO, this read where. The 1916, a specif ADADOM Secommend replayment is

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ADGCP 413.68, Hq ADC, 30 Jan 58, Subject: Master Direction Center Concept of Operations (Manual) (U)

NOOOF-T

5th Ind

1 May 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Communder, USAF Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- Approval is granted to delete paragraph 4c(1) (b) of your plan entitled "Master Direction Center Concept of Operations (Minual)," 19 February 1958.
- 2. In order to expedite the implementation of the Master Direction Center (MDC) concept of operations, your headquarters is authorized to approve the MDC plans submitted by your air defense forces. However, this command will review the information copies of the supporting plans and reserves the privilege of disapproving plans that are not in consonance with the concept promulgated by this headquarters.

FOR THE COMMANDER-IN-CHIEF:

1 Incl 1. Mpc Concept of Ops (Manual) 19 Feb 58 2. w/d /s/t/ MARSHALL S. CARTER Major General, USA Chief of Staff

M/R: 1. USAF AD requested that:

a. Par 4c(1) (b) of their plan entitle "MDC Concept of Operations
a. Par 4c(1) (b) of their plan entitle "MDC Concept of Operations
(Manual)" 19 Feb 58 which states "DCs that are associated with an AADCP
will be designated as an MDC in all cases" be deleted: ARADCOM concurred
in this recommendation (see par 2, 4th Ind)
b. Since time is of the essence in putting the MDC plan to action
and in view of the fact that the supporting plans from the air defense
forces will contain a great amount of detail, USAF ADC believed that
the requirement for NORAD to review and approve these plans would
result in duplication of effort and a loss of valuable time.

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HEADQUARTERS
AIR DEFENSE COMMAND
BHI AIR PORCE BASE
COLORADO SMINES COLORADO

19 Pebruary 1958

Master Direction Center Concept of Operations (Manual)

1. General.

a. In an effort to keep up with the natural development of the air defense system, it has been necessary to make changes in and exceptions to the present Decentralized Concept of ACW Operations. More changes will be necessary in the near future due to the fact that the activation of presently programmed ACW sites is creating a demand for personnel and circuitry that is not compatible with the resources being made available to Air Defense Command. This problem will be further aggravated by the demands required for transition into SAGB. It can be readily seen that if we continue modifying our present procedures on a piecemeal basis, the system will lose all semblances to "Standardization" and the advantages that go with it.

b. In order to overcome this problem and to modernize the ACW system so that it can keep pace with the improved performance of defense weapons, radars and enemy bombers, it has been necessary to develop a new concept of manual ACW operations. The "Master Direction Center Concept of Operations (Manual)", described below, is the result of various studies made by this headquarters and the Defense Forces. It recognizes that standards rigidly applied is the other extreme to non-standard operations. Its main, feature to its flexibility of ACW alignment, manning and circuitry that makes it possible to tailor the ground environment system to fit the diverse conditions that exist in different areas. This will result in an improved operational capability and a more economical utilization of resources.

2. Purpose.

The purpose of this document is to provide guidance for the planning and implementation of the "Master Direction Center Concept of Operations (Manual)".

3. Responsibilities.

Porce Commanders and the Commander, 64th Air Division will formulate the necessary plans to support the concept outlined in this document and will submit them to the Commander. Air Defense Command, for review and approval.

4. Operational Concept.

a. Heavy radar stations in the manual ACM system will be functionally classified as "Master" or "Slave", Slave stations may be direction center, surveillance stations, ARW&CON, or Picket Ships. These stations will be grouped into small operational complexes consisting of one Master Direction Center and up to five (5) slave stations. Each Master Station will be responsible for the operational control of all slave stations within its complex. Where practicable, a "Radar Complex" -should have a size and configuration (alignment of radars and weapons to probable enemy approach routes) that will enable it to carry out all required actions against a Mach 2 target.

- (1) Master Direction Center (MDC) Responsible for surveillance display, track establishment, identification, allocation of fighter interceptor weapons, acramble/ recovery of fighters, control of fighter interceptors, toordination of tracks with adjacent radar stations and adjacent MDC's, and reporting to a CONAD Division Control Center.
- (2) Direction Center (DC) Responsible for aurveillance and control of weapons. Capable of scramble/ recovery. Reports to a Master Direction Center. Accomplishes track coordination with adjacent radar stations.
- (3) Surveillance Station (55) Responsible for surveillance and may or may not have a limited control capability. Reports to a Master Direction Center or to a Direction Center. Accomplishes track coordination with adjacent radar stations,
- b. The functions and responsibilities of the Air Defense Control Centers are not changed by this concept. However, the method of exercising control responsibilities are slightly changed: 1.e., the MDC's which are under the operational control of the ADCC's are responsible for exercising operational control within their complexes as delegated to them by the Control Centers and act as filter centers between the Direction Centers and the Control Centers. Thus, decisions will continue to be made at the



ADCC's for allocation of interceptor weapons on inbound tracks received via threat warning tells from outside COMAD Division areas; on pre-arranged weapons employment plans; and on tracks with insufficient interceptor weapons commitments. Weapons control status of surface-to-sir weapons of USARADCOM will be directed through COMAD (NORAD) Combat Centers.

- c. The alignment of radar sites to support this concept of operations will be based on the following:
- (1) Factors to be considered in the selection of Master Direction Centers;
- (a) Joint Manual Direction Centers will be designated Master Direction Centers in all cases.
- (b) Direction Centers that are associate with AN AADCP will be designated as Master Directions in all cases.

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- above, with the most radar and radio coverage should be considered as the third priority for selection.
- (d) A Direction Center operating independent of other Direction Centers and/or Surveillance Stations may be designated a Master Direction Center.
- (e) Existing facilities, such as large operations rooms (CPS 6B sites), on-base locations, and adequate entrance facilities, should be used wherever possible to curtail the establishment of new requirements.
- (2) Factors to be considered in the selection of Surveillance Stations:
- (a) ACM sites should be designated as Surveillance Stations if they will not be able to direct weapons in a combat situation because they are not in a position to receive early warning radar information and/or because weapons are stationed so far away that their range capability cannot be used because of the time element.
- (b) Heavy radar sites that are programs to be replaced by gap fillers should be designated as Surveillance Stations.



(c) Surveillance Stations may be given a limited control capability in cases where they are required to give navigational assistance (in areas where other navigational sids are lacking) or where limited control of weapons may be required.

(3) Pactors to be considered in determining the composition of "Radar Complexes":

(a) All Master Direction Centers will have an identification capability.

(b) SAGE boundaries should not preclude the best grouping of sites to form a complex.

(c) The optimum cellular composition of a radar complex is considered to be one Master Direction Center to three slave stations (i.e., direction center, surveillance station, ACW&CON, Picket Ship). This may be exceeded if not detrimental to operational considerations. However, the combination of Master and Slave stations within a complex should not exceed six (6) in number.

(d) Alignment with potential enemy approach routes.

(e) Locations of major target complexes.

(f) Sxisting and programmed weapons locations and capabilities.

5. Communications.

a. Bach Master Direction Center will be given sufficient ANIS circuitry to enable it to perform an identification function. Direction centers may or may not have ANIS circuitry (direct to the ARTCC's). This will be determined on an individual basis contingent upon identification requirements and traffic loads. Wherever it is practicable, processed identification information will be relayed from the Master Direction Centers to the direction centers.

b. All circuitry going forward to division control tenters from slave sites, except one (1) TTY circuit and one voice "Westher-Lisison" circuit from direction centers having Scramble/Recovery responsibilities, will be deleted.

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- Present terminations of all acramble, AADCP, and augmentation unit circuits will remain as is.
- Engineered circuits will be deleted wherever possible.
- e. Present circuitry between Defense Porces and Division control centers will remain intact.
- f. Based on the concept that GOC data should be supplied to the radar site in whose area the plot lies, a GOC circuits will remain in place with their current terminations.
- g. In addition to the above, the following will be used as a guide for determining the circuitry, below control center level, required to support this operational concept. The mere fact that a circuit is listed herein will not be used as justification for circuit requests, escircuit must be operationally justified on a site-by-site basis. On the other hand, requests for circuitry not list in this paragraph, will be approved if sufficient justific tion can be furnished (see ADCR 102-1).
 - (1) ADCC to MDC (4 GPP circuits)
 - (a) Surveillance and Status
 - (b) Command, Control and Weather
 - . (c) Telling
 - (d) Lisison and Operations
 - (2) MDC to Adjacent MDC (3 GFF circuits)
 - (a) Surveillance and Status
 - (b) Command, Control and Weather
 - (c) Telling
 - (3) MDC to DC in same complex (3 GFP circuits
 - (a) Surveillance and Status
 - (b) Command, Control and Weather
 - (c) Telling

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- (4) MDC to 35 in same complex (2 GPP circuits)
 - (a) Surveillance and Status
 - (b) Telling
- (5) DC to adjacent MDC, DC or \$5 (1 GPP circuit)
 - (a) Liminos and Telling

6. Manning.

Manning of ACW sites to support this operational concept will be in accordance with ADC Manning Standards being developed for each type of ACW unit described in paregraph 4.2.

7. Command, Administration and Logistics.

The present relationship between the Division Meadquarters and their ACW units for command, administration and logistics will remain unchanged.

FOR THE COMMANDER:

HAROLD W. GRANT

Najor General, USAF

Deputy for Operations

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NUMBER ONE TO CRECK OPOINT 9-58. THIS TESSAGE L. THE TWO THE PART IS FOR COMMANDANT COMMAND ON 551ST ARMAC LINE TO THE PART IS FOR COMMANDANT COMMAND AND COM 551ST ARMAC LINE TO THE REQUEST YOUR DEPLOY YOUR PICKET SHIPS AND ARMAC ALBORATE IN "A" STATIONS LISTED IN APPENDIX I TO ANNEX B OF MY OPOIN S. TO QUOT HOURS I FEB 58. REDEPLOYMENT SHOULD NOT BE IMPLEMENTED TO ODOI WORK I JAN 58. PART II: FOR ZU-1 SORN OF LY. YOU SEE TO ODOI WORK I JAN 58. PART II: FOR ZU-1 SORN OF LY. YOU SEE CONTINUE TO MAN STATION 6 DURING PERIOD WHEN ARMAC ALBORATE TO OUTER PERIMETER STATIONS. DIRECT COORDINATION WITH COMMAND TO

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HEADQUARTERS CONAD FORCES EASTERN CONAD REGION Stewart Air Force Base, New York

CFEOP-S

5 Feb 1958

SUBJECT: Test Deployment Stations for Elements of the Seaward

TO: Commander, 26th Continental Air Defense Division,
Roslyn Air Force Station, Roslyn, New York
Commander, 85th Continental Air Defense Division,
Andrews Air Force Base, Washington 25, D.C.
Commander, Haval Forces, Eastern Continental Air Defense
Region, Stewart Air Force Base, New York

- 1. During the recent CFECR Secural Extension Conference of 29-30-31 Jamary 1958, many questions were asked by the conference that indicated a lack of knowledge concerning the reasons for the establishment of alternate stations as provided for in Annex B of CFECR CPORD 9-58. The "A" stations that elements of the seaward extension are presently occupying on a test basis are the result of a study on deployment of these elements originated by appropriate staff personnel assigned to CFECR. The objective of this deployment is to insure the destruction of enemy forces at the maximum range of weapons under the operational control of the Commander, CFECR.
- 2. During the past two years, CINCNORAD has received many suggestions for the redeployment of the forces assigned to the seaward extension. Because there is limited objective data available to justify firm conclusions on this subject, CFRUR has been directed to conduct a test of our operational concepts, and to evaluate the advantages and disadvantages of our proposed deployment. It is anticipated that exercises "Rough Game" and "Ocean Waves" will provide the data required for this evaluation.
- 3. Some readers of CFECR CPORD 9-58 have concluded that the manning of "A" stations has automatically reduced the mission of the 551st AEMAC Wing to that of Early Warning. Although the limitations of present radar equipment available to the AEMAC Wing are well recognized and understood by this headquarters, we have not recommended that the control portion of the AEMAC Wing be reduced or eliminated. In fact, the present deployment embodies the concept that a certain number of interceptors would be issued airborne orders for the control of the AEMACon aircraft after threat warning has been received from the Remote Information Zone. Consideration must be given to this concept if the destruction of enemy forces is to be accomplished at the maximum combat radius of the available intere

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CFEOP-S, Hq Eastern CONAD Region, Subj: Test Deployment Stations for Elements of the Seaward Extension (Cont'd)

4. Results from exercises "Sea Legs", "Hail Stone", and "Black Angel" have already been analysed by this headquarters. This data added to the results of exercises planned within the next sixty days are expected to provide a firm basis for recommendations to CINCHORAD concerning mission assignments and optimum deployment of the forces presently assigned to the seaward extension.

5. This letter is classified SECRET in accordance with paragraph 30b(2)(b), AFR 205-1.

FOR THE COMMANDER:

Copies furnished:
NORAD
EADF
551st AEW&C Wing
YAOR Div 21
AEW Airship Sqdn #1

/s/t/ JOHN E. MANNON Major, USAF Adjutant



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SEARCH ENTER TO THE EMPERATOR YOUR MESSAGE MOOP-T MOSS.
THIS MESSAGE ME PARTS. PART 1: THE OPERATIONAL DATE REQUIRED TO ANALYZE THE EFFECTIVENESS OF PRESENT DEPLOYMENT WAS BEEN LIMITED DECAUSE OF RESTRICTIONS PLACED ON JOINT TRADITION INVOLVING ADC INTERCEPTOR WITH SAC A HIGHEST. RECENT COORDINATION VITE WITH TACTICAL AIR COMMIND MAVE RESULTED IN AGREEMENT OF TAVINITY TO COMBUCT RESTRICTLY ENERGISES AGAINST OUR SEAMAND EXTENSION. RESULTS OF THESE EXERCISES OF MOUNT THE DATA REQUIRED FOR CONCLUSION OF FIN DEPLOYMENT. PART 2: AN INTERNITY REPORT CONCENNING PRESENT DEPLOYMENT WILL BE FORWARDED YOUR MEADQUARTERS PRIOR TO 23 APRIL 1950.

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HEADQUARTERS
WESTERN AIR DEFENSE FORCE
UNITED STATES AIR FORCE
HAMILTON AIR FORCE BASE, CALIFORNIA

19 Nov. 1957

SUBJECT: Change of AEWAC Mission

TO: Commander
Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado

- 1. (UNCLASSIFIED) Airborns early warning and control (AEWAC) sirmarks of the 552nd AEWAC Wing have provided, and are still being depended
 on for, a seaward extension of WADF ground reder. Following early experience in the AEWAC mission the control function (direction of fighter
 sireraft) was found impractical and was abandoned as a wing function.

 During the past year, however, this was reestablished in the wing and
 a substantial number of controllers assigned to this organization. Current experience continues to prove that the controller function is impractical and uneconomical and accordingly it is believed that the
 requirement for controlling fighter aircraft is not commensurate with
 the equipment and personnel capabilities that exist in AEWAC.
- The mission of AEWEC, as assigned by WADF Operations
 Plan 5-56, is to provide seasord extension of WADF ground radar for the
 detection of medium (20,000') and low (500') altitude targets with
 particular emphasis placed on the low level target. Operational experience with the AEWEC seaward extension indicated that the sircraft possesses
 a good capability to conduct a surveillance and early warning role. Tests
 conducted in September 1956 resulted in the detection of 83 percent of some
 560 known movements at a range of 163 miles. Experience with the present
 station configuration has indicated excellent early warning results with
 pickup ranges averaging 170 miles. These results came from targets at
 all altitudes within the medium and low altitude maga range. This same measure
 of espability cannot be given to the "Control" portion of AEWEC mission
 for the reasons listed below:
- a. The average year round platform altitude of AEWAC is 8,000 feet. At this altitude the visible horizon is approximately 95 nautical miles. Using this figure as a guide, a target flying at 500 feet above the surface would first be detected by AEWAC at approximately 100 nautical miles range. Since the present station location of AEWAC is in excess of 350 miles from the coast and the initial detection range is 100 miles, if tactical action is immediately taken, and fighters scrambled, a high speed, low level target would penet ate the AEWAC station and be out of the range of its radar before an intercept could be attempted. If the initial detection took place while the target was 450 miles from the coast, under ideal conditions as intercept could not take place until the target had reached a point of 190 miles from the coast. It can a readily be seen that AEW would never have the opportunity to control fighters for intercepts within their sector.

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Hg WADF, Subject: Change of AEWEC Mission

- b. Another deficiency shows up when investigating the range limitation caused by the visible horizon at average platform altitude. As mentioned in par paragraph a, the initial detection of a low level high speed target would be at approximately 100 nautical miles range. The normal "sea clutter" caused by sea state and atmospherics on the scopes extends to approximately 90 miles. The clutter, if intense, seriously affects any possibility of skin painting a target in the clutter, aliminating any capability of control for interception.
- c. Bependable height information is required to perform an intercept. The height finder on AESEC (APS-45) does not give dependable information and an unsatisfactory report has been submitted on the equipment. It has proved difficult to maintain, and a good percentage of the time the frequency of the APS-45 interferes with the APS-20 search radar, seriously hampering the effectiveness of the search radar. The APS-5 has a limited range was capability of approximately 100 miles. This corresponds roughly with the sea clutter area of the APS-20 where no intercept control could be depended upon.
- d. The final report of the Denver Essearch Institute, University of Denver, Study of Airborne Operations Center Equipment and Techniques for Airborne Early Warning and Control, recommends that a program of me sector search be implemented to improve low altitude detection capability. To handle the improved search program, it would be necessary to utilize the five scopes presently installed in the aircraft for surveillance. If control of interceptors is required or desired, they suggest that a sixth console be installed for control if effective search is not to be jeoperdized.
- e. Another unsatisfactory condition that exists on the sircraft for the control of interceptors is that reder contact is lost during the turn of the AEMAC platform. Though this loss is momentary it would be critical during an intercept and could change an otherwise successful run into a lost attempt.
- f. With the present number of controllers assigned to WADF in all units (ACW, AEM&C and the picket ships), intercept requirements to meet ADC Regulation 50-12 approximate 100,000 per year. Aircrev intercept requirements, as directed by ADC Regulation 51-3, approximate 90,000. However, the present WADF capability, based on progressed flying hours and the extinated skill of the aircrev/director team, is approximately 67,000. A deficit of over 30,000 intercepts that cannot be accomplished to fill the director requirements, and over 20,000 intercepts short of aircrev requirements, therefore exists. Reserving

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Hq WADF, Subject: Change of AEW&C Mission

the control requirement from AEW&C and moving the majority of the assigned directors to AGW sites, thereby increasing their proficiency with training, will reduce the overall training requirements for WADF directors to the point where the 30,000 intercept deficit would almost be eliminated.

- Conclusions, based upon the above information, are:
- a. AEWAC possesses a good early makes werning and surveillance capability and can be effectively utilized in this role in furtherance of the air fa defense mission.
 - b. A realistic control capability for AEABC cost not ix i exist.
- 4. The following recommendations are submitted for approval:
- a. Delete the control function from the ADWAC mission and utilize the sireraft for early warning and surveillance.
- b. Readjust equipment and personnel authorizations which support the control function and make redistribution of these resources, leaving a minimum number of directors (one per crew) on the aircraft for crew supervision.
- (UNCLASSIFIED) This correspondence is classified in accordance with paragraph 30b(2)(e), AFR 205-1, 3 January 1956.

HUCH A PARKER Major General, USAF Commander

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C, Ho WADF, Hemilton AFB, Calif, 19 Nov 57, subj: Change of AEWEC Nam

ADOOP-0

1st Ind

HEADQUARTERS Air Defense Command, Ent Air Force Base, Coloredo Springs, Coloredo

- TO: Commander, Western Air Defense Force, Hamilton Air Force Base Celifornia
- 1. The proposal outlined in the heads letter is presently under study by this headquarters.
- 2. There are several actions presently being taken to provide this headquarters with additional information upon which to bees a decision with relation to proposals for a change in the concept of operation for AEWSCon. These actions are:
- a. Wright Air Development Center has been requested to place increased emphasis on testing and evaluation of the AMTI (cirborne neving terret indicator) modification of the APS/20E search radar to permit the earliest knowledge of its capability. Headquarters USAF has indicated that consideration of new search radar for AEM&Con will be held in absyance until the results of the AMTI evaluation are available. Headquarters USAF has indicated that sufficient data should be available on this modification by February 1958.
- b. Authorization has been given by this headquarters and Headquarters NORAD to GONAD Forces Eastern COMAD Region to utilize, on an experimental basis, the AEWSCon element on the outside (seaward side) of the picket ships. This project will include an evaluation of the control on capability and will provide additional information on this subject.
- 3. This headquarters is making every affort to obtain data and factual information to permit a optimum future utilization of the AEMACon forces. Your comments are being given serious consideration, and any additional recommendations are solicited.
- 4. Your headquarters will be advised of progress in regard to this proposal.

FOR THE CONTANDER:

UNCLASSIFIED

HARGID W. GRAMT Major General, USAF DEPUTY for Operations

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B/L, Eq WADF, 19 Nov 57, Subject: Change of AEMAC Mission

2nd Ind

28 Jan 1958

Eq Western Air Defense Force, Hamilton Air Force Bese, California

TO: Commender, Air Defense Commend, Ent Air Force Base, Colorado Springs, Colorado

In the 28th Air Division (Befence) face from 10 January 1958 through 13 January 1958 was an excellent opportunity to test the measure extension operational concept as proposed by this headquarters in basic correspondence. During this period picket ship stations seven and nine were moved in approximately 50 miles in order to eliminate the existing 50 mile gap when tracking B-47 aircraft and to be in a position for control of interceptor aircraft if required. AEMAG stations five and seven were moved outboard of the picket ships approximately 180 miles for early warning. Paralles of surveillance and tracking of seasons extension elements during the ORI were excellent. For the first time, during a major exercise, EXEMAG aircraft contributed extensively to the success of the exercise. Extended early varning enabled the 28th GADD to comit F-59d aircraft to faker tracks when they were approximately 600 miles from the const.

2. The following permanent seaward extension locations are proposed by this headquarters and will become effective 1 March 1953 unless serious objections are expressed by your headquarters. Approval of the following locations will require a change to bound Extension Oper times Flan 9.57, Intel 1 August 1957. A chart with the new security extension elements plotted is inclosed for your information. Buter ranges for the picket ship were drawn as using a .5 blip scan ratio to insure positive control capability; the radar ranges for the ARMSC circust were drawn using approximately a .2 blip scan ratio for early warning only

Reporting

AEWAC	Primary HF	Secondary HF
#1 47-20N 135-00W	Picket #1	P-1
#3 43-20N 134-00W	Picket #3	M-100
#5 39-00N 133-40M	Picket #7	P=38
#7 35-10N 131-30W	Picket #9	P-38
#9 31-45N 128-50W	P-15	
#11 34-00N 126-00W	P-38 UNCLASSIFIED	



B/L Hq MADF, 19 Now 57, Subject: Change of AEW&C Mission

Reporting

AEWSC	Primery HF	Secondary HT
#13 30-30N 128-20W	P-15	
Fin 47-00N 132-15W	UHF to Picket #1	
#3n 44-00N 131-95W	UHBF to Picket #3	
#5a 41-05 131-00W	UNF to Picket #5	
#7a 38-000 130-004	UMF to Picket #7	
#9e 35-20N 128-10W	UNF to Picket #9	
PICKET SHIP		
#1 47-30N 130-30W	P-1	AENRO #1
#3 44-35N 130-00W	H-100	AEMSC #3
#5 41-40N 130-00W	P-38	
#7 38-50N 129-10W	P=36	ARMSC #5
#9 36-05# 127-50W	P-38	ABW&C #7
#11 33-30N 125-30W	P-15	*
#13 31-00W 123-50W	P-15	

Peacetime swarm secured extension coverage is designed to give protection to the entire west coast. Picket ships will man locations 1, 3, 5, 7 and 9; AEW2C aircraft will man their locations 11 and 13 with the outboard stations being manned on a rotating house. The number of outboard stations being manned will depend upon flying time authorized. Emergency manning will consist of seven picket ship and five AEW8C stations manned full time.

4. rimary communications for the AEW&C sircreft will be by voice HF to the picket ships. Picket ships will correlate AEW&C tracks with their own tracks and forward the information to the parent DC. Secondary communications will be HF direct to the parent DC. UHF locations will be mermed in the event HF communications

B/L Hq W/DF, 19 New 57, Subject: Change of AFW C Mission

cannot be maintained. Primary communications for the picket ships will be RATT to the parent DC. Secondary communications will be voice IF to the AEWAC aircraft for relay to the parent DC.

- Menning picket ship stations 11 and 13 will be 6. Manning picket ship stations II and IS WILL be accomplished by one DER proceeding from Seattle and assuming station #1. Picket ships on stations 1, 3 and 5 will move south and assume stations 3, 5 and 7 respectively. Ships on stations 7 and 9 will move south and assume stations il and 13 while a YAGR is proceeding from Treasure Island to assume station #9.
- 6. (UNCLASSIFIED) This indorsement is classified SECRET beacuse it store the overall refer cover to and espebblity of all seemend extension elements.

2 nels

1. Sepund Extension Emerg Augh Coverage (ley)
2. Semmerd Extension Peacetime

Manning

Hugh A. Parker Major General, USAF Commander

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ADOOF-O, Hq ADC, 5 Mar 58, Bubj: Change in Amer. Mission (U)

NOCOF-T Eq North American Air Defense Command, Ent Air Force Base, Calorado Springs, Colorado

FO: Communder, USAF Air Defense Command, Ent Mr Touse Base, Coloredo Springs, Coloredo

1. Your comments on the WALF proposal of redeploying elements of the sensord extension have been revised by this best parters.

2. In view of the fact that a similar that is surrently being sondward by CFRCR, it is desired that WADF be replaced to relocate ARRAC aircraft on an interim backs to that stations outlined in message 1028, this headquarters, 22 property 1028 (see Inchosure).

3. Upon completion of the Crain was, the recommendations submitted by MANF and CFECE will be reviewed by this headquarters in
coordination with HAYVORCEAN and your headquarters. The results of
the review will establish a time policy of the employment of elementa
within the seaward extension she will be promulgated in a revised
MORAD operations plan.

FOR THE COMPONENTS -CHIEF:

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Added 2 Inchs
22 Feb 50
3. Has ONOUP, 80-5016,
CPMCS, \$7 Feb 50

HARVEY T. ALMESS Major General, USAF DCS/Flans & Operations

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HEADQUARTERS

AIR DEFENSE COMMAND

ENT A P FORCE BASE

COLORADO SPRINGS, COLORADO

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ADDOP-0

SUBJECT: (U) Change in AEWAC Mission

TO: Commander-in-Chief Continental Air Defense Command Est Air Force Base Colorado Springs, Colorado

- Attached is a copy of a proposal from the Commander WADF someorning the changing of the AEW&C mission on the West Coast. This headquarters concurs with that pertion of the plan which relocates these stations and is authorizing -ADF to proceed with the implementation of this phase.
- 2. Until such time as it is definitely determined that a requirement for Fighter Controllers about these aircraft does not exist, the 552d AEUSC Wing has been instructed to maintain this expebility. In the event this requirement is later deleted, a minimum of one Director per error will be maintained to provide supervision of the surveillance crew.
- 3. We do not concur with the proposal to route ARMSC primary telling through the picket ships. The airborne teletype modification presently being installed in all RC-121 aircreft is being made to specifically overcome some of the communications problems. This will reduce the work load at the CCI site. With picket ships extremely vulnerable to sutmarine attack, the primary telling procedure should not be routed through them. It is not considered advisable to establish a peacetime operational procedures that would not be available in a war. Alternate telling procedures through picket ships is considered acceptable.

FOR THE COMMANDER:

1 Incl Ltr fr WADF, 19 Nov 57, seme subj. w/2 Inds MARCLD W. CRANT Major General, USAF Deputy for Operations



ROUTINE ROUTINE CINCNORAD

AF CWOOP 8C-5016 17 Feb 58 CONF

COMCFWCR HAMILTON AFB CALIF

INFO: COMUSAFADC ENT AFB COLO (COURIER)

COMMAVFORCONAD ENT AFB COLO (COURIER)

Pending resolution of your proposal to relocate seaward extension elements and completion of CFECR Seaward Extension Test, permission is granted to deploy AEWAC aircraft as outlined in your message.

X

/s/t/ Maj Reeves 2078 19 Feb 58

wdm

M/R See attached correspondence

19 2130Z

Feb 1958

/s/t/ Maj Fred D. Reeves, Jr.

2078 1

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TO RJEDDN/CINCONAD ENT AFE COLO SPRINGE COLO ACTION: COOP INFO RJEDDN/CINCONAD ENT AFE COLO SPRINGE COLO INFO: COMIC, COMEN RJEDDN/COM ABC ENT AFE COLO SPRINGE COLO INFO: COMIC, COMEN RJEDS:/COMEN 502ND ABMEC MG MCCLELLAN AFE CALLY X8-2273

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CONTIDENTIAL CWOOP 8C-5016. PENDING RESOLUTION OF PROPOSAL
TO RELOCATE PERMANENT SEAWARD EXTENSION ELEMENTS AS CUTLINED IN OUR SECOND INDORSEMENT DATED 28 JAN 58 TO LETTER, HQ WADF, SECRET, 19 NOV 57, SUBJECT, CHANGE OF ANDER MISSION, REQUEST PERMISSION TO CONTINUE MANNING ASSECTED TATIONS 7A, 9A UNA 5A TEST. THIS CONTINUE MANNING ASSECTED TO CONTINUE MANNING ASSECTED TO CONTINUE MANNING GIVES MAXIMUM EARLY WARNING FOR THE 27TH ADD PLUS COMMUNICATION CHECKS ON OUTBOARD ASSECTATIONS AS PROPOSED IN OUR INDORSEMENT.

BT

18/00392 FEB BJMPSB

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C, Hq WADF, Ramilton AFB, Calif., 19 Nov 57, subj: (U) Change of ARRAC

ADDOCP-0

3d Ind

4 Mar 1958

Ho Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, Western Air Defense Force, Hamilton Air Force Base, California

- 1. This headquarters concurs with your proposal to reposition the ABMAC aircraft of the 552d ABMAC Wing. However, this deployment will be closely monitored to determine its effectiveness in the detection of both low and high altitude tracks. Should this deployment prove to be unsatisfactory, or should a new type search radar equipment now under test be procured for retrofit to these aircraft, it is very likely that a reconsideration of the ABMAC station locations will be required.
- 2. The fighter control capability of the ABMAC mission cannot be deleted until it has been definitely determined that a requirement for this function does not exist. In the event this requirement is withdrawn, it is felt that at least one director per crew must be retained to act as a supervisor of the surveillance crew.
- 3. We do not concur with the proposal to route AEWAC primary telling through the picket ships. The airborns teletype modification presently being installed in all RC-121 aircraft is being made to specifically overcome some of the communications problems. This will reduce the work load at the CCI site. With picket ships extremely vulnerable to submarine attack, the primary telling procedure should not be routed through them. It is not considered advisable to establish a peacetime operational procedure that would not be available in a war. Alternate telling procedures through picket ships is considered acceptable.

FOR THE COMMANDER:

2 Incls

/s/t/ MAROLD W. GRAFT Major General, USAF Deputy for Operations

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CONDR 25 ADD
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CONDR 639 ACWRON
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CONVERSATION BETWEEN MAJOR LAULER, 552 AEU AND COS AND CAPT MORRIS THIS HEADOMATURE. IN ADDITION TO LAURING STATION SATELY, 7A AND SA 24 POURS PER DAY DURING FEBRUARY MAIN STATION 1 ON EVEN DAYS AND STATION 3 ON ONE DAYS FOR THE PERSON OF MAINTAINING CONCRETE PERSON OF MAINTAINING CONCRETE PERSON OF MAINTAINING CONCRETE PERSON OF MAINTAINING CONCRETE PERSON OF DAY DETWEEN THE HOURS OF OWN AND 1500.

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INFO RJEDDN/COM ABC ENT AFB COLO SPRINGS COLO INFO: COELC, COCEV
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20-227:

TO RELOCATE PERMARENT SEAMARD EXTENSION ELEMENTS AS OUTLINED IN OUR SECOND THEORESISTEN PATED 28 JAN 38 TO LETTER, MG MADE, SECRET, 18 NOV 37, SUBJECT, CARRIES OF AREAC MISSION, MEDIUST PERMISSION TO CONTINUE MODELING AREAC STATIONS 7A, 9A and 34 TEST. THIS CONFIGURATION GIVES MAXIMUM EARLY AUGUSTS FOR THE 27TH AND PLUS COMMUNICATION CLEAKS ON CUISGARD AREAC STATIONS AS PROPOSED IN CUR. INDORSEMENT.

BT 15,0039% FEB RJWPSB

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11 April 1958

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RJEDDN/COMDR CINCONAD ENT AFB COLO
RJEDDN/COMDR ADC ENT AFB COLO

DURING 25TH ADD ORI. EFFECTIVE OBOCZ, 12 APRIL, UNTIL FURTHER NOTICE, MAN AWARC STATIONS ONE, THREE AND SEVEN ALFA TWENTY FOUR HOURS PER DAY. STATION NINE ALFA WILL BE MANNED AT THE DISCRETION OF 552ND AEWAC WING IF FLYING HOURS OR MAINTENANCE OF AIRCRAFT PERMIT MANNING AN ADDITIONAL STATION.

BT
11/2327Z APR RJWPSB

10 Apr 1958

Seri 00

Prom: Commander Naval Forces, Continental Air Defense Command To: Commander in Chief, North American Air Defense Command

Subj: Contiguous Surveillance, Identification and Aircraft Control. Systems

Ref: (a) MORAD Secret 1tr MOCOP-T dated 27 March 1958, Subject: Disposition of "Unknown" Targets

Encl: (1) Details Relating to Contiguous System Deficiencies and Suggested Specific Remedial Actions

1. Considerable concern continues to be expressed over the capabilities and performance of the contiguous surveillance and identification system. Reports reaching this headquarters repeatedly stress the unaccaptable high number of unknowns which continue to appear within the current system. Deficiencies have invariably been attributed to inadequate and inherently unreliable surveillance radars, inferior communications and associated equipment, and a lack of enforcement authority as concerns accuracy of movement and reporting by transiting aircraft.

2. In view of the urgency of the "unknown" problem as stated in reference (s), and because naval surface pickets and airships are an integral part of the contiguous surveillance system, this headquarters has conducted a study of system requirements, the potential capabilities of existing and programmed forces to fulfill these requirements, if full utilization is made of their capabilities, and the degree of effectiveness being realized with the current organization, operational procedures and deployments.

3. Studies confirm the following salient factors:

a. The current contiguous system does not meet minimum air defense requirements for warning, nor the intercept of potentially hostile aircraft approaching the North American Continent from the seaward.

b. Existing elements of the seaward extension possess the capability to fulfill many of the requirements placed upon the contiguous system; however, the present organization and operation of the system does not provide for complete utilization of seaward extension element capabilities.

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- c. Responsibility for overall organization and direct supervision of the contiguous system has not been satisfactorily established below the NORAD headquarters level.
- d. The contiguous system can be organized and operated with existing and programmed elements to provide an effective degree of warning and intercept well above levels currently being attained.
- 4. Enclosure (1) contains details relating to deficiencies and suggests specific remedial actions.
- 5. It is highly recommended that immediate action be instituted to overcome the serious deficiencies which are precluding effective utilization of forces available for contiguous air defense. It is difficult to justify requests for additional forces if those available are not being effectively utilized. This command is prepared to give presentations on the proposals advanced, and participate in discussion relating to the context of this letter and studies upon which it was based.

/s/t/ W. F. RODEE

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DETAILS RELATING TO CONTIGUOUS SYSTEM DEFICIENCIES AND SUGGESTED SPECIFIED REMEDIAL ACTIONS

1. CONCLUSIONS:

- a. The current contiguous system does not meet minimum air defense requirements for warning, nor the intercept of potentially hostile aircraft approaching the North American Continent from the seaward.
 - Rumbers of unknowns appearing within the contiguous system are unacceptably high for realistic raid evaluation and commitment of intercept weapons.
 - (2) Intercepts are seldom commenced at periphery of shore based coverage, consequently few are consumated prior to target passage of coastal bomb release lines.
- b. Existing elements of the seaward extension possess a considerable capability to fulfill many requirements placed upon the contiguous system, however, organization and operation of the system do not provide for effective utilization of seaward extension element capabilities.
 - Only a portion of picket ship detection and tracking capability is being utilized. (Coverage external to ADIZones is generally ignored).
 - (2) ADIZone boundaries which are basis for correlation do not extend to usable limits of available coverage. Correlation should commence at detection. Some portions of ADIZones are located far beyond existing or planned radar coverage.
 - (3) Existing placement of picket ships and AEW does not provide equidistant depth of coverage to principal target areas. (Tabs A and B).
 - (4) The flight correlation system, particularly in the Eastern Region does not lend itself to good utilization of seaward element detection and tracking capabilities. Areas of responsibility for above stations are too narrow and decentralized.
 - (5) Ship-shore radio circuitry is not aligned to effect timely relay of picket ship and AEW track calls between the shore station terminal and the AGW site responsible for the geographic area through which the track may be passing.
- c. Responsibility for overall organization and assignment of the contiguous system has not been satisfactorily established below the MORAD Eqtrs level.

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ENCLOSURE (1)

- (1) The U. S. Air Defense Command is assigned: Responsibility for organization and integration of surveillance, identification, and aircraft control elements of the air defense systems within the Continental United States. (ADUS 1-57). CONAD First Endorsement to ADUCP, Readquarters ADC letter of 13 May 1957, Subject: Delineation of COMAD-ADC Functions specified ADC is responsible for coordinating with COMMAN-FORCOMAD in the development of operational procedures and plans for the utilization and deployment of all seaward extension forces.
- (2) Regional NORAD forces are responsible for exercising operational control over naval forces in the extension to seaward of the contiguous radar coverage of the air surveillance weapons system in accordance with basic operation plans of, and tasks assigned by CINCHORAD.
- (3) Existing NORAD (headquarters and regions) directives do not establish detailed procedures for operating seaward elements in conjunction with the continental system.
- d. The contiguous system can be organized and operated with existing and programmed elements to provide an effective degree of warning and intercept well above levels currently being attained.
 - Area surveillance requirements should be based upon equidistances from probable bomb release lines and not necessarily associated with geographic coastal lines.
 - (2) Calculated risks need be taken in certain instances where protection for isolated targets of relatively low importance would be uneconomical in view of the limitations on availability of forces.
 - (3) It is uneconomical and undesirable to employ picket ships to provide low altitude coverage.
 - (4) RC-121 aircraft should be employed to utilize their high altitude (above flight level) tracking capabilities. Low altitude (below flight level) performance does not include the capability to continuously track a target.
 - (5) Airborne coverage capability beyond that required for equidistant depths to bomb release lines should be employed on a random basis and not stabilised in a given area.

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- (6) Providing additional high altitude coverage beyond that possible with existing and programmed equipments (approximately 500 NM) would not greatly enhance the air defense system and in terms of gains obtained would demand an unrealistic increase in force levels.
 - (a) With 500 BM coverage from BRL, sufficient tectical decision time is available to effectively launch interceptors and consumate intercept prior to target transit of coastal bomb release lines.
 - (b) Interceptors must be scrambled based upon picket ship and RC-121 tracks.
 - (c) Airships and a few picket ships will require intercept direction capabilities. RC-121's will not need intercept control capabilities.
 - (d) Commitment of F-89 and F-102 for maximum range utilization would require tactical decision when target is beyond 800 HM from bomb release line. Commitment at this distance is considered inadvisable because of possible target course changes that would subsequently require additional scrambles.

2. RECOMMENDATIONS:

- a. Establish and assign firm responsibilities for organization and direct supervision of the contiguous system.
 - (1) Prepare detailed implementation plans and operational procedures at MORAD headquarters level, or
 - (2) Assign detailed integration and operation responsibilities to NORAD Regions based upon definite principles and policies premulgated by NORAD.
- b. Position picket ship, airship, AEM, and RC-121 AEW station in accordance with Tabs C and D so as to generally provide equidistant coverage from bomb release lines. The SPS-17 installation on East Coast picket ships is scheduled for completion on 20 July 1958 and the proposed deployment could be implemented at this time. Sufficient numbers of additional YAGR type picket ships will have reported for duty on the West Coast by 2 February 1959 to allow implementation of the proposed. West Coast deployment.
 - Depth of coverage varies in relation to target concentration and importance.
 - (2) The criteria for picket ship stationing is continuous reliable overlap coverage from 20,000 feet upward contiguous to land based radars. Sufficient overlap is provided along

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the axis of the picket line so that complete coverage from 11,000 feet upward exists at the weakest point in the line.

- (3) Provide for several series of alternate stations for rotational purposes so as to avoid stereotype deployment.
- (4) Utilize available airborne coverage capabilities, over and above that proposed, for random outer coverage.
- (5) Tab E illustrates criteria need for joining contiguous and continental radars.
- c. Reorganize correlation system:
 - Establish correlation lines in the external position of seaward surveillance as indicated in Tabs C and D.
 - (2) Eliminate ADIZones or realign external borders to coincide with correlation lines.
 - (3) Eliminate extreme decentralization of correlation responsibilities, perticularly in Eastern Region. Establish a maximum of two correlation centers for each coast. It is suggested that these areas coincide with proposed SAGE division boundaries.
 - (4) Devise system whereby transoceanic air traffic utilizes picket ships for mavigational and reporting purposes.
 - (5) Establish ship-shore communications and lateral telling circuits so as to effect timely classification of all inbound tracks crossing correlation lines.
- d. Develop new vespon deployment procedures:
 - Enlarge all coastal ACW site plotting capabilities to include coverage out to at least 50 nautical miles beyond proposed correlation lines.
 - (2) Scramble interceptors based upon picket ship and RC-121 ABW tracks prior to target entry into shore based coverage.
 - (3) Generally commence intercept engagements at outer periphery of shore based coverage.
 - (h) Eliminate intercept control requirements for RC-121 aircraft.

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ENCLOSURE (1)

(5) Establish sufficient communications circuits to permit direct cross telling and passing of tracks between picket ships, RC-121 aircraft and applicable shore ACW sites, or SAGE Sector Direction Centers and Texas Towers.

e. Withhold generation of new requirements pending reorganization and trial of proposed or similar system. State future requirements as basis of equidistant coverage from bomb release lines.

Tab A. Ourrent East Coast System

- B. Current West Coast System
 C. Proposed Coverage East Coast
 D. Proposed Coverage West Coast
 E. Criteria for joining contiguous and continental radars

ENCLOSURE (1)

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1. Mafarences:

a. Instructor Plan No. -37, this headers term Desward attritions to the articlous over Coverage value, I August 10.

b. NAV and all letter, surjects "Continuous Serveillance flortification and Atriva"s Sentral estemp," 10 A ril 1958.

- 2. It is headquarters has reviewed reference to and to orinciple concurs ith the concent of operations delineated in the plan. This command realities that the results of head you single conducted by Chap Forces, satern 3 in degion, are no available. However, informal discussions ith stiff members of the indicase that their test report with not reach this headquarters for search conthis and that the report with not have firm Mindows and recommendation one to the land of advants air surik sain of the saward satenate elements and the finites a fill denotes the saward satenate elements and the film of a fill denote this command by that is A and the film of the same fill denote the first of the same and the fill that a decorate the first is the first that the fill that satenate the first is the same of fill the satenate the first that the fill that satenate the first the fill that satenate the first that the fill that satenates the first that satenates the first that the fill that satenates the first that the fill that satenates the first that satenates the first that satenates the first that the fill that the fil
 - a. Concept of operations for the clan-
 - b. Coordinates of elements of the seaward extens one
 - c. Navy weather reporting procedures
 - d. Communications arrow
- e. Procedures covering a identified submarine or targe while on station

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NOODF-T, NORAD Headquarters, Subj: Snaward extensions to the Contiguous Radar Coverage System (U) (Cont'd.)

f. Radar coverage diagrams for elements of the seaward exten sions for 500 feet, 25,000 feet and 45,000 feet. Diagrams should be designed for a 3-52 type sircraft with a Rip/Scan ratio of .5 for picket ships, Texas Towers and shore based raders. The Slip/Scan War carefully ratio for the belance of the elements of the seasond extensions will be .2.

3. Subject plan will be submitted to this headquarters not Later than 2 June 1958.

FOR THE CONCLANDER-DI-CHTEP:

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HARVET T. ALNESS Hajor General, USAF DCS/Plans & Operations

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2. The callent features of the 'V' . 'A proporal are as indicated:

a. Position micket spine, airmin ASS and ASW C aircraft stations in accordance with Indian one 2 and 3, so as to generally provide equidistant coverage from VIe.

(1) Wenth of coverage veries in relation to target

concentration and importance.

(2) The criteria for cicket ship stationin are continuous rollable overlan covers a from 27, 77 feet unrard continuous to land-massed raders. Sufficient everlands or mided along the axis of the micket line so that no mileta cover se from 11,777 feet movers exists at the weakest ourt in the line.

(3) Itiliza A. v.C alreradt on two .- reament static - on each Coast. Anditional aircraft, if available, would be outcoard of licket ships. b. Sliminate ADILones or real; in external worders to coincide with

radar covera e.

c. Fransoceanic air traduce atd lize nicket ships for navigational and reporting purposes.

d. istablish sain-saur a stories from and lateral tellin circuits so meals alors fin to of all incomed tracks crassing correlation lines. as to effort (co t'd, reverse)

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- e. Scramble intercentors pased upon picket ship at a www aircraft bracks prior to target entry into ships-pased coverage.
- f. Denerally communce intercent energy ments at outer periphery of shore-based coverage.
- g. diminate intercept control requirements of ALACS aircraft; (CTWOR also made this recommendation).

RETURN TO:

Director
Research Studies Institute
Attn: Archives Branch
May AFB, Alabama

SUPPORTING DOCUMENTS VOL III NORAD HISTORICAL SUMMARY 94 Thru 149

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HEADQUARTERS
MORTH AMERICAN AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

FF5-10/302:dmm J15, Hq ADC, 1 May 1958, Subj: Contiguous Radar Coverage System: planning requirements for

HOOCP-T

1st Ind

9 May 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, Mayal Forces, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

To assist Headquarters USAF ADC and your headquarters in formulating a joint plan for the deployment of elements within the seaward extensions of the contiguous radar coverage system, the following policy guidance is furnished.

- a. The concept of operations should be developed to insure continuous tracking and intercept control from initial detection point.
- b. The plan should furnish an equidistant depth of coverage to specific target areas along a perimeter across all approach strike routes.
- c. The RC 121D aircraft should be utilized to cover the low altitude radar coverage gaps between the picket ships and the shore-based radars.
- The estimated objectives of the U.S.S.R. in an air attack on the North American Continent are delineated in Annex H, NORAD Long Term Intelligence Estimate, 1 January 1958.

FOR THE COMMUNDER-IN-CHIEF:

Copy furnished:

/s/t/ HARVEY T. ALMESS
Major General, USAF
DCS/Flans & Operations

/s/t/ Maj Reeves 2078 8 May 58

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M/R: In order to formulate a joint plan for the elements of the seaward extensions of the contiguous radar coverage system, NAVFORCONAD requested policy guidance on the following phases of the plan:

- a. Should the system furnish continuous tracking & intercept control from initial detection versus a system furnishing maximum early warning without a requirement for continuous track continuity.
- b. Should the system furnish an equidistant depth of coverage to specific target areas along a perimeter across all approach strike routes versus a system furnishing maximum depth of coverage against a single strike computed to an individual target complex.
- c. Should the system utilize the RC-121 as a general search vehicle versus a system utilizing the RC-121 as a low altitude coverage vehicle exclusively.
- d. The specific target complexes which are to be defended including their relative priorities.

Author agrerate wit Associated Gadar Antiment [1]

W. de

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1. Wheremen to 1 1 d 4-5; 1 suggest 1 57.

requested to submit their recommends commons to reference 1. The tithan regions requested act rity to conduct tests of the elements within the seavar's extensions. This remmest war ranted by MRAD. OF MK completed their test in Fabruary and before their proposal was fully evaluated by KOFAL, GF to stated they were discatisfied with their proposal and requested permission to conduct another test. KPA: denied this request. OF CF originally requested 60 days for the completion of their test. However, 3 months have clarged since the commencement of the test and CV Will believes another month will be remired 'n order to complete their test. At a bringing on 25 april 1 5 , way portall's proposal was presented to 'no til and the CONAT regions. Informal discussions with representatives of "A" is and the CONAT regions indicate that the I PATT & Ve proporal is not accordable to their heatquarters.

3. The reason ESAT A.C. Mayer portal, and the C "AD regions carnot reach an agree-- ment on a plan for the deployment of the el morts within the seaward e tensions is that S a firs corcept of owretions for a d Cor aircrait has not been established. Prior to "Ontal promplicating a fire policy on the deployment of a nicon aircraft, it is believed a suitability test on the redar equipment within this aircraft soul . e conducted by Air Freving grands Comand.

b. Recommend that four office initiate a latter to "SAF requesting that and conduct a suitability test on the rador equitant within an Admilen aircraft at the earliest mracticatio date.

> WEST C. ALN'T'S ajor- oneral, 1 47 C Clars operations

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MOCOF-T, Hq NORAD, Ent AFS, Colo, 14 apr 58, subj: Elements of the Seaward Extension

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3d Ind

10 MAY 193

HQ Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force base, Colorado Springs, Colorado
- The basic correspondence requests authority to carry out a further thirty day test of the seaward extension elements along the west coast in a new series of possible deployments.
- It is the opinion of this headquarters that since CINCMCRAD
 has laid down certain criteria for the deployment of the picket ships
 and AEMACon sircraft, no further experimentation should be carried out
 on possible deployment of these elements.
- 3. It is recommended therefore that both defense forces involved be directed to return all elements to the deployments outlined in CONAD Operations Plan 9-57 and leave them there until the new Operations Plan for the utilization of the seaward elements is finalized in accordance with GINCHORAD's desires.

POR THE COMMANIER:

3 Incls

HAROLL W. GRANT Major General, USAF Deputy for Operations

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MCOOP-T, Hq NORAD, 14 Apr 58, Subject: (U) Elements of the Seasond Extension

WDOTN-X

2nd Ind

8 MAY 1958

Bq Western Air Mefense Force, Hamilton Air Force Base, California

TD: Commander, Air Defense Command, Est Air Force Base, Celerade Springs, Celorade

- The following information is submitted in compliance with paragraph 2, basic correspondence.
- a. Inclosure = 1 is a chart of the Western Defense Force Area on which the shore-based radar coverage has been entered. The AEMEC and picket ship radar coverage for the stations specified in the MADF proposal have also been entered on this chart.
- b. Inclosure 2 is a complete listing of all AEMEC stations set up under CONAD Operations Plan 9-57, WADF's proposal of putting AEMEC stations outboard of the picket ships, and another proposal to move the picket ships out another 100 to 150 miles and having the AEMEC sircraft approximately 250 miles off the coast. This inclosure shows the AEMEC flying time to and from each station, on-station time, time for one aircraft on station, total time to man each station per day, and the total time to man each station for a 30-day month.
- c. The current fighter interceptor availability plus the number of training intercepts required to keep all ground station intercept controllers proficient does not allow any missions for the adequate training of AEMEC controllers. All fighter interceptor aircraft will be used at maximum range possible on targets penetrating from over water. The range of the FPS-20 radar is sufficient to have the fighters on their scope during overwater intercepts.
- 2. Inclosure #3 is a proposed configuration of AEMSC aircraft and picket ships that this defense force would like to test for a 30 day period. The purpose of the test is to determine the feasibility of employing the picket ships further out than their present positions, with AEMSC in the approximate present positions of the picket ships, and still have contiguous radar coverage on a target penetrating from the west. The following information is submitted in support of this test:
- a. The average cost to fly the AEMSG aircraft is \$400 per hour. The additional time required to man an AEMSG station outboard is relation to the test position is one and one-half to two hours flying time. The approximate cost per menth per station for this additional time is \$70,000.

NOOOP-T, Hq NORAD, 14 Apr 58, Subject: (U) Elements of the Seaward Extension

- b. The picket ships (YAGE) cost approximately \$417 per day to operate and would require only 12 to 14 hours additional time to proceed 120 miles outhoard of their present positions. The YAGR type picket ship remains on station approximately 30 days.
- c. The radar range shown for the picket ship is from the SPS-28 radar. The SPS-17 radar, installed in two YAGR's and programmed shortly for the other two, has a range approximately double the range of the SPS-28.
- d. Early warning range of both WADF proposals is between 550 and 600 miles from shore. This range will increase with the SPS-17 aboard the Navy ships.
- 3. Request permission to conduct the proposed test, starting either 15 May or 1 June 1958. Approval to conduct the test and starting date selected should allow sufficient time to move the picket ships and coordinate all frequency changes with air divisions concerned.
- 4. Upon withdrawal of inclosures this indorsement may be downgraded to Unclassified.

FOR THE COMMANDER:

R. T. HERRICE, Z

CWO, W-3, USAF Asst Adjutant

3 Incls

1. Chart - WADF Area Showing Shore Based Radar Coverage (S) WD 8S-1640 (1 cy)

2. AEMSC Flying Hours (U)

3. Chart - Proposed Configuration of AEM.C Acft & Picket Ships (S) (1 cy)

USAF Air Gefense Command Ent Air Force Base Colorado Springe, Colorado 1. Reference is made to letter Headquarters Western Air Defense Force, subject: Change of ADARC Missions, 1) November 1957, with 2nd indersement, Headquarters WADF, 28 January 1958. 2. To assist this headquarters in evaluating WADF's proposal of relocating Seaward extension elements as outlined in letter mentioned above, request the following information be furnished this comand: a. Radar coverage diagrams for shore-based radars, and 45,000 feet. Diagrams should be designed for a 3-52 type aircraft with a Blip/Scan ratio of .5 for picket ships and shore-based radars, and .2 for ADME-Con aircraft. b. An route time to all ASAS.Con stations. c. Humber of flying hours required to man continuously ADACon stations 11, 13 and three of the outboard stations. d. The CFWCR policy on the employment of the various types of fighter-interceptors. FOR THE CONTUNDED-IN-CHIEF: Operations DCS/Plant **UNCLASSIFIED** 23641 wes 85-1595

HEADQUARTERS
MORTH AMERICAN AIR DEFENSE COMMAND
ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

SUBJECT: Alements of the Seaward Extension (U)

Commander

HOOOP-T

TO:

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14 APR 1958

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINSS, COLORADO

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14 APR 1958

SUJECT: Alements of the Seaward Axtension (1)

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Commander USAF Air Lefense Command Ent Air Force Rese Colorado Springe, Colorado

- 1. Reference is made to letter Headquarters Western Air Defense Force, subject: Change of Alexo Missions, 1) November 1957, with 2nd indersement, Headquarters WADF, 28 January 1958.
- 2. To assist this headquarters in evaluating WADF's proposal of relocating Seaward extension elements as outlined in letter mentioned above, request the following information be furnished this command:
- a. Radar coverage diagrams for shore-based radars, ASECon aircraft and picket ships for 500 feet, 25,000 feet, and 15,000 feet. Diagrams should be designed for a 3-52 type aircraft with a Hip/Scan ratio of .5 for picket ships and shore-based radars, and .2 for ASECon aircraft.
 - b. An route time to all ASA-Con stations.
- c. Number of flying hours required to man continuously inscens tations 11, 13 and three of the outboard stations.
- d. The CFWCR policy on the employment of the various types of fighter-interceptors.

FOR THE COMMUNTER-IN-CHIEF:

Major General DSAF DCS/Plana Coperation

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3	5	8	13	39	1170
5	3	6	11	33	990
7	3	8	11	33	990
5A	51/2	8	13½	40%	1215
7A	4	8	12	36	1060
9A	44	8	1.25	372	1125
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3	7	8	15	45	1350
5	6	8	14	42	1260
7	5%	8	131/2	40%	1215
9	51/2	8	1352	40%	1215
11	4	8	12	36	1000
- 13	5	8	13	39	1170
Proposed	d =2 Imboard				
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5	452	8	125	37%	1125
7	352	8	11%	34%	1035
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11	4	8	12	36	1000
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332/FI SQ McGuire/TF-102A/3/0/0/3/0-0/0/0/0/

337 FI SQ Westover/F-86L/5/1/0/3/1-0/0/0/15/0/

337 FI SQ Westover/F-104A/24/8/3/9/4-0/0/0/15/0/

337 FI SQ Westover/F-104B/2/0/0/2/0-0/0/0/0/ UNCLASSIFIED

ADCST-0 ADCST-0

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MESSAGEFORM - CONTINUATION SHEET

COMADO

ADCST-0 8257 (1-AF-V14 as of 30 Jun 58) (CONT)

437 FI SQ Oxnard/F-89J/23/17/0/6/0-0/0/0/26/24/

438 FI SQ Kinross/F-102A/2/0/0/2/0-0/0/0/0/

438 FI FLT K.I.Sawyer/F-102A/23/16/0/7/0-0/0/0/36/19/

438 PI SQ Kinross/TF-102A/1/0/0/1/0-0/0/0/0/

438 FI FLT K.I. Sawyer/TF-102A/2/1/0/1/0-0/0/0/0/

444 FI SQ Charleston/F-86L/26/23/1/2/0-0/0/0/31/29/

445 FI SQ Wurtsmith/F-89J/26/14/0/12/0-0/0/0/29/21/

456 FI SQ Castle/F-86L/11/8/0/3/0-0/0/0/24/7/

456 FI SQ Castle/F-102A/5/2/0/3/0-0/0/0/6/0/

456 FI SQ Castle/TF-102A/3/3/0/0/0-0/0/0/0/0/

460 FI SQ Portland/F-89D/6/6/0/0/0-0/0/0/28/20/

460 FI SQ Portland/F-102A/7/1/0/6/0-0/0/0/0/

460 FI SQ Portland/TF-102A/2/1/0/0/0-0/0/0/0/

465 FI SQ Griffiss/F-89J/25/21/0/4/0-0/0/0/31/26/

482 FI SQ Seymour-Johnson/F-102A/2/0/2/0/0-0/0/0/0/

482 FI FLT Tynda11/F-102A/17/17/0/0/0-0/0/0/20/0/

482 FI SQ Seymour-Johnson/TF-102A/1/0/0/1/0-0/0/0/0/

482 FI FLT Tynda 11/TF-102A/1/1/0/0/0-0/0/0/0/

484 FI SQ K.I. Sawyer/No aircraft or aircrews assigned.

497 FI SQ Geiger/F-86D/Unit reassigned as of 20 Jun 58.

498 FI SQ Geiger/F-102A/28/15/0/11/3-1/3/2ALPQ/32/21

518 FI SQ Klamath/No aircraft or aircrews assigned UNCLASSIFIED

538 FI SQ Larson/F-86L/11/10/0/1/0-0/0/0/24/21/

ADCST-0 5 6

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JOINT MESSAGEFORM - CONTINUATION SHEET

SECURITY

COMADC

ADCST-0 8257 (1-AF-V14 as of 30 Jun 58((CONT)

539 FI SQ McGuire/F-86L/23/8/2/13/14-14/0/0/33/0/

551 ABW WG Otis/RC-121/32/18/0/14/14-14/0/0/29/21/

552 AEW WG McClellen/RC-121/30/15/1/12/7-5/0/0/64/64/

4677 REV FT Hill/TB-29/3/0/2/0/2-2/0/0/3/1/

4713 REV FT Griffiss/TB-29/10/8/0/2/0-0/0/0/9/0/

4754 REV FT Hamilton/TB-29/6/5/0/1/0-040/0/6/6/

This report reflects complete coverage.

Following is a correction to report as of 16 June 1958:

46 FI SQ Dover/F-94C/0/0/0/0/0/0/ No acft or aiccrews, assigned unit inactivating.

Report as of 23 June 1958"

46 FI SQ Dover/F-94C/0/0/0/0/0/0/

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ADCST-0 6 6

DD MAY 55 173-1

1 3 4 4

DEPARTMENT OF THE NAVY Office of the Chief of Naval Operations Washington 25, D. C.

opeose/rjh 3 Jan 1958

From: Chief of Naval Operations

Chief of Staff, United States Air Force To:

Subj: Reduction of Flying Hours for AEW and Control Aircraft

(a) CINCNOLAD Secret 1tr to C/S, USAF NOODP-T of 27 Sep 57

(b) C/S, USAF Secret Menu to LAO of 22 Oct 57

 In response to the request in reference (a), which was forwarded to the Chief of Naval Operations by reference (b), the following information concerning AEW aircraft operations on the Argentia-Azores burrier is forwarded.

a. In January 1958, the average number of WV 2 mircraft continuously airborne on the Argentia to Azores barrier will be increased to three (3).

b. It is planned to maintain an average of four (4) WV 2 aircraft continuously airborne commencing in April 1958.

c. It is expected that the raid recognition capability afforded by maintaining on average of four (4) AEW aircraft continuously airborne and (4) DER picket ships on station will provide adequate tactical warning on the Atlantic seaward extension of the Early Varning System.

2. By copy of this letter, CINCLANT is requested to continue close lisison with CINCNOLAD regarding the status of Atlantic barrier operations.

> /s/t/ R. E. MOSE By direction

Copy to: CINCLANT CINCPAC CINCLANTFLT COMASFORLANI COMNAVFORCONAD CONNAVAIRLANT COMBARLANT

Declassified

COPY **UNCLASSIFIED**

10 3 - AA. XB



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

102

" IAN 1958

SUBJECT: Reduction of Flying Hours for AEW&C Aircraft

TO:

Commander-in-Chief North American Air Defense Command Ent Air Force Mass Colorado Springs, Colorado

1. (UNCLASSIFIED). This is an Executive Agency letter. As requested in your letter on this subject, dated 27 September 1957, a review has been made by Headquarters USAF and by the Uniof of Naval Operations with respect to flying time allocations for ADASC aircraft.

Declassified Due to the congressional appropriation for flying hours being less than requested by the Services, all Commands were required to program reduced flying time. Air Defense Command determined that their appropriation would be applied so that their fighter interceptor aircraft would be reduced approximately 15% of their flying time capability as opposed to an approximate 30% reduction of capability in ADMAC. This ratio was predicated on the decision that a 15% reduction in fighter time was the maximum acceptable in consonance with flight safety, particularly in view of current phasing of F-102 aircraft into the ADC inventory.

Declassified
3. It is significant that ADC reported operating a total of six stations on a twenty-four hour basis before the reduction. Other stations were operated as flying hours permitted. The reduction in second quarter FY 1956 was aggrevated by overflying in first quarter FY 1958. During third and fourth quarters FY 1958 ADC will operate seven stations on a twenty-four hour basis.

Declassified The Chief of Naval Operations reports that the average number of WV-2 aircraft continuously airborne on the Argentia to Azores barrier will be increased to three during third quarter FY 1958 and to four commencing in april 1958. He states further that it is expected that the raid recognition capability afforded by maintaining an average of four ADW aircraft continuously airborne and four DER picket ships on station will provide adequate tactical warning on the Atlantic seaward extension of the Sarly Warning System.

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102

Ltr to CINCHORAD, subj: Reduction of Flying Hours for AEW&C Aircraft (contd)

5. (UNCLASSIFIED). This letter is classified Secret because it discloses numbers and disposition both present and planned of airborne early warning forces.

FOR THE CHIEF OF STAFF:

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COMMA VEGRECONAD

CG ARAA COAD RCAF LIAISON

COMADO

DCI PERE

SUBJECT: Operatility of NORAD Forces

TOI

Commander COMAD Forces, Eastern COMAD Region Stewart Air Force Base Newburgh, New York

A study has been made of the operational read ness of !ORAD Ferces during a recent time period. The results of this study, in a form of a bricking prepared for CINC TRAD are forwarded for your information. Sufficient soules are inclosed for such distribution as you consider appropriate. It is suggested that distribution he made down to and including division level.

POR THE COMMANDER IN-CHIEF :

1 Inel a/s (16 cys)

Maj Gen, USAF PCS/Flans & Operations

When inclosures are withdrawn or not attached, the classification of this document will be changed to UN SLOS.

M/R: Self explanatory. Id atical letters sent to Western, Central, 64th Division, Air Officer Commanding, ECAF, AAC and Cincal except for the number of inclosures due to the number of divisions or sectors in each command. CACT N.M. HEA 2496 Tennes 5 Mar 58

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CONAD X8.....

G2152 - FCAF G2153 - Exeten G2168 CINCALS G2172 64th G2174 CFCCR

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DIRECTOR OF ENTIRE TO DE TO

In order to keep the Commanders - 7 of adv. I to matters which concern the effectiveness of his command a prest us study and report has been made concerning certain actions associated with air defence; stecifically detection, identification, and information as we have conjucted them on a day by day basis it a sere a number of the last the our current readiness to fight an air battle. This look is particularly timely in view of the state of increused restinger Eastern Region coasts, D. No. 41. rations to provide the state of the activity. Data provided this herdunanters concerning the manning of stations and the operational residing is a growth moon in overed for the pariod from 1 January to 10 february to 10 february Coman, for the entire month of locary 1955. This data has been asserbled in such a manner as to portray certs a conditions throughout the entire NOFAD system. In the analysis, the missions and authority of CIACNORAD contained in the Terms of Reference, which we hope will scon be approved, were kent foremost to mind Fertisent extract to the former unterlaining for emphasis

operational matters to component and subordinate 1854h commanders.

Specify the conditions of compat readiness to include states of alert to be maintained by all forces assigned, attached or otherwise made available including augmentation forces while under the operational control

of CINCNORAD. (Operational control embraces the power of directing, coord ating and controlling the operational activities of forces assigned, attached or otherwise made available.)

Develop and submit to the JCS and Chief of Staff studies and recommendations concerning the size, composition and deployment of air defense forces and types and numbers of air defense weapons and equipments for all elements of the air defense system.

As regards picket ship stations, the NOPAD objective is to maintain five statio
that this objective was to man an Eastern Coast picket station for cer(blimp) was programmed to man an Eastern Coast picket station for certain periods during the month of January, and was in fact effectively
on station for a period representing 99% of the programmed manning time.

A NOTAD objective of manoing ten 1948C strength picket stations live on each coset, and meet to a larger to arrive headquarters concerned has stated that "flying hours" sufficient to man a total of seven stations would be available during the 3rd and 4th quarters of fiscal year 1958. In the left had har of Chart #2, (Fast Coast portion) it will be seen that 45% of the ASW&C aircraft assigned on the

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East coast were on the content of said of the right hand there aircraft were on the content paraticularly ready. The right hand bar indicates the percentage of all other hours on station of the bases on time required to maintain the states and mental other was an experienced, the West Coast are, respectively and the said only all stations during on a ten station basis, effective canning of only all stations during the time period shown. This is four less than the objective established the time period shown. This is four less than the objective established by CINCNCPAD and one less than the number permitted by sufficience of the hours.

We pass now to consideration of the acting vedpons of must order to determine what forces might be available in an emercacy on a "rule of thumb" basis, it is sometimes the practice to base such estimates on the total number of ome drops of NIVO battalions authorized together with the number of acting a number of of partial authorized per battalion. Several degrading factors number of fire units authorized per battalion. Several degrading factors can introduce wide variations in results when using this procedure. Due to re-equicing squadrons with new torce of aircraft the overall number of aircraft only be acting the constant authorized aircraft the overall number of aircraft in the hands of the combat units. Additionally, the number of aircraft in maintenance significantly affects the several available for operations. Maintenance, and absence of fire units dur or training periods a fect availability

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prescribed by NOPAD. These were not look. However no standard nor opjectives defining the minimum number of sircraft or missile units to be
maintained operationally ready have been prescribed by CINCNOPAD. In
other words, we prescribe an alert force only - we do not prescribe the
number required for a ready (three hour) force.

Chart #3 shows the average percentage of <u>authorized</u> aircraft reported operationally ready throughout the NOPAD system. The variation of percentage by regions will be noted. On the average, 51% of authorized aircraft in NOPAD were operationally ready.

As regards air crews a somewhat higher percentage was possessed than authorized. (107%) Chart #4 shows that throughout NORAD 66% of the authorized aircrews were on the average operationally ready. An additional 12% (not shown) were "alert ready".

Turning to another essential element of the interceptor weapons system, Chart #5 shows that on the average 60% of the AC&W squadron directors authorized were operationally ready.

As regards the AC&W squadrons, Chart #t shows that they actually were in operation 93.4% of the programmed time in the net. This does not represent full 24 hour manning throughout the entire period; the programmed time in the

Turning to the surface-to-sir weapon system (Chart #7) where again certain slert standards are prescribed by CINCNORAD. Chart #7 shows

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that on the average, 86% of the NIKE fire units in the Eastern Region were reported operationally ready throughout the period, 89% in the Central Region, and 92% in Western. These percentages are based on full 24 hour operational readiness of all 244 assigned fire units. In other words there is no programmed maintenance time considered in NIKE operations nor is any "down time" allowed for training or periodical refresher firings at Ft. Bliss. Each of the foregoing detracts from the operational readiness figure. In the 64th Division, 99% of the guns and skysweepers were on the average reported operationally ready throughout the period and in Alaska 95% of the guns were reported operationally ready.

After seeing the variation in standards and operational readiness throughout the NORAD system, how does this or could this possibly effect the performance of the NORAD mission? In Chart #8 it may be seen that in the 37th CONAD Division, there was a gradual falling off in operational readiness throughout the period considered: NIKE from 82 to 77%; Interceptors from 70 to 46%; and sir crews from 50 to 42%. Sufficient forces remained operationally ready at the and of the reportion period to meet normal prescribed alert standards. However, they were realised to subject to sibly critical low level for the conduct of an air tatile in that I wision, particularly in the case of interceptors and air crews. This concurrent drop in readiness of both the weapons systems in this area is a cause for concern and is an argument for coordination at the NORAD level in such maters as re-equiping or modification of equipment in order that deficiencies

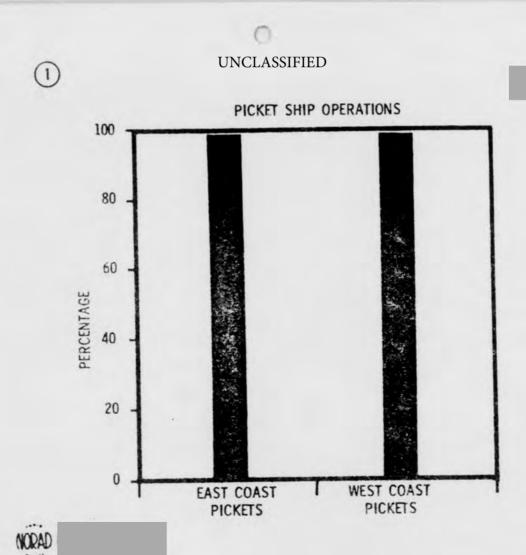
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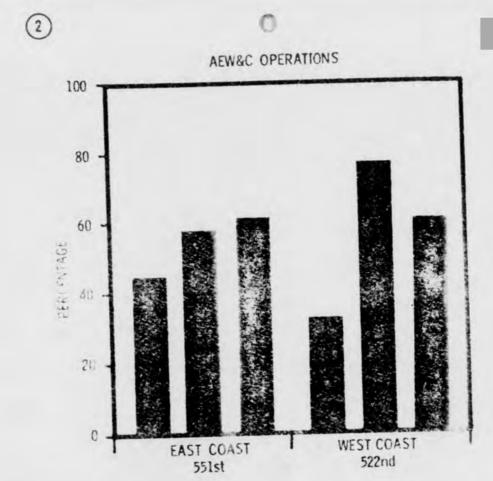
in one weapons system may be balanced, if desired, by increased readiness and availability of forces in another weapons system.

This leads to the conclusion that there appears to be a necessity for the establishment by NORAD of objectives concerning operational readiness to conduct an air battle, and for coordination of operations and to the recommendation that appropriate agencies of the NORAD staff study the problem of availability of forces in conjunction with the various component commands in order that criteria might be established. Such criteria would appear to be mandatory if CINCNORAD is to recommend with any degree of accuracy the numbers of forces, particularly interceptor squadrons and missile battalions, for the NORAD system

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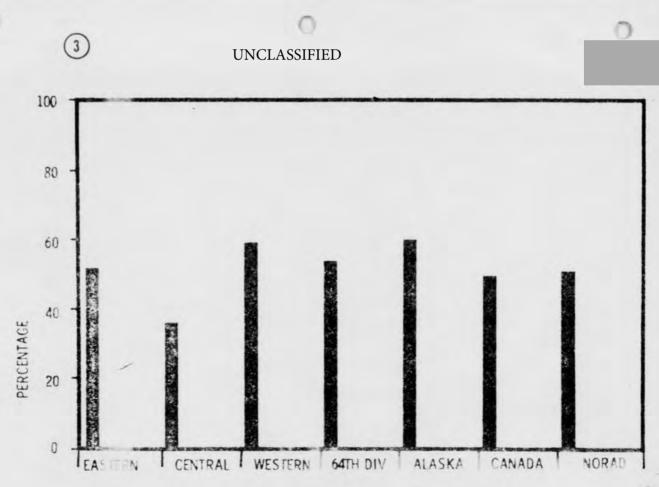
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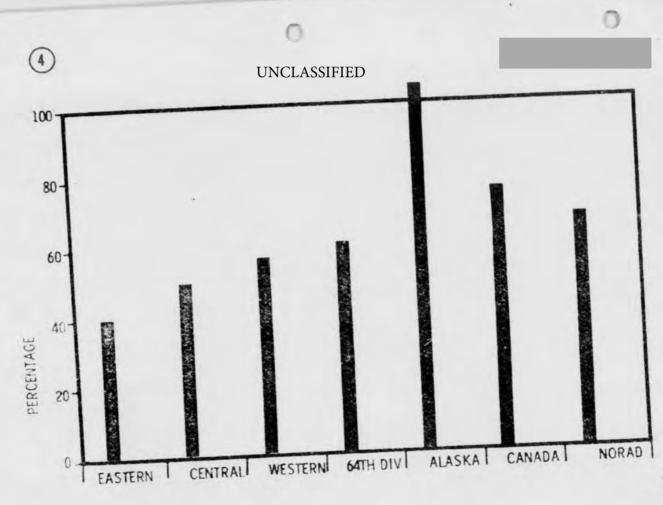
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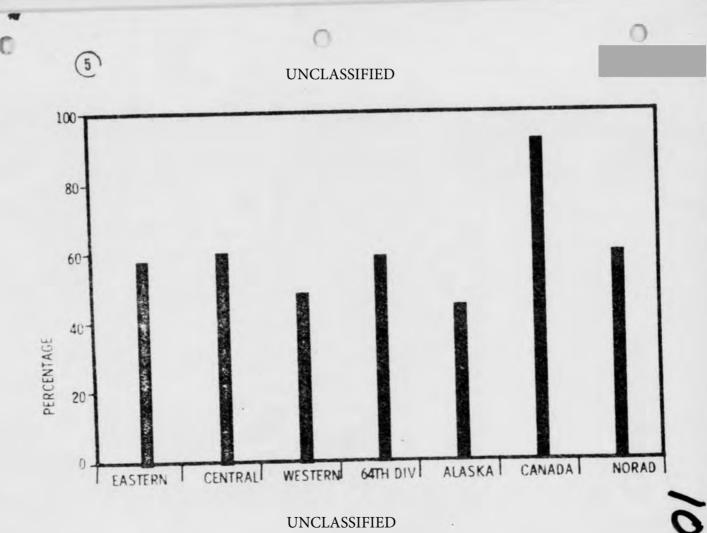


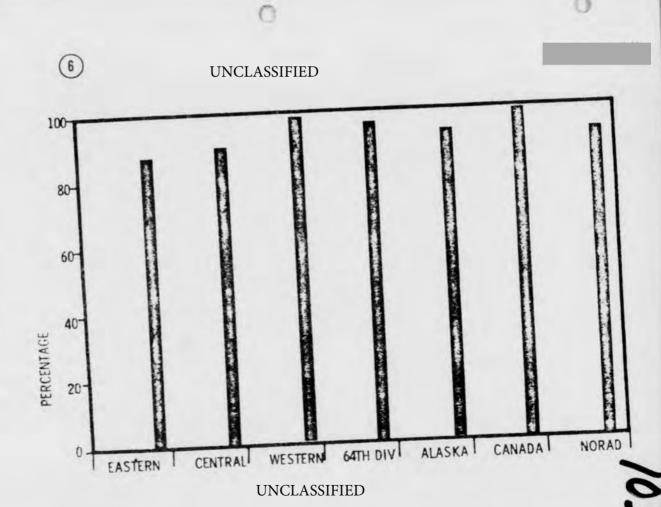
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NORAD

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NOOOP-T

19 MAR 1958

SUBJECT: Seaward Extension Elements (U)

TO:

Commander-in-Chief Strategic Air Command

ATTR: DING

Offutt Air Force Base, Nebrasks

1. In compliance with message your handgmarters, DINC 16533, 21 February 1958, the following information is estaitted:

a. Station locations and cell signs

(1) AEWACon Aircraft

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BAST COAST

Station	Depr	dinates	Call Sign
2 4 6 8 10 2A 4A 6A 8A 10A	12700 W 1010 W 38-20 W 36-10 W 33-05 W 430-17 W 43	66°00'W 68°20'W 71°15'W 72°35'W 75°30'W 60°22'W 60°23'W 62°07'W 64°45'W 67°16'W	Senior Able Seaman Bolster Gin Fizz Gun Post Air Sentry Brass Budge Camp Robber Double Loop Fall Guy

Stantons 2A, wa and 6A are being manned 24 hours per day. Other stations are manned on a non-scheduled besis.

WEST COAST

Station	Coor	Coordinates Call Big		Coordinates Call Bigm	
1 3 5 7 9 5A 7A	47005'N 4200'N 4200'N 3900'N 36910'N 32055'N 31025'N	131°35'W 131°30'W 131°20'W 131°10'W 129°15'W 130044'W 126040'W 124030'W	Yucatav Mellov Lucky Lady Joe Louis Sandusky Big Wheel Test Joe Louis Sandusky		

At present Stations 5A, 7A and 9A are manned twenty-four hours a day. Other stations are manned on a non-scheduled basis.

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Current Test

Station Coordinates Call Signs

12(a) 42-00; 63-15W Game Fish

MOOOP-T, Hq NORAD, Subj: Seaward Extension Elements

(2) Picket Ships

Prime y

Station Coordinates

12 41-4an; 63-20W

BAST COAST

14 16 18 20	39-30时; 64- 37-3河; 67- 36-30时; 69- 34-4河; 71-	254 18(a) NO-201, 64-30W Big Chin) 39-201; 66-50W See Horse) 38-201; 59-25W Cout Pen) 36-40W, 73-40W Cors Beef
		WEST COAS	
	Primary	UNCLASSI	IFIED
Station	Courdings	es State	on Coo dinetes Call Signs
1 3 5 7 9	47-05N; 131 44-30N; 131 42-00N; 131 39-00N; 131 6-10N; 129	-200 30 -100 -74	1) 17-30N; 130-30N Quaker 1) 141-30N; 130-00N N-in 1) 141-10N; 130-00N Lefty 1) 38-50N; 129-10N Comber 2) 36-05N; 127-50N Delouse
	1	nt utilizat on s	en station
- 1	1	Andon sirereft	
	Bo	witnent.	Characteristics
12	Wa-80	Search Roder	F. equency 2600-2910, PRF-300/ Runge 0-250 miles
	APS-45	Height Finder	Frequency 9320-9430, PRF 450 Runge 0-125, Altitude 0-40,000
1	APH-1	Radio Altimeter	420-460 MC
1	APR-22	Radio Altimeter	4200-4400 MC
-	APE-9	Lorun	175-185 MC 1700-2000 KC
	APH -70	Loran	1700-2000mRC
	APS-20E	Search Radar	2820-2910 MC PRF 300 or 900
	APS-42	Weather Pene-	1075 Trans
		trution Radur	9320-9430 MC
	AP8-45	Height Finder	9320-9430 MC
	PX-6	IFF Transposie:	950-1150 MC
	APX-7	IFF Interrogate	1010-1030 and 1090-1110 MC
		Transponder	
	APX-25	Presconder	950-1150 KC

NCOOP-T, Hq NORAD, Subj: Seuward Extension Elements

ARL-27	URF	55 00 NO
ARN-6	ADF	1 -0-1750-KC
ARN-12	Marker Berson	
	Reliever	75 MC
ARN-14A	VOR	3.03.1-136 MC
191 -21	TACAII	950-1150 MC
ART-13	FF Tr newitter	1.8 18 MC
610 -51	I Tr namitter	.2 - 25 WC
, SCR-718	F.der ltimeter	420-460 MC
Le l Picket	84100	

YAGR ELECTRONICS ECHIPMENT

1. COMMUNICATIONS

TRUNSMI TIERS

	Approx.	
3	300-500 KG/2-18.1 mc 8-18.1 mc 225-400 mc	
3	2-18.1 mg	CW, V-TBR
2	225-400 BG	MCW/V-AN/GRC-27
-	285-100 to	MCWIV-TED
.1	225-150 to 115-150 to	V-AN, URT-7
ROC	IVERS	
3	14-600 ke	CW-R-389-URR
	2-30 mu	CW-V-R- 90 URR
	229-400 00	MCW/V-AR/ORC-27
	25-400 m.	MCW Y-ALL /URR-13
12	115-156 Ex:	V-AN URR-27
	SGLW-B.G. bands	AM, URR-22
MAV	A108	
1	UHF RDF (225-400 mc)	AN/URD-4
1	Short range air nav a	rys AN/URN-3
1.	Lorun System	AR, SPN-7A
RAD	AR	

Equipment

- SPS-BA Height Finder SPS-12 Air Search SPS-17 or 1 SPB Air Search SPS-58 Surface Search

3. ECK

- 1 Intercept & D,F System AN/SLR-2
- * Normal station manning is DER on Stations 1, 3, 5 and 16 with other stations being menned by YAGRS.

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8000P-T, Hq NCRAD, Subj. Seaverd Extension Elements

(b) DER ELECTRONICS E UTPAGENT

1. COMUNICATIONS

No	Equipment	Usc
1 1 7 1	AN CRT-15 AN SER-15 AN SER-11 M-20 Th	Receiver 2-2 mc Receiver 1000 kc Truns & sec
1	TT-57/FG M-14-TTY	(True distributor) Machine (receive only in tage form)
3	AN, URABA	Diversity duplex unit for receiving
1	THE AVEC	Treq neter
2 2	AN TURNEZ AN JURE OT AN JURE D AN JURE D	Product receiver VHF receiver VHF trans (some TDQ) HF WE trans

VGI Saming brucon Luran Receiver



SPS - Height Finder SPS-10 - Surface Search SPS-26 or 1 SPS-12 - Mir Search AN SPC-14 - Fire Control Radar

7. DOL

ECM intercept & D.F system -AR SLR-2 (90-10, 750 mc)

Characteristics and Operational Capabilities of Equipment.

(1) Picket ships

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MCOOP-T, Eq BCRA. Subj: Seaward Extension Elements

			PULSE	USUAL ANTENNA HOTATION		100
RADAR	PREQUENCY	PULSE	RATE	RATE	Man To	165
SPS-6	1250-1350 190	1 8 4 Mdcto Secs	15C-600 PM	-16 RPM		1/9
sps-8	3430-3570 NO	2 Micro Becs	700 1 8%C PES	2 RPM	- this	
SPS-M2	1250-1350 MC	3 % 4 Micro	300 & 600 PPS	2 1/2 RPM	-	100
Srb	215-225 MC	20 Micro Secs	60 PPS	2 1/2 RPM		
SP8-17	215-225 MC	10 Micro Secs	300 PP3	4 RFM 2.5-15 RFM	8/	A
8PS-28	215-225 MC	4 Miero Secn	120 PP3	2-15 RPM		
SPS-10	5450-5825 MC	Atero Secs	885-60 FP3	16 RPM	4	- 4
SPS-5B	6275-6876 NC	0.35 Mis Se	ocs 683 PP8	17 RPM	- (4) -	30
	nement named				(A) N	

FIRE CONTROL RADAR

AN/SPC-34 8740-1800 MC .3 Micro Secs 1600 PP3

d. Fature programs which will increase the effectiveness of the overall system.

(1) Afficien sireruft.

Correspondence initiated by this as aquarters to Chief of Staff, USAF, as Executive Agent for NORAD, has recommended that the APS-70 radar be utilized instead of the current APS-20 radar. As of this date, this headquarters has not received an answer - this conversion program.

(2) Picket ships.

SPS-17 radar. On both coasts the SPS-17 installation has already begun and is scheduled to be completed by June 1958.

FOR THE COMMANDER-IN-CHIEF:

UNCLASSIFIED

HARVEY T. ALMESS Major G meral, USAF DCS/Plans & Operations

104

CUPY

O517
AVT: NOCOP
INFO: NOCOC NOOPO
NOELC NOHCS

P 212213Z

FM CINCSAC

TO CINCNORAD ENT AFB COLO

BT

UNCLAS DINC 16533 x SUBJECT: REQUEST FOR INTELLIGENCE INFORMATION. REQUEST

THIS HOURTS BE FURNISHED BY 1 MAR 58, THE FOLLOWING INFO PERTAINING TO PICKET

THIS HOURTS BE FURNISHED BY 1 MAR 58, THE FOLLOWING INFO PERTAINING TO PICKET

SHIPS AND BOTH NAVAL AND AIR FORCE AIRBORNE EARLY WARNING AIRCRAFT UNDER THE

CONTROL OR JURISDICTION OF YOUR COMMAND: (1) STATION LOCATIONS OF ALL OPER
CONTROL OR JURISDICTION OF YOUR COMMAND: (1) STATION LOCATIONS OF EQUIP
MENT UTILIZED ON EACH STATION, AND (4) COMPLETE CHARACTERISTICS AND OPERATIONAL

CAPABILITIES OF EQUIPMENT. IN ADDITION, REQUEST ANY INFORMATION AVAILABLE AS TO

PRESENT FOR FUTURE PROGRAMS WHICH WILL INCREASE THE EFFECTIVENESS OF THE OVERALL

SYSTEM. ALL CORRESPONDENCE OR MATERIAL FORWARDED IN RESPONSE TO THIS REQUEST

SHOULD BE ADDRESSED TO THIS HOURTS, ATTN: DINC AND REFERENCE SAC D/I CONTROL NUMBER

58-1-6-M. BT

0

21 2236Z FEB

SEE NOOCPT 040 FOR INTERIM REPLY

COPY

UNCLASSIFIED IN REPLY REPER TO ANLAW CLEARCH: FY 50 Pending Chief of Staff 300 Beadquarters USAF Washington 25, D. C. I. IT 5: funding deficite and ISAF reprograming estraines in connection therewith were brought to the attention of this headquarters on recent visit of General Preston Pr visions which these evercases make for support comor priority air defease programs are completely untenable if the hir force is to provide even , token defense of the inited States. 2. The unequivocal ADC position for over two years, har favored : mediate initiation of a program for an advanced ARTHC atrereft as a top priority project. It is ADC inderstanding that (SAF has not contidered an advanced ARVAC for FT 50 fo ding. Implication of Such as omission is otraight-forward and irrefutable. Lutil an advanced ARVAC is wallable, SeC and the populace cannot rely on more than chance warning of an enemy force approaching via constal areas. Pour quality identification associated with the dense traffic area immediately all ... ent to coast lines will remain unimproved; improvement requires modern equipment performing well seaward of the traffic corgestion. Seaward firing BUMARCS cannot be controlled at any mighificant distance beyond the coast line and wir. in consequence, sacrifice 75-100% of effective intercept range in coastal areas. Letter, Atkinson to Lekay, dated 5 February 1958, retterated ADC priority need for advanced ARVAC sirgraft, 3. ADC priorities for both BCKURC and F-106 funding in FY 59 have been brought to USAF attention repeatedly and pointedly. Since 12 Dec 57, ADC has urged 40 full squadres BOMARC operational capability by 1963. These priorities, as with ARW&C, are based on long standing, well analyzed, convictions as to minimum operations, requirements in th face of austerity. Under provisions of current USAF repre-gramming, ADC faces the dire prospects of reduced F-106 buys and BOMARC procurement at a level so low that practically none of the defense capability of the weapon can be realised. UNCLASSIFIED 30 b AT V . \$5-1, or for recental stated PARFOLD NUMBER AND SUSPENSE DA rel E 4 gravette gma ADLAN 5 May 58 2521 None MENO FOR RECORD: A HONE SEE MEVE

ADC HQ FORM 11 PREVIOUS EDITIONS OF THIS FORM ARE SEALETE

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total Brain buy of lass the 1000 missiles (120 missiles per site) is antisely share prints from an operational standpoint. Procurement if 8:207 at levels below the 4800 figure will have the clear of a sit of committing the safety of the safed States to a fillion capability of local defense weapons in the safe at a hostile air attack.

- 4. It is the firm upin on of this headquarters that an advanced lafth program was a sepedited BOMARC buy must be funded in FY 50 h | all | wen sa a matter of urgency. Secret message, AULAN-S-186, personal Alkinson to Lemmy dated is April 58, reflected ADC's grave concern and regard for the F-106. Despite the a betterial interia boost in effectiveness while could be afforced ADC by introduction of the F-106 and the political implications of the F-106 program notwithstanding. On an empedied by operational considerations to recommend that the F-106 program be reduced or, if necessary, eliminated to permit full funding for advanced ASTAC and HOMARC in 71 59. This recommendation is forwarded with great reluciance, however, the operational superiority of SCHARC over the 106 cannot be denied. If URIF does not intend to provide acceptable PY 59 funding support, this Command has no the to but to forego one of its major programs.
- Analytical ists referenced in massage, personal Partridge to White, deted 5 May 58, are attached. These data show.
- a. Percent of threat surviving to local defenses at various levels of NOMARC.
- b. Permissible intercept distances for BOMARC with control from various levels of advanced ANNAC.
- c. Warning time available to SAC with various levels of advanced ANN&C.

3 Incls

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ATTENSON
Literan' General, USAF

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OFFICE OF THE DEPUTY FOR PLANS

MEMORANDUM FOR THE COMMANDER

SUBJECT: BOMARC ACT Funding

- 1. Letter on FY 59 funding to General White is inclosed for your signature.
- 2. It appears that General Partridge's wire will not be dispatched until around 1700. Since time is drawing short for USAF to get the FY 59 budget before Congress, it is hoped that General Partridge's wire will forestall any decisive action until the supporting documents in your letter arrive at Air Force Headquarters.

1 Incl

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DOLF E. MURRLEISEN Major General, USAF Deputy for Plans

JOINT MESSAGEFORM

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INFO: COMADO ENT AFE COLG (COURTER)

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FROM COOPR 23

PART I. I have been informed by Air Defense Command that the Air
Force is contemplatin, a tractic reduction in the Bonarc program
and that no runds are provided for APW&C sircraft in the Fiscal Year
1991 budget. This unilateral action on the percontract in accordance with spirit and intent of the Terms of Reference for
CINCHORAD/CONAD as approved by the Joint Chiefs of Staff. This
headquarters firmly believes that the necessary lunds to implement
the Bonarc and APW&C Programs should be obtained, even though it is
at the expense of the manned interceptor or of Strategic Air Command
hardware. FART II. Expans is the only surface-to-air missile with
high kill potential currently planned for the USAF inventory. It

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Colonel Richard T. Carrisle
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is the best weapon proposed to date for employment in an area air defense role between now and 1963. FART III. Without an improved AEW&C capability, securing even tactical warning may be doubtful, and we will be unable to operate Bonarc at all altitudes more than 7) miles at sea. Further, it will be impossible effectively to exploit the full potential of the F-108. Provision of this capability by an aircraft such as the Lockheed Project 410 will permit intercept missions in regions well remote from U. S. porders and may permit elimination of the seaward extensions of the DEV line and the picket ships operating off the East and West Coasts. Achievement of this capability and retention of the full Bomere program remain a firm requirement of this head usrters. PART IV. In view of the magnitude of the Soviet air supported threat, particularly since they enjoy the advantages of the initiative, timely provision of an effective air defense of this country is sufficiently vital to dictate reduction of expenditures for the offensive forces or seeking supplemental appropriations to o'tain the necessary funds. To this end I request that you reconsider such actions as Hq USAF may be undertaking with regard to reducing programs for air defense forces.

M/R. At a meeting at Hq ADC between her Partridge and Gen Atkinson, General Atkinson's statif stated that the Air Force was takin, action to reduce the number of Bomarc mis-fles per squadron on 30 missiles each. The also stated there was no consideration of funds through FY 1959 oudge, for the AEW&C program, deneral Atkinson is taking a strong position is opposition to these Air Force actions. General Eartridge agreed and expressed his desire to go on record to the CofS USAF concerning such unilateral actions on the part of the Air Force and expressing his concern over any further reductions in these two programs. This message is lotended to put General Partridge's views before General White.

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IN THE P-100 AND 200 AREAS. SOTTING TO ALLEVITATE TO 1959

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URGENT BASIS IS TO ASSURE THE MOST EFF COURS CONTINUATION F

PAGE TWO JETHC 118
OFFENSIVE, LEFENSIVE AND SUPPORT POICE W THIN FUNDING LIMIT TILNG.
TO THIS END, THE 1959 PROGRAM HAS BEEN TREGUIGHLY ANALYZED
AND IS FIRM. IN1959, MUNDS ARE NOT PROVIDED FOR FOLLOWICH
AMBLE AND THE BOMARC BUY HAS PEEN REDUCED AS ROXIMATELY
SPERCENT FROM THE PG-69-1A LEVILL. REPROCRAMING ACTIONS
FOR 1969 THROUGH 1963 AND BEING EX HOUSED WITH THE PRODUCT
IND INTENDED FOR AIR COUNCIL REVIEW 12 MAY 1958. YOUR ABOVED
AND BOMARC COMMENTS WILL RECEIVE THOROUGH CONSIDERATION IN
THE CURRENT EXERCISES, PART II. BEALITING THAT THE PRESENT BUDGET
C.N NOT MEET ALL OF YOUR RECUIREMENTS IT IS SUGGESTED THAT
NADOP REFLECT RELATIVE PRIORITILS FOR ALL AIR DEFENSE
PROCRAMS UNDER YOUR COONLY, NOT PROTITE THE JOS WITH A
MAISIS FOR RY IN NECESSARY REAL JUSTMENTS. THE FINAL AIR
DEFENSE PROGRAM WILL BE MADE AVAILABLE TO YOUR AT THE
EARLIEST DATE.

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DEPARTMENT OF THE AIR FORCE
OFFICE OF THE CHIEF IN STATE
UNITED STATES AIR FORCE
WASHINGTON U. C.

29 May 1.958

SUBJECT: FI 59 Funding

Commander

Air Defense Command Ent Air Force Rame

Coloredo Springs, Coloredo

1. Reference your letter dated 6 May 1958, subject: FT 59 Punding, and your concern over supected adverse impact on the ARMAC and BOMANC programs.

- 2. This Emaguarters is currently engaged in drastic reprograming extion as the result of unitical shortages in the F-100 and F-200 funderess. Actions to alleviate the FY 59 shortages through requests for supplemental appropriations resulted in realization of less than twenty percent of the UMAF request. We are pursuing this problem on an urgest basis with the objective of assuring the most affective combination of offensive, defensive and support forces within funding limitations.
- 3. The FT 59 progrem has been thoroughly analysed and is firm.
 This progrem does not provide funds for follow-on ARMAC aircraft. Purther, the BOMARC buy progrem has been reduced approximately fifty percent from the FG 60-1 level. These decisions were made after full consideration of the many different alternatives possible, including those you have recommended.
- 4. This Readquarters is fully source of the impact this action is expected to have on the overall North American air Sefence system and its resultant reduced espability against the Soviet threat. Reserver, as stated in paragraph 2 above, this action is necessary in light of other overriding priorities? For your information, CINCORAD has been advised of the above in a reply to his message detect 6 May 1958.
- 5. You will be hapt advised if any significant obenges occur in the above stated BOSARC and ARTHU programs.

SACON R. MARRY Major Reseral, E. S. Air Peres Assistant Visc Chief of Monft

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DUPLICATE

SUBJECT: FY-59 AEWSCon Funding

TO: Chief of Staff
Headquarters USAF
Washington 25, D. C.

1. Reference: Letter your headquarters, subject: "FY 59 Funding", 29 May 58.

- 2. This headquerters must continue to regard the follow-on AEMACon system as a first-priority requirement, in view of its impact on all other defense measures. However, since the FY 59 budget does not provide for this system, it is urged that development money and effort be allocated to as many of the long lead time subsystems as possible. The following is the recommended priority for development of components:
- a. Radar. Preferably a combined search and height finding set, overcoming the deficiencies of present systems. While the APS-85 appears a good interim search radar, it does not now have a height-finding capability, nor the range on small targets such as Cross-Bow. Further, it operates on a frequency which appears subject to very severe degradation from radio noise caused by nuclear detonation.
- b. Communications. Although many communications systems have been proposed for this purpose, to our knowledge no suitable system exists at this time. Specifications are contained in GOR 97, as amended.
- c. Data Processing. Of the several data processing systems proposed, the only one known to be under active development is the Litton ATDX. The advertised characteristics of this system appear to meet our requirements, but the status of funding and development is not known.
- ii. Infra-red. Although this is not specifically mentioned in GOR 97, recent advances in this field seem to make it highly desirable to include a supplementary detection capability in the system, employing infra-red techniques, especially against submarine-launched missiles.

Lt Col Tapscott/kma

ADLAN-G

17 Jun 58 2183 Non

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3. While other subsystems are required, it is felt that in general they are available today in essentially the form required. This includes data display, navigation, and in-flight maintenance and checking.

/s/t/ ROY H. LYNN Licutement General, USAF Vice Commander

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FROM AFKPD 57024. CATEGORY "AC" MSG.

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THE NAVY PLANS TO REDUCE FROM FIVE TO FOUR STATIONS EACH IN THE ATLANTIC AND PACIFIC SEAWARD EXTENSIONS OF THE CONTIGUOUS RADAR BS WITH. YOUR COMMETS ARE REQUESTED NOT LATER THAN 10 MAR 1958.

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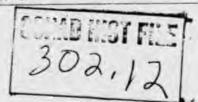
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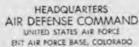
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HEADQUARTERS

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TEL MELPOSE 2081

IN REPLY REFER TO ADLAM-G

SUBJECT:

AKWaCon Coverage in the Gulf of Mexico and South

Atlantic Areas

MAY 21 .958

TO:

Commander-in-Chief MAY 21

Morth American Air Defense Command Ent Air Force Base

Colorado Springs, Colorado

- 1. Headquarters ADC, in accordance with a request from your Headquarters, is currently in the process of establishing a surveillance and identification capability along the southern perimeter of the United States by second quarter FY 1959. To be effective, this capability should be extended into the South Atlantic and Gulf of Maxico areas.
- 2. The Navy is currently maintaining one ARW&Con blimp station on the east coast on approximately a half-time basis. It has been our understanding in the past that one station on the east coast was to go on a full time basis by 1 July 1958 and that a similar station would become operative on the west coast by 1 July 1959.
- 3. Follow-on AEW&Con aircraft scheduled for Air Defense Command in 1962 should eliminate the need for AEW&Con blimps on the east and west coasts. The AEW&Con blimps, if redeployed in the Gulf of Mexico and South Atlantic at that time, might provide the necessary coverage in those areas. In order to allow this head-quarters firmer planning factors, request a determination be made as to the intent of the Department of the Navy to furnish lighter-than-air AEW elements in the time period involved.

FOR THE COMMANDER:

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EDGAR B. GRAVETTE Colonel, USAF Director of Plans

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	HEADQUARTERS H AMERICAN AIR DEFENSE C		
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TO: Commander, Kava Ent Air Force B	l Forces, Continental As	ir Defense Command, Colorado	AST CO.
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From: Commander Naval Forces, Continental Air Defense Command To: Commander in Chief, North American Air Defense Command (MOCOP-T)

Subj: AEMsCon Airship Utilization

- The Navy is not currently planning to establish am LTA station on the West Coast or to commission a ZW squadron for West Coast operations during the time period under consideration.
- 2. The present Navy procurement program for additional ADN configured airships is limited to a total of four (4) ZPG-3W type airships. Fear (4) ZPG-2W airships are already in service with Airship Early Warning Squadren One at Lakehurst, New Jersey. The first ZPG-3W airship should be delivered to the Navy in the Fall of 1958 with one additional expected shortly thereafter. Two of the scheduled total of four ZPG-3W airships will not become available for use in the air defense system until completion of service evaluation trials expected to be completed in late 1959 or early 1960. A total of six airships are programmed for assignment to ZN-1 for operations in the East Coast seaward extension of the contiguous radar coverage system. The two AEM airships remaining in the inventory will be retained as back-up for airships going through overhaul. Six blimps should give ZN-1 the capability of full time manning of one station.
- 3. Consideration has not been given to the redeployment of ZW-1 to the Gulf of Mexico area because no support or operational facilities exist in this area for this size and type of airship and funds have not been budgeted for such base construction.

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From: Commander Saval Larges, Continental Air Delense Command Commander in time, orth American air Defense Command

Subje ZP. 2W Airs/ ips

1. The following data recting to estimates on delivery dates of ZPG-SW airship has been received from the Chief of Naval Operations and is forwarded for information purpo es:

s.,	urea. M.	Est. Date of Del. to Navy	Lemarks
	1442-0-	3a: *58 (718)	This is second in production line.
		Jul *50 (27 1)	estimated distation about one year.
	141212	Oct *50 (77 1)	First production arrange. First Flight esteb 'bo, to be retained by contractor for illight test and demonstrations. Delivery to Navy after completion.
	1462-11	Jac *20	Deliver to & 1.
	146277	Mar *30	Deliver to ZV 1. Completion 01 corrent production contract.

5. There are no pur ent ; as a put as additions AFX acretions, nature results of the evaluation at the second and the second at be mes as stable.

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ADOOP-C, He ADC, 14 Jan &, Subj: Surveillance and Identification

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11 FT 1069

Eq North American Air Defense Cramand, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, Ent Air Force Base, Colorade Springs, Colorado

- 1. This headquarters concurs with the request contained is paragraph 2, that the implementation date for the surveillance and identification system along the southern perimeter be extended to the second quarter of FY 1959. Due to the togethey of this program, this headquarters cannot accept my elippage in the revised implementation date.
- 2. With reference to purigraph 1, it is requested that you continue to investigate the possibility of utilizing facilities of other commands or services and if my refound which lend hemselves to the solution of this problem, own an an interior was, that action be taken immediately for their use in the clasing of the serveillance and identification gap along the southern border of the United States.
- 3. Request this needquarters be furnished a copy of the plun of operation", referred to in prospers 4, at the carliest possible date.

POR THE COMMANDER-IN-CHIEF;

MARSHALL S. CARTER Major General, USA Chies of Staff

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HEADQUAR

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE
ENT AIR FORCE BASE, COLORADO

TEL: MELROSE 2-5511

14 January 1958

SUBJECT: Surveillance and Identification

TO:

Commander-in-Chief North American Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. References:

a. NORAD letter NOOOP-C, dated 27 September 1957, Subject: Surveillance and Identification.

b. NORAD-ADC conference held at Headquarters ADC on 25 November 1957.

- 2. As tentatively agreed at the conference referenced in paragraph 1.b. above, request that the implementation of approved plans for completing the surveillance and identification system along the southern perimeter of the United States be extended from 1 January 1958 to approximately the 2nd Quarter of FY 1959.
- 3. This request is predicated upon a review conducted by this headquarters which indicates that through special expeditious action a surveillance system can be established along the southern perimeter of the United States without the use of facilities of other commands or services. To provide a lash-up surveillance system using the facilities of other commands and services would require funds not available to this command and would require re-programming actions which could have a detrimental effect elsewhere in the system.
- 4. A plan of operation is now being formulated which will entail the following actions:
- a. The AC&W radar coverage will be essentially as established in present programming documents with augmenting radars of the CAA and the U.S. Navy. The use of augmenting radar in the Florida peninsula will be necessary to give the desired radar coverage and identification capability in this area.

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 provide a combat espablity in the side will be a but in a local trace. Interceptor Program occurred, and is seen part 177, except that the Interceptor quadron program... If for experience in sections, laces, will be located at the information of each.
- c. 'ir national Tuers unit will be requested to serve and 22-hour status to issist in providing the assessed it provide coverage. The present plan is to unit. The codes units a locate at Phoenic, 'ricona sen fatonic, indicate a suston, locate, ever reason, courses, and recksonville, a locate.
- i. The establish of the moduler perimeter of the will start at the nowhere tip of the module of the module of the control of the full of sich, enclosing the southern portion of lories, the hasting at the southern portion of the thantic ADIZ.

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND

ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO **UNCLASSIFIED**

OFFICE OF THE ASST SECY OF ADMINISTRATION

NOTICE OF IMPORTANT INCOMING CORRESPONDENCE

15 Jamery 1958 (Date)

TO: Chief of Staff Assistant Chief of Staff	
For your information, the	following correspondence has been received: Dated: 1k January 1998
Prod;	Panfold# 18-694 Suspense: Some

SUMMARY: This letter is on the subject of SURVEILLANCE AND IDENTIFICATION. It is in reference to our letter HOOOP-C, dated 27 September 1957 and also the NORAD - ADC conference 25 New 57. Letter requests the surveillance undidentification system be extended from 1 Jan 58 to approximately the 2nd quarter of FI 1959. To provide a lash-up surveillance system using the facilities of other commands and services would require funds not available cilities of other commands and services would require funds not available to this command and would require re-programing actions detrimental to the program. An operation plan is being formulated as follows: The ACM reder coverage will be essentially same as present programing documents. The coverage will be essentially same as present programing documents. The Florids peninsula will have the augmenting radar of the CAA and US Navy. The intercepter deployment to aid identification as outlined in Intercepter The intercepter deployment to aid identification as outlined in Intercepter Program Document, dated 10 Dec 57. The Air National Guard will serve on a 2th hour status at Passenix, San Antonio, Houston, Hew Orleans, and Jacksenville. The establishment of a southern perimeter ADIZ.

This letter signed by MAJORN ROY H LYDN, USAF, Vice Commander, ADC.

R. E. GARVEY, IR. Major, USA Asst Adjutant

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HEADQUARTERS

NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

UNCLASSIFIED

OFFICE OF THE ASST SECY OF ADMINISTRATION

NOTICE OF IMPORTANT INCOMING CORRESPONDENCE

15 January 1958 (Date)

TO: Chief of Staff Assistant Chief of S	Staff
For your information	n, the following correspondence has been received:
Classification:	Fanfold# 18-69k Suspense: None
Action Office: CODOP	on the orbinet of SURVEYLLANCE AND IDENTIFICATION.

SUMMARY: This letter is on the subject of SURVEILLANCE AND IDENTIFICATION. It is in reference to our letter HOOOP-C, dated 27 September 1957 and also the HORAD - ADC conference 25 New 57. Letter requests the surveillance and identification system be extended from 1 Jan 58 to approximately the 2nd quarter of FI 1959. To provide a lash-up surveillance system using the facilities of other commands and services would require funds not available to this command and would require re-programming actions detrimental to the program. An operation plan is being formulated as follows: The ACAM reder coverage will be essentially same as present programing documents. The Florida peninsula will have the sugmenting reder of the CAA and US Havy. The intercepter deployment to aid identification as outlined in Intercepter Program Document, dated 10 Dec 57. The Air Hational Guard will serve on a 2h hour status at Phoenix, San Antonio, Houston, New Orleans, and Jacksenville. The establishment of a southern perimeter ADIZ.

This letter signed by MAJGEN ROY H LIMM, USAF, Vice Commender, ADC.

R. E. GARVEY, IR. Major, USA Asst Adjutant

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FORM 4 IREV

HEADQUARTERS AIR DEFENSE COMMAND UNITED STATES AIR FORCE ENT AIR FORCE BASE, COLORADO

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TEL: MELRUSE 2-5511

SUBJECT: Designation of Air Defence Identification Zones

Director of Operations Headquarters United States Air Force TO: Washington 25, B. C.

- 1. Current intelligence estimates give the Seviet Long Range Air Armies the espability of end running our northern detection mystem and penetrating through Maxieo and our seuthern seestal areas. It is believed that the Soviets may accept this more undesirehle reute rather than direct penetration with a high prebability of detection.
- 2. In order that penetrations from the southern approaches can be detected and properly evaluated, it is mandatory that our surveillance and identification capabilities along the southern perimeter be re-examined with a view toward strengthening our air defense espability over the southern approaches to the Continental United States. To attain an effective identification supability along the southern perimeter of the United States, the following setions are required;

a. Mexican Border ADIZ:

- (1) Designation of a US/Mexican Border ADIZ as shown in Inclosures 1 and ?.
- (2) Establishment of identification oritoris and precedures for operation within the Mexican Border ADIZ and provisions for mendatory compliance therewith.
- (3) Provisions for extending low altitude radar coverage south of the US/Next can Border.
- (%) Provide timely flight plan and air movements data om aircraft penetrating and/or operating within the Mexican Border
- (5) Previsions for overfly and interespt of unknown and/or bostile aircraft over Mexican territory by U.S. interceptors.

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NORAD, Commander-in-Chief,

Colorado

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ADOOP-CI, Hq ADC, Subject: Designation of Air Defense Identification Zones (Cont'd)

b. Gulf of Mexico ADIZ:

- (1) Designation of an ADIZ over the Gulf of Mexico as shown in inclosures 1 and 3.
- (2) Provisions for extending surveillance radar coverage into the Gulf of Mexico.
- (3) Provide timely flight plan and air movements data on aircraft penetrating and/or operating within the Gulf ADIZ toward the United States.

c. Atlantic ADIZ Extension:

- (1) Designation of an ADIZ over the Bahama Islands and extension of the Atlantic Coastal ADIZ as shown in inclosures 1 and 3.
- (2) Provisions for extending surveillance radar coverage into Southern Florida and the Bahama Islands.
- (3) Establishment of identification criteria and procedures for operation in that portion of the ADIZ overlying British territory and provisions for mandatory compliance therewith.
- (4) Provide timely flight plan and air movements data on aircraft penetrating and/or operating within the Atlantic ADIZ extension (including Bahama Islands ADIZ) toward the United States.
- (5) Provisions for overfly and intercept of unknown and/or hostile aircraft over British territory (Bahama Islands) by U.S. interceptors.
- 3. It is anticipated that the internal (Eastern and Western) ADIZ's will remain in effect for an indefinite period after the southern perimeter ADIZ has been completed. However, after the establishment of an ADIZ around the Florida Peninsula, it may be desirable to realign the southern portion of the existing Eastern ADIZ, i.e., re-terminate the southern portion of the Eastern ADIZ at some point on the Gulf ADIZ or Atlantic ADIZ. When the effectiveness of the southern perimeter has been proven, the Eastern and Western ADIZ's may be placed on standby status at the lower altitudes but retained for use during an air defense emergency.

ADOOP-CI, Hq ADC, Subject: Designation of Air Defense Identificat Zones (Cont'd)

- 4. Studies of current seaward extension radar coverage and deployment are being made to determine the feasibility of extending, further to seaward, the Atlantic and Pacific Coastal ADIZ's. If the results of these studies so indicate, our recommendations to realign the Atlantic and Pacific ADIZ boundaries will be submitted under separate cover.
- 5. It is recognized that an ADIZ over the southern approaches cannot be effectively policed with existing radar and interceptor deployment. In accordance with the current ADC Program, sufficient radars will be operational along the southern border by the end of calendar year 1958 to provide acceptable medium and high altitude coverage. Within the limits of resources available to this command, positive action will be taken to expedite the installation of radar and communications facilities required to provide detection and identification capabilities along the southern perimeter.
- 6. It is requested that the Air Defense Identification Zones, outlined herein, be designated at the earliest possible date. Even though we will not have a fully effective surveillance and identification capability prior to the Second Quarter Fiscal 1959, the early designation of these ADIZ's will enable us to exploit our capability as it materializes.

FOR THE COMMANDER:

3 Incls:

/s/t/ HAROLD W. GRANT Major General, USAF Deputy for Operations

1. Coordinates of Proposed ADIZ's (2 cys)

2. Map depicting proposed Mexican Border ADIZ (2 cys)

3. Map depicting proposed Gulf ADIZ and Atlantic ADIZ Extension (2 cys)

Copy furnished: CINC NORAD

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COORDINATES OF PROPOSED ADIZ'S

Nextean Berder ADIZ. in area bounded by the following everdirects: Starting at the northwest corner at 32°16'H 117°06'W north to the western edge of the California - Hexiso border, east
along the California, Arisona, New Mexiso, and Texas - Mexico border
to 31°23'H 106°00'W - east to 30°20'H 100°30'W - southeast to 29°22'H
108°00'W - southeast along the Texas - Mexico border to 27°30'H
108°00'W - southeast to 26°05'H 96°16'W - east along the Texas - Mexico
border to the Culf of Mexico - east to 25°50'H 96°35'W - south to
25°00'H 97°00'W - west to 25°00'H 106°00'W - west to 29°20'H 111°00'W - west
to 29°00'H 111°51'W - north along the centern boundary of the Pacific
ADIZ to point of origin.

Oulf of Herico ADIZ. An area bounded by the following occudinates: Starting at the southwest corner at 26°00:19 97°00:19 -north to 25°58'19 96°35'14 - north to 26°05'19 96°30'14 - northeast to 29°26'19 96°00'14 - cost to 26°46'19 90°00'14 - northeast to 30°00'19 28°25'14 - cost to 30°00'19 86°00'14 - coutheast 29°20'19 86°00'14 - cost southeast to 20°55'18 83°30'14 - northeast to 25°46'19 80°00'14 - cost and south around the cost boundary of 4-173 to 25°10'19 81°12'14 southeast to 26°49'19 80°55'14 - cost to 26°49'19 80°00'14 - south to 26°00'19 80°00'14 - west along the Sigth parallel to point of origin.

Extension of the Atlantic ADIX. An area bounded by the following scordinates: Starting at the southwest corner at 24,000'E 80000'W - month to 24,000'E 80000'W - month to 29,000'W portheast along the present Atlantic ADIX to 30045'N 74,000'W - south to 24,000'E 73,000'W - west along the 24th purallel to point of origin.

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the spation of Air Defense For the design Zones," File DOX - 1, deten 23 January 1983.

- Thus command has long been command over our instilling properly to evaluate constrations along the southern approaches to the Continental which store, that Fiber , with which you are familiar, set lorts a regiment for Mexico-cased prime and at filler radars to west take see.
- 3. In light of the changing threat and the probable elasted time to securing an operational casculity of racare made in Mexico and in the interest of paining some carry consultity, this headquarters strongly concurs in and supports the establishment and extension of the Abills as madelia in referenced to letter.
- h. It is recommended that the first in question be specifical at the earliest oraclicable date and, in any event, to the second queries of fixed 1950 to the end it is firther recommended that the ANO proposal be much as a basis for any listion with the extensive Government in lieu of the Calletine or requirements for that specific area.

Joseph petroching

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DEPARTMENT OF THE AIR FORCE
OFFICE OF THE CHIEF OF STAFF
UNITED STATES AIR FORCE
WASHINGTON, D. C.
16 ADT 11 1958

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SUBJECT: Designation of Air Defense Identification Zones (U)

TO:

Commander-in-Chief North American Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. This is an Executive Agency letter. This Headquarters is in agreement with letter Headquarters ADC, subject: "Designation of Air Defense Identification Zones", dated 23 January 1958. The inability to properly evaluate southern approach penetration is a serious problem, one that must be resolved expeditiously. For this reason ADC's proposal is being given prompt attention.

2. In view of the requirement to conduct negotiations with foreign governments prior to full implementation of this proposal, it appears doubtful that the 2nd Quarter FY 59 date can be met. It is anticipated, however, that negotiating problems will be lessened by using ADC's ADIZ proposal as a basis for these negotiations, rather than CADOP 56-66. You will be kept advised.

Center & Commercial Control of Staff

Curtis E. Lemay

General, U.S. Air Force

Vice Chief of Staff

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HEADQUARTERS

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AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

TEL MELBOSE 2-5511

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TH AETLY ROPPER TO ADOOP-GI

SULFICE: Southern Per meter ADID (0)

23 MAY 1958

TO: Som Ander-in-Daief
Continents air Defense Sommund
Ent der Peres dese

Colorado Springs, Colorado

1. deference is made to air Defense D. mand Letter alker-J, dated 1. January 1958, Subject: Eurveillance and Identification, and your lat Inforsers t theorets, dated 11. Sebruary 1958.

- 2. A letter outlining our requirement for a southern portmotor ADIZ complex was dispatched to Headquarters United " tes hir Force on 23 January 1959. Inserted as extensive coordinated is required with other opencies, civil and military, as well as other governments, there re unable to give first data were this coordination will ecompleted. Our proposal has been staff to the south Order of Staff, terrations, at SAF and is presently in the hands of the Deputy Chief of Staff, Flons, for their otion.
- 3. We have initiated deordination with the Carry in an effort to utilize surveillance information from their roder located at Key West, Florida. Also, it is planned to utilize imputs from the civil Aeronautics Administration long range redar located at Name. This will provide normal acceptable radar coverage over the Florida oning da.
- h. Five additional Air Sational Guard squarrors will assume twenty-four hour alert on 1 October 1950. These squadrous are located at Phoenix, Arizo a, Sar Antonio and Gouston, Texas, Jew Orleans, Louisiana, and Jacksonville, Plorida. These units essents F+ tD/1 mineralt and, with the execution of the Lew Orleans sandalron, have been or daylight alert for more than one year. These units will greatly extense our intercent and identification capability in the area of the next ern aDIZ.
- 5. Five Aircraft Control and Warning Stock, which will have nor-veillance responsibility of portions of the ADIZ, will not be operational until approximately 1 success 1959. This slippage occurred becomes family housing will not 1 available prior to this date. Second of serious y blic housing a stocks to the vicinity of these sites, it has been determined that unions of ADIC 30-7 should not be request 1. Flough this will leave now too in radar not rage, it should not below the designation of the aDIC 2 interior. Electification will be a referred to the extent possible companies to other existing detection carability. This degree ation is acceptable for a short period of tipe.

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

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2 JUN 1958

HOOOP -T

SUBJECT: Change in the Alaskan Coastal ADI2 (U)

TO:

Chief of Staff, USAF As Executive Agent for NORAD Washington 25, D. C.

- Reference: USAF letter to Commander, Air Defense Command, Subject: Operations Plan for the Distant Early Warning and Mid-Canada Lines, dated 8 April 1958.
- 2. USAF ADC forwarded the referenced letter to this head-quarters for appropriate action in regard to the change in the Alaskan Coastal ADIZ and a requirement for full time AMIS facilities at Fairbanks and Anchorage. A proposal has been received from the Alaskan Air Command to change the outer boundaries of the Alaskan Coastal ADIZ to cover the Aleutium area. These changes will extend the Alaskan ADIZ, as shown on the attached chart, from a point on the present ADIZ at 60000'N, 174010'W to 50000'N, 174000'W to a point on the present coastal ADIZ at 52000'N, 153000'W.
- 3. CINCRORAD concurs in Alaskan Air Command's proposal and requests action be taken to have this proposal presented to the SCAT Board for action at the carliest possible date.
- 4. Attachments to the referenced correspondence indicate that no formal negotiations have been conducted with the Civil Aeronautics Administration for the establishment of full-time AMIS facilities at the Fairbanks and Anchorage Air Route Traffic Control Centers to service the DEW Line and/or Aleutism Segment. It is therefore requested that Headquarters USAF negotiate with the CAA for the establishment of appropriate AMIS facilities for Fairbanks and Anchorage centers and that Alaskan Air Command be designated the Sunding agency.

POR THE COMMUNICER-TH-CHIEF

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M/R: On 8 Apr 58 Headquarters USAF forwarded a letter to ADC in which they requested that necessary administrative action be taken to formally request the CAA to: 1. Extend the Alaskan ADIZ and, 2. To provide AMIS service to the DEW Line and the Aleutian Command from Fairbanks and Abchorage as outlined in the DEWOPS Plan and changes thereto. ADC forwarded this correspondence to this headquarters for action indicating a desired change in the Alaskan coastal ADIZ as requested by AAC. An attachment to the referenced USAF letter is an informal letter from Mr. D. D. Thomas of the CAA to Colonel Preston in USAF in which he said that there would be no action taken by the CAA in regard to Alaskan ADIZ changes or AMIS facilities at Amchorage or Fairbanks until a formal request was received. This letter is therefore our formal request to USAF, as Exec. Agent, to take the appropriate action in this regard.

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HEADQUARTERS AIR DEFENSE COMMAND UNITED STATES AIR FORCE ENT AIR FORCE BASE, COLORADO

TEL: MELROSE 2-5511 EXT 2237

ADLMO-A

4 APR 1958

SUBJECT:

Manning of Canadian Sited Aircraft Control and

Warning Activities

TO:

Commander-in-Chief North American Air Defense Command ATTN: Colonel Scott, Secretariat

Ent Air Force Base

Colorado Springs, Colorado

- 1. An exchange of notes between State Department representatives of this country and Canada in August 1951 forms the legal basis for U.S. operation of certain Pinetree and NEAC sites. These notes, plus later specific agreements, provided for the construction of 33 Aircraft Control and Warning sites. Eighteen of these sites are manned by the U.S. and fifteen by the R.C.A.F. Canada reserves the right, on due notice, to take over manning of all sites.
- 2. The United States Air Force is in an austere manning situation and every effort is being made by this command to reduce our manpower requirements. A significant savings could be effected if Canada would accept the manning responsibility for all Pinetree sites.
- 3. Request you discuss this possibility with the appropriate members of your command and advise this headquarters of possible future actions.

FOR THE COMMANDER:

Sterreth & Dame

KENNETH L. CAMP Co'rnel USAF Lirector of Mancower & Organization



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NOOPR

16 April 1958

Manning of Canadian Sited Aircraft Control and Warning SUBJECT: Activities

Commander TO: USAF Air Defense Command Ent Air Force Base Colorado Springs, Colorado

- 1. This letter is in reply to your ADIMO-A dated 4 April 1958.
- 2. At the present time, the RCAF is committed to the limit of its manpower authorization, and the manning of additional Pinetree radars could only be undertaken at the expense of cutting back other equally essential elements of the system. With the conclusion of the election in Canada, there is always the possibility that the Canadian Government might appropriate more resources to the RCAF for this purpose, but the extent to which this might be possible could only be established by further inter-governmental negotiations.
- 3. It might be noted that any proposal to reduce the number of USAF personnel manning radar units, irrespective of the hard facts of the manpower situation, constitutes a reversal of the trend that must be maintained if the operational requirements for increased surveillance are to be met. The ADC Long Range Limited Resources Plan 56-67, dated 10 Dec 1957, was based upon anticipated financial and personnel limitations. Although it curtailed proposed weapon systems to an appreciable extent, it made provision for 23 additional radars in Canada. CINCNORAD subsequently wrote the JCS and the COSC supporting this requirement and recommending the earliest possible implementing action. We have been advised by the CAS RCAF, as Executive Agent for the COSC, that consultations are being held between Hq RCAF and Hq USAF concerning the improvement and the extension of ground environment in Canada. To the extent that this program is approved, it is to be expected that it will involve a requirement for the additional personnel -- both RCAF and USAF.

FOR THE COMMANDER-IN-CHIEF:

s/t

HARVEY T. ALNESS Major General, USAF DCS/Plans & Operations

MEMORANDUM FOR RECORD: See next page

COPY 124

MEMORANDUM FOR RECORD: The ADC Director of Manpower and Organization requested Hq NORAD advice on a proposal to request Canada to take over the manning of presently USAF manned Pinetree sites in Canada. This letter advises that the RCAF is fully committed up to its present manpower authorization, and that the extent to which it might be possible for the Canadian Government to increase its authorization to the RCAF could only be established by further inter-governmental negotiation. It also points out that to the extent that the proposals for the extension of the ground environment in Canada, now the subject of discussions between RCAF Hq and USAF Hq, are approved, it is to be expected that there will be a requirement for additional (rather than less) USAF personnel in Canada as well as additional RCAF.

STANTEST

21 FEB 1958

MOOPE

SUBJECT: Ground Environment Extension and Improvement in Canada

TO: Chief of Staff, United States Air Porca-As Executive Agent for HORAD Washington 25, D. C.

1. References:

- a. Hq ADC latter, subject, Proposed Regises Fourth Phase Bader Program Canada, 22 March 1955.
 - b. Hy ADC letter, subject as above, 13 August 1956.
- c. Continental Air Defense Objectives Plan 1956-1966, 15 December 1956.
- d. He ADC letter, subject, Jeint RCAF/ADC USAF/ADC Frequency Diversity Plan.
- e. ADC Long Range Limited Resources Plan 58-67, 10 December 1957.
- 2. Is July 1954 USAP ADB Headque ters published a document called "ADG Air Defance Requirements, 1954-1960." This document postulated a requirement for the northward extension of the Combet Zone by the addition of 16 prime radars to be known as the Fourth Phase Sephiemental P.ogram. G/C C W McNet
- 2845 3. Readquarters ADC letter, reference "a", 22 March 1955, J. Jan 58 presented a revised Fourth Phase Rada: Program prepared jointly by representatives of the RCAF/ADC and the USAF/ADC. A similar document was forwarded to RCAF AFEQ Ottawn. This revised Program provided for a lime of 18 prime redsrs parallel to the Pinet ea chain plus 8 prime radirs located on the Mid-Canada line.
- Meadquarters ADC letter, reference "b", 13 August 1956, responsted the requirement for this additional coverage, urged that expeditious action be accorded the implementation of this Program, and pointed out the budgetery problems that would be avoided if irmediate funding could be accomplished.
- 5. The "Continental Air Defense Objectives Plan 1956-1966," 15 December 1956, again presented the requirement for this additional coverage but reduced the number of reders to 25 by the deletion of the most westerly prime radar on the Hid-Canada line.

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- Handquarters ADC sector, 'teletence "d", 3 December 1957, forwarded the joint BRAF/ADC BCAF/ADC requirements for F equency Diversity sciens throughout Geneda including the 16 locations northunid of the Pinetree chain.
- 7. The "ABC Long Range Limited Resources Pian 58-17,"
 10 December 1957, which was based upon anticipated fund limitations, with serious curteilments in the proposed weapon systems, still assigned sufficient priority to the Ground Divironment requirements to silocate funds for 23 additional redars in Casada, '80 on the paratter line and 5 on the Mid-Canada igae. This Fish also silocated funds for the Prequency Divorsity pagairments as specified in the ABC setter dated 5 December 1957.
- 6. The foregoing history should serve to demonstrate the consistency of CONAD, ADC and the RCAF in their repeated endeavors to obtain this eddition to the Combes Zone. It is resided that the implementation of this Program received a sotract as a result of the CHESAT report to the Cameda/U.S. Militery Study G. oup on this subject. At the time of the presentation of this report, COMAD representatives protested that the CHESAT report was too limited in scope, did not take account of all the factors involved, and therefore should not be used as a basis for a decision on such an important matter.
- 7. The purpose of this letter is to again emphasize the air defense requirement for the extension of the Combet Zone in Canada. Headquarters MOLAN strongly supports the Headquarters ADC proposals for the Todquency Diversity Plan and the additional 23 prime raders. Without these additional facilities we will not be able to exploit the potentialities of the vespons proposed in either the CADOP 56-66 or the ADCIRIE 58-67. We have been recommending the additional raders for the last three years with no evident result. Failure to provide for this program is reducted will result in a serious deficiency in our defenses against the series be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications be carried out with accommended that the necessary communications because the provided to get the program under the provided to get the program accommended that the necessary communications are constant.

1). A copy of a similar letter to the Chief of the Air Staff, BCAF, ap Empacive Agent for BORAD, is attached for your information.

Copy furnished: Chief of the Air Staff, BCAF No. E. E. PARTRIDGE Gene.ai, USAF Com.ander in-Chief

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MEMORANDUM FOR RECORD: This letter consolidates the history of the proposals for the northward extension of the combat zone into Canada from ADR 54-60 to the ADCLRLR 58-67 and reemphasizes NORAD requirements for this program.

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HEADQUARTERS

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE
ENT AIR FORCE BASE, COLORADO

TEL MELRO 2716

MAR 3 1958

ADOCE-EG

SUBJECT: (U) Review of Radar Sits survey Reports, Operation Pillow

THRU: Commander-in-Chief

North American Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

TO: Director of Communications-Electronics Headquarters USAF

Washington 25, D. C.

 Forwarded herewith are two copies each of Radar Siting Reports concerning eighteen prime and fifty-one gap-filler sites of the Canadian Phase IV program. These sites are located as follows:

a. Prime Sites:

(1) 0 33 Mutton Bay, 744

(2) C 39 Burnt Lake, Que

(3) C 40 Cape Observation, com

(4) C 41 Mamuan Lake, ue

(5) C 42 Mistissini, ,ue

(6) C 43 Namiscau, .us

(7) C 44 Meosones, Ont

(8) C 45 Ghost River, Ont

(9) C 46 Lanadowne House, Ont

(10) C 47 Windigo Lake, Ont

(11) C 48 Little Grand Rapids, Man

(12) C 49 St. Martin, Man

(13) C 50 Carberry, Nan

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ADOCE-EG, Hq ADC, Subj: (U) Re lew of Radar Sits urvey Reports, Operation Fillow

- (14) C 51 Yorkton, Sask
- (15) C 52 Dana, Sask
- (16) C 53 Alsask, Sask
- (17) C 54 Olds, Alta
- (18) C 55 Fort Assiniboine, Alta

b. Cap Filler Sites:

- (1) C-3A West Port, Unt.
- (2) C-4A Puck horn, Ont.
- (3) C-48 Nobel, Ont.
- (4) C-4C Brampton, Ont.
- (5) C-4D Formosa, Ont.
- (6) P-20D London, Ont.
- (7) C-6A St. Cecil Stn., Ne.
- (8) C-6B Nicolet, Ne.
- (9) C-60 St. Charles de Bellechasse, Que.
- (10) C-9A Manton River, Ont.
- (11) C-9B Tobermory, Ont.
- (12) C-9C Elliot Lake, Ont.
- (13) C-9D Biscotasing, Ont.
- (14) C-17A Redditt, Ont.
- (15) 3M-132C Fort Frances, Ont.
- (16) C-16A Graham, Ont.

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ADOCE-B:, Hq ADC, Subj: (U) Review of H.dar ite Sur sy Reports, Operation Fillow

- (17) C-16F Atikokan, Cnt.
- (18) C-15A Nipigon, Ont.
- (19) C-15B Silver Falls, Ont.
- (20) C-10A Timmins, Ont.
- (21) C-108 Relleterre, we
- (22) M-1198 Chapleau, Ont.
- (23) M-119A Oba, Ont.
- (24) P-66D Eaglet River, Ont.
- (25) F-66C Batchawara, Ont.
- (26) C-14A Geraldton, Ont.
- (27) C-14H Marathon, Ont.
- (28) C-3D Rapides des Joachims, que.
- (29) C-3C Algorquin Fark, Ont.
- (30) C-3B Lac Ste Marie, Que.
- (31) C-8A Lac des Loups, .ue.
- (32) C-2A La Tuque, Tue.
- (33) C-28 La Macasa, Jue.
- (34) C-la Grand Pond, ue.
- (35) C-12 Portneuf, Que.
- (36) C-33A Godbout, ue.
- (37) C-6D Les Etroits, lue.
- (38) C-34E Alder River, N. S.
- (39) C-34A Cape North, N. S.

ADUCE-EG, Hq ADC, Subj. (U) Reveiw of Madar Site Survey Reports, Operation Fillow

- (40) C-11A New Yarmouth, 1. S.
- (41) C-11P Munns Road, F. c. I.
- (42) C-110 Springton, P. .. I.
- (43) N-23A Red Mocks, Mild.
- (44) M-102A Milton, N. ..
- (45) H-102E St. Joseph, N. S.
- (46) C-5A Scotch Settlement, N. R.
- (47) C-5B Todd Mountain, 4. 3.
- (48) C-50 Mt. Carleton, N. B.
- (49) C-5D Mt. Carleton, Que.
- (50) C-5% St. Cleophas, Jue.
- (51) C-5F Perce, 30.
- 2. A Site Survey Review Board which met at this headquarters on 28 January 1959 agreed that the proposed sites "eet the overall requirements of this command with the following comments:
- a. Although the total power requirement of the new type radar is somewhat in doubt, the 1000 KW power plants proposed at all prime sites appear inadequate. It is recommended that this item be reviewed when firm power requirements are available.
- b. Commercial power sources do not meet the requirement of 2% regulation. In most cases this difficulty can be corrected by suitable regulating equipment located at the site.
- c. It appears that a substantial savings would result from reducing the facilities (swiming pool, two churches, family housing, etc) and number of person el authorized at each site. The estimated cost of the operations buildings, in particular, appears excessive.
- d. Recommend sites C-38, Mutton Bay, Luebec, and C-39, Burnt lake, uebec, be given a low priority for construction and programming because in the opinion of this headquarters these sites may not be required.

ADDUE-SG, Mg ADC, Subj: (U) Review of Radar Site Survey Reports, Operation Fillow

- e. The authorization of 115 civilian employees at C-41, Manuan lake, nuclec, without authorizing additional housing is not in consonance with the other seventeen prime site surveys. Recommend further study to resolve this item.
- f. Adoption of the second siting alternative is recommended at 5-42, Mistissini, Tuebec.
- g. Recommend fuel storage requirement: for C-43, Nemiscau, Tuebec, be reviewed at such time as total power requirements are firm. Fuel storage as recommended appears inadequate.
- h. Recommend consideration be given to moving the technical portion of C-4/L, Moosonee, Ontario. to the mainland within area now roposed for cantonment. It appears considerable making in construction costs and improved operations would result from combining these areas.
- i. Recommend further investigation as to the possibility of replacing C-45, Chost River, Ontario, with a Car Filler, due to the extreme overlap from sites C-44 and C-46. Also recommend further investigation as to the use of the Albany River as a means of transportation, particularly during the construction period.
- j. The overall estimated construction costs for C-50, Carterry, Manitoba, appear excessive since the accessibility to this site i good.
- k. The possibility of exceeding a safe radiation density in the town of Yorkton should be investigated if C-51 is sited as proposed.
- 1. The possibility of utilizing higher ground indicated at 108 degrees from the proposed location of C-54, Olds, Alberta, should e investigated. An apparent discrepancy between authorized civilian personnel and authorized civilian housing should receive further investigation.
- m. An apparent discrepancy at C-55, Fort Assimiboine, Alberta, retween authorized civilian housing and civilian personnel should receive further investigation.
- n. The 1.4 acres proposed for most var filler sites appears excessive.

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ADOCE-EG, Hq ADC, Subj: (U) Review of Fadar Site Survey Reports, Operation [11] ow

o. Recommend that the gap filler layout and construction follow the USAF Plot Plan Definitive Drawing for Sap Fillers. (Dwg AW-60-03-01)

p. Power requirement in numerous gap filler siting reports states a requirement for 60 KVA, whereas 60 KW is required.

q. Recommend two-lane access roads proposed for gap filler site be reduced to single lane with turn-outs each one thousand feet.

r. A combination fire-lookout and radar tower will be required at the following sites:

(1) C-1A Grand Fond, Que

(2) C-1B Portneuf, Jue

(3) C-2h La Macaza, Jue

(4) C-3D Rapides des Joachims, que

(5) C-5A Scotch Settlement, N. b.

(6) C-5C Mt. Carleton, N. B.

(7) C-5E st. Cleophas, Que

(8) C-9C Elliott lake, Ont

(9) C-9D Biscota ing, Ont

(10) C-10A Timmins, Ont

(11) C-10b Hellsterre, us

(12) C-11 New Yarmouth, N. S.

(13) C-14A Geraldton, Ont

(14) C-15A Nipigon, Ont

(15) C-16B At1 okan, Ont.

(16) C-33A Godbout, Que

(17) P-66C Batchawana, Ont

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(18) M-119A Oba, Ont

ADOCE-EC, Hq ADC, Subj: (U) Review of Radar Site Survey Reports, Operation Fillow

- s. Recommend installation of diesel senerators as both prime and standby power at C-2A, la Tuque, suebec, and C-3D, Rapides des Joachims, Quebec.
- t. Siting report for D-9D indicates an access road to be existing fire lookout tower is to be completed by summer of 1958. However, an item of \$5,000 appears in the cost estimate to construct an access road. The of fire lookout road and whimination of this item From cost estimate should be investigated.
- u. Recomment relocating reposed site of C-144. Ceraldton, Ontario, to the site of a nearty fire-lookout tower. This would require a combination tower which is reflected in para 2 t (13) above.
- v. Recommend radio link in lieu of land line telephone circuits at C-14.8, Marathon, Chtario, to reduce overall costs.
- w. It appears that a more suitable location for N-33A, Red Rocks, Newfoundland, would be along the ridgeline and road to tephenville than the proposed location.
- x. Recommend re-siting of G-34A, Cape North, N. S., to surrounding high terrain, if feasible, in view of radio interference problem at the proposed site.
- y. Recommend adoption of second proposal at P-66D, Eaglet River, Ontario. Elimination of proposed road and telephone improvements should reduce overall cost from an estimated \$317,020 to an estimated \$115,445.
- x. Triangulation point shown on Tab D of M-102A, Milton, N. S., siting report would appear to afford better coverage than the site selected.
- 3. Communication requirements for these prime sites are as reflected on inclosure 1 of letter, this headquarters, to Mq USAF, Attention AFOAC- //O (Mai Ewell), Subject: "Northern Area Communications Requirements", dated 13 January 1958, file ADOCE-LP.

ADOCE-EG, Hq ADC, Subj: (U) Review of H dar lite survey Esports, Operation Fillow

5. In connection with acquisition of real estate required for sites as shown in the inclosed Site survey Reports, request guidance as to which procedure, indicated in inclosures 3 and 4. should be followed.

FOR THE COMPANDER:

4 Incls

1. Radar siting Reports a/s

2. Cap Miller Site

3. Flow Chart ADC/ACKA Augmntath Canada

4. ADC Realty Cycle 64 AD Acquisition Procedure

JAMES H. WINER Colonel, USAF Director, Communications-Rectronics

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ADOCE-EG, ADC, 3 Mar 58 subj: (U) Review of Radar Site Survey Reports, Operation Pillow

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29APR

Eq North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

To: Commander, USAF Air Defense Command, Ent AFB, Colorado Springs, Colorado

- 1. Approved for planning purposes only. Approval as an official NORAD requirement or for the purpose of implementation is withheld, pending completion of the NORAD Objectives Plan (NADOP) 58-68. Further guidance will be provided when this Plan is completed.
- 2. As this correspondence is viewed as a matter of USAF-RCAF responsibility rather than for concern by the Executive Agent for NORAD, this indorsement is provided to your beadquarters for forwarding directly to the action addressee. It is also requested that two copies of the basic letter and this indorsement be provided to the RCAF-ADC for information, with a request that they forward one copy to RCAF Madquarters.

FOR THE COMMANDER-IN-CHIEF:

4 Incls

F. P. UHRHANE Brig Gen, USA DCS/Comm and Elect

COME ACK NOTLE

M R: The basic letter forwarded opics of the Site Survey Reports for the Canadian sites in the Phase IV Program. The basic letter was addressed to the Director of C&E, Readquarters USAF, through NORAD. The administrative difficulties created by this routing has been discussed 11b the originating office and ADC, and it has been agreed that it is more appropriate that fORAD comments be provided back to ADC and that to Teachquarters USAF

ADDRO-E, Hq UEAF ADC, 13 Feb 58, Subj: Preliminary Operational Concept for Frequency Diversity Radars (FD) (U)

MOOPH-S

Let Ind

Hq Continental Air Defense Command, Est Air Force Base, Colorado

TO: Commander, WAF Mir Defende Command, Bay Air Peace Base, Colos,

1. The attached document has been reviewed and is considered to present a satisfactory concept in all respects.

2. For your information, latters have been sent to the Chief of Staff, WAF, and the Chief of the Air Steff, WAF, as executive agents for NORAD, referring to the Joint actifing to APADC Frequency Diversity Plan for frequency diversity medare throughout Camada including the 18 locations mertingerd of the Pinetree chain, also referring to the Radar Extension Program included in the ANC I was Long Range Limited Resources Plan, and recommending joint Hq War I was He RCAF action for immediate implementation.

FOR THE COMMITTER-TH-CHIEF:

1 Incl n/c

HARVEY T. ALNESS Major Cameral, WAF DOS/Flans & Operations

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ADDREG-E, Hq UEAF ANG, 13 Yeb 58, -a-j: Preliminary Operational Concept for Frequency Diversity hadars (FD) (U)

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Hq Continental tir Defense Command, Est Air Porce Date, Colorado

Tos Commander, SAF Air Defende Conwand, Bry of Peace Base, Colon

1. The attached document has been reviewed and is considered to present a satisfactory compage in all perpects.

2. For your information, letters have been sent to the Chief of Staff, USAF, and the Chief of the Air Staff, MALF, as executive agents for louds, referring to the Apint ad F/ADC TOPF/ADC Frequency Diversity Plan for frequency diversity redare throughout Camada including the 18 locations pertinged of the Pinetree chain, also referring to the Lada Retendice Program deluied in the MC / He REAF action for hamdiste inches antation.

FOR THE COMMITTEE-TH-MITTE

DINAS PERSON TEL

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HARVIY T. ALVES! Major Ceneral, USA7 DES/Flans & Operations

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HEADQUARTERS
AIR DEFENSE COMMAND
UNITED STATES AIR HORED
ENT AIR FORCE BASE ALL CORACO

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SHOULD : Preliminary operational Concept for Prequency Diversity Sadare (+0) (H)

TO: Commander-in-Chief
Continental Air Defense Command
ont Air Force Base
Colorado Springs, Solorado

- 1. The attached document is submitted to your headquarters for information and review. This document has been prepared in accordance with AF 5-47, Subject: Publications, dated 29 August 1955. The original copy was sent to Headquarters USAF on 19 January 1958 for their surroyal.
- 2. Hennest the strached document be returned to ATC, Directorate of Requirements after review by your headquarters.

FOR THE COMMUNDER:

1 incl Cy preliminary OC:DR dtd 1 Jan 58

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Colonel, CSAF Director of Requirements

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COPY OF INCOMING CL. JFIED MESSAGE

this message in whole or in part is prohibited without approval of CONAD Adjutant)

SEE CRYPTO SECTION BEFORE DECLASSIFYING

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READING FILE

ACTION: COLLC SUSPENSE: 5 Feb 58 X8-1579

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FM HQ USAF WASH DC TO RJEDDN/CINCHORAD ENT AFB COLO

TO RJEDDN/CINCIORAD ENT AFB COLO INFO RJEDDN/COMA IRDEFCON ENT AFB COLO

ZENICH IEF OF TELECOMMUNICATIONS ROAF HEADQUARTERS OTTAWA ONTARIO CAN

FROM AFOAC-E/A 55971 "CATEGORY AC"
THIS IS AN EXECUTIVE AGENCY MESSAGE. REFERENCE ADC LETTER, SUBJECT:
"JOINT RCAF/ADC USAF/ADC FREQUENCY DIVERSITY PLAN, " DECEMBER 1957 AN ADC LETTER, COPIES AVAILABLE YOUR HEADQUARTERS. REQUEST YOUR CONCURRANCE AND/OR COMMENTS ON THIS PROGRAM.

31/2108Z JAN RJEPHQ

AC-PARAPHRASE NOT REQUIRED ETCEPT PRIOR TO CATEGORY B ENCRYPTION-PHYSICALLY REMOVE ALL INTERNAL REFERENCE: BY DATE-TIME GROUP PRIOR TO DECLASSIFICATION- NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS QUOTED.

///ADVANCE COPY OF THIS MESSAGE HAS BEEN DELIVERED TO COC///

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ACTION: NOELC

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TO RJEDDN/CENCHORAD —
ENFO RJEDDN/CENCHORAD —
ENFORMAN AFOAC-E/A 45300

THIS IS AN ENECUTIVE AGENCY NESSAGE. REFERENCE MOREN X013, DATED OF FEDRUARY 1950. THIS HADOULTERS INTERPRETS YOUR NESSAGE AS A CONCURRENCE ENTRE PRESENT FO RADAR DEPLOYMENT PLAN WITH THE ENCEPTION OF A RESERVATION FOR SOME VEIGE ADJUSTMENT ENTRE
P'MAS INC OF THE PROGRAM.

DT

13/0042Z FED MJEPNO

Col Low FEW.

12/3 UNCLASSIFIED JOINT MESSAGEFURA one of the present of the PRECEDENT E ACTION HOUTINE APOAC-K/A 59971 ROUTINE NFC FROM CINCECRAD COFS DEAF WASH DO TO: COMBAPADO AT APR COLO/COURT JV CHIEF TELECOS REAF B. CTTA 44 CHT CANATA FROM NORM _ XC13 Chief of Staff as Executive Agent for MERAD. For Caradian addresses only CARUSECURITY. Reference your sensege AFCAC-E/A 59971. Comments on Joint RCAF/ADC BEAF/ADC Proquency Diversity Plan and ATC Frequency Diversity Plan follows (a) These plans were not submitted to MCRAD Bendquarters for approval. (B) Strongly support comment frequency diversity in integrated defense environment. (C) Current program and production should be expedited to provide maximum defense and NCCH capability by approximately 1961 time period. Urgancy supports erash program to most MCRAF requirements. (P) Frequency diversity redar deployments through and beyond this period subject to further study to incure critical 90 P/ARC and USAS/ARC sites have highest phasing priority consistent with sub-launched missile threat, squip- pars ment production, SaGr-BGK. C, siting and testing requirements. S NTH 22.30 PER 1958 SYMBOL HOUSE COL D. .. WILLE 799 -Vost 5 -UNCLASSIFIED

JOINT MESSAGEFORM - CONTINUATION SHEET

CINCHERAD

(E) Phasing of prime frequency diversity RCAF/ADC sites should be reviewed for higher precedence than now reflected in ADC, 5 Dec 57, letter. (F) Communation of intergovernment agreements relative to funding, production, etc., should be expedited to support (E), shows. (0) Future revisions to the frequency diversity radar requirements and phasing progress should be satssitted to this headquarters by ADC for approval.

Middle FOR RECORD: Not required.

UNCLASSIFIED

SIGNATE CLASSIFICATION



DEFARTMENT OF THE ROOT - CE OFFICE OF THE CHIEF OF STAFF UNITED STATES AIR FORCE WASHINGTON, D. C.

20 March 1958

SUBJECT: (U) Ground Environment Extension and Improvement in Canada

Commander-in-Chief TO: North American Air Defense Command Ent Air Force Base Colorado Springe, Colorado

This is an Executive Agency letter. With reference to your letter or 21 February 1958 on this subject, it is certainly desirable to extend the Combat Zone farther northward into Canada. The Air Force will continue to consult with the RCAF in this regard, and you will be advised of developments as they occur, particularly in the all important area of USAF/RCAF budgeting for this extension of our contiguous radar cover.

- Fund limitations and the relative priorities of operational requirements have interacted to prevent funding of the total program for prime radars in the northward extension of contiguous cover. Within present and anticipated funds available, seven of the required prime radars have been approved to be funded in FY 60, with operational dates planned for FY 63 or earlier. This planned deployment may be later augmented, dependent in large measure on availability of funds.
- The ADC Frequency Diversity plan has been approved and is awaiting canadian agreement concerning that portion involving Canadian sites. A IBAF/RCAF meeting in April has been proposed by Headquarters USAF for this purpose.
- 4. (UNCLASSIFIED). This letter is classified SECRET because it discloses contiguous radar coverage of the CONUS area and plans for improvement of that coverage, the unauthorized disclosure of which may compromise air defense warning capability.

Assistant Vice Chief of Staff

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Dept of Nationa Defence, Royal Canadian Aid Force, St Hubert Quebec, 27 Sep 57, Subj: Air Defence Ground Environment Employment of DOT Radar Information

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1st Ind

20 Dec 1957

Hq North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

To: Commander, Air Defense Command, Int AFB, Colorado Springs,

The NO AD views relative to the proposals made in the basic correspondence are provided in attached copy of a NORAD message to the RCAF, inclosure 2. Request you coordinate directly with the RCAF to acomplish the actions reflected in the NORAD message and the study attached to the basic letter.

FOR THE COM ANDER-IN-CHIEF:

2 Incls

1. Staff Study S096-107 (SOReg), 11 Jun 57

2. Cy of msg in NORAD to RCAF

F. F. UHRHANE Breg Gen, ISA DCS/Command Flect

M/R: The basic correspondence proposes that telling information be provided to the Aih Defense System from certain DOT radars in Canada. NO AD has concurred with this action in principle in the cited message. Further detail actions are required and must be accomplished through coordination between USAF ADC and the RCAF.

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DEPARTENT OFNATION L DEFENCE Royal Canadian Air Force COPY 132

St Hubert Que 27 Sep 57

Commander in Chief Continental Air Defense Command Ent Air Force Base Colorado Springs Colorado, U.S.A.

Air Defence Ground Environment Employment of DOT Radar Information

1. Attached herewith one copy of staff study S096-107 (SOReq) dated 11 Jun 57. Your comments would be appreciated. In particular, your comment on the recommendation stated in para 12 (a) is desired since the implementation of this recommendation would require the concerned DOT radars to be tied in to the CONAD divisions to the south. In addition, information you may be able to supply on your policy covering the parallel CAA-USAF situation would also be appreciated.

(W. Weiser) G/C for AOO, ALC.

Encl 1

cc: RCAF Liaison Office, ant AFB

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A Study of the Employment

11. Jun 57

of DOT Radars

in the Air Defence System

GENERAL.

- 1. A program has been amnounced by DOT for the installation of 15 heavy radars and h adhport surveillance radars in Canada. The heavy radar is to be the FPS-19 radar with the display modificed to meet DT requirements. A hot cosecant2 antenn is being employed and MTI feature is incorportated. Treliminary siting has been done at the 15 locations and the results of this siting are shown in Appendix "A". In addition to these units it is understood that at Sydney and Seven Islands DOT projects to request authority to remote scopes from the BCAP radar installations. In some areas DOT are installing radars in locations already covered by ADC radars but in other areas, particularly the mid west DOT radars are programmed in areas where ADC cover is wirtually non existant.
 - ?. The purpose of this paper is to determine:
 - (a) Whether the DOT radars could be usefully employed in the Air Defence System, and
 - (b) If so, how information generated at DOT radars could be processed and disseminated.

Employment of DOT radars

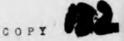
- 3. The calibrated cover of APC radars at 5,000' and 20,000' is shown by a solid black line on the chart attached as Appendix "E". The theoretical cover of the DOT radars is shown in red on the same charts.
- h. A study of these coverage diagrams whows that DOT cover is inside ADC coverage in the entire eastern Canda area and also on the west coast. In the central portion of Canda from a proximately Yorkton west to calgary, DOT raiars do provide some radar surveillance in an area not covered by ADC. In this particular area there are no Canadian con rolled radars immediately to the south of the DOT radars and the DOT cover does in fact supplement the cover provided by American based and American controlled ADC units.
- 5. In the central portion of Canada the distance between the MCL and the fringe of US based radar cover is, measured in terms of flying time, approximately 50 minutes. In this particular area there is no Ground Observer Corps Organization. Therefore, there does not exist between the MCL and the fringe of US based cover any formation with the capability of providing air surveillance information to the air defence system.

COFT 132

- of all DOT raiars were to attempt to provide track information to the air defense system the correlation problems would, in areas of developing co erage, be of such magnitude that a general slowing down of the manual processing of information would result. In the area where no other radar data is available, the DOT radars would have data that could be of important early warming value to the air defence system. BOT will not have a height finding capability in its heavy radar sites, therefore, spe d and direction information is all that would be available from their units.
- 7 The touth number of DOT radar: that are nutside ADC cover is four; these units are located at Regima, Samkatoon, Edwo ton and Calgary. All of these units are in front of the US based ADC cover. The logical units to which they sho ld provide radar data are located in the USA and report to the USA Air Mence system.
- 8 Until such time as a radar extension program is effected in the Canadian Mid West, the DOT radars at Regima, Saskatoon, Edmonton and Calrary could provide track information in the "50 minute hole" between the MCL and the fringe of MS based cover.
- great communication circuit between the US based radars and the DOT site. The method of operation most suited to present conditions would be to place the ADC radars in a position of requestin data from DOT if and when tracks had penetrated the MCL and no information was available on their southerly progress.
- alrea y provided by ADC radars, a factor of fromency; diversity can be applied in some cases. The ADC radars at Lac St Denis, Mont Apiua, St Sylvestre and Beaverbank are the type CFS68 wich is S Band radar. The FFS 19 is an L Band radar as are the majority of the ADC radars but the four units listed above are in a different fromecy band to the DOT radars and in all cases except Mont Apica a DOT radar is sited in close proximity to an ADC unit. In the face of the serious threat of ECM it is suggested that the DOT radars at Halifax, tuebec City and Montreal could contribute to the air defence system if S Band jaming was bein aplied. Direct communications between these three sites and Beaverbank, St Sylvestre and Lac St Denis would provide a limited capability to the system in the face of ECM activity against the ADC units.

Peco-mendations

- The contribution that the DOT units could make to the air defence system is at the present mement small, but invaluable, since the fact remains that no data is available in the central prairie region and no source of information that can be tapped should be ignored in our efforts to impro e our air defence capability. In addition the DOT units at Halifax, Tuebec City and Nontral could provide a measure of frequency diversity in one part of the system.
- 12 To ans or the two specific questions outlined in pare 2 of this paper the following is presented:



- (a) DOT radars at Regine; Saskatoon; Edmonton; and Calgary, should be employed in the ir Defence System because they can provide air surveilllance data in an area where no information is available at present.
- (b) The DOT radars at Halifax, Quebec City and Montreal should be linked to the Air Defence system because they could provide a measure of frequency diversity in one part of the system.
- (c) The above units should be connected by direct communications lines to the closest US or Canadian based radar unit. An estimate of communications re uirements is attached herewith as Appendix "C".
- (d) The Radar data should be rquested by the ADC unit from the DOT unit when the tactical situation arises.

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COPY

Proposed Location of DOT

Radar Installations

- within Halifax airport boundary. Halifax

- 12 miles south of airport. Moneton

- North of airport. Quebec

- in MW area of airport. Montreal

- within airport boundary. Ottara

- within airport boundary. Toronto

- within airport boundary. Nort Bay

- approx 13 miles NW of airport. Lakehead

- with airport boundary. Kenora

- within airport boundary Winnipeg

- within airport boundary . Saska toon

- South of Airport. Regina

- within airport boundary. Calgary

- expected to be on New Edmon on arport. Edmonton

- within airport boun ary. Vancouver

UNCLASSIFIED BECHAI JOINT MESSAGEFORM THE APLOY RESERVED FOR 1 - WHI 63+ Don 133 STHEOL WITING MEG ILLER PRECEDENCE AP-63,120ec57 ROUTINE AF ACTION X Baller FROM CINCHORAD CANALEDET ST SUBERT QUEBEC CANADA 10 INFO: CANAIPHED OFTAWA ONTARTO CANADA COMASC ENT AFB COLORADO SPRINGS COLO (COURISR) ROM NOESS-5 XT 3T FOR CANADIAN ADDRESSEES ONLY. CANUSECURITY. RELERENCE YOUR 12 DECEMBER MESSAGE AP-63 AND YOUR 27 SEPTEMBER LETTER, SUBJECT: AIR DEFENSE GROUND ENVIRONMENT EMPLOYMENT OF DOT RADAR INFORMATION. CONCUE FULLY WITH PRINCIPLE OF MAXIMUM DATA EXCHANGE BETWEEN DOT AND AIR DEFENSE RADARS AND ALSO IN USE OF DOT RADARS TO SUPPLEMENT COVERAGE WHERE NO AIR DEFENSE UNITS AND AVAILABLE. FULL TIME TELLING FROM BOT HADARS IN WESTERN PROVINCES TO AIN DEFENSE UNITS IS CONSIDERED ESSENTIAL UNTIL ROAF RADARS ARE AVAILABLE, PROVIDED THAT OPERATION OF DOT RADARS 18 2325Z CAN BE MADE RESPONSIVE TO AIR DETENSE TO VICEMENTS. UZC *11 1957 BACKUP OR FREQUENCY DIVERSITY ROLE FOR DUT FADARS IN OVER FOR HEND FOR RECORDINATIONS . D THE THE HEADY HAME AND TITLE NOBSS-E PED NAME AND TITLE (Stradore, Il -matred) I. W. LEDOUA Lt Col 1.K. Nichols, Dir of Sys 2029939 **UNCLASSIFIED** REPLACES DO FORM 175. 1 OCT 49. WHICH WILL BE USED UNTIL EXHAUSTED DD PORM 173

JOINT MESSAGEFORM - CONT .ATION SHEET

CINCHORAD

LINES TO AIR DEPENSE SITES, BUT OTHER COMMUNICATION

PLANS TOU PROPOSE ARE CONSIDERED ADEQUATE TO MEET MINIMUM

REQUIREMENTS FOR MANUAL ENVIRONMENT. USAF ADC HAS BEEN

REQUESTED TO COLLABORATE WITH YOUR HEADQUARTERS IN A

REVIEW OF TOUR PROPOSALS SO THAT NORAD MAY BE PROVIDED

WITH YOUR JOINT VIEWS AND PLANS BEFORE SPECIFIC APPROVAL

IS VOICED BY NORAD. APPRECIATE YOUR ACTION IN SEEKING

NORAD VIEWS IN THIS MATTER WHICH IS OF SUCH IMPORTANCE

TO NORTH AMERICAN AIR DEFENSE. REQUEST YOU WORK DIRECTLY

WITH USAF ADC AND SUBMIT RESULTS OF YOUR JOINT ACTION TO

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DD 1 MAY 55 173-1

R: Due to a misunderstanding as to the action office, a reply the cited RCAF letter has been delayed, The delay has been explained to RCAF ADC by telep one. The RCAF proposal was contained in the Staff Study which recommended that certain BOT radars be connected into the Au Defense System for the purpose of providing surveillance data. This is in consonance with the NORAD policy as reflected in this message. Details of the RCAF plan must be coordinated with the radar and communications planning

of ADC, and, therefore, the matter is being referred to USAY ADC for review in coordination with RCAF ADC. (This message has been reviewed and approved by Deputy CINCNORAD)

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PRON 10080-8 2170 .

CAMBRICERITY. For Canadian addressess only. Your Confidential AP 101 day '13 Jan 58, Subject: MAY-4DC Staff Study 5096-107 SOREQ dated 11 Jame 1957. This message in five parts, Part I. ADC agrees in principle with your recommendations outlined in the SCAF-ADC Staff Study. However, mant to bring to your attention the recent impetus being given Project "Pillow". ADC has specifically concurred with the siting reports for 0-49, St Martin; 0-50, Carborry; 0-51, Torktown; C-52, Dame; C-53, Aleask; C-51, Olds; and C-55, Fort Assimilation. In the event Rep Char and RCAF give Project "Pillow" the priority that this headquarters feels necessary, it may not be necessary to "tie-in" with DOT reduce. Part II. For planning purposes ADC utilises a two

or named lity factor for rader sites to justify expenditures for .. ADDRO-8 --------POSTURA W. CLINORS, MAJOR, USAF

B.F.MURRAT, lat Lt, USAF UNCLASSIFIED

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modification or addition of major communications installation. Providing the DOT radars could be jointly utilized for a similar period, prior to the operational date of reders in "Project Pillow", it then appears that joint use of subject radars would be desirable, Part III. Reference your request on policy covering CAA-USAF-ADC Joint use of radar. In accordance with a Department of Defense directive, civilian and military agencies in the United States will jointly utilise radare wherever possible. However, degradation to the air defense mission will not be condoned. The latter means that if a particular agency's radar does not meet USAF-ADC standards, its joint use in the air defense system is not mandatory. In several laces USAF-ADC and CAR will jointly utilize CAA radars, ARSR-1, modified with Amplitrons and ECCM fixes, as the prime radar. In these cases CAA personnel will perform maintenance am the prime radar. They will fund what would normally be funded at a CAA site. Additional requirements such as FST-2, Air/Ground Communications, etc. are funded by primary user. Maintenance performed by the CAA must be comparable level with that of USAF-ADC standards. Part IV. Before my firm planning can be made by USAF-ADC, we must be given the approximate date that DOT radars can become operational in the Regins, Saskstoon, Edmonton and Calgary areas. Also, we would like to know the status of the radars in "Project Pillow." The latter can be acquired only at the time joint agreement for funding and installation is reached by Hqs USAF and RCAF. Part V. Regardless of

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UNCLASSIFIED SECURITY CLAST TEHE MOTION JE:NT MESSAGEFORM we unknown facts, this headquarters favors a meeting with RCAF-ADC to discuss joint use of DOT radars when and where deemed practicable by your headquarters. UNCLASSIFIED ADORQ-E DD - FORM 5 173-1

FIRST TO A TOTAL STREET

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16 January 1958

MEMORANDUM TO: CCMMANDING GENERAL, USARADCOM

SUBJECT. Air Defense Warning

Attached is a copy of letter submitted to the Joint Chiefs of Staff by Commander-in-Chief, NORAD, subject as above, dated 7 January 1958.

It is forwarded for your information, guidance and appropriate action.

Necessary requests to the Commanders specifically responsible for the items indicated in paragraph 9, have been dispatched by the Commander-in-Chief.

FOR THE COMMANDER-IN-CHIEF:

1 Incl

MARSHALL S. CARTER Major General, USA Chief of Staff

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**NAD X8

7 January 1958

SUBJECT: Air Defense Warning

TO:

Chief of Staff, United States 'ir Force as Executive Agent for NORAD Washington 25, D. C.

- 1. The national policy of the United States and Canada is to prevent war, if possible. Militarily, within the United States, this policy has been reflected primarily in the development of a massive retaliatory capability, the objective of which is to deter enemy aggression. Essentially, the concept, insofar as full-scale nuclear war is concerned, has been to meet offensive strength with offensive strength, thereby creating a stalemate wherein the United States and its Allies as a matter of policy will not attack, and the Soviets, in turn through fear of reciprocal destruction, dare not attack. This concept is predicated upon the factor that our full offensive strength can and will be employed in retaliation.
- 2. Whereas offensive strength can be measured in terms of forces in being, such is not the case when considering these forces employed only in retaliation. Only those offensive forces surviving the initial enemy attack can be employed in retaliation. Accordingly, should the Soviets conclude that the bulk of our offensive forces could be destroyed or immobilized at the outset of a major war, such forces would provide little or no deterrence to his plans.
- 3. Since the Soviets are presumed to have the necessary weapons and air carriers to achieve this objective, the success or failure of the venture would be primarily dependent on the degree of surprise achieved.
- 4. Present National Intelligence Estimates credit the Soviets with the capability of concurrently launching as many as 300 bombers with minimum possibility of strategic warning. This force, coupled with the current Soviet short and medium range surface-to-surface missile capability, is adequate to effect neutralization of the * Ilied offensive strike forces, if tactical surprise can also be achieved. In this connection, it is estimated that a maximum of 60 to 80 bombers would be assigned to SAC and Fleet targets on the North *merican Continent.

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Hq NORAD, Subject: Air Defense Warning

- 5. It is probable that Soviet strike routes to North American bases would avoid the polar route across Canada, since the DEW Line between Cape Lisburne and Cape Dyer and the Mid-Canada Line currently provide radar surveillance which offers little possibility of undetected penetration by air-breathing weapons. These radar lines, however, can be outflanked with varying probability of loss of tactical surprise. Along the Aleutians and in the Pacific, this probability surprise. Along the Aleutians and in the Pacific, this probability is essentially zero. The air defense radars operating in Alaska, is essentially zero. The air defense radars operating in Alaska, Northeast Canada, and aboard the picket ships of the Atlantic Barrier can currently be overflown on a one-way mission. Further, the Atlantic Barrier can be underflown, on a calculated basis, between picket ships, since low-level coverage along this 1:00 mile line between Argentia and the Alores is currently provided by only two (2) AEW&C aircraft.
 - 6. By exploiting weaknesses in the present early warning radar system, and/or by end-running this system. Soviet strike aircraft (particularly in limited numbers) have the capability of reaching the contiguous radar coverage with little likelihood of electronic detection and even less likelihood that sporadic detections will result in timely raid recognition.
 - 7. The time of warning which can be provided by the contiguous radar system is extremely limited. Warning time is based upon raid recognition, and detection in itself, while a prerequisite to identification, does not assure immediate recognition of an enemy aircraft as such. Picket ships and AEW&C aircraft in the seaward extensions of the contiguous system provide the first means of detecting enemy aircraft enroute to SAC bases and Fleet installations near the Coastal areas. However, this coverage applies only to the Northern halves of the two Coastal areas and has restricted low-level potential, due to limitations on AEW&C operations. At best, assuming immediate raid recognition upon penetration of contiguous radar cover, warning of at most 30 minutes could be provided to SAC and Fleet units in Washington, Northern California, and the north and Central Atlantic States. Bases in Southern California, Georgia and Florida would receive warning of 15 minutes or less. By employing low-level techmiques, the attackers could materially reduce the possible warning time and, in some cases, completely avoid detection.
 - 8. The major SAC complex in the central open area is particularly vulnerable to surprise attacks from the South across the Mexican border or Gulf of Mexico. Due to lack of adequate radar coverage and aircraft for positive identification, the establishment of a southern ADI7 has been delayed. Accordingly, the warning which can currently be provided in this area varies from none to a matter of minutes.

Hq NORAD, Subject; Air Defense warning

Further, the active defenses in this area are extremely limited. An attach from the south into and through the central open area is quite within current Soviet capabilities

In order to Insure that retaliatory and air defense forces based in North America are provided with maximum possible warning time, it is considered that the following actions should be implemented with the least possible delay:

- a. Establishment of Main Land-Based DEW Line detection criteria as the standard performance criteria for the entire Ear y Warning Line from Midway to the Azores. While it is recognized that additional resources must be made available, it is apparent that if the investment already made in the Main DEW Line is to prove sound, we must deay the Soviets the capability of endrunning this line, insofar as practicable. The following specific action is required:
- (1) Temporary reorientation of the Pacific Barrier from Midway-Umnak to Midway-Kodian, pending completion of the Aleutian radar system. (CINCPAC)
- (2) Priority action to complete the Aleutian radar system and related communications system. (USAF)
- (3) Equipping the Pacific Barrier to provide coverage parallelling that specified for the Land-Based DEW Line (CINCPAC)
- (4) Acceleration of the Alaskan radar improvement program. (CINCAL)
- radars in the 64th CONAD Division area of responsibility to provide coverage parallelling that specified for the Land-Based DEW Line. (ADC)
- (6) Equipping the Atlantic Barrier to provide coverage parallelling that specified for the Land-Based DEW Line. (CINCLANT)
- b. Acceleration of the MIRINT/CIRVIS Program to provide back-up for the Ocean Barriers. (USN/USAF)

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Hq NORAD, Subject: Air Defense Warning

- c. Establishment of the Southern ADIZ to include surveillance capability to 65,000 and an adequate identification system based on current techniques. (ADC)
- d. improvement and expansion of the seaward extensions of the contiguous radar system to provide for full coverage of both the Atlantic and Pacific ADIE's to 65,000 (ADC and NAVPORCENAE)
- By Establishment of an instantaneous warning system for nuclear or thermo-nuclear emplosions. There is an immediate requirement for netting all North American SAC installations and NORAD Headquarters. This system should be subsequently expanded to provide for instantaneous sarning of such explosions at any prime target within the NORAD area of air before responsibility, with crossible NORAD area of air before responsibility and from other major U.S. and Allied Commands.
- f. Accordance in the radar improvement and gap filler in ram to the compatitude, with priority in the peripheral areas. (ADC)
- 10. The above actions are prerequisite to the establishment of an adequate early warning capability against the current air-breathing threat. Despite the imminent additional threat posed by the ICBM, it is considered that we must retain and improve our capability of defending against manned bombers and cruise missiles for some time to come. It is reiterated that it retaliatory force which can be destroyed as a result of a surprise attack which can be destroyed as a result of a surprise attack is no longer a deterrent to war. It is essential that this very real possibility be minimized at the earliest possible moment. It is equally important that the manipossible moment. It is equally important that the manipossible moment are defense system and the timely alerting of military and civil defense agencies
 - 11. The various Services and formands indicated in paragraph for above, have been or are being requested to take appropriate action to effect necessary improvements

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Hq NORAD, Subject: Air Defense Warning

in areas of concern. The support of the Joint Chiefs of Staff, in assisting in the early implementation of this program, is urgently solicited.

E. E. PARTRIDGE General, USAF Commander-in-Chief

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HEADQUARTERS HORTH AMERICAN AIR DEFENSE COMMAND

ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

#____, Doc ____

17 JAN 1958

SUBJECT: Air Defense Warning

TO: Commander-in-Chief, Alaska

APO 942 Seattle, Washington

1. Attached is a copy of a letter which I have submitted to the JCS, outlining certain actions which must be implemented

in order to provide the basis for adequate warning of possible air attacks against the North American Continent.

2. It is my sincere belief that we must have a fully operational early warning system extending from Midway to the

operational early warning system extending from Midway to the Azores across the top of the North American Continent, at the earliest practicable date. The success or failure of our efforts to defend the United States, Alaska, and Canada may well depend upon the effectiveness of this line in detecting and reporting hostile aircraft or missiles.

3. Your full support in accomplishing the actions outlined in paragraph 9.a.(4), attached letter will materially assist in the attainment of this vital objective.

l Incl Ltr to C/S, USAF as Exec Agent E. E. PARTRIDGE
General, USAF
Commander-in-Chief

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WORAD Itr dtd 17 Jan 18, Subject: Air Defense Warming

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FEB 7 1954

Beenquarters, Alaskan Air Command, APO 942, Seattle, Washington

TO: Commander-in-Chief Alaska, APO 9-2, Seattle, Washington

1. The republifices of or current redar posture is of great consern to make commune. However, the Placal Year 1998 Military Construction Program provides for a natraction accessary to convert nine radar sats to the PPS-20 configuration. The lorpe of Engineers is scheduled to complete the avanding of contracts for these sites by I April. This will allow for the completion of construction at all sites by 25 November 1998. The installation of equipment will require an additional six weeks to fourteen wheke after completion of construction. The Corps of Engineers applies us that the dates listed below are the earliest practicable without the use of premium construction funds.

SPER	CONSTRUCTION	INSUMITION SELECTION SELEC	
Sparrevolu	1 Aug 58	30 Oct 58	
Indian Mt.	1 Aug 12	15 Sep 58	
King Salmon	1 Aug 58	15 Sep 58	
Campion	1 Sep 12	10 Oct 56	
Tetaline	11 pet 38	15 Dec 58	
Nevenber	25 Nev 58	15 Dec 58	
Romanzof	25 Nov 58	30 Jan 59	
Wales	25 Nov 58	30 Jan 59	
Lisburne	25 Nov 58	15 Mar 59	

2. In addition to the artion indicated above, this headquarters has hand carried projects (as approved by your headquarters) to headquarters (SAF that will provide for installation of PPS-20 Sadars at Fire Island and Murphy Dome with Fiscal Year 1948 funds, rather than await the programmed Fiscal Year 1948 funds and equipment. These sets would be installed during the Se and Quarter of Fiscal Year 1959.
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and at this headquarters as it is necessary to divert funds, revise equipping priorities, and change emphasis on construction efforts. Our representatives now in Washington have advised that the Air Staff is sympathetic to our problem. It is believed that they will be able to make programmed adjustments permitting us to accomplish our goal of making the FPS-20 sets operational at Fire Island 15 December 1958 and Murphy Dome 30 January 1959.

3. This indorsement is classified SECRET because it indicates our redar programing.

1 Incl n/c

> KENNETH H. GIBSON Brigadier General, USAF Commander

B/L fr MCRAD, 17 Jan : Air pefun warning

DUT IN

12 FEB 1958

HEADQUAPTERS ACASKAL COMPLED, Mineralory AFE, Alaska

TO: Commander, Acastan Air Command, Landorf AFE, . Laska

1. The Commander-in-Time of wild directed as to assist lim in attaining adoptite wards, of a possible all attack against the North American continuent by accolerating the radar improvement program in Alaska. The time takes supplied in parecrash is and Indorsement, does not indicate a supplied acceleration and, is some cases, indicates further stipped in the program. It is my duty to investigate every possible : sais of varrying out General Partridge's instructions. These in 19 officient past g of construction and equipment installation, the use of military alresaft to transport equirment to the situs where necessary, and the possibility of expediting construction under the provisions of Section 302, Papers Law 85-170, approved 25 Au and 1957.

2. To assist me in making appropriate recommendations to General Partridge, 1 is m desire that your command estimate the amount of premium construction funds and overtime payments to equipment installations per smell registed to advance the completion date of each site by one mentile two mertio, and three mentile. It is requested that this information be prodes down for each site. In arriving at these estimates, du oppideration must be given to the possibility of time phasing the completion of portions of projects, in which electronies equipment in to be installed, to permit the earliest possible 2.0.0. This will allow electronics lestanlation to start at a much carlier data. In addition, your comments are solicited on the fersibility of the transporting any items of equip-ment to the situs, the lack of which would slow down construction and/or installation.

3. Request this information arrive this headquarters not later than I' February 1995.

" Incl n/c

Arutement Jeneral, USA

Commender-in-Chief

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7 36 Peb 24 1958

Hq MCRAD, 17 Jan 58, Subj: Air Defense Warning

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Headquarters, Alaskan Air Command, APO 942, Seattle, Washington

TO: Commander-in-Chief, Alaska, APO 942, Seattle, Washington

- In view of previous limitations on the employment of premium construction funds, firm estimates had not been prepared by the Corps of Engineers to provide premium transportation or premium labor for the AN/GPA-27 program. The District Engineer, in compliance with a request from this Command, has prepared a schedule of premium costs as computed on 18 February 1958. The computation is inclosed for your information.
- 2. It is readily apparent that three sites, King Salmon, Sparrevohn and Indian Mountain, can be expedited from 30 to 41 days at a very reasonable cost. Both Indian Mountain and Sparrevohn will require 100 percent airlift regardless of expediting action, and the additional cost for these two sites represents only the overtime pay for multiple shifts. In the case of King Salmon, a 41-day improvement can be obtained by airlifting building materials and tools which previously were scheduled for water shipment. This Command will initiate action to obtain premium funds for these three sites. Such action will not jeopardize the existing construction schedule, in case the premium funds are refused.
- 3. Premium construction costs for the other sites are considerably more expensive, and would provide a maximum of 30-days improvement with ideal conditions. Premium funding for these sites undoubtedly would be difficult to obtain, and would gain only minimum time because of unpredictable weather and transportation factors.
- 4. With reference to the accelerated completion dates cited in paragraph 2 of the preceding indorsement, the District Engineer has declared that none of these projects could be expedited as much as 60 or 90 days, because the time required to process changes in requirements already has extended the completion of contractual documents into February and March 1958. Therefore, the inclosed chart was prepared on the basis of the maximum acceleration which could be obtained on each site with airlift of all materials, the employment of multiple shifts, and military airlift of outsized equipment which cannot be transported by commercial air carriers in Alaska.
- Advertisement for bids was scheduled for 20 January 1958;
 however, Headquarters, USAF did not transfer funds to the OCE until 24 January 1958. The District Engineer now estimates that

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Ho NORAD. 17 Jan 58, Subj: Air Defense Warning

the first four sites will be advertised on 1 March 1958 and the remaining five sites prior to 1 April 1958. These advertising dates will force the successful contractor to mobilize his manpower and materials expeditiously in order to meet the Beneficial Occupancy Dates. The District Engineer has been officially informed of the operational necessity for these sites, and has been requested to exert concerted effort toward rapid completion of construction. The District Engineer is including contractual clauses which will assure maximum construction effort in the technical areas, and allow this Command to negotiate for installation of technical equipment prior to completion of construction. This will permit compression of the operational dates.

- 6. The prime radar equipment for all of these sites has been produced, and either is physically located in Alaska or is enroute. The equipment contractor has arranged for airlift of this technical equipment to the sites, saving both traveltime and transportation damages, and has prepared a set of detailed plans for moving outsized or extremely heavy components to the radar sites prior to the arrival of winter weather. As of this time, no major problem is known to exist in the technical installation area, and any future improvements in the operational dates for these sites must result from a prior improvement of the Beneficial Occupancy Dates.
- 7. This indorsement is classified SECRET because of reference to specific operational dates of the ACW sites involved in this program.

2 Incls 1. n/c

2. Added 1 Incl Chart of Premium Construction Costs /s/t/ KENNETH H. GIBSON Brigadier General, USAF Commander

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B/L fr NORAD, 17 Jan 58, subject: Air Defense Warning

3. The Alaskan Command will continue to closely monitor the Radar Improvement Program in Alaska. Every effort will be made to assure completion of this program at the earliest practical date.

2 Incls

MANK A. ARMSTRONG, JR. Lieutenant General, USAF Commander-in-Chief

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B/L fr NORAD, 17 Jan 58, aubject: Air Defense Warning

th Ind.

HEADQUARTERS ALASKAN COMMOD, Elmenterf AFB, Alaska

25 FIR 1958

- TO: Commander-in-Chius, North American Air Defense Command, Ent AFE, Colorado Springs, Corado
- 1. This headquarters has completed a detailed study of the GPA-27 construction and installation program proposed by the Alaskan Air Command. In addition, serious consideration was given to the possibility of accelerating this program through the use of premium construction funds. While it was theoretically possible to cave a small amount of time by using such runds, it has been determined that the most recent target dates supplied by the Alaskan Air Command, not involving premium construction funds, are the most practical. This determination was based on the fact that the construction period in Alaska is basically a summertime operation which is extremely dependent on weather and such variable factors as the date of the spring breaker. Any effort to accelerate construction is extremely costly and the success of such a venture cannot be guaranteed.
- 2. The latest time table proposed by the Alaskan Air Command provides a small saving in construction time; however, the greatest saving will accrue from the use of three Bendix installation teams instead of the previously planned two teams. By using three teams, the Alaskan Air Command has been able to add two AN/FPS-20 installations to the program and still complete the entire program a full month earlier than originally planned. Listed below is the latest GPA-27 construction and installation program for Alaska:

SITE Sparrevolu Indian Mountain King Salmon	CONSTRUCTION COMPLETED 11 July 55 31 July 58	EQUIPMENT INSTALLEDCOMPLETED 14 Oct 58 7 Oct 58 2 Sep 58
Campion Tstalina Newerham	31 Aug 58 15 Oct 58 31 Oct 58	21 Oct 58 18 Nov 58 13 Jan 59 7 Jan 59
Romanzof Wales Lisburne Fire Island	31 Oct 58 31 Oct 58 31 Oct 58 15 Oct 59	30 Dec 36 10 Peb 59 25 Nov 58 2 Dec 58
Murphy Dome	15 Oct 58	2.00

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NORAD ltr dtd 17 Jan 58, Subject: Air Defense Warning

1st Ind

31 JAN 1958

Headquarters Alaskan Command, Elmendorf AFB, Alaska

TO: Commander, Alaskan Air Command, Elmendorf AFB, Alaska

- I wholeheartedly concur with the views expressed by General Partridge. The single channel low altitude search radars now in use at our radar sites do not provide the detection probability required during these critical times.
- 2. To correct this deficiency, it is essential that the AN/FPS-20 modification program be completed at the earliest possible date. Accordingly, it is requested that your headquarters investigate the feasibility of substantially advancing the operational date of the AN/FPS-20 program in Alaska. Request your comments and recommendations arrive this headquarters not later than 10 February 1958.

1 Incl n/c Lieutenant General, USAF Commander-in-Chief

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man,	Arisona), and the AN	/MPS-7 allocated	this comman	d for future is	
tall.	ation at St-114 (Oni	on City, Tenn), t	AAC for I	nating with the	
AN/OP	A-58e to provide AN/	173-20 at F-1 (F1	re Island)	and Y-2 (Murphy	DATE IN
Dome).	. Organt requirement	t for high eltitu	de coverage	and recommend	144
	s to co-locate the A	ADC-ADDC for Anen	orage and l	Pairbanks	man 1+
1770	ADOCE-AN Maj B D Johnson	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	JAMES Colone	H. WEINER 1, USAP DIT, COMMUNICATION SSIFIED JN. 1.	ons-Eleographic

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JOHNT MESSAGEFORM - COR , LIATION SHEET

COMEDE ADC

requires provision of \$N/FFS-200 instead of \$N/FFS-700 is October to provided until FT60. Required date for the \$N/FFS-200 is October 1958. Towers are not required since AAC intends to install these sets in the existing srotic towers. Squipment to return M-128 to operational status for the SAGE era, if required, and equipment for BM-166, will be previded from our assets to be released under the AN/FFS-7 and FD redar programs. Further request you furnish us a sopy of your action in this matter, in order that we can take appropriate FC action. FOR RORAD: This action on your letter NOESS-E dated 22 Nov 57, Subject: Radar Improvement Program for Alaska, and subsequent indorsements. FOR AAC: Reference your leth indorsement to referenced RORAD letter. Scopes cannot be released with the AN/FFS-7 from M-126 because of the extrems shortage of scopes within this occurred resulting from dalayed installation of AN/FFS-35 and AN/GFA-37 scopes.

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	JOINT MESSAGEFO	PEM			
)#.#C	I NAME AND ADDRESS OF THE PARTY	CAMP NATION	PNIEP	
ACTION	ROUTL'L	PE Mess ICAC #1	SYMBOL	ORIG OR REFERS TO	CLASSIFICATION OF THE PERSON OF
NEO	ROUTINE	, X	AF .	6 Mar 58	
FROM	COMIR ADC				SPECIAL INSTRUCTIO
ro.	COMOR AAC ELeminosis A	IFB ALASEA			
INFO:			*1		
4	CINCAL ELHENDOIS AFB	ALASKA			
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J. O.					
3	FROM ADOUE-A	3748	. Your mess		
	1,000,000,000		S. Senes mark	S	
04539	of 8 mar 58 reference	raiars to de re	allocated fr	om this com-	
mand t	to you for Fire Islani	and Lumphy Done	. Ressage to	o usar re-	
questi	ing reallocation to pour	ur command of An	/JF5-7 radar	now at hing-	
man, I	Arizona, and AM/HFo-7 i	radar allocated	to us for fu	ture instal-	
lation	n at Union City, Tennes	ssee, now being	staffed and	snoula he iis-	
	()c) You will be Ad	drised immedia	1., 3 68	The . delis	2.41
paten	ed today. A development	and the same of th	acopes can	not be re-	
1ease	d with the radar from r	Kingman because	of extreme s	nortage	
create	ed in this command by	conversion of ra	lars to AN/F	75-20, which	
requi	res extra maintenance :	scope, and delay			and the same
UPA-3	5 and OA-10bh scopes.		de	a ley Systems	14
				R- MAL	MONTH YEAR
		1.7	SIGNATURE ,	1	
SYMBI	ADOCE-AN		\$	1100	- Itt
1	ADOUB-AS		Typed in manpell	NAME AND TITLE	E-YAC
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NOR821 HQA815 AGC015
RR RJEDDN RJEPHQ
DE RJKDAG 5C
R GEG3G2Z
FH COMAAC ELHEMDORF AFM ALASMA
TO RJEDDN/COMBR ADC ENT AFD COLO
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RJEPHQ/COFF HEDUSAF MACH DC (AFOAC)
ZEN/CINCAL ELMENDORF AFD ALASMA

ACTION: COELC X8-3418

REFLERENCE 4 INDORSEMENT, THIS MEADQUARTERS TILE OC-3, DATED 12 JAN 50 TO LETTER, HEADQUARTERS HORAL, SUBJECT: RADAL INPROVENENT PROCESAN FOR ALASKA, DATED 27 HOW 57 AND TELEPHONE CONVERSATION BETWEEN MAJOR ELDRIDGE, THIS HEADQUARTERS, AND HAJOR JOHNSON, YOUR HEADQUARTERS ON 19 FEBRUARY, ALL ACTIONS FOR THE INSTALLATIONS OF THE FPC-UP RADARS HAVE BEEN APPROVED BY HEADQUARTERS USAF AND "DIPLETED BY THIS COMMAND WITH THE EXCEPTION OF PROCESSING HE COMMUNICATIONS AND ELECTRONICS SCHEMES NECESSARY FOR

PAGE TWO RINDAG 5C
SHIPMENT OF EQUIPMENT. NO FUTHER ACTION ON THIS CAN BE
ACCOMPLISHED UNTIL WE HAVE RECEIVED THE FOLLUONIG INFORMATION
FROM YOUR HEADQUARTERS IN CONSONANCE WITH ABOVE REFERENCE.

A. TYPE OF BASIC RADAR EQUIPMENT B. SIT ES EQUIPMENT WILL BEE
TAKEN FROM REQUST IMMEDIATE REPEATE IMMEDIATE REPLY TO THE
ABOVE TO PRECLUDE DELAY IN THE IMPLEMENTATION OF THE RADAR
IMPROVEMENTS FOR FIRE ISLAND AND HUMPHY DOME.

26/0320Z HAR RADAC

AC-PARAPHRASE NOT REQUIRED EXCEPT PRIORTO CATEGORY B ENCRYPTIONPHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR TO
DEGLASSIFICATION- NO UNCLASSIFIED REFERENCE IF DATE-TIME
GROUP IS QUOTED.

///ADVANCE COPY OF THIS MESSAGE HAS BEEN DELIVERED TO COC!!!

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PROBLEMS AF FOR AF OLD THAT IS THE CONTAMB DESIRES TO MEAN AND THAT IS DICTATED BY IMPORTANCE OF BOTH SITES FOR JOINT ADDOCATE STATES FOR SITES FOR JUNIT ADDOCATE STATES FOR CONSTRUCTION OF ANYFPS-S TO SEE JUNIT ADDOCATE STATES FOR CONSTRUCTION OF ANYFPS-S TO SEE JUNIT TIONS. POSSIBILITY EXISTS FOR CONSTRUCTION OF ANYFPS-S TO SEE JUNIT FY-58 P-341 FUNDS, PROVIDE OF PRIME EQUIPMENT CAN BE OBTAINED TO STATE THAN SEPTEMBER THIS YEAR. FURTHER PURSUIT OF THIS STATES IS CONTINUED ASSIRANCE OF EQUIPMENT AVAILABILITY.

20/2050 Z JEN FJ KOAS

A-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY E ENCRYPTION-PHYSICALLY RENOVE ALL INTERNAL REFERENCES BY DATE THE SIND PRIOR
TO DECLASSIFICATION

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FORM 15

(when filled in)

30-2, No Alaskan Atr Commend, 32 Jun 58, Subje (1) C-2 Package Plan September Fire Island and Surphy Sees

Lith Ind

Headquarters North American Air Defense Command, of Air Porce Base, where

To: Commander, Thir Marketone Tomand, on Mir Force hase, Colorado Colorado Springe, Colorado

1. Reference is made to your message ADOCE-AN 3761, 16 March 1958, and to Mosdquarters 200 message 100-11-2 50016, 3 April 1058.

referred to shove.

3. The incloaures are withdrawn or not attached, this indersemble may be down trained to unclassifiled according to him 205-1.

YOU THE COMMUNDER-IN-CHISPS

3 Incla No

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B/Ltr fr AAC, Subj: C-S Package Flan for Fire Island and Murphy Dome, dtd 31 Jan 58

AFOAC-M/P

1st Ind

Apr 14 1958

Department of the Air Force, Headquarters USAF, Washington 25, D. C.

TO: Commander, Alaskan Air Command, APO 942, Seattle, Washington

- CE FLAM-AAC-58-02h is approved with the exception of phasing the second AM/FIS-6 and tower at F-1 and F-2 in lat Quarter FT 1960. Equipments for these requirements can only be made available from phase out of AM/FIS-6 radars from the Zone of Interior subsequent to 3rd Quarter FT 1961.
- 2. One each AN/FFS-6A radar set and tower has been allocated to F-1 and F-2 to meet an operational date of FY 159. One each AN/GPA-58 radar modification kit, sets number 93 and 94 have been allocated to F-1 and F-2 to meet an operational date of FY 259. These actions were completed at the January 1958 ACWW Phasing Group Meeting. The basic radar sets, AN/MPS-7 for F-1 and F-2 must be made available by NO AD from command resources, reference paragraph 8, CE FIAM-AAC-58-024.
- 3. Attached as inclosures are AF Forms 1295 CCN-AAC-58-075, 076 and 077 which were hand carried to this Headquarters by Major Eldridge, your Headquarters on 3 February 1958. Submission of these AF Forms 1295 in consonance with the approved portion of CE FLAN-AAC-58-024 should be made directly to Air Materiel Command with a copy of the Flan and this indersement. AM/FFS-7 radars are allocated to F-1 and F-2 from production line delivery in March and April 1961. AF Forms 1295 submitted to AMC should indicate separate entries for AM/MFS-7 radars and AM/GFS-58 modification kits. Forms must be submitted through NCRAD with a request to have Air Defense Command attach AF Forms 1295 deleting the AM/MFS-7 radars being made available.
- 4. This 1st indorsement is classified SECRET in accordance with paragraph 30b, AVR 205-1.

POR THE CHIEF OF STAFF:

3 Incl
1. n/c (Cy #1 w/d)
Added 2 Incls

2. orig & loc Ltr fr
AAC, 31 Jan 58
Subj: New OME Fac.
Romt (ACW) w/3 Incls
(n/c) (S)

3. lee let Ind fr AAC, 31 Jan 58, Subj: Cancellation of Radar Equt w/1 Incl (n/c) (C)

PAUL H. STONEY Lt Colonel, USAF Assoutive, Programs Hanagement Division Directorate of Communications-Electronics



HEADQUARTERS
ALASKAN AIR COMMAND
UNITED STATES AIR FORCE
APO 942, SEATTLE, WARRINGTON

27 MAY 1958

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ETT JEST: Smeon. Ab /PPi-1 for P-1 and int (inclassified)

The Community-In-Chief
Tissin
APC SLY, Seattle, Mashington

1. (Secret) Reference 1st indersement, from Heatquarters USAF, 1. April 58, Jubje (1) C- Peres a Tab for Fire Island and Murphy Jone to Litter this besignarters dated 31 January 50, attached as inclosure 1. It appears evident that Mendquarters USAF has discounted the early requirement for two operational height finders (AN/FPS-6) in the Joint Direction Centers at Fire Island and Murphy Dors. Proper operation of these centers cannot be accomplished unless dual height finding facilities are available for the simultaneous control of manned interceptors and ground-to-air missiles on a continuous basis. To support joint operations at these locations, this communities there extraordinary action to install new prime search radars and a height finder tide year. Delay of the second recipit finder will agrain the effectiveness of these facilities in controlling missiles and interceptors.

- should be funded in FY-59, thus providing for the erection of the towers during the somer of 1959, and the installation of the second AL/FP3-, equipment in FY 2/60. This timetable would furnish a satisfactory joint operation by the one of Calendar Year 1959.
- 3. (Confidential, Assistance of the Alaskan Lowand and NORAD is requested in this matter. Action should be expedited for the FY-by reinstatement of the second of the for both sites, thus realising the earliest possible penefit of Dully equipped joint operations centers in Alaska.
- air befores capabilities and weaknesses, and a tiretable of scheduled improvements.

NOT THE TO THE TANK

LOUIS W. PROFER Colonel. USAF Colonel Staff

1 Just 1nd fr USAF dtd 14 Apr 50 (SF-1573) UNCLASSIFIED

I to me Copy 2 of 9 copies

FT DETSAL

DUFLICATE

OC-3, AAC, 27 May 58, Bubj: Second AN/FFS-6 for F-1 and F-2 (UNCLAS)

ALCOM CED

HEADQUARTERS ALASKAN COMMAND, APO 942, Seattle, Washington

SUN 1528

TO: Commander-in-Chief, North American Air Defense Command, France Ent Air Force Base, Colorado

- 1. The slippage in the installation date of the second AM/FFS-6 at Fire Island and Murphy Dome from FT 2/60 to FY 3/61 presents a serious operational problem in view of the fact that these stations will become Joint ADDC-AACC facilities in October 1958. It has been determined that dual height finding equipment is essential for the afficient simultaneous control of manned interceptors and Nike missiles. For this reason, additional delay in obtaining the second beight finder will substantially reduce the offensive capability of these stations for an extended period.
- 2. Recommend that MQ UEAF restore the original FY 2/60 operational date for the second AN/FFS-6 height finder at Fire Island and Murphy Dome.
- 3. The information contained in this indorsement is classified SMCRET in accordance with par 30b, AFR 205-1.

FOR THE COMMANDER-IN-CHIEF:

1 Incl n/c

MORRES O. EDWARDS Esquiller General, USA Class of Staff

UC-3, AMO, 27 May 58, Subj: (U) Second AM/". S-6 for F-1 and F-2

HOE IRA

2nd Ind

Headquarters North American Air Defense Command, Ent Air Force Base, Colorado 3 rings, Colorado

TO: Chief of Staff, United States Air Porce, as Executive A ent for APAD, Washington 25, D. C.

l. This Headquarters concurs in the requirement of Alaskan Air Command, supported by CINCAL, for second AN/PIS-6 height finders at Sites F-1 and F-2, for equipment installation in FY 2/60.

2. Air defense weapons an facilities must be geared to the requirement during battle committions. During a battle condition, one height funder cannot provide the necessary height information on numerous bestile tracks. Height data must continuously be furnished on initial detections, and height information must be checked repeatedly when provided for those tracks being conveyed to the surface-to-air missile system.

3. Request your headquarters take necessary PC programming action to insure installation of the second 7.6-0's at Fire Island and Murphy Dore in FY 2/60. If necessary, consideration should be given to reprogramming equipment from low rejerity stations in the 71.

i. This Headquarters is to be advised of the results of this action.

FOR THE COMMANDER IT CHIEF!

1 Inel

Brig Gen, ISA NGS/Com sat Most

Copy furnished:

M/R Not required

Lt Col FWH We 2040 24 June

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DISPOSITION FORM

FILE NO. | SUBJECT (U) Requirement for Alaskan Height Finders

10 NOOPO FROM NORLC # 10 June 58 COMMENT NO. /
Lt Col FWH Webner/2040/sc 1

- Hq USAF has approved installation of AN/FTS-20 radars at Sites F-1 and F-2 in Alaska, to meet an operational date of FY 2/59. One AN/FTS-6A height finder per site has been allocated to meet an operational date of FY 1/59 for F-1 and R-2.
- 2. However, as indicated in Inclosure 1 to the attached correst ordence, the second FFS-6 for these two sites is programmed for "subsequent to 3rd Quarter FY 1961."
- 3. Request your comments on the recommendation of AAC and Cl9CAL that the second FPS-6's be reinstated for a FY 2/60 operational date.

1 Incl
2 cys ltr Hq AAC,
27 May 58, subj: (9)
Second AN/FFS-6 for F-1 &
F-2 w/ 1 Ind (2 cys) w/ 1
Incl (1 cy)

F. P. UHRMANE
Brig Gen, USA
PCS/Comm and Elect

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DD 1785 50 96 REPLACES HAVE FORM IN, 1 OCT IN WHICH MAY BE USED

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3APRS8

SUMJECT: (1) Radar poverage Delicioney Best of Anchora e

TO: Commander-in-Chief
h rth American air Defense Command
int Air Force Base, Colorado

1. Baled a guidance furnished in your letter on Air Detense arming, dated 17 January 1956, I directed my staff to re-walkete the Alaskan adar Ground Invironment System. Particular attention was lives to a recar note which was known to talk t east-north act of Anch mu, and the Copper River lasis at all altitudes up to 23,000 feet. The extent of this hole, at 10,000 feet above mean and level, as alwely shown under the red to labeled 'GULKANA' near the center of the attached map. Originally a rader site had been programed to fill tide gap; however, this site was first doferred by Hoadquarters IMAF for bud stary reasons and later recommended for a Latio, on the assumption that the fire I hand Direction tenter sould be relocated on Mt. auditea. This relocation of the ire Islam room spend mive considerably ingroved the radar surveillance to the east of methorage; however bedgetary considerations York a the cancellation of this project use. . . w that a decision is. been made to co-locate the AAO -ADD: on Fire Island, I consider this covers a definitely to be anabisfactory since it will not permit the anator emperoment a sighter aircraft and sin missiles against ter ets appaching from an east.

2. The coper River basin, with my radar surveillance, or wider a Latural route for a low artitude surprise attack on the Anchorage area since fith through Grown , with a minimum care altitude of lo, on fact, . and or again the variety. The on my in an all-out attack on the mitted status, could one run ur min A asken land band reserved in a large rores, then givert one or more aircraft to attack the Anchora e area through this hale. These a mainers could rly direct to arthray, then rly west on mirrors Green 0 at 10,000 feet. Initial joku, of the screen't by the NADGE System radar would occur about it mustical miles away from the bone release said (shown as a small red circle on the attached map) for immuner Air Force Pase much to close to scramble fighters or launch with missizes. This would render the SAL refueling aircraft based at almendorf and over half the Amskan Air Command fighter aircraft highly vulnerable to a medium altitude surprise attack. In addition, the surface-to-curface missile sites, which are being planned for the Anchora e are i, would be vulnerable to pinpoint bembin, even by relatively 1 w performance aircraft.

DUPLICATE

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Subject: (8) Rudar Coverage Deficiency last of Anchorage

3. To correct this deficiency, a Ga. Filler radar station should be constructed ast-northogs of archounce in the Dopper River Basin. Accordingly, I propose to install the Ab/FFD- scarcen radar. Which is still carried in the boat P. C. & carrent, he alread at the carriest spice that. However, before directing the Alabama Air Command to install such a site, I need your concurrence in grinciple. If you a receive a that this pay has, but also ded, I will direct the Alaskar Air when it install and part this site at the cardiest practical decountries to a sible concurrent with the activation of the doint Directle a scales at Fire Teland.

1 Incl (Com; *)
Radar lawerije
Chart

FARA A AMPTHO V, etc. Limit de enal, RAF commander-in-Chief

Hq Alaskan Command, 3 April 58, Subj: (3) Radar Coverage Deficiency

NOEPR-R

Sast of Anch rege

1st Ind

1 Ft is 1958

Headquarters North American Air Defense Command, Ant Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, Alaska, APO 942, Septile

1. We concur in the need for a radar station to fill the gap in coverage over the Copper River Besin.

2. Request you rocced with plans to install an AVFrS-8 at Oulkans, to be operational at the earliest practicals date.

FOR THE COMMINDER-IN-CHIEF

1 Incl w/d

MARSHALL S. CARTER Maj Gen, Chief of Staff

FILE 1- LC E/E 'lot req ired. COMMAYFORCOMAD

INFO SERVICES

15 :pril 56 18-4558

REAF LINGON



(D) Survey of the LFs Redar System (LEW Line) 7 April - 5 May 1918

ADDOF

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- 1. Comments and actions takes or contemplated on "Findings" as pertain to Operations (paragraph 5, Section III, Part I of subject report) are included for indersement to the FC Seport. Reference is made to paragraph 2 of subject cover letter to IC Report, wherein indersement to Items "5s through 5k, less 5d" is requested.
 - a. Reference paragraph 5s, Section All "Findings".
- (1) Most prominent deficiency existing on 1 August 1957 for operation of the DEL System referred to in subject report was lack of Air Movement Information Service (AMIS, facilities supplying flight plun date to the DEW Nain Stations.

Action Required. The three aMIS Centers at himbanks, Alaska; Edmonton, Alberta, Canada; and Goose key, Labrador, are furnishing flight plan data in accordance with procedures established for the DEW system by the USAF-IGH Operations Flan (DEW-MCL) of 1 June 1986. No further action required by this headquarters.

- b. Reference managraph 5b, Section III "Findings".
- (1) The code word and management procedures initially established for the DF* System were considered by this headquarters as impractical, time consuming, and incompatible with the Sea Flanks and DF* extensions. Approval was granted by Headquarters USAF to implement Changes 1 and 2 of the USAF-PCAF Operations Plan which deletes the mode word-management procedure in identification of flight plan which deletes the mode word-management procedure in identification of flight plan traffic operating or penetrating the LEW Identification Zone in Canada and substitution of the FDC Interim Instructions for the DF* System dated 1 April 1958 was made.
- (2) Establishment of a uniform identification some for the entire land segment of the ITA System has been brought to the attention of Headquarters USAF, NOFAD and the Aleskan Air Command. At present, the Canadian-US Scientific Advisory Tens (TESSAT) has presented their views and recommendations to the Joint Military Study Group (JARC) to Washington D.C., on the protlem of standardization of ID procedures for the LEW System. The USSAT Report is presently being reviewed at Headquarters DEAF and NOFAD. Final approval of one standard ID procedure for the DEW System from Gupe Lisbourne, Almak: to Cupe Dyer, Baffin Laland, Canada, is subject to JCS review and concurrence, in addition to being coordinated with the Alaskan Air Command and the BCAF.

action Required. Reference (1) and (2) above. No further notion is contemplated by ALC until results of the PUSSAT Report are made known to this headquarters.



(ii) Survey of the 1% Fader System (IFW Line) 7 April-5 May 1958

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11 Jun 58

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(3) Latent establishment of Edmonton and Goose bay APIS Centers is considered a function of the Canadian Lapartment of Transport. These Centers are now operational as stated in prograph (e(1) above.

(4) This headquarters has quarted the aFC Project Personnel on the Employment and Suitability Test project being renducted on the FE. System and have received information that flight plan data is being received in the Canadian Sectors in a complete and satisfactory form. Familiarization of Limit operating instructions by air carriers, filets and operations personnel has regulated in receipt of more complete flight plans at 150 Main Stations, greater compliance with LEWIZ operating procedures and subsequently a higher percentage of correlation of flight plan traffic. Flight plan procedures for penetrating or operating within the Alicara Coastal or Lomestic aliff as published in Supplementary Flight Information booklet do not require time and point of penetration at the alif boundaries.

actions req ired. Action contemplated by all at this time, relative to operational procedures, standardization of identification criteria, uniform IEW identification some and allied operational areas is contingent upon the following:

(a) GUSSAT study on Identification for the DFW System, as referenced in paragraph b(2) stove.

(b) to pletion of the AFCC Employment and Suits ility Test of the UEL System. Fall is being conjucted curin, the period 25 April-11 July 1958, with final report required within 60 days of completion. Pevision of the LEW portion of US F Pr F Operation Flan, 1 June 1956, by this headquarters prepared as a NOFAL Operations Flan is contemplated within 45 days of receipt of the AFCC Test Results.

c. Reference paragraph 5c, Section III "Findings".

(1) Information at this headquarters indicates that an agreement exists between the Senior Military Different Ft. Herrow DEW Main Station, the Letachment Commander, AACS Detachment at Ft. Herrow, and the Station Commander, Station "A" Ice Island to pass flight than data to the LFW Main Station at Ft. barrow on mircraft deperting Ice Island and returning to Alaskan bases. AACS provides adequate communications between Ft. Herrow and Station "A" Ice Island. Status of communications from other known bases of departure north of the DEW Line, Resolute Bay and Thule, is not known; however, as separate arrangement has been made to receive flight plan data from Ice Island by the LFW Main Tation at Barrow without going to Fairbanke AFTS for this information, similar arrangements may exist at the Main Stations of LYE and Ing" to receive flight plans from Resolute Fay and Thule, Oregaland.

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(ii) Barves of the LEW Radur System (LEW Line) 7 apr-5 New 1958

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11 Jun 58

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action Rec. [red. This readquarters is requesting as of 15 June 1958 status of communication to known air bases (Thule and Resolute boy) north of the DEs Line with the Main Pasilons.

- d. Reference paregrant 5e, Section III; "Findings",
- (1) Violution of IEEE and alusaan DIZ regulations by military aircraft and commercial air carriers print to 1 april 1958 cannot be considered by this headquarters as flagrant, mis-shuse of established IEEEZ or AIIZ rules, as establishment of Goose and Edmonton APIC centers and non-publication of IEE beacons in Alaska for reporting purposes contributed to non-compliance with identification rules. Filing IEEEZ or AIIZ violation reports by the DE. System will be evaluated by this headquarters for resultility and necessity subsequent to the 1 April 1958 date tased on an analysis of the unknown reports received at WEAD COC. Initial study to date indicates there are very for unknown penetrations of the LEE Line by wirtue of pilots failing to comply with published flight procedures. As a secondary consideration, the finality of violation reporting procedures is dependent upon interception and recognition by air assense fighters for the violation report to be valid. This is not within the expeditity of the LEE System at this time.

tem is being prepared for implementation by the Ew Main Station within 30 days.
The summary will be used as a basis of study to determine if violation reports by the EEw Systemant are required.

- e. Reference is made to paragraph f. Section III, "Findings".
- (1) Military meaning of the LFW Data Centers is in accordance with the UNAF-FCAF operations plan ((EW-MCL)) I June 1956, and the ALC Controlled UMD No. ASCAB, I April 1958. ALC requested the Commander, ASCAST Support Group (LFW), to submit a study on the current workload at the LYF LFW Main Station, which appeared to be the only station so affected. Results of the DYE study should give an indication if rendjustment of manning authorization is in order. However, this head-current believes that the assauge headling capacity of LFW Data Center operations is a protlem identified with an outcomfix assauge composer requirement rather than an increase in officer strength at the LF- Stations.

Action Contexplated. A statement of the message composer recuirement for 10th Date Centers has been made and favorably considered by Headquarters USAF. However, USAF is holding any action on the message composer requirement in steyance until completion of the NFC Tests of the LFW Line. Re-attachent of this requirement will be made to USAF by this headquarters upon completion of EACT evaluation.

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Cont. td

(U) Survey of the :FW Radar System (UEA Line)
7 Apr-1 May 1958
ADDOR 11 Jun 38

ADCIO

f. Peference paragraph 5g, Section III, "Findings".

(1) Agtion Tokan. Lat C. Interim Instructions for IFW Line Operations, 1 April 1958, which pertains to Electronic Status Reporting is being rewritten by ADC with scheduled date of completion by 1 July 1958, and will be implemented by the IFW System upon receipt.

- g. Reference paragraph 5h, Section III, "Findinge",
- sages to NCPAD COC was not designed as a duplexed system (send and receive), nor is it normal for NCPAD COC to acknowledge receipt of any tactical or surveillance messages received from the numerous reporting agencies in the NCPAD system. However, communications improvement programs i.e. "read tack" capability for the rearward ionos, heric communication and voice operational circuits to 64th air Division, 11th Air Division and ANC CCC, are designed to give Data Center personnel with current status of the rearward communications to "intermediate" control points.

Action. No action contemplated on this item by ALC.

- h. Reference parsgraph 51, Section III, "Findings".
- (1) Monitoring of the radician training in the operations field by the military personnel on the Line has not been stated as a function of the militery in previous "Terms of Feference" for the USAF and Pfar officers, but was assumed by the military in the best intersets of mission accomplishment. In many respects, this additional responsibility has created duite an added workload on the few military at LPW Hair Stations.

action Taken. Supervision and Instruction by the military personnel of the contractor operators (Padicians) will continue for an indefinite time, and this responsibility will be included in the ALC proposed "Terms of Reference" which were forwarded on 21 May 1958 to ULAF for review and approval. Action has been taken by the Commander, 46Clat Support Group (DEW), to insure the Senior Military Officers visit auxiliary stations periodically to monitor and assist in operating training programs at the smaller stations.

- 1. Meference paragraph 5; Saction III, "Findings".
- (1) Action Taken. Terms of Reference for the LEW System, were forwarded to Headquarters UTAF on 21 May 1958 which more clearly "delineates the responsibilities of the military on the Lina." When approved by USAF, the AIT Terms of Reference will be appended to the CAN contract.

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(U) Survey of the LFW Radar System (DFW Line) 7 Apr-5 May 1958

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11 Jun 58

Cont'd

(2) Action Contemplated. Recently assigned Operations personnel of the 4601st Support Group are scheduled to perform frequent staff visits to the LEW Line when the C-54 mircraft is retrofitted for Arctic operations and made available to the Commander, 4601st Support Group.

j. Reference paragraph k, Section III, "Findings".

(1) <u>action Taken</u>. This headquarters has granted weiver of AFR 60-2 flying requirements and waiver of monthly flying time for pay purposes for rated officers stationed on the .Ta Line.

SCHN . YOW SKY Colonel, USAF Director of Operations Ext 2568

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FM. COMDR 64TH AIR DIV ODE F 2 PAFB NFLD TO RJEDDN/COMDR ADC ENT AFB COLO INFO RJEDDN/CINC NORAD, ENT AFB COLO RFEMVB/CAN IARDEF, ST. HUBERT, QRE

PRIORITY

INFO: COOPR 18-2311

THIS MESSAGE IN SIX PARTS. PART I REFERENCES: A. LETTER THIS HQ TO ADC HQ, SUBJ: SATH AD CD) CIRCUIT REQUIREMENTS, DATED 30 JAN 58, PARA 2 ALFA; B. LETTER HQ ADC, FILE ADOCE-LP, SUBJ: CONSCLIDATED NORTHERN ARE COMMUNICIATIONS REQUIREMENTS (SEVENTE-N CIRCUIT LISTED IN INCL 1), DATED 17 JAN 58. PART II. IDENTIFICATION FUNCTION ON DEW LINE IS COMPLETELY INEFFECTIVE ON SEGMENT UNDER OF ERATIONAL CONTRO OF THIS HQ THIS SITUATION RESULTS FROM FACT THAT AMIS DATA TO HAVE BEEN SUPPLIED THE MAIN STATIONS HAS NOT BEEN, AND IS NOT BEING, PASCED TO THEM BY D AS PROVIDED IN DEW OPS PLAN. INABILITY OF DOT AT GOOSE TO PERFORM AMI

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INCTION IS ATTRIBUTABLE TO TWO MAJOR FACTORS. THESE ARE! A. GOOSE AND IS NOT MANNED BECAUSE OF SHORTAGE OF TRAINED CONTROLLERS; AND B. SUCCONTROLLERS AS COULD BE MADE AVILABLE ARE NOL CAPABLE OF OPERATING TELETYPE MACHINES AS ENVISAGED IN DEW OPS PLAN. THIS FACT WAS POINTFOUT IN OUR LETTER, REFERENCE A ABOVE. PART III. CORRECTION OF THESE DEFICIENCIES CAN BE ACCOMPLISHED BY! A. DOT PROVIDING MINIMUM NUMBER OF CONTROLLERS TO MAN GOOSE AMIS ON AUSTER BASIS; AND B. PROVISION OF ONE VOICE CIRCUIT FROM GOOSE AMIS TO FOX WITH DROP OUT AT DYE. PART IV. IT IS UNDERSTOOD THAT CRASH ACTION IS BEING TAKEN BY DOT TO MAN GOOSE AMIS AND MINIMUM CAPABILITY CAN BE EXPECTED BY 15 MARCH. ACTION TO PROVIDE VOICE CIRCUIT WAS REQUESTED IN REFERENCE AND INCLUDED IN REFERENCE B. IN ADDITION TO SOLVING DOT TELETYPE OPERATOR PROBLEM, VOICE HANDLING OF FLIGHT PLANS GREATLY INCREASES. SPEED AND EFFICIENCY OF IDENTIFICATION. FURTHER, VOICE ON POLEVAULT SYSTEM IS MORE RELIABLE THAN TELETYPE AND WILL CONTINUE TO BE SO UNTIL MORE RELIABLE THAN TELETYPE AND WILL CONTINUE TO BE SO UNTIL MORE RELIABLE TELETYPE CARRIER IS PROVIDED TO REPLACE EXISTING SCHEDULED TO START 1 APRIL 58. IN ORDER TO PROVIDE VALID TEST OF THE LINES CAPABILITY IN THE NORTHEAST AREA, THE IMPENDING EVALUATION SHOULD BE CONDUCTED USING CINCEPT OF PASSING AMIS DATA BY VOICE.

PAGE THREE RJENGK 01
PART VI. IN VIEW OF THE ABOVE FACTS, IT IS REQUESTED THAT! A.
ALLOCATION OF A VOICE CHANNEL GOOSE AMIS-DYE-FOX, EQUIPPED FOR
SCHEDULE F TYPE OPERATION, BE OBTAINED FROM HQ USAF AS A MATTER OF
HIGH PRIORITY AND B. DOT CAPABILITY TO PERFORM AMIS FUNCTION FOR DEL
LINE ON OR BEFORE 15 MARCH 58-Q BE CONFIRMED.
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HEADQUARTERS
AIR DEFENSE COMMAND
UNITED STATES AIR FORCE
ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

584 /49

1 April 1958

INTERIM INSTRUCTIONS FOR DEW LINE OFERATIONS

The inclosed instructions and procedures affecting DEW Line operations are being issued in interim form pending revision of the current Operations Flan - Distant Early Warning and Mid-Canada Lines dated 1 June 1956. The information contained herein supersedes those corresponding areas contained in the above plan.

TAB A - Identification

TAB B - Surveillance Procedures for Main and Auxiliary Stations

TAB C - Status Reports

TAB D - Time Checks

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Tab a

IDENTIFICATION

- 1. (UNCL) ZONES AND FROCEDURES. Action is being taken to provide standardized identification zones and procedures along the entire Cape Lisburne-Cape Dyer DEW Line. Fending this standardization, the identification zones and procedures for the Canadian portion of the DEW Line are to be in accordance with the DEW/Z rules contained in the Line are to be in accordance with the DEW/Z rules contained in the Canadian Department of Transport's Air Navigation Order, Series V. No. 14, dated 13 November 1957, a copy of which is attached as Appendix 1. Zones and procedures for the Alaskan portion of the DEW Line are to be in accordance with the rules for the Alaskan Coastal and Domestic ADIZs as published in the current Eupplementary Flight Information Document.
- DEW Line inbound, which conform to the above identification criteria, are to be classified as "friendly". Aircraft outside the prescribed time and distance tolerances which may otherwise satisfy the identification criteria including the use of KAG I Authentication Tables are to be classified as unknown. This includes aircraft which correlate with known flight plan data but do not establish radio contact, and to aircraft on which no flight plans are available but which have established radio contact. To provide the Combat Operations Centers with more information on all penetrating aircraft, the following series of suffixes are to be used pending the publication of standardized identification procedures. These suffixes are to be inserted in Item #1 of the rearward surveillance report for information purposes only and not as a basis for classification.

SUFFIX CORRELATION FACTORS

- A Identified by visual means.
- B Established by flight plan correlation and position report within IC miles.
- C Established by flight plan correlation and position report within 20 miles.
- D Established by flight plan correlation and position report within 3C miles
- E Established by flight plan correlation and position report within 40 miles

TAE A

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SUFFIX CORRELATION FACTORS

- F Established by flight flow correlation and position report within 50 miles.
- G Detected sircraft correlates and has position reported between fC-100 mile radius of flight planned estimate.
- H Detected aircraft correlates and has position reported greater than 100 mile radius of flight plan position.
- J Detected aircraft correlates and has position reported greater than 100 miles of ground filed flight plan, tut within amended estimates received prior to entering the DEWIZ.
- Woice report only on previously filed flight plan. (This factor may be used with flights from a certain point with intermediate stops and return to original. Because of lock of communication facilities between the original point and the intermediate stops, one flight plan must suffice for entire route.)
- No ground filed flight plan available but radio contact with aircraft indicates protable irlendly aircraft.
- M No radio contact with aircraft, but track correlates with available ground filed flight plan.
- N No flight plan and no radio contact.
- O Voice challenge (KAC 1) establishes aircraft identification using authentication.
- P IFF is in accordance with policy or instructions.

3. (UNCL) FLIGHT PLAN HANDLING.

a. Lateral Mights.

- (1) Flight plans will be filed at the following locations when flight within the DEW area is intended:
- (a) With Communications Center at DEW Line Main Stations.

TAB A

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- (b) With Console Operators at Auxiliary Stations who in turn will relay by voice means to Main Station Communications Center.
- (2) Upon receipt of a flight plan the Communications Center will prepare three copies, one for retention, one for Main Station Console Operator and one for the Data Center. For flights originating in one sector and departing for another laterally, the Data Center will edit for correctness and format and then advise the communications center to transmit the flight plan laterally on the administrative circuit.
- b. Flights departing the DEW Line will file and prepare flight plans as above. However, the data center will edit for correctness and then advise the Communications Center to transmit rearward on the AMIS circuit.
- 4. (UNCL) <u>DEW LINE RADIO BEACONS</u>. DEW Line radio beacons are to be identified by their geographical names as published in the appropriate Air Navigation Orders and Radio Facility charts. The identification of these beacons by code name, DEW site number, or radio call sign is to be discontinued.

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EXTRACTS FROM
CANADIAN DEFARTMENT OF TRANSPORT
AIR NAVIGATION ORDER
Series V, No. 14, dated 13 November 1957

FART V

Distant Early Warning Identification Zone

- 13. The pilot-in-command of a flight originating outside Canada or a non-stop flight originating in Canada which penetrates the DEWIZ inbound shall:
- a. File an IFR or DVFR flight plan before take-off from the last location prior to penetrating the DEWIZ inbound, and shall include in the flight plan the estimated location and time of inbound penetration.
- b. Prior to DEWIZ penetration, establish radio-telephone communications with an appropriate DEWIZ beacon and transmit a position report.
- c. Penetrate the DEWIZ within plus or minus one hour and plus or minus 100 nautical miles of his flight plan estimate of time and place of penetration.
- d. When requested to do so ty a DEWIZ beacon, amend his flight planned estimate of time and place of penetration of the DEWIZ in minutes early or late and nautical miles east or west.
- e. Maintain a continuous listening watch on the frequency on which communication has been established with the appropriate DEWIZ beacon until the flight is through the DEWIZ.
- f. Maintain an altitude at least 6,000 feet above terrain, unless the safety of the flight requires operation at a lower altitude.
- 14. A flight operating laterally within the DEWIZ shall only originate at a base having facilities to forward flight plan information to a DEWIZ beacon, and the pilot-in-command shall:
- a. Defore take-off, file an IFR or DVFR flight plan, with a DEWIZ beacon or an appropriate air traffic control unit.
- b. Establish radio-telephone communications with a DEWIZ beacon as soon as possible after take-off and provide a position report.

APPENDIX 1 to TAB A

- c. Where practicable, conduct as much of the flight as is possible south of the DEWIZ and operate in accordance with radar advisory of the DEWIZ and operate in accordance with radar advisory navigation provided through the DEWIZ beacon.
- d. Report any deviation in excess of 5 minutes of his estimate or 10 nautical miles of his flight planned track to a LEWIZ bea-
- e. Maintain a continuous listening watch on the frequency on which communications have been established with the DEWIZ beacon until released by the beacon.
- 15. The pilot-in-command of a flight originating north of the DEWIZ where facilities do not exist for forwarding flight plans to a DEWIZ beacon or an appropriate air traffic control unit shall:
 - a. Operate under VFR conditions while in the DEWIZ.
- b. Establish radio-telephone communication with an appropriate DEWIZ beacon prior to entering the DEWIZ and transmit a position report.
- c. proceed in accordance with instructions issued by a DEWIZ beacon, which will normally require the flight:
- (1) To proceed to the nearest DEWIZ beacon for visual identification; or,
 - (2) To land at a stated location.
- d. Maintain a continuous listening watch on the frequency on which communications have been established with a DEWIZ beacon until released by the beacon.
- e. Maintain an altitude of at least 6,000 feet above terrain, unless the safety of the flight requires operation at a lower altitude.

PART VI

SCHEDULE C

DEWIZ Boundaries

The DEWIZ is the airspace extending upward from the area described as follows: commencing at:

Latitude 71°00' North, Longitude 141°00' West; thence to Latitude 71°00' North, Longitude 132°00' West; thence to Latitude 71°45' North, Longitude 125°00' West; thence to Latitude 70°15' North, Longitude 115°00' West, thence to Latitude 70°15' North, Longitude 68°00' West; thence to Latitude 67°30' North, Longitude 57°00' West; thence to Latitude 63°00' North, Longitude 60°00' West; thence to Latitude 66°00' North, Longitude 66°00' West; thence to Latitude 67°00' North, Longitude 63°00' West; thence to Latitude 68°25' North, Longitude 68°00' West; thence to Latitude 68°20' North, Longitude 73°00' West; thence to Latitude 69°00' North, Longitude 77°00' West; thence to Latitude 68°00' North, Longitude 86°00' West; thence to Latitude 68°25' North, Longitude 101°00' West; thence to Latitude 68°50' North, Longitude 105°00' West; thence to Latitude 68°10' North, Longitude 114°00' West; thence to Latitude 69°55' North, Longitude 125°00' West; thence to Latitude 68°30' North, Longitude 136°CC' West; thence to Latitude 69°30' North, Longitude 141°00' West; thence to the point of beginning.

PART VI

SC! EDULE E

DEWIZ Beacons

NAME	I D E N T I F I C A T I O N
Cape Dyer (DYE)	VN
Broughton (FOX 5)	VM ,
Cape Hooper (FCX 4)	UZ
Mid-Caffin (FOX 3)	UW
Foley (FCX 2)	UV
Rowley (FOX 1)	UG
Hall Lake (FCX)	UX
West Melville (CAM 5)	UU
West Simpson (CAM 4)	UF
Shepherd Bay (CAM 3)	US
King William (CAM 2)	UR
Jenny Lind (CAM 1)	UÇ
Cambridge Bay (CAM)	VK (In operation only when CB beacon inoperative)
Unnamed Point (PIN 4)	UK
Lady Franklin (PIN 3)	UJ
Young Point (PIN 2)	UI
Clinton Point (PIN 1)	UH
Cape Parry (FIN)	UE
Nicholson (BAR 4)	UC
Tuk Tuk (BAR 3)	UB
Shingle Point (BAR 2)	UA



TAB B

SURVEILL ANCE PROCEDURES

FOR MAIN AND AUXILIARY STATICHS

- 1. CENEFAL. Early warning surveillance responsibility for all DEW Line stations is defined as "that area 360 degrees about the station that is within the detection capability of the radar equipment." Targets of primary importance to the DEW system, as far as early warning detection and reporting are concerned, are those penetrating from the north heading towards the Continental Combat Zone.
- 2. SUB-SECTOR AREAS OF RESPONSIBILITY. The prime purposes of sub-sector areas of responsibility are:
 - a. Early warning surveillance under maximum load conditions.
- b. Warning and overlap telling between adjacent auxiliary and/or main stations under combat and load conditions.
- c. Delineating responsibilities for flight following of lateral traffic under normal conditions.

Geographical coordinates for DEW Line sub-sector boundaries are as follows:

(1) POW Sector:

(a) LIZ 2: West Boundary - starting at a point 70°30'N, 169°00'W and extending to the Alaskan Coast at 69°00'N, 163°30'W and to a point on a straight line 160 N.M. inland.

Fast Boundary - starting at a point 73°00'N, 168°00'W to LIZ B, 70°17'N, 161°34'W and thence to a point on a straight line 160 N.M. inland.

(b) LIZ 3: West boundary - same as east boundary

LIZ 2.

Fast Boundary - starting at a point 73°CC'N, 161°CO'W to LIZ C, 70°48'N, 158°15'W and then to a point on a straight line 160 N.M. inland.

(c) POW: West boundary - same as east boundary

TAB B

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Fast boundary - starting at PCW A 71°C3'N, 154°44'W, following a line 160 N.M. north and south of this point parallel to the meridian.

- (2) Startin, at FCW I and proceeding eastward, sub-sector areas of responsibility are defined as that area between the lines drawn north and south for a distance of 160 N.M., parallel to the meridean of longitude through the intermediate stations which lie to the east and west of the auxiliary or main stations. The eastern subsector area of responsibility for DYE Main will extend to the limits of radar coverage toward the east.
- 3. WARNING TELLING. Warning telling is the passing of surveillance information on tracks wholly within the sub-sector of the telling unit to a station within an adjacent sub-sector toward which a track is heading. Warning telling responsibilities of each Auxiliary or Main Station will be accomplished on all north to south penetrating tracks when within the definition of "warning telling."
- a. Warning telling will be done by the Console Operators at a distance of not less than 25 nautical miles from the sub-sector border when the track is determined to be progressing toward the adjacent subsector.
- b. Warning telling will be accomplished between Data Centers at a distance of not less than 25 nautical miles from the sector border when the track is determined to be progressing toward the adjacent sector.
- 4. OVERLAP TELLING. When a target is detected by one or more search radars it will be forward Told to the Data Center, and all stations will use their assigned track numbers. The Data Center will designate the appropriate track number which will remain on the track until final action is completed. The Data Center will assign primary report responsibility to the appropriate surveillance centers as each area of surveillance responsibility is penetrated to insure track continuity. Surveillance responsibility is penetrated to insure track continuity. When the target is detected, within the sub-sector of an adjacent stawhen the target is detected, within the sub-sector of an adjacent stawhen the detecting station will overlap tell the track to the station in whose area of responsibility the track is located. Overlap telling in whose area of responsibility the track is located. Overlap telling will continue until a cease tell is received by the telling station. Overlap telling is no longer required when the station which is receiving the "overlap tell" information has the specified track under surveillance and is forwarding surveillance information on the track to the Data Center.
- 5. CFASE TELLING. Cease telling procedures are used exclusively ty the Data Center to indicate to a Main or Auxiliary Station that forward telling is no longer required.



- 6. SPLIT TRACK. For LEW Line Main and Auxiliary surveillance stations the following will apply:
- a. The segment of the track which maintains the original heading more closely will retain the same track designator and track number. However, the necessary information will be indicated in the amplifying rortion of the surveillance report.
- b. The segment of the track splitting or deviating from the original heading will constitute the new track and the procedures for initial, follow-up, and amending surveillance report will apply to the new track.

7. SURVEILLANCE REPORTS:

- a. Low Traific Periods. During low traffic periods lateral and rearward surveillance reports on all compulsory reporting tracks will consist of an initial report and a follow-up report each five (5) minutes as indicated in Section VIII, Part "A" of the current DEW-MCL Operations Flan. Reports on "friendly" penetrating traffic may be limited to an initial report, a ten minute follow-up, and the final follow-up report.
- b. <u>Increased Traffic Periods</u>. During increased traffic periods when five minute reporting may saturate the data center, the senior military officer has the preregative to reduce the number of reports on each compulsory reporting track to an initial, a ten minute follow-up, an amending report if necessary, and the final report. Surveillance reports on "friendly" tracks may be reduced to an initial and the final report. This applies both to Main and Auxiliary station reports and to reports forwarded to the rear by the Data Centers.
- c. Raid Summary Reporting. When the number of unknown or hostile tracks in a sector or sub-sector increases to the point where individual track reporting is no longer possible, the system must resort to raid summary reporting. Normally a minimum of five tracks on a subsector is to be classified as a raid and reported to the Data Center as such; however, any requirement to report a raid as individual tracks is to be left to the judgment of the senior military officer based on the current situation in the Data Center. Conversely if saturation of the data center is apparent, the senior military officer may request that fewer than five tracks in any sub-sector be reported as a raid.

8. LATERAL AND OUTBOUND FLICHTS:

- a. Lateral air traffic, which is being flight followed in accordance with a ground filed flight plan, does not represent a threat to the NCPAD system, and should not be reported rearward.
- b. Outbound flights operating in accordance with a ground filed flight plan are to be considered "friendly by direction" and not

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reported rearward except to the AMIS facility as a normal function of flight following.

c. Round-rotin flights operating in accordance with a ground filed flight plan, are to be reported rearward on the inbound portion of the flight only.

TAB B

TAB C (Hevised 30 Juno 58)

OPERATIONAL ELECTRONIC STATUS REPORT (CAESAR Report)

1. (UNCL) Operational electronic status reporting from DEW Line data centers to the various combat operations centers and from auxiliary stations to the data centers, and between data centers, are to be in accordance with NCRAD "CAESAR" reporting procedures cutlined in this section. This report is applicable to the DEW System only, and is not to be confused with the NORAD ROS V-5 report or the contractor equipment status report.

a. (UNCL) Equipment outages will be reported by voice to the data center on all equipment affecting the primary mission. The data center will transmit this information to the rear over the surveillance circuits.

The report will be coded when change in equipment status is in excess of 3 hours using the ADC Radar Status Reporting Code (KAC-13/TSEC). The only parts of the message which will not require coding are the routing designator and the title "CAESAR" of the report. Any other portion of the message containing mixed clear text and encrypted text will be a violation of crypto security and considered a security compromise.

c. Outages of the following equipments will require a report and will be reported as indicated:

EQUIPMENT

REPORTED AS

Search Radar, AN/FFS-19

Search Radar

Fluttar Radar, AN/FFS-23

Fluttar (East or West)

(East or West)

UHF Tropospheric Scatter (East or West)

Tropo Scatter (East or West)

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VHF Ionospheric Scatter

IS-101

IFF

IFF

UHF, Air-Ground

UHF

VHF, Air-Ground

VHF Radio

Power Failure, All Radar and

Power Failure

-

Annual Maintenance

Annual Maintenance

- d. The following format will be used for the NORAD "CAESAR" report from Data Center to NORAD COC: (Note: Auxiliary station reports will omit item (1).)
 - (1) Routing indicator code
 - (2) Name of Report "CAESAR"
 - (3) Date time group of status report.
 - (4) Type of report indicate "Initial", "Amend", or "Final".

(Final report will be unclassified.)

- (5) Station call sign of facility which identifies the station to which the report pertains.
- (6) Equipment to which the status pertains and direction by one letter if applicable.
 - (7) Reason for outage.
- (8) Date-time estimate of return to operation, or of revised estimate of return. Entry omitted in final report.
- (9) Additional remarks if necessary for additional explanation of entries in report.
- e. (UNCL) Sample teletype message of report, as it appears before coding, not to exceed twelve characters per line. Examples:

(3) (2) (1) YU - Clear - Clear - Clear YU CAESAR - Clear CAESAR - Clear CAESAR - Clear 07/1530 - Coded 08/0100 - Coded 10/0800 - Clear Final - Clear - Coded Initial - Coded Amend POW B - Clear POW B - Coded POW B - Coded AIV/FPS-23 - Coded AN/FPS-23- Coded ROCP - Coded Breakdown- Coded - Coded 10/0800 08/0100 - Coded

f. (UNCL) All auxiliary and main stations will render "CAESAR" reports to the data center and the data center will transmit rearward in accordance with the following requirements.

(1) Frequency:

- (a) Auxiliary stations and data centers will render "CAESAR" reports when:
- $\underline{\mathbf{l}}$. Ground equipment becomes operative or inoperative (except when back-up equipment assumes primary function or as noted in $\mathbf{lf}.(1)(b)$ $\underline{\mathbf{l}}$ below).
 - 2. Amending an estimated time of outage.
- 3. Equipment specified in paragraph lc above is out of service for three hours or more or estimated to be out of service for three hours or more.
 - (b) Data Centers need not report when:
- 1. Inoperative due to preventative maintenance or when back-up equipment assumes primary function.
 - 2. Any primary equipment outage will be less than

three hours.

149

- (2) <u>Classifiecation</u>. The contents of the NORAD "CAESAR" report is classified SECRET. Transmission of "CAESAR" reports using the coded format is UNCLASSIFIED.
- e. (UNCL) <u>Data Center Responsibilites</u>. The Contractor must obtain prior approval from the data center whenever a piece of operational equipment is to be removed from the system for "maintenance" or "test". Requests for removal of equipment in excess of three hours are to be submitted to the Main Stations by classified message.

UNCLASSIFIED

4

149

TIME CHECKS

- Time Checks will be made once every twenty-four hours by the DEW Line Main Station Data Center using WWV, WWVH, or CHU as a time standard, and all main and auxiliary Surveillance Center clocks will be synchronized with the Data Center clock.
- a. The following standard procedures for clock synchronization will be followed:
- (1) The individual passing the time check will say "time hack." The person receiving will acknowledge by the ward "Roger."
- (2) When the second hand is stopped at 60, "Ready" will be reported.
- (3) The originator will call off the number of seconds remaining as the second hand passes 15, 30, 45, 50, 55 and at each second thereafter. The word "Hack" is added at end of the time sequence to indicate the "Zero" second and the beginning of the next minute. (Example: 45 seconds until 16 past the hour; 30 seconds, 15 seconds, 10 seconds, five, four, three, two, one, "hack".)
- (4) The receiving station operator acknowledges by reporting "Hack received". If repetition is necessary operator will say "say again for eighteen past the hour".
- (5) All time checks will be passed in Greenwich Mean Time (GMT) (ZULU).
- b. Upon completion of the Time Check, all Surveillance Centers will be required to send a Test Message via the Message Composer to insure that the Message Composer timer has been synchronized and to confirm the Time Check given by the Data Center.

RETURN TO:

Director
Research Studies Institute
Attn: Archives Branch
Maxwell AFB, Alabama

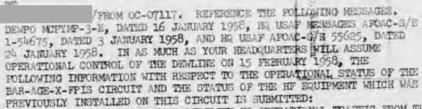
NORAD
HISTORICAL SUMARY
SUPPORTING DOCUMENTS
VOL IV
150 Thru 218

Estuded from General Declarationstation Schedule, NAFO

0 4 3 5



AG NOPO 42
A-294-14
R 131955Z
FM COM AAC
TO COM AAC
THEO COMDR IN CHIEF NORAD
COFS
CH DEWPO 220 CHURCH HT NYX
CINCAL



A. DUE TO CIRCUIT UNREALIBILITY NO OPERATIONAL TRAFFIC FROM THE DEW LINE HAS BEEN PASSED OVER THE BAR-AGE-X-FPIS CIRCUIT SINCE 19 OCTOBER 1957. THE CIRCUIT IN TIME OF APPROXIMATELY 30 PERCENT IS USED EXCLUSIVELY TO PASS CONTRACTOR ADMINISTRATIVE TRAFFIC.

B. THE HF EQUIPMENT WHICH WAS PREVIOUSLY INSTALLED ON THIS CIRCUIT IS PRESENTLY AVAILABLE AT BOTH THE AGE-X AND BARTER LOCATION.

- C. THE HF EQUIPMENT WAS NOT, REPEAT, MODIFIED. HOWEVER, EXTENSIVE MODIFICATION WAS MADE AT WECO TO THE INTERIM FPIS EQUIPMENT WHICH WAS INSTALLED AND OPERATED IN CONJUNCTION WITH THE HF EQUIPMENT
- D. THE HF ANTENNAS AND ANTENNA POLES ARE INTACT AT AGE-X.
 HOWEVER, ANTENNAS AND THE ANTENNA POLES WERE DISMANTLED AT THE BARTER
 STATION.
- E. EQUIPMENT SPACE REQUIRED FOR THE INSTALLATION OF THE HF
 EQUIPMENT IS AVAILABLE AT THE AGE-XRAY STATION, HOWEVER. IS LIMITED
 TO THE BARTER STATION.

than filled ...

COPY OF INCOMING CL. IFIED

reproduction of this message in whole or in part is prohibited without approval of CONAD Adju SEE CRYPTO SECTION BEFORE DECLASSIFYING

F. HF EQUIPMENT WAS PREVIOUSLY OPERATED IN COMJUNCTION WITH THE FPIS AND DID NOT CREATE INTERPERENCE PROBLEMS WHICH, IN FACT, PROVIDE A CIRCUIT WHICH WAS RELIABLE SO TO SO PERCENT OF THE TIME.

G. SITE PERSONNEL INDICATE THAT WHILE ADDITIONAL PERSONNEL WOULD BE REQUIRED TO ENSTALL THE FE EQUIPMENT AND ANTERNAS, NO ADDITIONAL PERSONNEL WOULD BE REQUIRED TO OPERATE AND MAINTAIN THE EQUIPMENT. THEREFORE, IT APPEARS THAT IT A PRIMARY CIRCUIT BETWEEN BAR AND ACCURACY IS REQUIRED, THE COIT INVOLVED FOR THE REMISTALLATION OF THE PRICE OF THE EQUIPMENT WOULD BE NEGLIGIBLE IN COMPARISION TO THE STUFF PRICE OFFENDLY BEHNS PAID FOR THE CONTRIBUED OPERATION AND ENGLISHED BY SERVICE WHICH THE AIR FORCE CONTRACTED FOR.

9. THE COMPLETE CIRCUIT OUTAGES BEING ENCOUNTERED BETWEEN BAY AND AGE-MAY, AND PIN AND WATERWAYS DURING THE PAST FOR MONTHS, THE MEARMAND REPORTING OF SURVEILLANCE DATA FROM THE ALASMA SECTOR. OF THE DEVLINE HIST BE PASSED ON A SPARED CIRCUIT BASIS OVER THE WHITE ALICE SYSTEM THROUGH CAPE LISBURNE OF THE FPIS AT CAMERIDES BAY. THIS HETHOD OF REPORTING VIA ALTERNATE ROUTINE, AT BEST, PROVIDED COMES IDERABLE DELAY. THE INFORMATION CONTAINED HISTORY FOR FER FERSONNEL FROM BOTH DARKS AND AGE-MANY, WHO WERE INVOLVED WHITE THE INSTALLATION AND DEACTIVATION OF THE IF SYSTEM.

14/13252

AC-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY D ENCRYPTION-PRIVE ICALLY RELIGIE ALL INTERIAL REFERENCES BY DATE-TIME GROUP FRIOR TO DECLISE FICATION-NO UNCLASSIFIED REFERENCE IF BATE-TIME GROUP IS ONOT

This message in whole or to port is professioned without approval of CONAD Adjutant)

MOROTO A-414-17 SEE CRYPTO SECTION BEFORE DECLASSIFYING

FM CH DEW/WA PROJECT OFFICE MY
TO DIRECTOR OF COMMUNICATIONS HOUSAF WASH DC
BNFO CINCAURAND ENT AFB COLO
CINCAL ELHENDORF AFB ALASKA
CONDR AAC ELMENDORF AFB ALASKA
CONDR AACS ANDREWS AFB MARYLAND

oc Action, coelc

/CITE -MCPYMP-J-E. REFERENCE HOUSAF AF DAC-1-34575, DATED 3 JAN 58, THE ALASKAN AIR COMMAND HAS REQUESTED THE FEDERAL ELECTRIC CORPORATION TO FURLISH THE STATUS OF EQUIPMENT FORMERLY USED BY THE WESTERN EMBETRIC COMPANY FOR THIS SERVICE AND TO FURTHER FURNISH A STATEMENT AS TO THEIR CAPABILITY TO REINSTALL THIS EQUIPMENT AND THE APPROXIMATE OPER-ATIONAL DATE IF FEC DETERMINES THAT THEY CAN PERFORM THE WORK. IT IS REQUESTED THAT THE DECISION TO APPROVE AN HE BACK UP LINK BETWEEN DEW SITE BAR AND AGE-X BE RECONSIDERED BASED ON THE FOLLOWING INFORMATION: A. THE ORIGINAL HE ANTENNAS WERE REMOVED FROM THE DEWLINE SITES; THEREFORE COMPLETE NEW ANTENNAS WILL HAVE TO BE INSTALLED. B. THE EQUIPMENT UTILIZED BY THE WESTERN ELECTRIC COMPANY WAS MODIFIED CONSIDERABLY IN THEIR EFFORT TO DEVELOP FIRM ENGINEERING DATA FOR THE DESIGN OF THE DEVLINE SYSTEM. THE EQUIPMENT WILL REQUIRE CONSIDERABLE OVERHAUL WORK TO RESTORE IT TO THE ORIGINAL SYSTEM. THIS IN TURN WILL REQUIRE ENGINEERING EFFORT PRIOR TO THE OVERHAUL WORK. THIS TOTAL EFFORT MAY BE HORE COSTLY THAN THE ORIGINAL EQUIPMENT COSTS. C. THE DEVLINE MODULES AT BAR CONTAIN NO EXCESS SPACE FOR INSTALLATION OF A SYSTEM OF THIS SIZE. #THIS MAY REQUIRE IT TO BE DISTALLED IN AN EXISTING TEMPORARY BUILDING WHICH WILL PRESENT A PROBLEM IN POWER DISTRIBUTION AND RENOTING OF A TRAFFIC INFORMATION. D. THIS ADDITIONAL SYSTEM WILL PRESENT A PROBLEM IN SUPPORT, MAINTENANCE AND OPERATIONS TO THE FEDERAL ELECTRIC CORPORATION AND MAY REQUIRE ADDITIONAL HA RITENANCE AND SUPPORT PERSONNEL. E. THE FEDERAL ELECTRIC CORP-ORATION UNDER THEIR PRESENT CONTRACT ARE PREVENTED FROM NAKING AN INSTALLATION OF THIS TYPE OR PERFORMING THE ENGINEERING FUNCTIONS THAT ARE CONNECTED. THIS EFFORT WILL REQUIRE A SEPARATE CONTRACT WITH FEC IF THEY ARE TO PERFORM THE WORK OR THEIR PRESENT CONTRACT EMPANDED TO COVER THIS TYPE OF EFFORT. F. III-STALLATION OF AN HF SYSTEM ALONG THE DEVL DIE MAY GENERATE INTERFERENCE PROBLEMS WHICH WILL REQUIRE AN ENGINEERING EVALUATION PRIOR TO INSTALLATION AND FREQUENCY SELECTION. G. THE WESTERN ELECTRIC COMPANY IS PREPARING AN EVALUATION OF THE BAR-ACE-X VHF LINE AND WILL PROVIDE A SOLUTION TO IMPROVE THIS SYSTEM. THE BAR-AGE-X LINK IS THE PRIMARY CIRCUIT FOR DEWLINE SITE BAR AND THE ALTERNATE ROUTE FOR SITE POU. THE WHITE ALICE SYSTEM IS USED AS PRIMARY FOR POW AND ALTERNATE FOR BAR. THE WHITE ALICE SYSTEM IS COMPLETE AND IS BEING UTILIZED AS PLANNED. IT IS FELT THAT BY USING THE UNITE ALICE CIRCUITS FOR BAF, SATIS-FACTORY RELIABILITY IS EF ING REALIZED AND CAN CONTINUE WITH THE BAR-AGE-X MODIFICATIONS COMPLETED, THUS NOT WARRENTING THE EXPEND-ITURES NECESSARY TO INSTALL THE HE BACK UP SYSTEM. IT IS FURTHER BELIEVED THAT MORE TIME SMOULD BE ALLOWED THE CONTRACTORS TO GATHER DATA AND PROVE OR DISAPPROVE THE DEVLINE VHF LINK, BEFORE ACTION IS UNDERTAKEN TO PROVIDE OTHER ALTERNATE SYSTEMS. UNCLASSIFIED

filled

COPY OF INCOMING CL AFIED MESSAGE

message in whole or in part is prohibited without approval of CONAD Adjo SEE CRYPTO SECTION BEFORE DECLASSIFYING

4 JANIGES

READING FILE NOROO3 HQA OO 7

RR RJ KDAG RJEDEN RJEDAN

DE RJEPHQ179 R 11 2421572 FM REDUSAF WASH DC TO RUKDAG/CINCAL ELMENDORF AFE ALASKA RJEDDN/CINCHORAD ZIT AFE COLO

RU KDAG/C DIAAC ELITENDORF AFB ALASKA INFO ZEN/CHIEF DEWPO 220 CHURCH STREET NY NY RJEDAA/COMAACS SCOTT AFB ILL

ACTION: CO LC x8-1251

REFERENCE MY AFOAC-1 54675 AND CINCHORAD MESSAGE NOESS-C X-284

EN VIEW OF INFORMATION CONTAINED IN DEW/UNITE ALICE PROJECT OFFICE
MESSAGE MCPYMP-3-E, THE AUTHORITY TO INSTALL A HIGH-TREQUENCY
BACK-UP SYSTEM FOR BARAGE-X CIRCUIT IS RESCRIBED. THIS DECISION
BACK-UP SYSTEM FOR BARAGE-X CIRCUIT IS RESCRIBED. THIS DECISION
BACK-UP SYSTEM FOR BARAGE-X CIRCUIT IS RESCRIBED. THIS DECISION
BASED ON THE FOLLOWING CONSIDERATIONS: (1) THE AVAILABILITY OF UNITE
BASED ON THE FOLLOWING CONSIDERATIONS: (2) THE LEMOTH OF THE ALICE CIRCUITS TO PROVIDE ALTERNATE ROUTING, (2) THE LENGTH OF TIME REQUIRED TO EFFECT INSTALLATION OF HE EQUIPMENT AND ANTENNAS AT BARTER, AND (3) THE WORK BEING PERFORMED BY MESTER! ELECTRIC COMPANY TO CORRECT EP IS DEFICIENCIES.

24/22007 JAN RJEPHO

VA-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCHYPTION--PHYSICALLY REMOVE ALL DITERNAL REFERENCES BY DATE TIME GROUP PRIOR ///ABVANCE COPY OF THIS MESSAGE HAS BEEN DELIVERED TO COC/// TO DECLASSIFICATION

UNCLASSIFIED

READING FILE

UNCLASSIFIED COPY JOINT MESSAGEFORM SPACE BELOW PRIERVED FOR CUMMUNICATION ACCOUNTING ORIGING TO MEFERS TO THE MEG (Chris) PRECEDENCE ----ACTION DEFERRED 00-4 07115,07116,07117 SPECIAL INSTRUCTIONS MEG PROMICOMOR ADD COMDR AAC ELMENDORF AFB ALASKA FROM ADOCE-CS 3657 Reference your messages OG-4 \$7115, \$7116 and \$7117. This headquarters concurs in the USAF position in not backing up the FPIS circuits with HF. We are not totally satisfied with the DE line rearward FPIS circuits. A considerable number of outages are being encountered on these circuits due to propogation and equipment malfunctioning. A record is being kept of these outages which will be forwarded to USAF for their information and necessary action. The unreliability of the BAR - AGE-X circuit will also be included in our report to USAF. Request any additional information concerning circuit outages DFM rearward circuits be forwarded this headquarters.

BIGNATURE

TYPED (or stamped) NAME AND TITLE

UNCLASSIFIED

Director, Communications-Electronics

JAMES H. WEINER

Colonel, USAF

SYMBOL

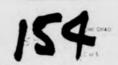
ADOCE-CS

Maj Pelak/bw

TYPED NAME AND TITLE (Systems), if required)

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ADOCE-CL, Hq USAF ADC, 11 Feb 58, Sebj: Traffic Survey on DEW Line Rearward Circuits

NOEPR-R

lst Ind

12 MAR 1958

Headquarters North American Air Defense Command, Ent Air Force Bass, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, ATTN: ADOCE-CL, Ent Air Force Base, Colorado Springs, Colorado

- 1. The Inclosures to the basic correspondence indicate graphically a degree of communications reliability that is unsatisfactory and unacceptable to this Command.
- 3. This Headquarters considers it a matter of urgency that remedial action be taken to insure that DEW Line surveillance information is received at the HORAD COC and ALCOP on a guaranteed basis.
- 3. From the inclosed charts, it is not apparent whether the messages are garbled in the military-owned facilities from the DEW Line or in the facilities between the Mid-Canada and the NORAD COC.
- 4. Reference para 2e of letter, MOMPR, subject: "Review of North American Long-Lines Facilities Related to Air Defease," dated 11 December 1957. Recommend our proposal to establisk a momitor and control point in the Dawson Creek area, to include the communications as outlined, be further evaluated by your Maj Di Ewell command. This proposed control point would expedite trouble location and facilitate rearrangement and supervision of traffic between the DEW Line and U. S. terminals.

FOR THE COMMANDER-IN-CHIEF:

DUPLICATE

F. F. UNRHANE Brig Gom, USA DCS/Comm and Blect

COMEBACK NOELC

M/R not required.

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This correspondence is tribuled conf association will fire 30 C2 (1) (6) a to respond table

Record Evaluation | Terrorment | Long Time Value | Theory to pro-

CX8-606

HEADQUARTERS
AIR DEFENSE COMMAND
UNITED STATES AIR FORCE
ENT AIR FORCE BASE, COLORADO

154

TEL: MELRO 200511

ADOCE-CL

FEB 1 1 1958

SUBJECT: Traffic Survey on Dev Line Rearward Circuits

TOI

Commander-in-Chief North American Air Defense Command ant Air Force Base Colorado Springs, Colorado

- 1. Anchosed are graphs for the 64th Air Division, 25th Air Division and NORAD CCC which show the percentage of good, readable copy received from specified Dew line stations. A chart on RCAF/ADC showing the same information in numerical form is also inclosed. The above sequential stations were selected to report the total number of messages received daily from specific Dew line stations, and the number of these messages that were received garbled. This information was requested to provide us with a qualitative picture of just how well information from the Dew line was being received at the NORAD CCC.
- 2. A review of the basic data indicates that there is a considerable difference in the total number of messages received from a Dew line station at the different requential points for any particular day. The reason for this is unknown and can be corrected only by chancing the reporting data. It is believed, however, that the information received satisfied our basic requirement to determine how well Dew line information was being received at the NORAD COC. The following comments are offered with reference to the NORAD COC:
- a. Information received from POW and BAR generally improved during January and is considered to be satisfactory at this time.
- b. Information received from PiN is unsatisfactory. The primary FPIS circuit from PIN operates approximately 50% of the time because the corner reflector at Waterways is still down (the antenna went down in October because of ice). Western Electric Company is repairing the antenna. PIN sends many messages through its primary alternate, GAM, and through its secondary alternate, BAR.



- e. Information received from CAM comes in fairly consistent, however, improvement is required.
- d. Information received from FOI and DYE showed an improvement during January, however, further improvement is required. The primary circuit from FOI has been unsatisfactory and most of FOI's messages were passed through DIE. Trouble on the FOI primary circuit sppears to be in the FPIS circuit from FOI to Bird.
- 3. Action will be taken through Headquarters USAF to try to improve the FPIS circuits; however, the degree of improvement that can be obtained is questionable. The overall network can be improved provided communications personnel are assigned to NORAD COC to exercise operational control over the network on a 24 hour a day basis. This recommendation was forwarded to NORAD by separate correspondence.

FOR THE COMPANDER:

4 Incle 1. Graph-6hth Air Div -25th Air Div

3 sheets 4. Oraph-RCAF/ADC JAMES H. WEINER

Colonel, USAF Director, Communications-Electronics

DISPOSITION FORM

FILE NO. SUBJECT (IT) SPRING COMMENT NO. 1

10 SIGNS-IS

FROM INCIDE OF DATE 1 Jun 56 COMMENT NO. 1

42 14 - Par 1/2760

1. Tarious communications improve . * The country time of them, initiated on the Full and and a TS DEW Line of the initiated of the system. This directorate can be set its need of the status and images of the communications traigness that have an interest continued innotion.

2. listed in descriptive arms as to reconstructive or termination, request your engments and incometics are the proper electric are reliable proceedings of the later of the line of the later are reliable as the second article are respectively.

a. Frequent status of the lime it is the size. In it contemplated that this circuit will to replaced, or resemplaced, at we so be operationally useble?

o. Status of inimast the tool election for profits our messages from PAR win White Alice Communications Network to as out NCPac.

c. Status of operational control voice communication from ACC to four western DEW Main stations. This resultances involves re-cuiling of existing voice circuits from 11th Air Division to ACC at anthony set, switching as selective ringing facilities at anchorage, atc., on that there are direct voice occuminations ing facilities at anchorage, atc., on that there are direct voice occuminations from WCFAD TOC to FCA, has, rived to Tab, subject to wood new exerts from W DAD to FCA and IYE stations.

d. Status of Mread Davk' incilities on the tour 1700 Heavils file-NELA, PIN-WATA, CAM-NELA, and 70%- TEXT

e. brief summary of the antications surrey bein conjucted by your directorate on the factical network for the five line to NOSAD DC. This need not be specific or in setail. Request your comments as to reliability of circuit analysis by individual stations; and presidently of continuing the message numbering system in circuit analysis.

Colonel, USAF Director of Coretions

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line and rearward by the white alice was come in it systems as the rivary
rolles. The FITS systems on the left is a terrate facilities and for
telling to Will it necessary. The samplify is resultly eigh investigated.

A L. ON SAF to Drief micricas-macronics

AIR DEFENSE COMMAND UNITED STATES AIR PORCE ENT AIR PORCE BASE COLORADO SPRINGS, COLORADO

TEL: MELROSE 2-5511 KIT 2901

JAN 1 : 1958

ADOCE-LP

SUBJECT: Consolidated Northern Area Communications Requirements

Commander-in-Chief, North American Air Defense Command, TO: Ent Air Force Bese, Golorado Springs, Colorado Commender, Alaskan Air Commend, APO 942, Seattle, Washington Commander-in-Chief. Alaska, APO 942, Seattle, Washington Commander, Airways & Air Communications Service, Scott Air Force Base, Illinois Commander, Military Air Transport Service, Scott Air Force Base, Illinois Commander-in-Chief, Strategic Air Command, Offutt Air Porce Base, Omaha, Nebraska Commander, USAF Security, San Antonio, Texas Commander, 64th Air Division (Def), APO Box 862, New York, N.Y.

Inclosed for your information are the consolidated Northern Area communications requirement refined at the 9-10 January 1958 meeting at Headquarters Air Defense Command. The USAF representative hand-carried these requirements to Headquarters USAF on 14 January 1958.

FOR THE COMMANDER:

1 Incl 8/8

An JAMES H. WEINER
COLORAL

Colonel, USAF

Director, Communications-Electronics

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NDEPR-R-3

DUPLICATE



CONSOLIDATED COMMUNICATIONS REQUIREMENTS FOR THE NORTHERN AREA (This consolidation does not include: 1. Installed circuits; 2. Leased commercial circuits; 3. RCAF requirements.)

FROM	<u>TO</u>	VOICE	TELETYPE .	DATA	FASCIMILE	REMARKS	
Thule	Cape Dyer	3	1				
Thule	Goose Bay	3	h	2			
Thule	Wilerson		2				
Goose Bay	Harmon	1	1				
McGuire	Goose Bay to Harmon			1			
McGuire	Harmon		1				
Harmon	Goose Bay to Thule		1			*	
Harmon	Keflavik	2	2				
Goose Bay	Keflavik			1			
Goose Bay	BW-8	1					
Harmon	Gander	1	1				
Pepperrell	Harmon to Goos to Thule	e 1					
Pepperrell (Harmon)	Thule	5	1				
Goose Bay	Edgar	2					Q-LAB
Pepperrell (Harmon)	Edgar	1	2			(ALOOP)	Q-LAB
Goose Bay	Moise	3					Q-LAB
Goose Bay	Fox to Dye	1					
Cape Dyer	Resolution	1					Note 1
Cape Dyer	Frobisher	1					
Cartwright	Hopedale	48				Goose	Bay By-
Pepperrell (Harmon)	U. K.	1	UNCLA	SSIFII	ED		AMIS



<u>)</u>		AOICE	TELETYPE	DATA	FASCIMILE	REMARKS
FROM	<u>TO</u>		IBIDITIO			
Dawson Creek	Barter Island to Pt. Barrow to Cape					
	Lisburne	1				
Dawson Creek	Anchorage	1	1			
Dawson Creek	CAM to PIN		1			
Dawson Creek	FOX to DYE		1			
Dawson Creek	St. Hubert		1			
Dawson Creek	Ent AFB		1			
BAR	Dawson Creek	1				Note 2
PIN	Stoney Mtn (C-21)	1				Note 2
CAM	Waterways	1				Note 2
FOX	Bird	1				Note 2
DAE	Great Whale	1				Note 2
Resolution Isl.	Knob Lake	1				Note 2
Anchorage	BAR	1				
POW	Ent AFB	1		2		
BAR	Ent AFB	1		2		
PIN	Ent AFB	1		2		
CAM	Ent AFB	1		2		
FOX	Ent AFB	1		2		
DYE	Ent AFB	1		2		
Alaska	Ent AFB	1		2		Note 3 Alt Route
Thule	Ent AFB	1		2		Note 3 Alt Route
Scotland	Ent AFB	1		2		Note 3
			UNCLAS	SIFIEL)	



FROM	10	VOICE	TELETYPE	DATA	FASCIMILE	REMARKS
Sheymia	Ent AFB		1			On line
Drift Wood Bay	Newenham	7	8			Note 4
Murphy Dome	Pedro Dome	77	20	35		Note 5
BAR	Ft. Yukon	32	9			



FROM	<u>TO</u>	VOICE	TELETYPE	DATA	FASCIMILE	REMARKS
Kettle Lake	Offutt AFB	1				Note 7
Gillan	Offutt AFB	1				Note 7
Penny	Offutt AFB	1	W	in.		Note 7
Hays	Offutt AFB	1				Note 7
Winisk	Offutt AFB	1				Note 7
Beach	Offutt AFB	1				Note 7
Canary	Offutt AFB	1				Note 7
Beaver	Offutt AFB	1				Note 7
Gooseberry	Offutt AFB	1				Note 7
Kotzebue	Offutt AFB	1				Note 7
Hall Lake	Offutt AFB	1				Note 7
West Simpson	Offutt AFB	1				Note 7
West Mellville	Offutt AFB	1				Note 7
Shepherd Bay	Offutt AFB	1				Note 7
Cape Christian	Offutt AFB	1				Note 7
Mid-Baffin	Offutt AFB	1				Note 7
Frobisher	Westover	1	1	1	1	Note 7 & 8
Knob Lake	Westover	1	1	1	1	Note 7 & 8
Great Whale	Westover	1	1	1	1	Note 7 & 8
Churchill	Westover	1	1	1	1	Note 7 & 8
Coral Harbor	Westover	1	1	1	1	Note 7 & 8
Le Pas	March	1	1	1	1	Note 7 & 8
Cold Lake	March	1	1	1	1	Note 7 & 8
Namal	March	1	1	1	1	Note 7 & 8
ort Chimo	Westover	1	1	1	1	Note 7 & 8

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FROM	<u>TO</u>	VOICE	TELETYPE	DATA	FASCIMILE	REMARKS
March	Eileson	. 1	1	1	1	Note 7 & 8
March	Elinendorf	1	1	1	1	Note 7 & 8
Westover	Goose Bay			1	1	Note 7 & 8
Westover	Thule			1	1	Note 7 & 8
Westover	Harmon			1	1	Mote 7 & 8

- Note 1. Overbuild Polevault from Cape Dyer south to include everything in Dewline Eastward Extension, Dewline loteral, and Dewdrop systems.
- Note 2. MCL should have loteral voice capability, station to station. Purpose to support cross telling from Dewline.
- Note 3. To support BMEWS.
- Note 4. Aleutian segment by-pass (alternate route) (Tropo-system).
- ote 5. Fairbanks By-Pass. Includes BMEWS, W8-315A (Thor), plus Army NIKI alternate requirements.
- Note 6. Tropo system for Elenendorf by-pass. Includes W8-315A (Thor).
- Note 7. Alternate route is required.
- Note 8. Receive only weather RTTY & Fascimile drop at each of the Canadian site from DOT.

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DEPARTMENT OF THE AIR FORCE HEADQUARTERS UNITED STATES AIR FORCE WASHINGTON 25, D. C.

AFOAC-S/O

29 May 1958

SUBJECT: Review of North American Long Lines Facilities Related to Air Defense

TO:

Commander-in-Chief North American Air Defense Command Ent Air Force Base Colorado

1. References:

- a. Your letter, subject as above, file NOEPR, dated 11 Dec 1957.
- b. Executive Agency letter, this headquarters, subject as above, dated 27 Jan 1958.
- 2. In accordance with paragraph 5, reference 2b, this is a status report concerning recent actions in connection with plans to improve northern area long lines communications capability.
- 3. The originally conceived means of improving our long lines systems, as discussed in inclosure to reference 2b, have been drastically changed as a result of three important findings during systems engineering for BMEWS.
- a. The data bit-rate requirement has been reduced from an anticipated 1300 bits/sec to 250 bits/sec. This fact, while lessening in no degree the need for extreme reliability, makes the use of some existing facilities possible.
- b. Initial studies show the feasibility of installing a submarine cable from Thule to Cape Dyer and from Cape Dyer to Goose Bay.
- c. The American Telephone and Telegraph Company has proposed the installation of a submarine cable, as a commercial venture, from Port Angeles, Washington to Homer, Alaska.
- 4. The advantages of adopting cable as the transmission medium for BMEWS are obvious when reliability, quality and annual operating and maintenance costs are considered. Accordingly, we now plan to provide Site One and Site Two BMEWS long lines communications as shown on attached chart (Incl No. 1). It will be noted that two communi-

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B/L to CINCNORAD, sub: Review of North American Long Lines Facilities Related to Air Defense (Cont)

cations routes previously considered as possible means of meeting BMEWS requirements are no longer planned in direct support of that system. They are the Thule - Hall Lake - Churchill tropospheric scatter route and the end-to-end DEW Line lateral communications system. The funding limitations now imposed on the BMEWS system make the work shown on inclosure no. 1 the maximum possible under that program.

- 5. The requirement for long lines, voice quality and toll switching capability in the northern area communications systems, in support of NORAD air defense operations and other USAF obligations, is recognized. Funds are included in the FY-59 Budget Estimate for the improvement of Communications along the DEW Line and through the POLE VAULT system. Western Electric Company, as an adjunct to the BMEWS system's engineering effort, is analyzing total communications requirements in the Arctic, and will make recommendations for the most practicable and economical means of meeting overall requirements. This study considers Canadian systems and RCAF communications requirements, and all results will be coordinated with appropriate Canadian agencies prior to work implementation. The manner in which our FY-59 funds are expended will be determined after study of the Western Electric proposals. All this, naturally, is dependent upon funds being made available by the Congress.
- 6. A status report concerning other items covered in your letter of 11 Dec 1957 is attached (Incl No. 2).
- 7. Although it is evident that specific plans have changed as the result of systems engineering effort and monetary considerations, it is also apparent that the objectives for attaining long lines, voice quality and toll switching capability in our northern area communications systems remain unchanged. Liaison officers from the Air Defense Command and the RCAF are on duty with the Electronic Defense Systems Division in New York and have access to the BMEWS Project Office. We expect that by this means your staff will be kept advised of progress and changes under this program. You will be kept advised on other matters, not having a relation to the Project Office effort, by this headquarters.

FOR THE CHIEF OF STAFF:

2 Incls

1. Chart - BMEWS Comm Plan

2. Status - NORAD Comm, Arctic /s/t/ ALVIN L. PACHYNSKI
Major General, USAF
Director of Communications-Electronics

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B/L to CINCLUMAD, sub: neview of North American Lon Lines Facilities related to Air Defense (Cont)

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DEPARTMENT OF THE AIR FORCE OFFICE OF THE CHIEF OF STAFF UNITED STATES AIR FORCE WASHINGTON, D. C.

27 January 1958

158

SUBJECT: Review of North American Long-Lines Facilities Related to Air Defense

Commander - in - Chief TO:

North American Air Defense Command

Ent Air Force Base

Colorado

1. Reference is made to your letter, subject as above, file NOEPR, dated Il December 1957. This is an Executive Agency letter.

2. The need for positive and reliable communications in support of Air Defense operations on the North American continent, and especially to those defense installations in remote Arctic areas, has long been cause for concern. Your analysis of the problem and recommendations for corrective action have been very well thought out and presented. Also, your support for the needed work, both from an Air Defense and other user's viewpoint, is appreciated.

3. Each of the seven corrective actions you recommended, with the exception of the proposal for the monitor facility at Dawson Creek and augmentation of the Mid-Canada communica-Filed of other, tions system, have been under active consideration. Attached as Inclosure #1 is a report on the status of each recommended corrective action. Also, a discussion of the item mentioned 1.7.c >> above is included.

4. As can be seen from the attached discussions, we are now faced with the problems of providing positive, instantaneous communications between the Ballistic Missiles Early Warning sites and the central display facility in the United States. This requirement is of sufficient magnitude and priority that most of the suggestions you have made for improvement of Air Defense

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Ltr to CINCNORAD, suoj: "neview of North American Long-Lines Facilities Related to Air Defense"

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Communications have been included as an integral part of the BMEWS project. It is a classic illustration of your very proper concern over the communications required during this transition into the ICBM time period.

thatter !

5. Your staff will be kept advised of progress toward meeting the objective of providing reliable, positive, toll quality communications for the North American Air Defense system. Your continued support is solicited.

1 Incl
Rpt on status of
corrective action

JACOB E. SMART
Major General, U. S. Air Force
Assistant Vice Chief of Staff

158

COMMENTS ON CINCHORAD PROPOSALS FOR IMPROVEMENT

OF NORTH AMERICAN LONG-LINES FACILITIES

1. PROPOSAL: Improvement of White Alice to DEW communications.

SUGGESTED METHOD:

- a. Provide a Tropospheric Scatter relay station between Lisburne and Kotzeoue.
- 5. Provide alternate T opospheric Scatter system between Ft. Yukon White Alice site and Barter Island Devline site.

OPINION, ACTIONS TO DATE AND STATUS:

- a. The need for a relay between Lisburne and Kotzebue was considered during original engineering for the White Alice system. A tentative site was selected at Kavalina. Western Electric Company's path-loss tests showed the Lisburne-Katzebue nop to be feasible for 12-channel operation. This satisfied then known requirements and to save the cost of a relay station we agreed to the single-nop 12-channel system. Since that time, WECO, decided to employ quadruple diversity on this path and now expects 3c-channel capability of the same reliability as the rest of the White Alice System. We feel therefore, that corrective action is not indicated at this time. Should improvement of this link is instanted by operational results, sorrective action will a fact that MEMS site is Alaska will require channels of the a pleast order over this path. Should a relay be required to an electrocapt over this path. Should a relay be required to an he-planned in conjunction with the FPS-30 radar programmed for the vicinity of Mulgrave Mills.
- b. The Ft. Yuson-Sarter Island Tropo lick was recommended by the original Plant Extension Study for an Integrated Communications System in Alaska. Funding was authorized for that portion of the study we now know as Phase I, White Alice. All other work recommended by the study was deferred due to funds limitations. The contractor for implementing the BMENS site in Alaska is being asked to re-evaluate the need for this link and to present nost estimates. This link would not only provide voice capability for DEW operation, but would shorten by many miles the communications must being planned for TMENS.

Die WI

2. PROPOSAL: Augmentation of Alaskan long-lines communications.

SUBJESTED METAOD: Tropospher. Soutter system between Boswell Pay and Stagway.

OPINION, ACTIONS TO DATE AND STATUS:

This system was also recommended by the original study for a Integrated Communications System for Alaska. The Department of the Arm, in recognition of its function to provide communications facilities released the United Statem and Alaska, attempted to implement this system during the past two fiscal years. They were of able to do so however, due to funds limitations. The existing system, when CAA's programmed over-build has been considered sufficient to meet known requirements until recently. However, the advent of the BMEMS has caused us to re-evaluate communications alequacy and reliability in this area. The BMEMS contractor will study this route to determine if the existing CAA facility can be augmented to the required capability and reliability or if new facilities are required. In either case, all user's for this route will be considered.

For your information, the combined AT&T and ACS cable from Seattle to Skagway is subject to considerable and lengthy outage. The reliability factor for both the submarine and Alcan routes will be studied under the BMEWS survey.

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3. PROPOSAL: Construction of alternate facilities to Aleutian extension of DEW line (Project STRETCHOUT)

SUGGESTED METHOD: Provide FPIS circuit from western terminus to Alaskan mainland (White Alice), and coordinate Navy and Air Force systems.

OPINIONS, ACTIONS TO DATE AND STATUS:

The need for an alternate communications system, of the type proposed, has been recognized. The Dev Project Office has been instructed to study this proposal and to recommend the most feasible solution. DEMPO has also been asked to furnish cost estimates. We agree that the configuration of Navy and Air Force circuitry in this area should be coordinated. All previous queries from this headquarters to CINCONAD have resulted in the opinion that no tie-in is required for Air Defense purposes. The Alaskan Air Command, however, has expressed strong desire to crossconnect the Aleutian Sector to Adak to facilitate air movements, weather, etc. This matter should be re-opened for consideration and recommendations should be made to this headquarters. It is recommended that either CINCNORAD or the Air Defense Command, in coordination with CINCAL and AAC, evaluate this requirement and present a proposal.

4. PROPOSAL: Installation of repeat-back equipment to DEW rearward telling circuits.

SUGGESTED METHOD: Comnect southern terminals back to reporting station, using available equipment and channels.

OPINION, ACTIONS TO DATE AND STATUS:

This action is concurred in.

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 PROPOSAL: Establishment of communications monitor and control point in Dawson Creek area.

SUGGESTED METHOD: Establish a control station to monitor information flow and to re-route if necessary. This envisions use of the Mid-Canada line for alternate routing.

OPINION, ACTIONS TO DATE AND STATUS:

This proposal should be very carefully evaluated. Also, it should be held in abeyance pending the outcome of studies to be performed by the BMEWS contractor. It is not known at this time whether or not the Mid-Canada communications routes are capable of expansion. With the planned installation of tropospheric scatter systems in Canada in support of the SAC Canadian Tanker Bases, and in support of BMEWS, it may be that the installation of automatic trunk finding equipment will be the best answer to the problem of southern routing. This problem will be kept in mind during all studies to arrive at reliable southerly communications routes.

158

PROPOSAL: Improvement of Pole Vault to DEW Communications.

SUGGESTED METHOD: Expand, reggedize and improve the Pole /ault System.

OPINION, ACTICLE TO DATE AND STATUS:

0

The need for improding Pole Vault is recognized. Punds for this purpose were untained in the FY-19 Budget Estimate. The original thought was that improvement was required to support DEWDROP and Bastern Extension of the Dewline. The advent of the BWEWS site at Thule has added emphasis to this requirement. We now proceed that the BWEWS contractor will perform this work as a part of the BWEWS requirement.

158

7. PROPOSAL: Support of Proposed FOX-Churchill Tropospheric System (DEW to FCL).

SUGGESTED METHOD: Install Tropo link from FOX to either Knob Lake to Churchill.

OPINION, ACTIONS TO DATE AND STATUS:

This system was originally programmed for FY-59 in support of the SAC Canadian Tanker Bases. It is now planned to implement it as a part of the ENEWS. It will interconnect at FOX with another Tropo system between FOX and Thule. All users will be considered.

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14 April 1958

SUBJECT: Operational Responsibilities Concerning the Land-Based DEW Line

TO: Commander-in-Chief North American Air Defense Command Ent Air Force Base Colorado Springs, Colorado

- 1. This is an Executive Agency letter. Reference your letter, subject as above, dated 17 February 1958, attached. The sense of the presently approved CONAD Terms of Reference is that CINCONAD has operational control of the land-based portion of the DEW Line. Further, the proposed NORAD Terms of Reference as approved to date confirm this fact.
- To provide a better capability to maintain an operational DEW Line and to solve a unilateral Air Force problem, the USAF designated a single agent to provide operation and maintenance of that portion of the DEW Line extending from Cape Lisburne, Alaska to Cape Dyer, Baffin Island, and subsequently to the east coast of Greenland. In assigning the Air Force responsibility to the Air Defense Command, there was no intent to reduce CINCNORAD's (CONAD's) degree of operational control or the "responsiveness" of the system. The contrary is actually the fact.
- 3. CINCNORAD clearly has operational control of the Cape Lisbourne-Cape Dyer portion of the DEW Line in the same manner as other air defense elements. Commander, Air Defense Command, is responsible for operation and maintenance of the Lisburne-Dyer portion of the DEW Line. ADC's operational control involves not only forces assigned directly to him but also forces and real estate assigned to the Alaskan Air Command.
- h. (UNCLASSIFIED) It is considered that no change in the present instruction is necessary since your operational control of the land-based portion of the DEW Line is not in anyway superseded.
- 5. (UMCLASSIFIED) This letter is classified SECRET to protect advanced planning information.

FOR THE CHIEF OF STAFF:

/s/t/ WILLIAM H. TURNER
Lieutenant General USAF
Deputy Chief os Staff Operations

17 FEB 1958

MOOPR.

Operational Responsibilities Concerning the Land-based SUBJECT DEW Line (U)

Chief of Staff, United States Air Force TO: As Executive Agent for WORAD Washington 25, D. C.

1. It is noted that the Commander, SAF Air Defense Command, has been given operational control of the land ased DEF Line, effective 15 February 1958, by a letter from Readquarters USAF, subject: "Assignment of Operational Control and Contract Administration of the DEW Line," dated 17 January 1958.

2. In accordance with the JA approved forms of Reference for NORAD, it is essential that CIRCLEM exercise operational control over the land-based portion of marning systems that provide the means of alerting the North American forces. Opera-tional control will be exercised through designated subordinate NORAD commanders. This construction of an assignment of responsibility to USAR Air Defense Command for management to include contract administration, technical centrol, manning and operation. USAF ADC will also be directed to prepare, for NORAD approval, paintardised operational procedures for the entire PEW

3. In order that the responsibilities of various commands concerned may be clarified, it is requested that action be taken an to revise the responsibility of the Commander, ISAT Air Defence Command, in accordance with paragraph 2 above.

FOR THE COMMANDER-IN-CHIEF!

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MARSHALL S. CARTER Major General, USA Chief of Staff

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3 1 MAR 1958

SUBJECT: Distant Early Warning Line (U)

TO:

Commander UBAF Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. The USAF/RCAF Operations Plan, 1 June 1956, states the general operational concept of the Distant Early Warning Line as: "Tactical warning will be provided by a system capable of detection and identifying an enemy attack after it has been launched, in sufficient time to aid in retaliatory and survival actions.

- 2. The North American Air Defense Command, responsible for . air defense of the North American Continent, has in part based its concept of operation on the warning to be provided by the DEW Line.
- 3. CINCHORAD, in aiding the retaliatory force of CINCSAC, has agreed to the passing of "Boah's Ark" messages so that this force can be airborne prior to the receipt of a formal execution order and not be subject to destruction on the ground.
- 4. ADC USAF, responsible for the operation of the DEW Line, is directed to accomplish the following tusks:
- u. Detection and identification of all air-breathing vehicles penetrating the DEWIZ. In this connection, the vehicle must be detected and then identified as friendly or of a type possessed by the enemy. The "unknown" must be eliminated.
- b. Providing differentiation between single and raid type formations crossing the DEWIZ. This includes tracks that split while in the DEWIZ.

c. Rapid transmission of information to and from the DEW Line to AAC, NORAD, and RCAF ADC.

d. Rapid transmission of "Souh's rk" messages to Strategic Air Command sircraft.

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HOCOP-T, Eq BORAD, Subject: Distant Early Warning Line (U)

e. Providing navigational assistance to friendly aircraft

FOR THE COMMANDER-IN-CHIEF:

MARSHALL S. CARTER Major General, USA Chief of Staff

M/R In a conversation between Gen Alness and Gen. Grant, DCS/O USAF ADC, Gen Grant requested that NORAD direct ADC to accomplish the functions that NORAD requires from the DEW Line. This letter outlines those tasks.

RETYPED DUE TO MINOR ADMINISTRATIVE CORRECTION.

V. E. MATTESON

L/Col., USA Asst Chief, Tactics & Tech. Div

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Operational Control of DEW Line (U)

TO: NOOOP

FROM: MOCOP-T

DATE 17 April 1958 COMMENT #1 Maj Pass/2078/bkm

1. References:

- a. Letter from Headquarters ADC to Director of Operations, Headquarters UEAF, dated 2 December 1957, subject: "Command Responsibilities for the DEW Line."
- b. Letter from Department of the Air Force to Commander ADC, dated 17 Jenuary 1958, subject: "Assignment of Operational Control and Contract Administration of the DEW Line."
- c. Letter from Hesiquarters NORAD to Chief of Staff, USAF, dated 17 February 1958, subject: "Operational Responsibilities Concerning the Land-based DEW Line (U)."
 - d. Paragraph 6, Proposed Revised Terms of Reference for NORAD.
- 2. In paragraph 8 of reference a., ADC recommended to Headquarters USAF that their headquarters be given unified operational control of the whole DEW Line. In paragraph 2 of reference b., Department of the Air Force approved ADC's request, and on 15 February 1958 ADC assumed responsibilities for operational control of the Cape Lisburne-Cape Dyer DEW Line. However, in the same letter, ADC was denied the right to establish a standard identification zone, to include Alaska, for the whole DEW Line. Alaskan Air Command was advised of these actions by the Department of the Air Force. In paragraph 2 of reference c., this headquarters requested that the Executive Agency revise their decision relative to operational control by ADC. We concurred in the assignment of responsibility to the USAF Air Defense Command for management of the DEW Line to include contract administration, technical control manning, and operation. An answer to this letter has not been received as of this date.
- 3. Faragraph 6, Revised Terms of Reference for CINCHORAD, is an attempt on CONAD's part to bring the DEW Line officially under the operational control of this headquarters. The statement as appears herein, was not included in CONAD's Terms of Reference, and in accordance with USAF-RCAF Operations Plan, 1 June 1956, operational control of the DEW Line was officially under the control of the Alaskan Air Command and ADC until publication of reference b.
- h. In view of the above, there is no question but that USAF Air Defense Command now has operational control of the DEW Line.
- 5. It is the opinion of this Division that although the Department of the Air Force gave Air Defense Command operational control of the land segment of the DEW Line, they further complicated the situation by denying ADC the right to establish standard identification procedures and identification zones for the

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Operational Control of DEW Line (U) (Cont'd.)

entire DEW Line including the Alaskan segment. If ADC is to operate the Line in response to the needs of CINCNORAD, they must have authority to control the establishment of all operating and identification procedures with no reservation.

6. It is believed that no action should be taken on this subject until answers to letter (reference c.) and NORAD Terms of Reference are received. NOOPR has primary action on these items.

4 Incls:

1. Ltr fr Hq ADC to Hq USAF atd 2 Dec 57

2. Ltr fr Dept of AF to Com ADC dtd 17 Jan 58

3. Ltr fr Hq NORAD to Chief of Staff, USAF atd 17 Feb 58

4. Revised Terms of Reference for NORAD

/s/t/ VICTOR E. MATTESON
Lt. Colonel, USA
Acting Chief, Tactics & Techniques Di

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haturence is onde to jour letter lated %6 Vebruary 17 5 and to Neich 100 concerning the BEN Line.

The present concept on Dir Lang notice to which you blev e. in our letter in Ferniery to to provent o. deter specific, in order o matured but him intentity. A tores with such a care would also be nowd to partit identification of questionable tracks detected penationing the Bill Line and sould be engloyed in a combat role se well the tagained. Of course, it is resident that you alls not have this empassing until , are equipped the me alreredt such a the F-lot. The F-lb interceptor, witch & youcured, a especial to be even ble in tally in 124, should a ab a co perform these wishings. The First i enclet send to have a 100 received still radius o, setion or Mace i and a surface to . We fear combe. capability. It is a no expected . have a superior fire control system with a rada, an e capability between and it rancica, miles, Purchar, did such tapablilies, extensive increases to ground envir muent and it comes on, not nuce savily to required. The veries roles within the empetitions of the Falid are not hole, soudied, and as ill be advised of the proposed employment of this attended that your command when a TORAL concept bas been apprived.

I can appraed at the concern you have expressed in your letter of to March relative to the operational responsibilities of the DES line. A reply to the NORAD letter of 17 February 1:55 on this subject has just been received and states that CHRISTAN has operational control of the Cape Lisberns-Cape Dyer portion at the DES Line and that the Communion. Air Defence Communi is responsible for the operation and maintenance of this line. I plan to exercise my operational control of stating the operation be the trace must concept to be implemented. Also, I till expect the Communion. Air Defence Communion to supervise the operation and maintenance of this line with due consideration to your operational requirements. In view of the above, I can not a pass at this time with your proposal to divide the DES Line operational natural responsibilities.

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Lt Gen Armstrone

Reference is made to your commence on identi loation. I = -e that the DEW Line within Alerke should provide the intormation mouded for the air defense of Aleska providing it can also require to NORAD the information requires by the tanderdized identification to NORAD the information requires by the tanderdized identification system applicable to the mattre land-based DEM Line. If this system applicable to the mattre land-based DEM Line. If this cannot be accomplished, clumies to either system will have to the made. However, any proposed than as which may affect the pe a tions requirements for the air defense of Aleska will be considered with your headquarters and will require MESAB approval.

Reference is made to page 2 of your letter of 10 Marks.
Although NORAD does not have any logistical responsibilities concertion the DES Line. I do not agree that we should divide the DES Line supply support. These responsibilities have been vested in Alk and supply support. These responsibilities have been vested in Alk and supply support. These responsibilities have been vested in Alk and supply support. All the present time, ADC is in the process of developing a PEN Line menual, replacing the present logistics plan. The new logistics support concept will phase to logistics plan. The new logistics support concept will phase to land supplies the concept, all DEW Line supply requirements will be centimeted by the contractor. House supply requirements will rhan be levied directly on ANC depote supply requirements will than be levied directly on ANC depote and/or other appropriate military agencies in coordination with and/or other appropriate military agencies in coordination with and/or other appropriate military agencies in coordination with and/or other appropriate military agencies in coordination with

with regard to the armuel smallft and periodic sirlist for stations LTZ A to BAR A inclusive, according to Meadquerters ADC the related plans and agraements conform to your recommendations.

Sincerely,

S. S. PARTRIBOR General, USAF Commender-in-Chief

Condr. SHAF EM

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MEMORANDUM FOR RECORD: In two letters to General Partridge,
Lt General Armstrong, CINCAL, requested clarification of DEW Line
policing mission and recommended CINCAL be given authority to
exercise operational control of the Alaskan portion of the DEW
Line and to furnish logistical support to this part of the DEW
Line. CIMENORAD's reply defines DEW Line Volicing considered as
one of the F-108's possible functions and monconcurs in the two
recommended proposals.

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11 Feb 1958

SUBJECT: Termination of Early Warning Operations Work Group

TO: Chief of Staff, United States Air Force
As Executive Agent for NORAD
Washington 25, D.C.

- 1. The Early Warning Operations Working Group (EWOWG) has completed its intended task of preparing for Headquarters, USAF the operations plan for the land-based DEW Line and Mid-Canada Line.
- 2. It is therefore recommeded that the EWOW be dissolved. This action was also recommended to Headquarters, USAF by the EWOWG as a result of its last meeting which was held on 19-22 November 1957.

FOR THE COMMANDER-IN-CHIEF:

MARSHALL S. CARTER Major General, USA Chief of Staff

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MEMO FOR RECORD: Self-explanatory

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DEPARTMENT OF THE AIR FORCE HEADQUARTERS UNITED STATES AIR FORCE WASHINGTON 15, D. C.

op/65

28 MAR 1958

SUBJECT: Termination of Early Warning Operations Working Group

TO:

Commander-in-Chief North American Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

- 1. (UNCLASSIFIED) This is an Executive Agency letter. Reference your letter, subject as above, dated 11 February 1958. This Headquarters concurs in principal with your request to dissolve the EMMG.
- 2. The EMONG has requested ADC to prepare and submit recommended changes to the Joint RCAF-USAF Operations Plan for the DEM and Mid-Canada Lines that will make the plan cover the Greenland Segment of the DEW Line. Approval of these recommendations will complete the intended task of preparing operational plans for the Land-Based DEW Line and the Mid-Canada Line.
- 3. (UMCIASSIFIED) At such time as the above action is completed this Headquarters, with approval of Hq RCAF, will take the necessary action to dissolve the ENCHG and assign planning responsibilities for Early Warning Systems to MCRAD.

FOR THE CHIEF OF STAFF:

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T. C. MUSGRAVE, JR. Major General, USAF Acting Assistant Deputy Chief of Staff

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CINCHORAD

OF SURVEILLANCE AND TACTICAL DATA BETWEEN LAND-BASED DEW AND MCL RADARS, CONNECTIONS TO SAC ACTIVITIES IN CANADA FOR ALERTING OR MADW PURPOSES; IN GENERAL, THE TOTAL OPERATIONAL CIRCUITRY OF THE CANADIAN AND ALASKAN COMPLEXES WHEREIN NORAD RESPONSIBILITIES FOR THREAT WARNING AND SUBSEQUENT TACTICAL AIR DEFENSE ACTIONS ARE INVOLVED. THEREFORE REQUEST YOUR HQ AFFORD THE OPPORTUNITY FOR NORAD REVIEW OF PACKAGE MENTIONED ABOVE PRIOR TO ANY FINAL INSTRUCTIONS TO ENGINEERING AGENCY AFFORDING IMPLEMENTATION GROUND RULES.

FILE NO:LC

M/R Not required.

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JOINT MESSAGEFORM TOD'S WILL SERVICE - --PHECEDENCE ACTION PRINTITY FROM: CI "CNORAD COMOPYOR HAMILTON AND CALLY TO From No OP-T X057 . ATTENTION: COC. Reference telephone conversation 15 April 58, between Capt. Shaner, your nead martors and Major Fuss, this headquarters. The following massa a from CINCPAUFIT is forwarded for your information. Q'CAB -CT CON D ENT AFB 092015Z May. Cice CHOPR-R My 021 passed by CINCPAC Admino 119515Z may with notal. CINCPACWIT plan for adjustic Pacific Seaward Swiensier Tw his . from 1 July 58 until Alentian segment DCW Line parational amproved by CNC as fols: A. Forces avail. 1 July 58. 15 FFR and 25 WV 2. Continued Des build-up to reach 18 about April 59. Plan 5 L.R stations in porthern sector commencing about 5630 North 15615 'est them SSW toward Midway. Spacing about 2m Mi. WV 2 oper out of Midway in race track nattern to overlan ER Line about 100 M. Finn occupy max. WR DEP Stations at all times computable with MR 23302 58 DRR avail., operating on 1 to 1 at sea import ration and max. Apr. STREET, NO. 02-7 Maj hiss UNCLASSIFIED

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CINCNORAD

2h days at sea any one time. Presently expect AVG h DER on station.

AVG h-plus WV 2 on station with random time/Dist. gaps between acft.

Actual DER Line origin, station spacing and WV 2 track to give max.

detection probability subj. result COMBARPAC training barrier OPNS

being conducted up to 1 July 58. B. When Alautian segment operational will shift northern and west maintaining 5 DER on station between Midway and UNMAK (providing 18 DER avail. at that time) with AVG h plus WV 2 KK race track pattern making contact with land based radar coverage at north and. Both interim and ultimate barriers can be augmented in emergency. UNQUOIS.

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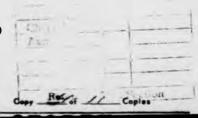
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IFIED MESSAGE when filled COPY OF INCOMING CL Reproduction of this message in whole or in part is prohibited without approval of CONAD Adjutal SEE CRYPTO SECTION BEFORE DECLASSIFYING 307 NOROIA A-122-05 1: 0 301052 FIL C DICPACELT CI CHOMAD ENFO COMMAND DECEMBER CENTERNAL CONTRACTOR CTALL SOUTH files couch, total, and and a Cit COFS USAF 18-1765 CONDARPIN CEICCAL DIDLUGES PAC CICPAC PARA A CRICFACTLY 1995222 JAN. FORCE ONAIL -1
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CINCNORAD

COMCEWOR HAMILTON AFB CALIF

INFO:

CINCPAC PEARL HARBOR T H

COMBARPAC OAHU T H

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ROM NOEPR-R X025

REFERENCE CWOCE-C CW 8S-5025. NOTAL. A NORAD REQUIREMENT EXISTS
FOR FULL-PERIOD FULL DUPLEX OPERATION FROM CFWCR TO COMBARPAC. THIS
REQUIREMENT HAS ALWAYS BEEN VALID, HOWEVER, DURING INITIAL NEGOTIATIONS A DUPLEX CIRCUIT WAS NOT AVAILABLE. REQUEST YOUR HQ EFFECT THE
NECESSARY COORDINATION WITH CINCPAC AND COMBARPAC TO ASSURE EARLY
OPERATION OF THEIR PROPOSED DUPLEX CAPABILITY.

MAJ DL FAULKNER 2040 7 Mar 58 X8-3261

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M/R Not Required

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March 58

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MAJ DL FAULKNER

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THE ATLANTIC COMMAND HEADQUARTERS OF THE COMMANDER IN CHIEF NORFOLK 11, VIRGINIA

JU10/55

10 FEB 1958

From:

Commander in Chief, Atlantic

To:

Commander in Chief, North American Air Defense Command

Subi:

Air Defense Warning

Ref:

(a) GINGNORAD ltr of 17 Jan 1958

- 1. Reference (a) requested support in accomplishing certain action to assist in providing the basis for adequate warning of possible air attacks against the North American Continent.
- 2. Since I January 1958 the number of aircraft providing low coverage on the Argentia-Azores line has been increased from 2 to 3 and will be further increased to 4 in April of this year.
- 3. All practical action will continue to be taken to improve capabilities in the Argentia-Azores Barrier. At present technical limitations of detection equipment available for installation in ships and aircraft preclude accurate estimates as to when the Atlantic extension could be expected to provide the coverage specified for the land based DEW line. In this regard, the detection capability of ships and aircraft is still quite marginal above 45,000 feet. However, a capability of 60, 000 feet is expected in the DER equipment by 1960.

24 Mard

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Page 1 of 1 Page

ad #1

. N. N. X8. 2076



17 JAN 1958

SUBJECT: Air Defense Warning

Commander-in-Chief, Atlantic 70: U. S. Maval Base Morfolk 11, Virginia

1. Attached is a copy of a letter which I have submitted to the JCS, outlining certain actions which must be implemented in order to provide the basis for adequate warning of possible sir attacks against the North emerican Continent.

2. It is my sincere belief that so must have a fully operational early warning system extending from Midway to the Amores across the top of the North American Continent, at the earliest practicable date. The success or failure of our efforts to defend the United States and Camada may well depend upon the effectiveness of this line in detecting and reporting hostile aircraft or missiles.

3. Your full support in accomplishing the action outlined in paragraph 9.2.(6), ettached letter will materially assist in the attainment of this vital objective.

E. E. PARTRIDGE General, USAF Commander-in-Chief 2130 10 Jan 58

COMADO

COMMAYFORCOMAD CG ARAA COND RCAF LIAISON

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/MY 202147Z DEC 1957 NOTAL DIRECTED THAT

4 AIRCRAFT BE CONTINUOUSLY AIRBORNE ON THE ATLANTIC BARRIER
COMMENCING IN APRIL 58. THIS ACTION WAS PREDICATED ON MINIMUM FORCE
REQUIREMENTS TO DETECT HOSTILE AIRCRAFT MOVEMENT TOWARD CON US IN
TERMS OF RAID RECOGNITION. PARA TO TEST THIS THESIS UNDER OPERATIONAL
CONDITIONS, DESIRE YOU CONDUCT A SERIES OF EXERCISES TO DETERMINE
CONDITIONS, DESIRE YOU CONDUCT A SERIES OF EXERCISES TO DETERMINE
BARRIER CAPABILITIES TO RECOGNIZE AIRCRAFT RAIDS OF SIGNIFICANT SIZE.

OF STUDY 588 REFERS. EXERCISES TO BE CONDUCTED IN ACCORDANCE WITH
MY SER 201528 P 33 OF 17 DEC 1957 NOTAL WILL ASSIST IN DETERMING
BARRIER CAPABILITIES.

BT

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PRIORITY

ACTION: COLOR COOPO, NAVYOROGNAD X8-5363

IN ANSUER TO TELEPHONE INQUIRY 231745R X THREE AIRCRAFT AIRBORNE CONTINUOUSLY IN ATLANTIC BARRIER X ON 33 APRIL NUMBER INCREASES TO BT.

CFN 231745R 35
24/G16EZ APR RDEKZGR

PLICATE

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RATIONAL TILE

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AIR DEFENSE COMMAND

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IN TEPLY BEFOR TO ADDOD-O

15 JUN 1958

STATES (U) Operational Flan for Greatlend Jagment (Interim)

ti temanter

Continental of Defense Gordand Fat Air Force have Colored Springs, Colored

1. The interia Operational Flow for the Grandland Extension (DENUZart) has been prepared per recess of Beaderwriters DEAF and is subwitted for your review and consists prior to submission to BEAF.

2. The operational concept for integration of the Greeniam Extension into the Dictar Farly barding System is to perition rader sections on Greenland proper to link with a proposed early wreing line through looked to the Saires singular and to Join the Atlantic MR Line from Cape Forewell to the Asores. Latest information received from USAF indicates that as of 18 March 1958, overmental agreement authorized establishment of four stations at agreed tites in Greenland.

 Servete action has been initiated by this acadque term to present through the Joint DE-Demish Commission for the Greenler Extension the identification problem to the Danish authorities (reference Al - Secret magazage to Chief, CEM/MA Project Office, ADOR-O 0149, 10 Apr 58).

4. As the Interior Plan is presently being reviewed by Staff Scotions of this headquarters, request your compents be returned within ten working days of receipt. Attached copy may be retained for your files junding final judication of the Plan by this headquarters.

TOS THE COMPANIERS

1 Incl apt Ope Pina for Greenland Segment (Interim). Jose H. SCHOOLY Colours, SEAF Director of Operations Deputy for Operations

ces Chief, DeN/va PC, 220 Church St, MYC

25 May 58, Secret, 2 cyo

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Condr. 15(1st Support Ora (DTA) c/o FFO. St 17 & Carden State Pareness NJ

DUPLICATE

HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND

ADCOT-0, to ADC, 5 June Boyor Adels SPRINCE, COLORADOR al Plan for ENT AIR FORCE BASE Greenland Segment (Interia)

1st Ind

11 JUN 1955

Hq Continental Air befense Command, Mt Gir force Base, Colorado Springs, Solorado

To: Commander, Air Defense Command, int in force Base, Colorado Springs, Colorado

- 1. This headquarters has reviewed the attached Interim puration rlan for the creenland comment, Land based in line.
- 2. This headquarters concurs in the ACC Han and is orepared to assist your headquarters in any way possible in establishing the standard identification criteria for wis say ment of the " .. idne.

THE PERSON AS A PROPERTY :

1 Incl ADC ms Plan for Treenland forment (Interi :) 23 May 59 (1 coy w/d)

WA ! IV T. ALE CE Hajor General, MA 108/Plans | Onerations

M/R Representatives of this office have worked with ADC personnel in the development of the attached Interim Plan for the Land Based Segment of the DEW Line. Headquarters USAF, through Air Defense Command and the DEW Project Office, has retained development and programing responsibilities for the Greenland Extension. The joint U.S.-Danish Commission for the DEW Extension was established by Headquarters USAF with the concurrence of the State Department, and retain the prerogative of reviewing all inputs to this Commission. In discussion with USAF and ADC there appears to be no problem in securing agreements with the Danish government for the establishment of the Daw Identification System. It has not been determined at this time in what U.S. and Canadian publications these identification procedures will be incorporated.

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HEADQUARTERS
AIR DEFENSE COMMAND
UNITED STATES AIR FORCE
Ent Air Force Bese
Colorado Springs, Colorado

23 May 1958

QUILINE

OPERATIONAL PLAN FOR GREENLAND SEGMENT (INTERIM)

SECTION	TITLE
I	Foreward
II	Command Responsibility
III	Mission
IV	Concept of Operations
٧	Description of System
VI	Operational Procedures
	A. General
	B. Surveillance Procedures
	C. Identification
VII	*Logistic Support

"To be furnished by ADC Materiel

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SECTION I

FOREWORD

This document is developed as an interim operational employment plan for incorporating the Greenland Extension of the land based DEW Line into the North American Early Warning System. The plan does not include the site in Southern Greenland required for the Northern terminus of the Atlantic Barrier (Farewell-Azores).

When planning for the manning and operation of the Greenland sites is finalized, this plan will be incorporated into the current operations plan for the DEM_MCL systems.

As a planning document, the format of this plan does not of necessity conform to that of a formal operations plan. In its present form, it is complementary to the DEW-MCL Operations Plan of 1 June 1956 or any revisions thereto.

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COMMAND RESPONSIBILITIES

Command responsibilities for the Greenland extension of the DEW system will be similar to those outlined for the Lisburne-Cape Dyer Segment and are essentially as follows:

- a. <u>COMMANDER-IN-CHIEF NORAD</u>: Operational control of the DEW system is vested in the Commander-in-Chief, North American Air Defense Command.
- b. COMMANDER ADC: Operational management and contract administration for the DEW system are the responsibility of the Commander, Air Defense Command.

0

SECTION III

MISSION

The mission of the Greenland extension to the land based segment of the DEW System is the same as that of the land-based portion of the DEW Line which is:

- s. To identify inbound airborne objects entering or operating within the DEW Line Identification Zone.
- b. To provide the air defense commanders with information on all inbound objects penetrating the DEW Identification Zones inbound and report them as either "friendly", "unknown" or "hostile."
- c. To identify and flight follow all lateral traffic operating within the DEW Identification Zones.
- d. To provide radar advisory service to all air traffic operating in support of the DEW System; or any other air traffic authorised to operate in or through this area.

SECTION IV

CONCEPT OF OPERATIONS

- 1. The operation of Greenland extension will be identical to that of the land based segment of the DEW system in the detection and reporting of airborne objects and air-breathing vehicles within surveillance coverage of the radar equipment progressed for installation in accordance with current plans. This extension will differ from the land based segment of the DEW system only in its detection capability at low levels since no doppler sircraft alarm equipment is programmed.
- 2. The Greenland extension will consist of four surveillance radar stations located at intervals of approximately 130 MM across Greenland along the 66° parallel. Stations are to be located on the East and West Coast of Greenland, and two on the Ice-Cap. The four stations are to be the eastern suxiliary stations for the DYE Sector under the operational control of the Cape Dyer DEW Main Station. Detection data on all inbound penetrations will be transmitted to DYE DEW Main Station for the identification function.
- 3. Identification of all inbound and lateral air traffic operating within the Identification Zone for the Greenland extension will be similar and compatible with the identification system established for the land based segment of the DEW system.
- 4. The communications requirements for tying in the Greenland stations to the DIE Main Station will be essentially the same as those in use throughout the land based segment of the system. Point-to-Point UEF tropospheric scatter equipment will be employed in the Greenland extension DEW system to provide operational, administrative, weather, maintenance, emergency and disaster teletype and voice communications identical to the present DEW system. Air-ground communications will be UHF and VHF with HF back-up.
- 5. All other operational concepts expressed in the current DEM-MCL operations plan will be applicable to the DEM Greenland extension.

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SECTION V

DESCRIPTION OF THE SYSTEM

- 1. The Greenland extension will provide four suxiliary stations each programmed for a seerch radar, lateral communications and sirgerand communications equipment. Radar equipment IM/FPS-30 will provide coverage from line of sight to above 90,000 feet. Detection data will be passed laterally to DYE DEW Main Station via multi-channel tropospheric radio relay system installed for the Greenland extension.
- s. The station located on the west coast will be in microwave communication with the existing military facilities and units at Sondrestrom Air Base. To effect utilization of existing Sondrestrom facilities to the best advantage of the DEW Greenland extension, use of the high powered beacon and micro-wave communications at Sondrestrom will be programmed in lieu of normal navigational equipment and facilities located at other DEW auxiliary stations. However, a standard DEW Line beacon will be installed at Holsteinborg for emergency purposes.
- b. Distance from the vestern auxiliary station to Cape Dyer is approximately 205 mautical miles. The long range tropospheric communications equipment (AN/FNC-47) will be installed between these two terminels and provide a combination of 36 voice and teletype communications channels.
- c. Lateral communications, AM/FRC-39 equipment, between stations located on Greenland proper will provide combined 24 voice and teletype channels to accommodate operational, administrative and maintenance requirements for the Greenland extension similar to the land based system.
- The four auxiliary stations on Greenland will be manned and operated by civilian contractor personnel. Programming for civilian personnel will wary as to:
- a. <u>Coastal Stations</u>. Due to type of installed micro-wave and terminal UHF equipment and requirement for logistical support, total complement of civilian personnel for coastal stations will be thirty men each.
- b. <u>Ice-Cap Stations</u>. Due to type of installed equipment and reduced operating and maintenance requirements, the total complement of civilian personnel will be sixteen for each Ice Cap station.
- 3. Equipment and facilities for the Greenland extension, other than those indicated herein, will be essentially the same for suxiliary UNCLASSIFIED

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stations, less AN/FPS-23 radar, as indicated in the current DEN-MCL Operations Plan.

- a. Detection Equipment: AN/FPS-30 search radar.
- b. Radio Communications:
- (1) UHF Tropospheric Scatter Communications. AN/FRC-47, Cape Dyer to Holsteinborg, 36 channels.
- (2) UHF Tropospheric Scatter Communications. AN/FRC-39, Holsteinborg to Kulusuk, 24 channels.
- (3) Micro-wave communications, Holsteinborg to Sondrestrom Air Base, 12 channels.

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Section Y

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SECTION VI

OPERATIONAL PROCEDURES

A. GENERAL

1. The four Greenland Extension stations are to perform the normal functions of auxiliary DEW stations, less operations associated with doppler aircraft alarm equipment. Designation and general location of Greenland stations are:

a. DIE 1 - Holsteinborg - 66°37'H - 52°45'W

b. DIE 2 - (Site 1)** - 66°30'N - 46°30'W*

e. DYE 3 - (Site 2)** - 65°45'N - 43°25'W*

d. DYE 4 - Kulusuk - 65°31'N - 37°10'W

*Mot final *To be replaced with geographical name

B. SURVEILLANCE PROCEDURES

- Radar Surveillance, early warning detection and reporting will be in accordance with the current DEW-MCL Operations Plan as amended.
- a. <u>Bubsector Areas of Responsibilities</u>. For DIE east to include Greenland auxiliary stations, subsector areas of responsibility are bounded by a line drawn parallel to the meridians as follows:
 - (1) 'min: East boundary: 57°00' meridian.
 - (2) DYE 1: From DYE Main East Boundary to 49°30' meridian.
 - (3) DIE 2: From DYE 1 East Boundary to 45000 meridian.
 - (4) DYE 3: From DYE 2 East Boundary to 40°10' meridian.
 - (5) DYE 4: From DYE 3 East Boundary to the limits of radar coverage toward the east.
- b. For normal surveillance procedures and detail operations requirements, reference is made to:

- (1) ADC Interim Instructions for DEW Line Operations, 1 April 1958, Taba B, C and D.
- (2) USAF-RCAF Operations Plan DEW-MCL, 1 June 1956, as amended, Section VIII, Part A, subparagraph 3 (Main and Auxiliary Surveillance Room Operational Procedures) except Fluttar Detections.
 - c. Station Designators and Track Numbers (DYE Sector).

STATION	DESIGNATOR	ELOCK NUMBERS
DYE Main Station	LZ	61-80
FOX 4	LT	21-40
FOX 5	LU	41-60
DYE 1	LV	81-99
DYE 2	LW	1-20
DYE 3	LX	21-40
DYE 4	LX	41-60

C. IDENTIFICATION

- 1. Ceneral: Identification concept, procedures and criteria discussed in this plan are designed to standardize DEW Identification System for the entire Line; however, the identification criteria and Identification Zone boundaries for the DEW Greenland Extension have not been finalized nor has concurrence and agreement from Danish Government officials been received.
- 2. Identification Concept: Identification of sircraft penetrating or operating within the DEWIZ in Greenland will be accomplished by correlation of a ground filed flight plan with air-ground confirmation to a radio beacon station prior to penetration. This is the same as established for the Canadian portion of the DEW Line,

a. Flis

- of aircraft movement information from the Goose AMIS to DYE DEN hand Station Data Center for the Greenland (1) ransmi-Extension area is prescribed by procedures of the USAF-RCAF Operations Plan DEN-MCL, 1 June 1956, as amended.
- b. Position Reports. Refer to Section VIII, 1e, DEM-MCL Operations Plan, 1 June 1956.
 - e. Identification Procedures: Refer to:
 - (1) TAB A, ADC Interim Instruction for DEW Line Operations,
- 1 A 19
- (2) Section VII, Part A, DEW Line, DEW-NCL Operations Plan, 1 was 1950, with the exception of code-word maneuver. UNCLASSIFIED

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DEW Line Extension Across Greenland

MORCS

MOOPO

6 Peb 1958 Maj Knott/wdm/2078

 The following is a review of the status of the DEW Line Extension across Greenland as of 5 February 1958. Information for this resume was obtained from Major Goodrich, ROBIC, and B/L Anderson, ADC ADCOP.

2. Present Planning:

- a. The plan calls for four stations across Greenland with a firth station on the southwest coast. Sites are Holsteinberg, two auxiliary sites on the ice cap, and a station at Ikateq. The fifth station is planned for Eangek Island and would be the high altitude tie-in with the seaward extension to the Expres. (See map attached)
- b. Fund limitations, as late as September 1957, had forced USAF to plan on the basis of funding in FI 1958 for only a two station increment (Holsteinberg and Ikateq) of a five station complex. The siting surveys were to be delayed four to five months. The latest information is that the fund limitations have been lifted.
- c. Aerial surveys and radar sitings for Holsteinberg and Ikateq have been completed. No ice cap surveys have been accomplished, and to date no one has been on the ice cap. Path loss (Tropo Communication) surveys have not been accomplished.

3. Status of Construction:

- a. To date, no construction has been started.
- b. The Corps of Engineers hopes to have the design criteria available this month and hopes to start construction this year. In March 1958, they plan to go onto the ice cap. They would guarantee a "10 year life" if constructed by the Corps. All agencies (USAF, Army, AMC, etc.) are skeptical about this schedule.
- 4. There will be commercial contractors in addition to the Corps of Engineers on this project, but no contract has been let. The major weakness is that no agency is sure that ice cap construction is a sound concept. There appears to be a lack of a firm policy or attitude.
- 5. Expected Completion Date: At the present time, the expected completion date remains Ff 1961; however, since the whole project appears to be in a "state of flux," this date cannot be considered as "firm."

MAJOR General, USAF UNCLASSIFIED

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FROM ADOOP-C _C 149	2.31		
This he will prepare an interim operation	ations plan for the (reenland	
Extension pending a re-write of the	current IFM-M' plan.	It is	
intended to treat the 4 sites in Gree	enland as a part of	te DYE	
Sector, e.g., DYE 1, DYE 2, DYE 3, at	no DYE 4, and include	this ex-	
tension as an integral part of the Co	upe Listurne-Cupe Dye	er System.	
It is desirable that identification	procedures be stangar	rdized with	
those used on the Canadian portion of	f the Line ith Goose	Boy AMIS	
handling the distribution of all fli			
cedures and practices should be the			
the system except in those instances			
ment require specific exceptions. To			
It is essential to determine whether			/C 2/53
ALCOP-0	* SICHATURE		
8/L anderson/md/10 /pr 58	JOHN M. KONGEN		
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CONLIDO

Danish terretory, any instrictions in this regard outle require promulgation by Lermark. It is requested, therefore, that Colonel walter williamson, the U.Ar member of the Joint US-Lermark Commission for the Greenland Segment, present the Greenland identification problem to the Lamish authorities and outlin their views on:

- a. applying the TWIZ regulations to the Greenland segment and having them promulgated by Denmark; or,
- b. Applying some other method of identification that is compatible with the present system.

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SCHEDULED FIGH JUNE TO LATTER FART OF SEPTEMBER THIS YEAR. UPON
COMPLATION OF THIS TEST, YOUR NOW WILL BE IMPORTED OF THE SITES
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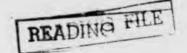
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HEADQUARTERS

CONTINENTAL AIR DEFENSE COMMAND

ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

3 JUL 1958

CORPR-R

SUBJECT: (U) Operational Flan for Orcemland Segment (Interim)

701

Commander USAF Air Defence Command ATTHI ADOOP-E Hot Air Force Hose,

Celorade

Attached serrespondence is forwarded as per telephone convergation

between Major Fauliciar, this beadquarters, and Major Shelten of your more beadquarters.

FOR THE COMMANDER-IN-GUEF:

1 Inel Ltr DBMPO to GOMAD, 23 Jun 58, quam subj. (Secret) F. F. UHRHANE Brig Com, USA DCS/Comm and Kleat

W min w A requiret.

COMMAN ADC CAA Villar Werlkne FEDA 2 July 58 2.41=79)11 SC Team

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MINITED STATES AIR FORCE
AIR MATERIEL COMMAND
ELECTRONICS DEFENSE SISTEMS DIVISION
DESS PROJECT OFFICE
220 Church Street
New York 13, New York

In Reply Refer to:

SUBJECT: (w) Operational Plan for Greenland Segment (Interim)

TO: Commander
Continental Air Defense Command
Ent Air Force Base
Onloredo Springe, Coloredo

1. Reference letter from ADCOP-O, name subject as above, dated 5 June 1958.

2. Commonte to the interim Operational Plane for the Greenland Extension (DEM Rast) are as follows:

a. Section IV, paragraph h - HV air ground is not programed for the Grounland Extension.

b. Section F, paragraph in - It is not planned to install a Wavigational Beacon at Sondreatron under this Project.

c. Section T, paragraph 1b - The types of communication equipment that will be utilized is not firm to date, as this will depend to a great extent upon the results of the path testing. In all probability this will be the AM/FRC-39. In any case the system will only have the capability of 2h voice channels with a minimum of 12 channels equipped for voice or teletype.

4. Section 7: paragraph is - The MI/FRC-39 lateral age two will have the espainility to headle 2h reise channels of which a minimum of 12 channels will be equipped for roise and/er teletype.

e. Section V, paragraph 2 - This Project Office has no direction regarding contractor MaG.

f. Section V, maragraph 35 1 and 2 - Cape Dyer to ... Questoque the AM/FRC-39, with a schimum of 12 equipped channels and a capability of 2h voice channels. Ougstoque to Exhank to Iceland the AM/FRC-39 with a capability of 2h voice channels of midsh a minimum of 12 channels will be equipped.

to Section VI. paragraph A la - The location of Dys 1 is at Gagatogas coordinates on shows.

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3. In addition to the normal detection and communication function of the Greenland sites the system will include a passive detection capability at both Cape Dyer and Qaqatoqaq capable of detecting any sireraft using navagational radar within 200 - 300 miles of either station.

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h. In planning the communication system and procuring charmelising equipment, it is necessary that this office be charmelising equipment, it is necessary that this office be furnished guidance regarding any placed operational tis-in of the iir Force radar system in lealand with the Greenland Extension.

Lt. Colonel, USAF Acting Crief, DEMS Project Office

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JAMES R. GUNN, JR. Colonel, USAF Director of Programming

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JOINT MESSAGEFORM - CONT...JATION SHEET

COMDR ADC

squadron at Webb within station capability on interim basis pending development of FIS facilities, unquote. Request you provide appropriate representatives at Webb AFB 0800 hours 11 Mar 58 to participate in a conference with representatives of ATC and ADC in delineating ADC requirements to be used in development of the plan referred to approve of t

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To: COOOP /87

SUMMARY

- The proposed ADC Manned Interceptor Program through FY 62 supersedes the program reflected in ADCM 27-1, dated 15 February 1958.
- 2. The following is a chronology of the changes to ADCM 27-1, 15 February 1958:
- a. 46th FTS at Dover will move to Webb FY 1/59 and convert to F-89D's instead of retaining F-9kC's and moving to lake Charles FY 1/59.
- b. 27th FIS moves to Grand Forks in FY 4/59 instead of Minot
- c. 438th FIS at Kinross converts to F-106A's FY 4/60 instead of FY 4/59.
- d. B7th FIS at Lockbourne will convert to F-102A's FY 2/60 instead of FY 1/59. The F-102's for the FY 1/59 deployment will be scattered throughout ADC because of non-availability of ground support equipment at this time period. Manned interceptor operations will terminate at Lockbourne FY 3/62 rather than continue through FY 62.
- e. The 332nd FIS at McQuire will convert to F-106A's FY 4/59 rather than FY 3/61. The 539th FIS with F-102A's will move to Minot FY 2/60 instead of to Grand Forks FY 4/59.
- f. The 58th FIS at Otis moves to Lake Charles FY 4/60 instead of Altus FY 3/60. A proposed Phase III Suitability Test of the F-101B Squadron at Otis may be conducted elsewhere because of runway construction at Otis, thus necessitating further reprogramming.
- g. The 76th FIS at Pinecastle will convert from F-89E's to F-102A's FY 1/60 for follow-on conversion to F-106A's at FY 1/60.
- h. The 71st FIS at Selfridge converts to F-102A's at FY 2/59 instead of FY 3/59. The 94th FIS converts to F-102A's at FY 3/59 instead of FY 1/59 for follow-on conversion to F-106A's at FY 3/61 instead of FY 4/60.
- i. The 331st FIS continues in the program for inactivation at FY 4/59 instead of transfer overseas in FY 1/59.
- j. The 2nd FIS at Suffolk converts to P-101B's at FY 4/59 instead of FY 3/59.
- k. The 325th FIS at Truck inactivates at FY 4/61 instead of inactivating at FY 3/62.
- The 337th FIS at Westover with F-104A's continues through FY 62 instead of converting to F-102A's in FY 1/62.

m. The 56th FIS at Wright-Patterson converts to F-104A's in FY 1/59 instead of FY 4/58 and continues through FY 62 instead of converting to F-102A's in FY 4/61.

n. The 86th FIS at Youngstown will inactivate at FY 4/60 instead of FY 2/61.

o. Base I was substituted for Bergstrom in the Southwest and will receive the 322nd FIS from Larson at FY 4/59 and convert to F-102A's.

p. The 93rd FIS at Kirtland converts to F-101B's in FY 3/60 instead of FY 4/60.

q. The 13th FIS at Sioux City will move to Walker with F-86D's at FY 4/59 and convert to F-89J's at FY 2/60.

r. The 329th FIS at George converts to F-102A's in FY 4/58 instead of FY $3/58\, \bullet$

s. The 83rd FIS at Hamilton continues the F-104A's through FY 62 instead of inactivation at FY $\frac{4}{61}$.

t. The 538th FIS at Larson converts to F-104A's at FY 4/58 instead of FY 3/58 and inactivates at FY 4/61 instead of FY 4/60.

u. The 47th FIS at Niagara converts from F-86D's to F-102A's FY 4/58 instead of FY 3/58.

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m. The 56th FIS at Wright-Patterson converts to F-104A's in FY 1/59 instead of FY 4/58 and continues through FY 62 instead of converting to F-102A's in FY 4/61.

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u. The 47th FIS at Niagara converts from F-86D's to F-102A's FY 4/58 instead of FY 3/58.

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CONTINENTAL AIR DEFENSE COMMAND

7 January 1957

MEMORANDUM FOR: DCS/Plans and Operations

SUBJECT:

Conversions from One Type of Aircraft to Another

- 1. As far as I know CONAD Headquarters has never expressed any policy on how conversions of units should be handled either insofar as antiaircraft or fighters are concerned. Perhaps this is a deficiency, and in any event I should like for you to give the matter your attention.
- 2. This subject is brought to mind because of my inquiries regarding the F-102 conversions at George AFB. This changeover was started about April of last year and the first aircraft of the 102 type arrived at George about the first of May. By now some 8 or 9 months have passed and the conversion is not yet completed. In fact, in my opinion, I won't stay in the Air Force long enough to see the day when any F-102 unit will be fully operational. The aircraft itself seems to be a great improvement over the types we have previously used but there is a critical shortage of supporting equipment and I doubt that this situation can be remedied in the life of the aircraft.
- 3. In spite of these deficiencies it is possible for the first squadron; i.e., the 327th at George, to operate some of its airplanes and in fact on the 15th of Jamuary, they are going to undertake the alert duty with the 102. Even the aircraft available are, in my opinion, non-operational. The weapons have never been fired by the people at George and there is no assurance that they could hit anything if they did shoot them. Nevertheless, I concur in placing this squadron on alert because I believe it is expedient for them to get the practice necessary to find out what the aircraft can do in an operational situation.
- 4. However, we are continuing to convert from operational to non-operational, aircraft in other squadrons throughout the country, and I am not sure that we should allow this to continue. It occurs to me that our operational capability is decreasing at a great rate and that we might want to put on the brakes in order to force the Air Force to meet its obligations insofar as support of the F-102 program is concerned.

/s/t/ E. E. PARTRIDGE General, USAF Commander-in-Chief

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Figure 1.1 ch. Tod - 5 f 77150 ir reres Flight last denter Liveria in Fires see, Lillardia

FTF G

7 April 1958

SELECT: Verpon Systems Stand-Down Du ing Tosting

To: Joseph or Air cofense Command

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Colorado Springa, Colorado

less of the initial squarron converting to each nowly developed airplane. It should be emphasize that this time period applies to the
first should be emphasize that this time period applies to the
first should be emphasize that this time period applies to the
first should be emphasize that the sole purpose of allowing
uninterrupted environmental testing. The F-101b and the 5-106 airplanes are of immediate concern to this office, however all subsement
Air before deapon Systems qualify for this consideration. Since
the irration of subject testing will vary with each system, the time
period established should be intefinite vian dire to twelve tenths
approximating an average planning figure.

- 2. The successful development of superior air weepons has long been fraught with the urgent pressures of tactic I re-direments at hand. Constantly changing works situations have detaited in each case, such accelerated testing methods that it is usually a ther impossible to accree necessary data or size impossible to compute the test prior to tactical unit conversions.
- in implementation of the recently devised Joint Test Force methods of operation will alleviate this problem to a degree, providing contain all untennts are made in current operating procedures. One such adjustment which can be made by the using command is to arrange for maximum availability of time and assets curing the test cycle. The more effective management of these resources made noteful by relieving the initial squadron of it's impensing conversion date would reflect vast improvements in the quality of the end product. More communehansive testing and earlier production incorporation of fixes will also constitute a major factor in the reduction of expensive retrofits and modifications.
 - 4. hegiest this office of advises of the Command's intentions.

G: ADMAC

MORVAL F. HEATH Colonel, USAF ADC Fighter Interceptor Project Officer

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TUICATE

FTTAD, ADC TPO A FTC Edwards AFR, Calif., 7 Apr 58, subj: Wpn Sys Stand-Down Puring Testing

ADOOP-0

1st Ind

21 APR 1958

He Air Defence Command, Ent ir Porce Base, Colorado Springs, Colorado

TO: Commander-in-Chief, North American Air Defense Command, Ent Air Porce Base, Colorado prings, Colorado

- 1. The existing policy portaining to converting FIS reflects that the unit is expected to be operational ready 75 days efter receipt of the fift enth aircraft. Subsequent to the operational ready date the unit, during normal conditions, is available for alert duties.
- 2. It is recommended that during normal air defense conditions, the unit while participating in Category III testing be relieved from aleri comitments. It is expected that the unit participa ing in Category III esting will be the first unit converting to a new weapon systems.

FOR HE COMMENDED:

TORN K. KOLOSKY Colonel, U'AF Director of Operations Deputy for Operations

Jean by Don FTFAD, ADC FIFO AFTTC Edwards AFB, Calif., 7 Apr 58, Subj: Hon 3 Sys Stand-Down Daring Testing NOCOF-T 2nd Ind 1 MAY 1958 He Morth American Air Defense Germand, Sat Air Force Base, Colorado Springs, Colorado TO: Commender, WSAF Air Defense Geamand, 300 Base. Colorado Springs, Colorado Phail E es 1. This headquarters concurs with the peoposel to stand-down the imitial F-1018 and F-106 Squadrons in Cade to corry out uninterrupted saviromental testing. Fact & Boller f. The policy expressed by DINGNOWN is that reapon system allocated to the air defense effort home be fally sented ready, and expelse of fulfilling its assistant placed under the operational control of this something. 3. The first interceptor unit converting to a new weapon system is relieved from alert admitmental during normal air defense the conditions. This relief from the will be effective for the period in which Category III testing is applicable, or as otherwise determined by your headest at the conditions. WOR THE CHOMENIA DE CHIEF! CHARLA COMO REAF LIABON HARVKY T. ALMSES Major General, USAF DCS/Flans & Operations ar schadron on worth, a to new alcoraft dies not until 75 lays after recoint of the "Eteent." ADC proposes to use to st ministrate F-1713 madron- to confuct er mount atom testing, water will be it all luture on spring in the situant be no required seemed alort. We should concur in these as it will result in an about effective on the care lity. We should always be available ouring and a lity of a lower of all repairs bear.

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PAGE TWO RJEPHG 162 THE ABOVE BASES AND IF REQUIRED YOUR PROPOSED ALLEGNEE OPERATING LOCATIONS. FOR PLANNING PURPOSES CONTRACT AWARD FUR THE PAVEMENTS AT ABOVE BASES IS ESTIMATED APPROXIMATELY 30 JUNE 1338. 03/2248. JAN RJEPHC

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ROUTINE

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FROM ADOOP-0 0026

Jan 58, MOTAL, concerning Glasgow, Kinross, K. I. Sawyer and Wurtsmith being utilized as SAC dispersal bases. This command recognizes the necessity of placing a high priority on SAC dispersal and the need for SAC dispersal bases to be completed as soon as possible. However, your headquarters should be aware of the below-listed effects of this construction program on the air defense capability of this command. A. Units cannot be deployed to other locations and maintain an operational status or fulfill the tactical needs of air defense. B. Storage sites for both nuclear and conventional weapons will be sterilized with the only access being by surface transportation. If squadrons are divorced geographically from their nuclear ADDOR-0

MAJ POERSCHKE/c1/21 Jan 6003

2

/s/t/ JOHN M. KONOSKY
COLONKI, USAF
DIRECTOR OF OPERATIONS,
DEPUTY FOR OPERATIONS

UNCLASSIFIED

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COMDR ADC

storage sites it will eliminate the nuclear defense capability of the area. C. Vital communication nets will be neutralized which cannot be relocated without prohibitive costs in time and money. D. ADC bases not affected by SAC dispersal cannot absorb additional units due to the lack of adequate facilities. Due to the complexity of aircraft and equipment ADC units must operate from fixed installations. E. During the proposed construction period mentioned in your message, a test will be conducted which has been directed by JCS Memorandum SM-410-57 to WSEG directing ECM evaluation, QUOTE WSEG Phase X of evaluation of ECM effectiveness UNQUOTE. The time period of this test is 1 Jun through Nov 58. The units located at Kinross and Wurtsmith are major participants in this test. If construction is to begin in June 1958 as proposed in your message, it is essential that your headquarters either delay the WSEG test or move it to a new location. To move the test site at this time will, however, result in a serious degradation of the test results for the ADC portion of the test. PART II. It is recommended that every consideration be given the possibility of planning construction phasing so as to allow operations to continue throughout the construction period.

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everall air defense structure. In addition, the closing of certain bases would seriously degrade the capability of this command to employ the MB-1 in defense, to effect early raid recognition in the combat sone, and to commence engagement in the peripheral areas of the combat sone. While recognising the necessity for dispersal of SAG aircraft at many bases, as the agency responsible to the JCS for the air defense of the United States, this headquarters cannot concur in any program for so doing which necessitates a significant reduction, even temporarily, in air defense espability. It is therefore recommended that all plans for dispersal of SAG aircraft and units be accomplished without a concurrent reduction in air defense espability.

Col Jeffus 2130 31 Jan 58

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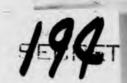
ROY AFORD SOASS PERSONAL FOR FARTRIDGE, POWERS, ATTINSO

SUBJECT: ADC OFFRATIONS AS EFFECTED BY CONSTRUCTION BY SAC. TE TEMENCE TOUR NESSAGE NOMOR X-007, PERSONAL FOR CEMERAL WRITE, CHIEF OF STAFF, USAF AS EXECUTIVE AGENT FOR MORAD, FROM CEMERAL PARTEIDGE?//TIS MESSAGE IN FIVE PARTS// PART I. CONSTRUCTION FOR SAC DISPERSAL MUST REPRAT MUST BE ACCOMPLISHED ON SCHEDULE. BEST POSSIBLE SOLUTIONS FOR RETAINING MAXIMUM OPERATIONAL CAPABILITY DURING CONSTRUCTION PERIOD WILL HAVE TO BE WORKED OUT, IT IS RECOG-NIZED THAT MISSION DEGRADATION WILL PESULT AT SOME BASES DURING CONSTRUCTION PERIOD . SUCH DEGRADATION WILL BE KEPT TO A MINIMUM. PART II. OFFICERS FROM THIS HEADQUARTERS REPRESENTING OPERTIONS AND CONSTRUCTION WILL VISIT YOUR HEAD WARTERS IN NEAR FUTURE TO DISCUSS THIS PROBLEM A D ASSIST IN DEVELOPING PLANS FOR OPERATIONS DURING CONSTRUCTION PERIODS. PART III FOR ADC. OFF CERS FROM THIS MEAN CARTERS WILL VISIT BASES AFFECTED BY SAT CONSTRUCTION UPON DOMPLE TON OF CONFERENCE AT HEAD ! ANTERS MORAD. APPROPRIATE INSTAL-LATIONS CHOINERS, AFIR'S DISTRICT ENGINEERS AND COMMANDERS SHOULD BE AVAILABLE AT TIME OF BASE SURVEYS. PART IV FOR SAC. REFERENCE AFOOP-OP-H 54640, 3 JA WARY 1958 AND AFOOP-UP-U 557/7, 27 JANUARY 1958. CONSIDERED ESSE TAL REPRESE " IVES YOUR COMME PARTICIPATE IN ALL DISCUSSIONS T. IS SUBJECT. PART V FOR ALL, REFERENCE SUBVEY PARTY FROM THIS HEAD QUARTERS, NAMES AND DATES OF VISIT THE SE BUT ISHED IN SEPARATE HI SHAGE.

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"Sterilization" of ADC B.ses

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17 Feb 98 Maj Knott, wdm/2078

1. On 14 February 1958, officers from Readquarters USAF and Readquarters SAC visited BURAD and ADC to discuss the "starilization" of selected ADC bases. Each base was examined for the possible effect SAC construction would have on the (BURAD) air defense mission.

2. Officers in attendance:

Col Ross Rector, USAF, Dir of Installations Div
Col W. G. Gillespie, USAF, Dir of Operations
L/C W. E. Hines, USAF, Dir of Operations
L/C R. T. Miller, USAF, Dir of Operations
Maj C. H. Greene, SAC, Dir of Installations
Col M. T. Marvell, Jr., ADC, Installations Engr.
L/C E. S. Pokek, ADC, Dir of Operations
Maj E. A. Poerschke, ADC, Dir of Operations
Maj A. W. Farnsworth, ADC, Dir of Operations, Support Branch
Capt W. H. Carrington, ADC, Dir of Operations, Fighter Branch
Maj C. W. Zhott, BOOOP-T

3. Bases discussed at this informal conference were as follows:

Belfridge (Tub A) Murtanith (Tab B) Maroes (Tab C) K I Savyer Tab D Q1.1800V (Tab E) Sepsour-Johnson (Tub P) Otis (Tab a) Duluth (Tab H)

bility suring 1958 and 1959 with the exception of Kinross. The F-102 FIS at Kinross will deploy to K. I. Savyer for the period May to Sovember 1958.

8 Incls

ROBERT S. DINHE, JR. Colonel, USA Acting Director of Operations

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HODOP-T

1 JAN 1958

SUBJECT: F-104 A/B Progressing

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Commander USAF Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. As you are aware, Readquarters USAF initiated sction during December 1957 to re-allocate the four squares of 7-104 A/B sircraft and equipment to the Dartical Air Command. However, I have taken action to reaffirm to General White that the MORAD requirement for the 7-10. A/B has not diministrat. With consideration of early incorporation of the MS-1 capability on the 7-10, the requirement for this weapon system gives positive promise of filling a serious air defense gap in the imaginate future.

2. My decision to rectifing the requirement for the F-10k wir craft in the ADC inventory is based upon the following:

a. The alreraft has superfor speed, climb and altitude to any Air Defense afteract presently in the inventory. Its capability to perform between 50,000 and 74,000 feet provides a weapon system not presently spailable to MORAD.

b. The MB-1 weapon and fire control system can be provided this aircraft at a very early dute vithout appreciable de-gradation of aircraft performance.

e. A Siferender configuration can still be incorporated in addition to the ES-1 configuration.

d. The allocation of the F-104 aircraft would enable ABC to phose a comparable number of obsolete F-860s out of the active inventory at a date earlier than planned.

81-079

. Employment of the F-104 A/B will provide a vehicle of fast Feartion time for high altitude identification and policing actions.

f. Considering a normal growth potential for the F-104, a greater performance and all weather capability can possibly be incorporated into the aircraft in the near future.

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MOOOP-T, Hq MORAD, Subj: F-104 A.B Programming

3. As a matter of information, Lockheed Aircraft Corporation, Inc. has indicated that the modification of the F-10, A/B fire control system and weapon system can be accomplished for approximately \$92,700 per aircraft. If provided the "go-sheed" during January 19-8 for modification of the existing contract, Lockheed Inc. further indicated that they would be able to realize a molter capable F-10s in the inventory by June or July 1958. It propert on a cost calculation that the modified F-10s would cost approximately a balf million last than F-10s or F-10s livereft. This tonsideration is an economic benefit the Air Force should not overlook,

4. It must be realised that my action in no may is intended to reduce the requirement for all-weather aircraft much at the F-105.

The F-104 A/B is desired to overtone immaintely, the inadequate performance of such obsolete aircraft as the F-860 and F-85 interceptors. The F-104 A/B would matchially anguent the kill potential of the all-wenther fighters.

5. It is requested that the following actions be taken by your handquarters:

a. Reafffirm to Ecodopierter's USAF, the requirement for the F-106 A/B as modified vity the 18-1 capability.

CG ARAS (Da) b. Initiate necessary action to provide for modification of the existing Lockheed contract as referred to in paragraph 3 above

c. Review exployment plans of F-104 A/B and revise such

E. E. PARTRIDGE General, USAF Commander-in-Chief Cwthe wil

William III

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2. No. 1.200 Later, Personal for antic from Furnitude a and 25 Dec 31 regions postinion included that decision not to make until Sene al Par tridge " . Id for a common speciation. (Classificate two). (Mag. in office of NORC.

on F-10s demonstration and proposal for modific them of the arrest of a provide

w. Gen. Printing personally distinction. White in shington on 2 Jan 32 MR-I cap bill y. relative to the first als facility of the common 7-104 (B in the

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ADC inventory. Gen White directed Lt. Gen Turner, DCS/Opns to withhold transfer until another "look-see" could be had at this latest proposal.

5. TWX NOHCR X-001 (msg in office of NOHCS) personal for White from Partridge, 6 Jun 58, reaffirmed CINCNORAD desire for the continuation of the F-104 A B in the ADC inventory. In addition, it was pointed out that the F-104 A/B should be modified at an early date to incorporate the capability of the MB-1 with this discraft. Both the MB-1 and Sidewinder capability could be made available with superior flight performance. Included was a statement to the effect that a Lockheed modification amounting to \$92,500 per aircraft could realize a MB-1 capability in the F-104 by June-July 1958 if the go-ahead were given in January 1958.

6. It was proposed on 10 Jan 50 that a letter be dispatched from CINCHORAD to Commander DC restating the most current concept and requirement for the F-10- A/B. This letter should encompass directive action

or Commander, ADC, to:

a. Request USAF Programming action to continue the F-104 A/B units

in the ADC inventory.

b. Request modification of the F-104 A/B fire control system and

aircraft to be capable of employing the MB-1.

c. Reconsider the general concept and requirement for employment of F-104 A/B aircraft incorporating the A/C performance and MB-1 capability.

7. This letter has been prepared.

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	which exists in the p	to any other	aircraft p	resently in or		
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	near future. Its ca	pability to operate	e at high at		Jan	58
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75,000 feet and fly at speeds up to Mach 2 have been demonstrated today. Para. Furthermore, this aircraft has a significant growth potential, some of which can be realized at an early date. A modification of this aircraft and its fire control system as proposed by Lockheed to permit the employment of an MB-1 as well as two Sidewinders per aircraft will further enhance the capability of this interceptor as a most effective weapon system for a considerable period. This modification has been estimated by Lockheed to be approximately \$92,500 per aircraft and is considered well worth the cost. With both an MB-1 and Sidewinde capability, F-104's assigned to an air defense role will increase the air defense deterrent to war and will offer a significant kill capability in countering an air attack. Para. It is realized that the modified F-104 may not be as capable for all-weather operations as other interceptors that may be introduced into the air defense system in later periods. However, the need for an aircraft with the performance of the F-104 is apparent for the immediate future when compared with the inadequate performance and altitude capabilities of present air defense aircraft such as the F-86D and F-89 interceptors. Lockheed representatives have

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of air defense F-10	F-104 aircraft ded today in the h performance is capability is r defense system fore urgently reaircraft be ass	as designed for air d Air Defense Comma nterceptor with an M	nd. B-1 of this quadrons nse taken to	
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Augmentation of FIS is Alaska

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MODOP

1 August 1958 Lt Col Hetteson/bkm/2098

 At the present time there are three Pighter Interceptor Squadrons in Alaska as follows:

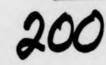
317th FIS	Elmendorf	F-1024	26 Aircraft	10th Air Div.
31st FIS	Elmendorf	F-102A	26 Aircraft	10th Air Div.
lulyth FIS	Ladd	7-893	28 Aircraft	11th Air Div.

- 2. The 31st FIS (F-102A) is currently phasing out for inactivation on 8 October 1958. This will leave 2 FI Squadrons in Alaska (1F-102 and 1 F-89J). This resulting program is in encordance with CINCONAD's recommendation to JCS on 6 June 1957 in which CONAD went on record by stating that it approved one F-89J Squadron be continued in Alaska as programmed by USAF, commencing 1958, and that the number of F-102 Squadrons be reduced from 3 to 1. (CONAD TS #57-306, COOPR File). This requirement for 2 FI Squadrons in Alaska was stringly supported by CINCAL (Reference Tab 4).
- 3. Now that the insetivation of the 31st FIS is about to take place, Alaskan Air Command is endeavoring to retain the aircraft and some of the personnel of the 31st to "beef-up" the remaining 2 squadrons to provide additional aircraft needed for forward bases to affect earlier identification of unknowns. Informal information indicates that this program of augmentation actually provides for the retention of 13 of the 31st FIS's F-102 A/C by the 317th FIS at Ilmendorf and the retention of the other 13 of the 31st FIS's F-102 A/C by the highth FIS (F-89J) at Ladd. Of approximately 500 personnel in the 31st FIS, approximately 300 would be reassigned to the two augmented units. This ascents to the retention of practically a third squadron.
- 4. USAF Program Guidance "B" (PO-60-1B, Jume 1958), paragraph 2e states that
 " - The concept of flexible U.E. for both BONARC and ighter-Interceptor Unite has
 been approved. Program details will follow at a later date."
- a. A flexible U.S. is defined as a unit without a fixed number of A/C but shose aircraft and personnel may vary in accordance with the Unit's need for the tetal requested and the installation's capability to support same.
- b. It appears that the AAC Augmentation plan is within the bounds of USAP policy.
- 5. Colonel Vandiver, ALCOM, phoned 31 July to inform MORAD of the FIS situation in Alaska and to attempt to get MORAD support for the AAC proposal to augment the remaining squadrons with personnel and equipment from the inactivating 31st FIS. It was believed that if NORAD would support the proposal it might strengthen the AAC presentation to USAF. As Colonel Vandiver was leaving for Washington on 1 August, tentative approval by MORAD was requested during the phone cell.

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- 6. TRAD considered the problem to be one between CINCAL and USAF, however the Director of perations wave tentative support in principle to the plan by telephone but requested a message be forwarded to NORAD outlining the situation in detail for final review by the RCS/P&O. Meither the telephone cell nor the follow up CIMCAL measure attached (Tab B) indicated the extent to which augmentation of the 2 remaining PIS was being planned, i.e., using all the sireraft (26) and a major proportion of the personnel (300) of the inactivating 31st VIS.
- 7. back in June 1957, CINCONAL was asked by the Chief of Staff, Hq USAF, as Executive Agent, for a recommendation as to the use to be made of unite declared excess to Alaska's needs. At that time CIRCONAD went on record (msg CouPR TS-033, 21 June 57) by stating that squadrons excess to Alaska could be used in the south and southwest areas of the U.S. at bases designated in CADOP 56-66 as manned interceptor bases. Commander ADC had no objection to this proposal if adequate interim facilities and OLM funds could be prowided. Meighter facilities nor funds were swallable and the situation has not improved. As a consequence the reduction in Alasken Squadrone has been largely accomplished by inactivation of units.
- 8. On the basis of COMAL's previous recommendation (Tab A) it appears appropriate to call to his at existion this previous basis for retention of only 2 squadrons and to see for his recommendation now as to his capability to support and central and additional 26 aircraft, If ClWCAL can justify bis requirement for the additional 26 sircraft, it is recommended that CIN-CMCRAD support this AAC Augmentation Program.
- 9. A proposed message to secomplish the recommendation in the above paragraph is sttached as Tab C.

3 Incls:

1. Mag CINCAL, 21 Jun 57

2. Mag CINCAL, 1 Aug 58

3. Proposed Mag to CINCAL

CARROLL . McCOLFIN Colonel, Director of Operations

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20 MARIASP

OP# 2/3

SUBJECT: Fighter Interceptor Aircraft Requirements for Alaska -1960 (UNCLASSIFIED)

Commander-in-Chief TERU:

North American Air Tefanse Command

Ent Air Force Base

Colorado Springs, Colorado

Department of the Air Force Executive Agency for the Joint Chiefs of Staff 70:

Washington 25, D. C.

heferences:

a. USAF Standard Aircraft Characteristics, Volume I.

b. TE Letter, Eq CONAD, file COOPR, 6 June 57, Subj: Air Defense Requirements for Alaska.

- c. Weapon Planning Group, November 1957 Minutes.
- c. UEAF Program Aircraft and Missiles (FX-50-1-1).
- In view of the Soviet manned bomber threat to the national security during the next five years, it becomes increasingly evident that fighter interceptors now in Alaska will prove insdequate to perform the task of early identification of hostile aircraft required to provide early warning of enemy attack. USAF Program Aircraft and Missiles (FX-60-1-1), reference 1.d, reflects the assignment of one F-101B squadron to Alaska during fiscal year 1962, as replacement for the F-89J equadron, and with retention of one of the two F-102A squadrons now in Alaska. With the above in mind consideration was given to the requirement for replacing aircraft based on the following criteria:
- a. All fighter interceptor aircraft should be of one type to facilitate maintenance, supply, and training.
- o. All fighter interceptor aircraft should have an MB-1 capability.
- 3. Both the F-106A mireraft and the F-101B mireraft meet these criteria. However, the F-106A is believed to be superior in performance to the F-101B in most respects. During the desired period of conversion of sireraft currently essigned to Alaska, both these types will be available. UNCLASSIFIED

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Hq ALCON OFH 2/3, Bubj: Fighter Interceptor Aircraft Requirements for Alaska - 1960 (U) (cont'd)

- 4. For these reasons, fighter interceptor requirements for Alaska are recommended as follows:
- a. One squadron of F-106A aircraft to replace the one squadron of F-102A aircraft at Elmendorf, to become operational April 1060.
- b. Following the above conversion, an additional F-106A squadron to replace the F-89J squadron in place at Laid, to become operational September 1960.
- e. From approximately FY 1964 on, a requirement will exist to replace these two F-106A squadrons with two squadrons of F-108 aireraft, if available.
- 5. The Alaskan Command Air Defense Requirements Plan, 1957, now being revised, will reflect the above fighter interceptor aircraft requirement. In view of the time involved to publish the new plan, the aircraft requirements contained herein are submitted for your consideration and approval.

FOR THE COMMANDER-IN-CHILE:



OFN 2/3, Eq ALCON, 20 Mar 58, Subj: (U) Fighter Enteresptor Aircraft Requirements for Alaska - 1960

HOOPE

Lat Ind

28 April 1958

Eq North American Air Defause Courand, Ent Air Force Mase, Colorado Springe, Colorado

TO: Chief of Staff, United States Air Porces, as Executive Agent for

Basing the decision on available performance information, this headquarters concurs with the fighter interceptor regularisants for Alaska as stated in the basic latter.

POR THE CUSCAPORE-IN-CHIEF

Copy furnished:

MARSHALL S. CARTER Maja: Seneral, USA Chief of Staff

MEMO FOR RECORD: Analysis of the performance of the F-101B based on flight test validated figures, and of the F-100A based on latest contractor's figures, is clearly in favor of the F-106A. We have questioned ALCCM in regard to the capability of the Alaskan tunways to support the load stress of the B-106A and the F-108. CINCNORAD agreed to support CINCAL's requirements but is pessimistic about getting the F-106A into the investory and operationally ready any sooner than 1961.

Maj R E Smit 2163 25 Apr 58

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Director, Plans & Requirements

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Reference your letter OPN 2/3, 20 March 58, to Dept of the AF thru CINCNORAD, subject, Fighter Interceptor Requirements for Alaska -1903. This headquarters concurs, with the exception of the choice at the F-17mh aircraft. At Mach .95 the F-171B has a 670 nantical mila radius of action as compared to 495 nautical miles for the F-1954. The .23 Mach difference between the top speeds of the two acceraft, 4.72 and 1.95 for the F-1018 and F-106A respectively, applies for only a very short time of flight. The lange advantage of the F-191B, is of more importance for operating as trailer aircraft and for policing the DE line. In addition, a two-engine, two place fighter interceptor is more desirable for Alaskan operations. Purther action on the reference will be held in abeyance pending

DATE 18502 your answer. 1 4 MONATURE NOOPR

SYMEOL TYPED IN HERITI NAME AND TITLE TYPED NAME AND TITLE (Signature, II required) MAJ R E SMITH UNCLASSIFIED PAGE 1 PHONE 2163 BEGURITY CLASSIFICATION

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MEMO FOR RECORD:

ALCOM letter OPN 2/3, 20 March 1958, subject, Fighter Interceptor Aircraft Requirements for Alaska - 1960, stated that fighter interceptors now in Alaska could not cope with the post-60 threat and that replacement should be b, two F-106 squadrons instead of by one F-102A squadron and one F-101B squadron. Their criteria were (a) one type of aircraft for both squadrons; (b) an MB-1 capability. Their expressed preference for the F-10bA over the F-101B was based on the belief that it is "superior in performance in most respects." Until long range radar (MADRE) is available in Alaska the slow reaction time of the fighter interceptors will place prime importance upon their value as trailer aircraft for attacks aimed at the U.S. and Canada, not on their value for air defense of Alaskan installations. After the advent of MADRE (or its equivalent) a longer range fighter interceptor will still be of more advantage than a shorter range, slightly faster afforaft. For remote area operation a two-engine, two-place aircraft has many advantages over the single-engine, single-seat type. We agree with their requirement for F-108s for the post-64 period. It was felt that both CINCNORAD and CINCAL would be on tirmer ground with the JCS if the Alaskan requirement could go in as a coordinated position. Furthermore, the Memorandum of Agreement Between CINCAL and CINCONAD, effective 1 Sept 1956, states that CINCONAD is responsible for developing of requirements insofar as they relate to the air defense of Alaska and that CINCAL will participate with CINCONAD in the development of requirements. Specific mention is made of force structure and deployment.

For these reasons the referenced letter will be held until CINCAL and CINCACAD are unified on the fighter interceptor requirements for Alaska.

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ACTION: COOPE TYO: COOPO X8-4702-

REFERENCE YOUR WEST HOOFE X OOS PTC 0116307 APR SC. THIS 'SG IN THREE PART'S PART 1. OUR SELECTION OF THE F-106 AIRGRAFT IS BASED ON A CARRIER, CO. PARISON OF THE PERFORMANCE DATA CONTAINED IN USAF STANDARD AIRCRAFT CHARACTERISTICS, VOLUME 2, PARA 1 THREE S FOR F-101 DEPARTD S DEC 57) AND F-106 A CRATED 1 JUL 57), 'S IC REVIALS THAT THE F-105 A IS SUBRIOL TO THE F-101 IN THE STANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION ONE: OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION OF ACTION OF ACTION OF AIRCRAFT AND CARRYING THE S-1 TANDING OF ACTION OF

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PAGE THREE RJKDAG 4C
BOTH OF THESE TASKS REQUIRE A PROPER GROUND ENVIRONMENT FOR DIRECTION AND CONTROL. WE DO NOT UNDERSTAND YOUR CONCEPT OF FIGHTER-INTERCEPTORS OPERATING AS TRAILER AIRCRAFT AND FOR POLICING THE BEW LINE. BY THIS RESPECT, IT IS ENQUIRED THAT AN EARLY REPLY BE MADE TO GENERAL ARMSTRONG'S SUCREY LETTER TO GENERAL PARTRIDGE DATED 26 FEBRUARY 1958, IN WHICH CLARIFICATION OF THE DEW LINE POLICING TASK WAS REQUESTED.

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FROM OPN 5030

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ALASKAN ENVIORMENT . TWO AIRBASES, KING ALMON AND GALEYA, MUST BE USED. THE IR MINUAYS MAY BE TOO SHORT FOR THE F-101 B AND MY FE UNABLE TO WITHSTAND REPEATED LANDBIG IMPACTS DUE TO ITS WITHOUT. DO HAS A DATE BEEN DETERMINED? IF MOT, COULD F-101A ALASKA FEST DATA

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PAGE TWO BURDAG 3C

BE RELIABLY EXTRAPOLATED TO F-101B? THIS COASSINES THAT YOU ARE FULLY FAMILIAR WITH ALASAGO CONDITIONS; IF LOT PLEASE AS A SPECIFIC QUESTIONS. YOUR ASSISTANCE IN MAKEUM VALUE PLEASE AS A SPECIFIC POTENTIAL EFFECTIVENESS OF THE F-101 S IN ALASKAN AIR DEFENSE BY
OPERATIONS HAS BEEN AND IS GREATL APPRECIATED.

25/0231Z JAN BURDAG

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MEMORA VOUN FOR RECORE :

Upon receipt of a letter from CINCAL to the Executive Agent through CINCACAD stating a requirement for the F106A, we messaged CINCAL (NCOPA X005) expressing our opinion that the F101P was better uited to Alaskan operations. Our opinion was based on performance figures showing the F101B as having a substantial radius of action advantage over the F106A. However, these figures were based on non-afterburner takeoff for the F106B (requiring 10,350 runway length) and preceded the latest contractor proposal extending the radius of the F106A. The advantage of a two engine, two place already for remote area operation still lies with the F101B but in performance the F106A is superior overall, if contractor's figures are accurate. This message is in answer to CINCAL's rebuttal to our previously expressed preference for the F101B. We now believe that the F106A is the wiser choice even though the performance figures are contractor furnished and not validated. The F106A and F108 can both operate from 7,000' runways using afterburner and drag chutes. There is a question as to the ability of the runway surfaces to support the aircraft. The Unit Jonstruction Index (UI) is used to determine this. A USI for the F106A was not available but the pressure and area of bearing surface per gear is equivalent information.

HEADQUARTERS MORTH AMERICAN AIR DEFENSE COMMAND

Hq USAF, 19 May 58, Subject A Through The Interceptor Aircraft Requirements for Alaska - 1960

Hq North American Air Defense Command, Ent Air Force Base,

MOOPR

Colorado Springe, Colorado

cern to your headquarters.

quarters USAF.

Cy Mag NOOPR X 026

M/R: - Not required.

1 Incl

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2. Inclosure 1 to this indorsement is our rebuttal and

C. H. SCOTT

Colonel, USAF

Assistant Chief of Staff

decision will be forwarded as soon as it is received from Head-

FOR THE COMMANDER-IN-CHIEF:

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DEP ..

CINCHORAD

TO: Commander-in-Chief, Alaska, APO 942, Seattle, Washington

ASST CHES

1. The basic letter is forwarded as a matter of primary con-

request for reconsideration of the planned deployments. The final

INFO SERVICES

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Walter & Murray Cal WA A. J. PIERCE Brianter Comeral, USAF Dir, Plans & Requirements

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19 May 1958

SUBJECT: (U) Fighter Interceptor Aircraft Requirements for Alaska - 1960

To: Commander-in-Chief
North American Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado

1. (UNCLASSIFIED) This is an Executive Agency letter. Reference A+tach is made to letter, Hq Alaskan Command, subject: Fighter Interceptor Aircraft Requirements for Alaska - 1960, dated 20 March 1958, and your lst Indorsement thereto, dated 28 April 1958.

Declassified Current USAF programing of fighter interceptors for Alaska was influenced by the following factors, among others:

- a. The P-101B and the P-106A are generally comparable in performance, and although the F-106 outperforms the F-101 in several respects, the F-101 is superior in range and endurance. These characteristics are considered of singular import for operation in the Alaskan Command area.
- b. Where otherwise feasible, it was considered advisable to fellow-en with two-place interceptors in light of training and logistic considerations.
- 3. Declassified It is currently planned to deploy one squadron of P-108 aircraft to Alaska in the 1967 time period as the follow-on to P-101 and F-102 squadrons.
- 4. (UNCLASSIFIED) It is considered that these deployments represent the optimum attainable interceptor force for Alaska during this period.
- 5. (UNCLASSIFIED) This letter is classified SECRET because it contains information on planned deployments of interceptors in Alaska, the unauthorised disclosure of which would compromise the air defense of Alaska and the U.S.

13. .18

JACOB E. SMART Major General, U. S. Air Force Assistant Vice Chief of Staff

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FROM CINCHORAD

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CINCAL BLMENDORF AFE ALASKA (MAIL)

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FROM MOOPR X J26

Chief of Staff USAF as Executive Agent for MORAD. Reference your letter, SECRET, Subject: Fighter Interceptor Aircraft Requirements for Alaska - 1960, dated 19 May 1958. This beadquarters is not in lagrement with the decision to continue planning for deployment of the F-101B to Alaska. Lakest data available at this Eq do not agree with your estimate of comparative performance of the F-:01B and F-10uA. Unless there are overriding considerations, it is requested that deployments planned for Alaska be reconsidered and reprogrammed in support of CIMCAL's position.

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DATE 11 2330; 19: June

HOOPE

ROBERT E. SMITH, Major, USAF

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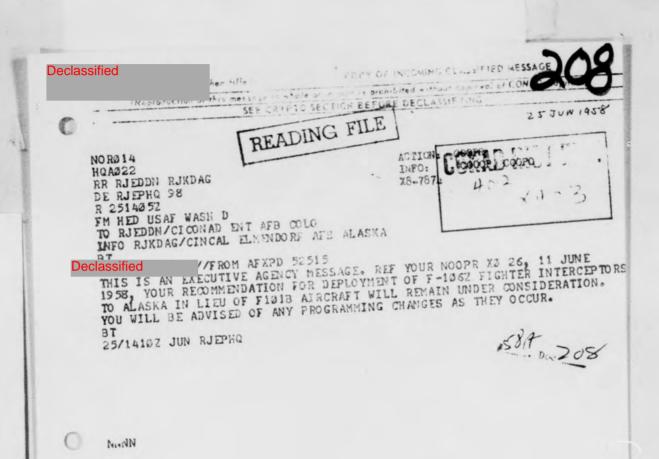
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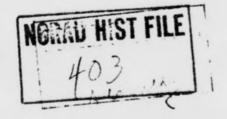
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HEADQLARTERS. Ho DSAF, 6 May ROR Thinhests - (V) R Weddess Command and anneas of Air Mational Guard Units INT ALL FORCE BASE COLORADO SPO-NGS COLORADO

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28 MAY 1958

Headquarters Continental Air Defense Command, But Air Force Base, Colorado Springs, Colorado .

TO: Chief of Staff, Daited States Air Yo ce. As Skacutive Agent for COMAD, Washington 25, D. C.

Because of the limited capability of day fighters in the air defense role, no objection will be interposed if the Chief of Scaff, United States Air Force, releases the thirteen Air Mutlomal Guard day fighter interceptor squadrons from their air defense pobilization assignment to the DEAF Air Defense Command.

FOR THE CORMANDER-IN-CELES:

MARSHALL S. CARTER Major Gueral ISA

Memo for Record:

Hq USAF itr, Mobilization Assignment of AMG Units, 6 May 58, requested NORAD comments and recommendations telative to the release of 13 ANG day in hter into cepter squadrers from an ADC mobilization assignment to a faction Air Command mobilization assignment. ADC and TAC have concurred in this reason imment.

Our reply concurs in the resease of the 13 day fighter squadrons from their conflication assignment to ADC because of the limited capability of these alrerait in air defense.

NED SERVICES to Bol 大きな! いんいん CO ARAD COMD COMMANTORCOMAD CONUSAF ADC CAA FCDA P B Aurand

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ARADOOM RECOMMENDED

DEPLOYMENT PLAN (U)

FISCAL YEARS

1959, 1960, 1961, 1962

Based on Force Tabs from the Department of the Army as of 27 January 1958

DUPLICATE

CONTENTS:

- 1. ARADCOM FORCE STRUCTURE
- 2. ARADCOM COMMENTS ON FORCE STRUCTURE CG USCONARC
- 3. PLANNED NIKE DEPLOYMENT
- 4. PLANNED HAWK DEPLOYMENT

DISTRIBUTION:

DCSOPS DCSLOG CNGB CG USCONARC

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CG, 2d RAADCOM CG, 5th RAADCOM CG, 6th RAADCOM CO, 4th RAADCOM

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HGB INO to USARADCOM

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ARADOM FORCE STRUCTURE

IN BN. FIRE POWER EQUIVALENTS (U)

(as of 27 Jan 58)

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Figures in __ are number in total which are National Guard.
* Includes 1 HERCULES Battalion in Greenland.
** Includes 2 HAWK Batteries in Greenland.

Note lr In addition to the above forces, it is assumed that 16 NIKE - ZEUS batteries will be operational in FY 1962.

Note 2: The availability of 25 TALOS detachments will invalidate the attached deployment plans.

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ARADCOM COMMENTS ON FORCE STRUCTURE (U)

- 1. a. The percentage of National Guard forces shown in the DA force structure is considered to be excessive. As can be seen from the attached NIKE deployment plan, with the National Guard comprising approximately 43% of the total ARADCOM force in FY 62, a much higher National Guard percentage becomes mandatory at certain individual defenses. However, the inherent nature of the National Guard concept of operations precludes them from maintaining the same degree of readiness as active army units. The surprise attack aspect of the threat in this time period dictates against any defense being predominantly National Guard. This headquarters recommends a limitation of one-third of the total ARADCOM force as National Guard.
- b. The use of National Guard forces in missile defenses should be contingent on the outcome of current tests of NG AJAX units. It should be shown that these units can, in fact, effectively maintain the equipment and operate with a high degree of readiness.
- 2. a. The allocation of two (2) HAWK batteries to Greenland in FT 62 is questionable. It is presumed that these batteries are intended for Thule. Terrain analysis of Thule reveals that a minimum of five (5) HAWK batteries are required for this defense, and even with this number, effectiveness is marginal. Terrain and other conditions at Thule require that the batteries be fairly close in to the base such siting would permit low altitude bomb release prior to aircraft coming within range of the HAWK batteries. It would therefore appear that the allocation of the two (2) HAWK batteries to Thule should either be increased or should be dropped.
- b. According to a priority list furnished NORAD by SAC, Thule and Sondestrom will be of approximately the same importance to the overall accomplishment of SAC's mission by the end of FY 61. Based on this priority list and on the Thule analysis referred to above, NORAD recommended three (3) HAWK batteries to Sondestrom in FY 61 and none to Thule. Determination of expected effectiveness of three (3) HAWK batteries at Sondestrom will require further study.

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HEADQUARTERS
UNITED STATES ARMY AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

ADGCL 413.68

2 NOV1957

/sets X - 13203 \$ 3296-57

SUBJECT: USARADCOM NIKE Program, FY 59 (U)

TO:

Commander-in-Chief Continental Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. The Department of the Army has advised this headquarters of the ARADCOM NIKE force structure for FY 1959. The totals shown below have been approved for programming:

FI 1959 Force Structure

Type Equivalent Battalions

NIKE AJAX 43 (Note 1)

NIKE HEECULES 27 (Note 2)

Notes:

- Includes seven battalion equivalents to be manned by National Guard.
- Includes conversion of 18 NIKE AJAX battalions at present defenses and nine battalions for new defenses, including Thule Air Base.
- 2. Because of a stretch-out in manufacture of HERCULES equipment it is expected that all units included in the above force structure will not attain an operational capability until several months subsequent to end FY 59.

Declassified

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ADOCL 413.68 SUBJECT: USARADCOM NIKE Program, FY 59 (U)

3. Department of the Army has requested that you be furnished the above information for your use in developing FY 1959 level of defense effectiveness as requested by the Joint Chiefs of Staff.

FOR THE COMMANDER:

Copy furnished: DCSOPS DA

J. R. BENNETT Major, AGC Asst Adjutant General NOOPE

40 EC . 1956

MUNJACI: URA Surface-to-Alr iss le Denloyment len (1)

TO:

Commander-in-Chini Strate ic Air to an

Uliut Air Force and, 's raska

1. meferences:

a. Tetter this head usrters, 2000, subjects "I lir Defense Interceptor issile colomant Plan Brough 16 in, dated 26 April 1957.

b. Letter your manquarters, DT ab 10 denuary 155 , subjects "sir Defense Intercentor . sile con lopert lan through 1961," in which you requested information on the operational status of missile mits and future olans.

c. Letter this adquarters (TE) . , s hjecis "No AD Proposed Strietr-to-Air issile a loy ent (), " dated 5 February 1,50.

2. All Nike sites liste in coa ruch 2 of eference a a ove nave attained an operational status at ... locations specified with the excep on of the following:

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*(This site is being constructed as a double si e. The like unit to eventually occury this location is now operational on temporary at a in the vicinity of emport, ichigan.

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MEMO FOR RECORD:

(Background information) On 14 September 1956, SAC requested that they be furnished data reflecting the present and future location of all surface-to-air missile sites in defense of the North American Continent. The information desired was the type of missile unit, TO&E (Table of organization and equipment), and the geographic coordinates of each. This information, which included deployment plans for Talos, as well as Bomarc and Nike, was forwarded on 10 Dotober 1956. Specific GEOREF coordinates were furnished on individual Nike Control sites, Launcher sites, and Headquarters sites for the 61 battalien plan. The specific locations of the Bomarc and Talos sites were not furnished, because they had not been firmly determined at that time. On 26 April 1957, CINCSAC requested and was furnished the operational status of those Nike sites listed on the 61 battalion plan. At that time 37 batteries had not attained an operational status.

This correspondence is in response to a request from SAC for the present operational status of those 37 batteries, and changes te the original plan and/or new plans or programs on missile deployments.

Wich Cay

MOOPR, HQ MORAD, subj: MORAD Surface-to-Air Missile Deployment Plan (II)

The following changes should be made to the list in paragraph
 of reference la above.

a. Change Rocky Miver, Ohio, Control and Launcher sites to the following:

Control Pairview Park, Onio GJJK Obb 271
Launcher Fairview Park, Onio GJJK Obb 277
273

b. Change E. Rapid City, S.D., Comirol and Launcher sites to the following:

Control 4.9 mi W. Elsworth AF, .D. FJBQ 406 007 Launcher 4.5 mi W. Elsworth AFP, S.D. FJBQ 471 091

c. Change Bratemanl, Chio, Control site to the following:

Control Clayeland, hio GJJM 210 321

d. Change Bratonahl, Unio, Launcher site coordinates to the following:

Launcher Bratenahl, Ohio GJJ 223 326

e. Change Travis AFB, California, Control and Launcher site coordinates to the following:

Control Travis AFB, Calif. DJPJ 092 130 Launcher Travis AFB, Calif. DJVJ 098 141

f. Delete damp Shanks as a headquarters site, as Camp Shanks so longer exists. The headquarters site is at Tannan, New York, HJBH 030 Clh.

4. GEOREF coordinates of the first four Bomarc sites are as shown below. The specific locations of other Bomarc sites have not been firmly established.

Suffolk AFB HJCL 220 500 Utis AFB HJCL 290 390

Dow AFB HJ00 110 485

WOOPR, H. WAD, subj: West burface-to-Air Massile Deployment Plan (4)

5. deference your query on changes to subject blan and/or new plans or programs on missile deployments:

a. .alos - the st has of the felos pro ram is once. ain at the ores at time. I is hesoquarters has received to a icial information as to whether also units will be made available for air defense nursoses. Therefore, intil such t a that a definite decision has been made, deployment planting for ales uni s compet of i alizee due to other air defense icriles entering the inventor . The original delionment of Talos furnished our . ad us ters in October 5 5 is to longer vehid. At such time that the decision is made to formish Telor for sir defense a moses, whened deploy ants will be are an ed to our hendquarters.

1. Forere - he complete Bonare Umloyment of a is combained in the a bliration " Frontinel we Pain ig Fan for the "blat Air Defence incide " " " po por 195". - o co tos . this coment were forwarded to our leadquarters on 2 January 1 %b. Das clan will be revised on or about I duly 1000, at which time more will be forwarded to come beacounters. Bemore decloyments recovered d by wal to the JCS for the TY th and The lad the are included in elemence letter le alove, which was forwaried to , ur conquarter on arrang 1500.

The tables of or animation and equip of (FOM) for Somero squadrons are being revised at the present than, however, under current o ricial planning about n.s. Tomare s undo se will e stially deployed at tra-half and priment strength, that is, missies. Subsequently, on the basis of defense priority and availability of funds, tiese only will be will in to full unit or insent a rength. The initial personnel strength of each nelf squadron, on a benant casis, will be 12 of moors and 15, auren. Full squadren strongth on a tenant basic will be it officers and it streen. Inpir for non-screen units incl des 12 or loars and 201 airmen for a malf statement and 15 officers and 325 airser for a full a madron. ast these at entation for a half squadron on a se art basis in 21 civillans and 2. I men and .c. a full equadron in a terant asis, 28 civilians and airmen.

c. Nike - In addition to the of like racialion han oreviously furnished your headquarter, wight tike marcules lattations have been approved by the defor dealerment in he m 55 barget, and In additional Name Hercules battalio s have over recomme asc to the ACS for deployment in the F' 59 budget. There deployments are included in reference latter le alove.

On 20 firch 1956, Mike hex launchin, batteries will reorganize under " " nh-shith, with a strength of on items and 80 enlisted men. Double launching betteries will be recommised under TO48 Wh-Will, with a strength of 12 officers and 14' enlisted men.



MOOPR, HQ MORAD, subj: MOIAD Surface-to-Air Missile Deployment Plan (U)

Headquarters and headquarters batteries will be reor anised under TOAR hh-hh6D, with strengths as follows: for a single battalion defense such as Loring AFB, 2h officers and 116 enlisted men; for a two or mere battalion defense, 9 officers and 49 enlisted men.

The TGE's for Nike Hercules batteries have not been published to date, however, it is estimated that the single battery strength will be approximately 8 officers and 70 ends to men, and a double battery strength, approximately 12 officers and 166 enlisted men. In regard to Nike Hercules units, one Max battery each at Loring, Fairchild, Travis and Ellsworth Air Force Bases are scheduled for conversion to Nike Hercules in late FT 59.

Plans for the deployment of additional like Hercules in
FY 61 are in the process of development. Copies of these plans will be
forwarded to your headquarters upon completions.

d. Hawk - Two Hawk battalions have been approved by the JGS for deployment in the FT 58 budget, and 25 additional Hawk battalions have been recommended to the JGS by MCRAD for deployment in the FT 59 budget. These deployments are included in reference 1c above. Plans for the deployment of additional Hawk units in FT 62 are in the process of development. Copies of these plans will be forwarded to your head-quarters upon completion.

however, it is estimated that the strength of the firing battery will be approximately 9 officers and 61 enlisted men.

6. additional infermation as requested will be provided as these programs develop.

FOR THE COMMUNDER-IN-CHIEF:

HARVEY T. ALNESS Major General, USAF DCS/Plans & Operations

Declassified

Secret Execution Transport City Time Value

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REAFTINGIA

2 41 Fet 58

20 FEB 1958

MOOPR

SUBJECT: Wike Plans for the 50th Air Division (11)

70:

Commander CONAD Forces Eastern CONAD Region Stewart Air Force Base New York

1. On General Partridge's recent visit to the 58th Air Division, the Division Commander wished to know the Nike deployment plan for his ares. The plan is as follows:

a. One Nike Lattalion for Cincinnati - operational date October 1959.

b. Two Nike batteries each for Bunker Hill Air Force Base and Lockbourne Air Force Base - estimated operational date for both bases February 1960.

Only the deployment of the mattalion to Cincinnati is part of an approved plan; the four batteries for Bunker Hill and Lockbourne are part of a plan recommended by CTMCMCHAD, but which has not yet been approved by higher hesquarters.

2. A letter is being prepared in this needquarters which will provide Region Commanders with the planted deployment of air defense weapons for their respective regions.

Manning

POR THE COMMINITATING INF:

HARVEY T. ALMES Najor General, USAF DOS/Flans & Operations

M/R: Self-exclanatory

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Plan (U)			w	Accorded
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HOGPR	1st E	sd 3	1 MAR 1958	
Hq North Am	erican Air Defence Command	, But Air Fore	Base, Colored	INFO SERVICES
TO: Commen	ding General, U. S. Army A: Colorado	ir Defend Com	Die All I	-
		//	11.	Place & Rep
deployments	is headquarters is currently of all air defence weapons of the North American Air	ly reducing for in continuetion Defends Objection	which the	DCS 1
1968 (MADOP	58-68). When published,	this planted	mplace GADOP	56-66 A Estantes
2. 10	e proposed deployment plan	ini see string	uded as Incles	Cyc intel
to the basi	a letter will be somethere	d bis bead	parters in der	when the wall
deployment	plans for MADOP 58-68.		ate	
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MEMO FOR	CORD:			
11	11			COAST
1.	ch of the information in AF	ADCOM's propos	ed	Lt Col Gries
deployment	plan is a restatement of nr	reviously annro	red	2841
deployments	New deployments	recommended a	ffect	26 Har 58
the FY60 MC	as follows:			Refers to Fachile
-				X8-3648
	New NIKE Hercules deploym	ment for FY 196	O MCP.	we Type
(-)				
6				
5	Location	No.	of Batteries	
		No.		
	Hunter AFB, Ga.	No.	2	
	Hunter AFB, Ga. Altus AFB, Okla.	No.		
	Hunter AFB, Ga. Altus AFB, Okla. MacDill AFB, Fla.	No.	2 2 2	
	Hunter AFB, Ga. Altus AFB, Okla. MacDill AFB, Fla. Pinecastle AFB, Fla.	No.	2	
	Hunter AFB, Ga. Altus AFB, Okla. MacDill AFB, Fla. Pinecastle AFB, Fla. Homestead AFB, Fla.	No.	2 2 2	
	Hunter AFB, Ga. Altus AFB, Okla. MacDill AFB, Fla. Pinecastle AFB, Fla.	No.	2 2 2 2 2	
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	Hunter AFB, Ga. Altus AFB, Okla. MacDill AFB, Fla. Pinecastle AFB, Fla. Homestead AFB, Fla. Lake Charles AFB, La. Seymour-Johnson AFB, N. C. Eglin AFB, Fla. Houston, Texas	de)	2 2 2 2 2 2 2 2 2 2 4	

DUPLICAT

b. New Hawk Deployment for the FT60 MCP.

2. W. T. S.

Location	No. of Batteries
New York, M. Y.	4 (2 on off-shore platfor
Washington - Baltimore	4
Washington - Dail Com	1
Westover AFB, Mass.	2
Hartford - Bridgeport	3
Philadelphia - McGuire AFB	. 5
Boaton - Providence	4
Loc Angeles, Celif.	. 3
San Francisco, Calif.	3
Seattle - McChord AFB	AFE 3 (3 on off-shore platfo
Chiego - Milwaukee - R. I. Bong	2 (Possible Hawksibe in
Detreit - Selfridge AFB	Canada)
Wurtsmith AFB	1
Saulte Ste. Marie - Kinross AFB	(Possible Newk site in
March AFB	3
Loring - Presque Isle AFB	2
Platteburg - Ethan Allen AFB	3
Griffies AFB, N. Y.	3
Cleveland, Ohio	(1 off-shore platers)
Buffale - Miagara, N. Y.	4.7
Norfelk, Va.	La,
Castle AFB, Calif.	3 .
Travis AFB, Calif.	3
Mather AFB, Calif.	3
Beals AFB, Calif.	3
Houston, Texas	3
San Diego, Calif.	3 (1 off-shore platform)
Thule, Greenland	2
Duluth Base, Minn.	_3_
Total	86 Btrys

2. Since ARADOOM's proposed deployment plan contains several controversial items such as the use of Hawk off-shore platforms, Hawk bases located in Canada and the pregram for conversion of AJAX to Hercules, it is not considered advisable to indicate approval at this time. These items should be considered in the development of NADOF 58-68.

3 Feb 58

ADGCL 601

SUBJECT: Legislation Governing National Guard On-Site Missile Units

TO:

Deputy Chief of Staff for Military Operations Department of the Army Washington 25, D. C.

1. References:

a. Letter, Department of the Army, AGAN-P (M) 323.361 (25 Oct 56) DCSOPS, 5 Nov 56, subject: "Designation of Commanders as 'Competent Authority' to Order Members and Units of the Ready Reserve to Active Duty".

b. Letter, Department of the Army, AGAM-P (M) 370.5 (13 Dec 57) DCSOPS, 20 Dec 57, subject: "Policies for Deployment of Army National Guard On-Site Battalions".

- c. Letter, This headquarters, ADGCL 322, 22 Nov 57, subject: "Elimination of National Guard M-Day Oun and Skysweeper Units from the CONUS Air Defense Task Organization" (S).
- 2. The requirement for effective procedures to provide for early and timely use of Army National Guard missile units with on-site missions is of constant concern to this headquarters. The Army Mational Guard missile units which will go on-site beginning in FY 1959 will be integrated into the defenses where deployed rather than serve as augmentation forces as was the case with the Army National Guard on-site gun units. The present procedures for ordering National Guard units and members thereof to Federal Service, wherein the CGUSARADCOM as "competent authority" must await a Presidential Proclamation before taking action is considered by this headquarters to require too much time in view of the probability of an attack with little or no warning. To reduce the defense degradation which would result from not having the capability of ordering these missile units to Federal Service, it is believed that new legislation is required to allow the CGUSARADCOM to order National Guard on-site missile units and members thereof into Federal Service at such time as CINCNORAD indicates a requirement for an increased alert status and specifically requests National Guard participation. Based upon the readiness requirements imposed by CINCNORAD over the past two years

ADGCL 601 SUBJECT: Legislation Governing National Guard On-Site Missile Units

wherein increased alert requirements (Air Defense Readiness or Air Defense Emergency) for all of NORAD have never been declared and only in isolated instances one or more Air Division has been alerted, it appears that any legislation such as that outlined above will not impose undue hardships upon the National Guard personnel involved in the on-site missile program.

- 3. Reference b required that this headquarters negotiate mutual agreements with appropriate State authorities for the alerting, assembling, manning, and ordering to fire of Army National Guard missile units pending orders into Federal Service. Legislation suggested above would obviate the need for such agreements. In the absence of new legislation, it may prove impossible, based upon experience gained in the National Guard gun program, to negotiate suitable agreements in all cases.
- 4. The accomplishment of the above requires that the Armed Forces Reserve Act of 1952, as amended, be again amended or that new legislation be enacted. In addition, the provisions of reference a must be amended.
- 5. If reference c is approved, the requirement for providing procedures for ordering National Guard M-Day units to Federal Service in the CONUS Air Defense Task Organization will be eliminated; and, therefore, any such legislation would pertain only to those National Guard missile units with on-site missions.
 - 6. Based upon the above discussion it is recommended:
- a. That action be initiated to effect legislation necessary to allow the CGUSARADCOM to order National Guard on-site missile units and members thereof to Federal Service at such time as CINCNORAD indicates a requirement for an increased alert status and specifically requests National Guard participation.
 - b. That reference a be amended in accordance with a above.

FOR THE COMMANDER:

HRADQUARTERS, UNITED STATES ABAY, ALASKA APO 949, Seattle, Washington

8 Jan 1958

ABAOT-T 472.93

SUBJECT: Conversion to NIKE-HERCULES (S)

TO:

Commander-in-Chief, Alaska APO 942, U. S. Air Force

- 1. The attached Department of the Army NIKE package output schedule lists the following NIKE packages for deployment to Alaska:
 - a. One (1) NIKE-HERCULES Battalion Package September 1958
 - b. One (1) NIKE-HERCULES Bettalion Package October 1958
- 2. Concurrent with the arrival of the above packages in this theater, this headquarters plans to convert the following AA 120mm gun battalions to NDE, in the following order:
 - a. 1st Conversion 502d AAA Bn, Eielson AFE Defenses
 - b. 2nd Conversion 96th AAA Bn, Elmendorf AFB Defenses.
- Request your approval to the order of conversion listed in paragraph 2, above.

FOR THE COMMANIER:

1 Incl SIXE Package Output Schadule /s/ ALHERT E. HEYER
ALBERT E. HEYER
CWO, W-2, USA
Asst Adjutant General

HQ U.S.Army Alaska - 0012

Regrading data cannot be predetermined

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ADGPP 370, Hq USARADCOM, 27 May 58, Subject: USARADCOM Recommended Deployment Plan (U)

COOPR

1st Ind

3 Jun 1958

Hq Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, ATTN: ADOCE-CE, Ent Air Force Base, Colorado Springs, Colorado

1. Forwarded herewith is USARADCOM's Recommended Deployment Plan for NIKE and HAWK units. Particular attention is invited to paragraph 3, basic letter.

2. For your information, this deployment plan does not include Alaskan SAM deployment. NIKE units have been approved for deployment at Eielson AFB (five batteries) and Elmendorf AFB (four batteries). These units, with the exception of the fifth battery at Eielson AFB, have an estimated operational date of February 1959. The fifth battery is expected to be operational early in FY 1961.

FOR THE COMMANDER-IN-CHIEF:

1 Incl n/c

M/R: Self-explanatory

/s/t/ Maj Hamilton 2841 2 Jun 58

kmt

4-2751-6

RETURN TO:

Director
Re earch Studies Institute
Attn: Archives Branch
Marwall AFB, Alabama

Declassified

HISTORICAL SUMMARY
SUPPORTING DOCUMENTS
VOL V
219 Thru 267

Excluded from General Declarationtion Solution (NACD)

Excluded from General Declaciancation personne.

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SUBJECT: (U) Exployment of Reserve Perces

TO:

Chief of Staff, United Sunter Afr As Executive Agent for NURAD Weshington 25, D. C.

1. References:

s. Letter, Department of the Air Force, 24 July 1957, Subject: Authority and Policies for Mobilization of the USAF a Componenca.

b. Lecte: , Department of the Army, New-P(M) 323.361 (25 Oct 50), DCSOPS, 5 Nov 50, Subject: Designation of Commander as "Competent Authority" to Order Rembers and Units of the Read Reserve to Active Duty.

c. Letter, AGAM-P(M) 310.5 (13 Dec 57). DCSOPS, Office the Adjutant General, Department of the Army, Subject: Policies Deployment of A my Mattered Quard Outsite Bettailone, 2: Dec 57.

d. Lette., Department of the Air Potce, 12 Dec 50. Subject: Authority to under MEAF Rose ve Components to Active A Levolunmetily.

24 The mobilization politics as outlined in leierences a designate the Commander, ADC and the Commander, USARADCOM at "competent authority" to mobilize Reserve components eiter a netional pag pancy has been declared by the President, but such Commenders and do so only armed the President has specifically authorized such action. No provision is made for these Commanders to take such action prior to the declaration of a national emergency by the restident even in the event of an actual or imminent attack upon this country.

Service ettorts to improve the citustion stated in paragraph 2 has resulted in Service recommendations to Commanders of ADC and USARADCOM to negotiate mutual agreements with the scates concerned (.eferences c, d). These negotiations baye met with limited success as evidenced by the few agreements reached by both ADC and UBARADCOM.

4. In view of the increased suphasis being placed on the role of the Reserve Forces in sir defense and the rapidity wish which

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Colonel, USAF

Plans & Semis

an air attack can be launched against the North American Continent, this headquarters considers rapid utilization of the Reserva Forces to be an absolute necessity.

5. ADC has 17 Air National Guard squadrons (two aircraft per squadron) performing shert duty (5-minute alert) to augment the ADC alert system. Individual crew members for these aircraft are placed in an active duty status and as such are readily available for commitment in the active air battle. This force represents a very small percentage (3%) of the overall ANG strength. The remainder of the ANG force cannot be assembled and utilized until a lational Emergency is declared and when specifically authorized by the President. Time-wise, this is too late considering the increasing speeds of attacking aircraft. It is believed that the Commander, ADC must have the legal authority to assemble and utilize the full potential of the ANG prior to the declaration of a Mational Emergency and authorization by the President.

6. A my National Guard missile units will be initially integrated into the air defense system and will perform alert duty on-site in fiscal year 1759. By 1962, 202 Ammy National Guard betteries will be on-site, perfecenting 62% of the Army air defense units in the air defense system. In some critical defense areas this percentage may be as high as 60% (e.g., Washington-Baltimore and Chicago defense areas with the solut of a total of 24 Nike units). National Guard missile units will be organized into 30-minute and 3-hour elert type units. The 30-minute alert units will be on-site and readily available; but they cannot be legally committed in the sir battle unless a National Emergency has been declared and such action is authorized by the President. Similarly, the 3-hour elert units could not be assembled and utilized unless the above actions had been taken by the President. The current legal arrangement which prohibits the use of Army National Guard missile units at a time of imminent danger cannot be reconciled with the threat that faces the nation.

7. Considering the high percentage of National Guard missile batteries that will be part of the air defense system and the high percentage (average 75%) of these units that will be on 3-hour alert status, is appears that the air defense of the United States would be seriously jeopardized unless rapid assembly and utilization of all NG batteries is authorized. It is believed that the CG, UBARADCOM must have the legal authority to assemble and utilize all National Guard missile batteries prior to the declaration of a National Emergency and authorization by the Plesident.

8. Based upon the above discussion it is recommended that legislative action be taken to provide the Commanders of ADC and USARADCOM with the authority to assemble and utilize, in the active

air battle, members and units of specified Reserve Forces prior to the declaration of a Mational Emergency and Presidential authorization when in the opinion of CINCNORAD such action is required. CINCHORAD's requirement for these forces may precede the declaration of a National Emergency and authorization by the President as intelligence information and/or early warning indicates the necessity NFO SERVICES for a rapid build-up of the air defense forces.

Commander-In-Chief

Street & Colomate DES PAG Part Ansas CONNAVEORCONAD CG ARAA COMD REAF LIAISON

MEMO FOR RECORD: Self-explanatory.

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ACT: HOUPE DIFO: HOUPE

CLAS FROM AFTIPD-: A7050 YOUR LETTER DATED 7 APRIL 1055, SUBJECTS.

LIPLOWART OF RECEIVE FORCES HAS BEEN REFERED TO THE JOINT
TANT FOR COMMENT AND RECOMMENDATION.

BALLE ATT BURNE

UNCLASSIFIED

SECURITY CLASSIFICATIO Declassified JOINT MESSAGEFORM SPACE BELOW RESERVED FOR COMMUNICATION CENTER 1577,000 2.21 ACCOUNTING SYMBOL TYPE MSG / ... PRECEDENCE CDOOT-F 0177 PRIORITY TEMBS-EA-1 ALMERICAN INSTRUCTION FROM: PRIUTITY CINCONAD COMMENTADO ENT ATB COLO (COURTER) CONDPIUR STEWART AFB MEGRARCH HY COMOFOCE FIGHANDS-JEBAUR AFB GRAMENTEN MO COMPACE SAMILACE AFB CALIF IMPO: CINCAL ELIMINDORF AFB ANCHORAGE ALAEKA 1000P-T X C 37 . This message in two parts. Declassified Part I for COMMETCER. This answers CADF message CDOUT-F 0175. Part II for all. Reference MY COOUP-T X032. Delete first sentence of Part II and substitute the following: The following alert commi ments are established for all units where HB-1 rockets and 7-897 aircraft are available. These short commitments are in addition to the required aircraft on quite Five-minute unquote alert as specified in CONAD Regulations 55-2 and 55-6A. TIME ve 80302 10 x THE W. LEDOUX HE AND THE LCDR, USN Anat Dir. Administrative Services had Schieble FF NO. x8-31-72 REPLICES DO FORM 175 1 OCT 49, WHICH WILL UF USED CHITE EXHAUSTED

1 5 1 0

28 Jan 1958

NOOP T

SUBJECT: Authority to Employ MB-1 Air-to-Air Rockets in NORAD Operations at Goose Bay, Canada

TO: Chief of Staff, USAF
as Executive Agent for NORAD
Washington 25, D.C.

1. Reference is made to:

a. Letter, CONAD, to Chief of Staff, USAF, as Executive agent for CONAD, Subject: "Storage of MB-1 Rockets in Canada," 23 April 1957.

b. CONAD message COOOP T X0108, to Chief of Staff, USAF as Executive Agent for CONAD, 16 July 1957.

c. Headquarters USAF message AFXPD 58652, to CINCNOAD, 26 July 1957.

d. Faragraph 3, CONAD letter to Chief of Staff, USAF, as Executive Agent for CONAD, Subject: "CONAD dispersal requirements for Fiscal Year 1958," 30 July 1957.

e. Paragraph h. NORAD letter to Chief of Air Staff, RCAF, as Executive Agent for NORAD (information copy to Chief of Staff, USAF, as Executive Agent for NORAD), Subject: "Employment of the MB-1 Air-to-Air Rocket in NORAD Operations," 28 October 1957.

f. Letter, Chief of the Air Staff RCAF to CINCNORAD, Subject: "Employment of the MB-1 Air-to-Air Rocket in NORAD Operations," 28 November 1957 (Copy attached as Incl #1).

2. The above-referenced correspondence indicates that this headquarters has endeavored to obtain the necessary authority to stock MB-1 weapons at Goose Bay, Canda, since 23 April 1957, and that since 21 June 1957, when this CONAD request was forwarded by the Office of the Secretary of Defense to the State Department, no authority to meet this requirement has been produced.

3. As you are awared, Goose Bay, because of its isolated location beyond the contiguous air defense combat sone, is particularly vulnerable to air attack. The F-89J squadron located there is one of the few squadrons on the USAF inventory operationally capable of fireing the MB-l air-to-air rocket. Storage facilities already exist and the armament could be made available immediately upon the receipt of the Canadian Government approval to employ these weapons. This would permit NORAD to have an atomic defense capability at this stratigec norther base.

UPLICATE

Declassified

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NOCOP T Hq NORAD, Subject: Authority to Employment MB-1 Air-to-A Rockets in NORAD Operations at Goose Bay, Canda

- 4. As now armed with a reduced quantity of cinventional weapons, the F-89J aircraft has but a fraction of its designed capability with the HB-1 armament. Consequently, the present air defense capability of the F-89J squadron at Goose Bay is restricted to little more than an identification role.
- 5. It is most desireable that MB-1 weapons be employed in NORAD operations in the defense of Goose Bay. It is requested that the necessary negotiations be completed at the ecaliest practicable date.

1 incl a/B E. E. PARTIBGE General USAF Commander-in-Chief

M/R Not required.

TOINT MESSAGEFORM SPACE MELLIN KINERVED FOR COMMING ACTION ROUTINE INPO FROM: CINCHORAD SPECIAL INSTRUCTIONS COYS USAF WASH 25 DC Declassified TROUNCEOF-T X 047 . Chief of "taff, USAF, is Executive Agent for CONAD. THIS ESG IN TWO PARTS. PART CHES YOUR AFXPD-PY 58401. THE PULLOWING FEGUEST IS MADE IN COMMECTION WITH EXISTING CONAT PROCEDULES: This headquarters requests re-" moval of the seographical restriction of 51: degrees North Latitude as now written in the agreement of 23 June 57. Reason: The present geographical restriction precludes overfly of Canada b, Alaska based sircraft armed with MB-I rockets and does not allow US based mircroft armed with MB-1 rookets to operate at maximum range utilizing HCAP forward recovery bases in emergency. Pakt Two: THE FULLOWING REQUISORS ARE MADE IN COMPORMITY WITH PROPOSED NORAL PROCEDURES: This headquarters is in the process of reviewing CONAL regulations and ROAF Air Staff Instructions for the purpose of standardizing these 1800Z operational regulations for the US, Canada, and Alaska as BIGNATURE NO. OF-P Maj Schiebel 2078 Declassified FORM 173 REPLACED DO FORM 177 1 OCT 44. WHICH WILL SE 1980 UNTIL EXHAUSTED

MT MESSAGEFORM - CONTINUATION SHEET

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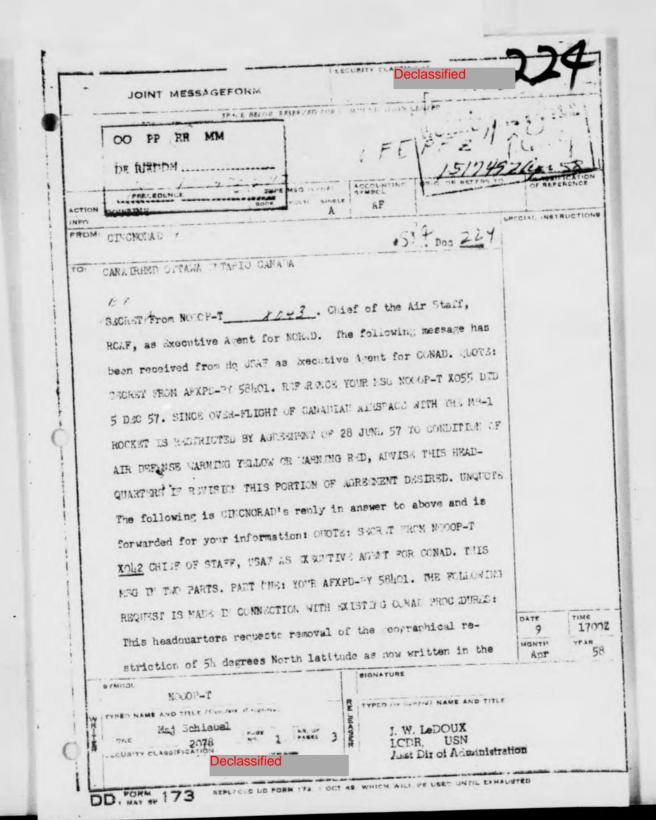
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MORAD regulations. The proposed draft of NORAD Regulation 55-3 outlining conditions of preparedness has received RCAF ADC initial concurrence and establishes the following conditions: A. Normal Readines B. Increased Readiness. C. Air Defense Readiness. Air Defense is the highest condition of NORAD preparedness. Following this is the transition from Peace to War which is accomplished by the official declaration of an Air Defense Emergency with imminence of attack indicated by Warning Yellow or Warning Red. Air Defense Readiness will be declared only by CINCNORAD, Deputy CINCNORAD, or his appointed representative in the NORaD COC. The initial Air Defense Emergency Warning Yellow or Warning Red will be declared only by CINCNORAD or Deputy CINCNORAD. Authority to order the engagement of an aircraft mitting a manifestly hostile act is limited to Air Division Commanders or higher authority. Authority to declare an aircraft hostile by intent only and to order its engagement will be made by CINCNORAD, Deputy CINCNORAD or his appointed representative in the NORAD CCC. In conjunction with the above proposed standardization, this headquarters requests the present authority QUOTE: To overfly Canada up to 5h degrees North latitude with MB-1 armed aircraft during Air Defense Warming Yellow or Warming Red UNQUOTE be changed to authorize QUOTE Overfly Canada with MB-1 armed aircraft from bases in the US and Alaska, during a NORAD Air Defense Readiness UNQUOTE. Estimated date of publication of proposed NORAD publication is thirty days after the approval of NORAD Terms of Reference.

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CINCHORAD

agreement of 28 June 57. Reason: The present geographical restriction precludes overfly of Canada by Alaska based aircraft armed with MB-1 rockets and does not allow US based aircraft armed with MB-1 rockets to operate at maximum range utilizing RCAF forward recovery bases in emergency. PART TWO: THE FOLLOWING REQUESTS ARE MADE IN CONFORMITY WITH PROPOSED NORAD PROCEDURES: This headquarters is in the process of reviewing CONAD regulations and RCAF Air Staff Instructions for the purpose of standardizing these operational regulations for the US, Canada, and Alaska as NORAD regulations. The proposed draft of NORAD Regulation 55-3 outlining conditions of preparedness has received RCAF ADC initial concurrence and establishes the following conditions: A. Normal Readiness. B. Increased Readiness. C. Air Defense Readiness. Air Defense Readiness is the highest condition of NORAD preparedness. Following this is the transition from Peace to War which is accomplished by the official declaration of an Air Defense Emergency with imminence of attack indicated by Warning Yellow or Warning Red. Air Defense Readiness will be declared only by CINCNORAD, Deputy CINCNORAD, or his appointed representative in the NORAD COC. The initial Air Defense Emergency Warning Yellow or Warning Red will be declared only by CINCNORAD or Deputy CINCNORAD. Authority to order the engagement of an aircraft committing a manifestly hostile act is limited to Air Division Commanders or higher authority. Authority to declare an aircraft hostile by intent only and to order its

engagement will be made by CINCNORAD, Deputy CINCNORAD or his

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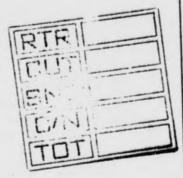
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appointed representative in the NORAD COC. In conjunction with the above proposed standardisation, this headquarters requests the present authority QUOTE: To overfly Canada up to 54 degrees North latitude with MB-1 armed aircraft during Air Defense Warning Kellow or Warning Red UNQUOTE be changed to authorize QUOTE Overfly Canada with MB-1 armed aircraft from bases in the US and Alaska, during a MORAD Air Defense Readiness UNQUOTE. Estimated date of publication of proposed NORAD publication is thirty days after the approval of NORAD Terms of Reference.



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4 U. S. GOVERNMENT PRINTING OFFICE: 1965-4522

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNIT D STATES AIR FORCE
WASHINGTON 25, D. C.

225



15

SUBJECT: (FNCLASSIFIED) Extension of Overflight Rights

TO:

Commander in Chief North American Air Defense Command Colorado 5 rings, Colorado

1. (UNCLASSIFIED) Reference is made to your message NOOOP-T 0108, 3 July 1958.

Declassified Inclosed are copies of notes exchanged between the United States and Canadian Governments on 12 May 1958 (Incl 1), which extend the permissible area of overflight northward from 500 to about 540 north latitude and longitudinally to the full extent of Canadian territory including the coastal Canadian Air Defense Identification Zones.

Jeclassified
[Inclosed also are copies of letters]
[Inclosed also are

4. (UNCLASSIFIED) This letter is classified SECRET because it contains information pertaining to classified understandings between the inited States and a foreign Government.

FOR THE CHIEF OF STAFF:

John Aplain

2 Incls

1. Notes-CAN-U.S. Extending Overflight

 Notes - CAN-U.S. Amending Overflight

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ACTION: NOOCE

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Declassified OVERFLIGHT AGREEMENT IS DATED 27 JUNE 1957. ON 12

MAY 1958 BASIC AGREEMENT WAS REVISED TO EXTEND
AUTHORIZED AREA OF OVERFLIGHT FROM A LIMIT OF

50 DEGREES TO 54 DEGREES MORTH LATITUDE. BT. 02/1656Z JUN RJEPIN

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Executive Agent for Canadian Border over Warning Yellow or Re Request overflight a Limitation should be 15 April 58.	NORAD. YOUR AFOAT flight of MB-1 arms d. This authority uthority be extende imposed as reques	dief of Staff, USAF, As 57773, 1 July 1957 authorized aircraft during Air Defendences void 30 June 58. Ed to FI 59. No geographic ted in our NOOGP-T I Oh2,			
M/R It is not known authority without U to extend MB-1 over	. 2,5				
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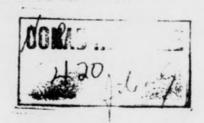
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TERM RIGHTS TO OUTHER LY CAMADA WITH MB-1 ROCKETS IN FINAL STACE OF PROCESSING IN THIS MEADQUATTER. ACREEMENT WILL PROVIDE FOR OVERFLICHT OF CAMADA WITHOUT GEOGRAPHICAL RESTRICTION DURING OVERFLICHT OF CAMADA WITHOUT GEOGRAPHICAL RESTRICTION DURING OVERFLICHT OF CAMADA WITHOUT GEOGRAPHICAL RESTRICTION DURING OVERFLICHT OF AIR DEFENSE READINESS. RCAF HAS ALREADY INDICATED. PERIOD OF AIR DEFENSE READINESS. RCAF HAS ALREADY INDICATED. OF GENERAL ACCEPTANCE OF PROPOSED AGREEMENT. PENDING CONCLUSION OF GENERAL ACCEPTANCE OF PROPOSED AGREEMENT WITH CHANADA FOR A ONE LONG TERM AGREEMENT STATE IS NEGOTIATING UITH CAMADA FOR A ONE YEAR EXTENSION OF PRESENT OVERFLIGHT AGREEMENT UNICH RETAINS YEAR EXTENSION OF PRESENT OVERFLIGHT AGREEMENT ON RESTRICTION OF 54 DEGREES NORTH LATITUDE, STATE ASSURES EXTENSION UILL BE FINALIZED PRIOR TO EXPIRATION OF PRESENT AGREEMENT ON

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RESTRICTION ON YOUR OPERATIONS CAUSED BY EXISTING GEOGRAPHICAL LIMITS APPRECIATED AND EVERY EFFORT IS BEING MADE TO EXPEDITE LONG TERM AGREEMENT WHICH WILL ELIMIATE OVERFLIGHT PROBLEMS. PAGE THO RJEPHO 191 BT 27/2040Z JUN RJEPIN

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ALCOM REGULATION) 55-11A) NUMBER

HEADQUARTERS ALASKAN COMMAND APO 942, Seattle, Washington 8 April 1958

OPERATIONS

Alert Requirements for Air Defense Units and Employment of the MB-1 Rocket

Paragraph 7, AIR 55-11 is rescinded.

FOR THE COMMANDER-IN-CHIEF:

T. R. STOUGHTON Brigadier General, USA Chief of Staff

OFFICIAL:

ZABA E. D. BRYSON

Major, AGC Adjutant General

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ALCON REGULATION) NUMBER 55-11) *AIR 55-11 HEADQUARTERS ALASKAN COMMAND APO 942, Seattle, Washington 11 February 1958

fit at to a Section

Alert Requirements for Air Defense Units
and Employment of the MB-1 Rocket

SECTION I - ALERT REQUIREMENTS

Purpose
Responsibilities
Aircraft Alert Requirements
Aircraft Control and Warning Squarrons
Alert Requirements
Antiaircraft Fire Units Alert
Requirements

SECTION II - MB-1 ROCKET

Concept of Employment
Operations over Canada

SECTION I - ALERT REQUIREMENTS

- 1. PURPOSE. This directive establishes the minimum states of alert to be maintained by air defense units in the Alaskan Command and provides guidance for utilizing MB-1 weapons in the sir defense of Alaska and the Northwest approaches to the United States.
- 2. RESPONSIBILITIES. The COMMAC and the CG, UBARAL, will be responsible for maintaining their forces in the minimum states of alert as outlined by this regulation. The COMMAC will establish procedures for the promulgation of policies pertaining to employment of the MB-1 rocket as outlined in Section II.
 - 3. AIRCRAFT ALERT REQUIREMENTS.
 - a. Normal Preparedness.
 - (1) 10th Air Division (Def).
 - (a) Two aircraft will be maintained on 5-minute

alert.

(b) Two aircraft will be maintained on 15-minute

alert.

* This Regulation supersedes AIR 55-11, 10 October 1957.

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ALR 55-11

- (c) Four aircraft will be maintained on 1-hour
- alert.
- (d) Remaining combat-ready aircraft will be maintained on 3-hour alert.
 - (2) 11th Air Division (Def).
- (a) Two aircraft loaded with 2.75" FFAR and/or GARS will be maintained on 5-minute alert for identification missions.
- (b) Two aircraft loaded or ready for instant loading of MB-1 rockets will be maintained on 15-minute alert.
- (c) Remaining combat-ready aircraft will be maintained on 3-hour alert.
 - b. Increased Readiness.
 - (1) 10th Air Division (Def).
 - (a) Four aircraft will be maintained on 5-minute

alert.

(b) Four aircraft will be maintained on 15-minute

alert.

- (c) Remaining combat-ready aircraft will be maintained on 1-hour alert.
 - (2) 11th Air Division (Def).
- (a) Four aircraft loaded with MB-1's will be maintained on five-minute alert.
- (b) Remaining combat ready aircraft will be loaded with MB-1's as soon as possible and maintained on one-hour alert.
 - c. Air Defense Readiness.
 - (1) 10th Air Division (Def).

All combat-ready aircraft will be placed on 5-minute alert and maintained on that status until released.

(2) 11th Air Division (Def).

All combat-ready aircraft will be loaded with the following weapons configuration priority: MB-1, GARS, 2.75" FFAR as soon as possible after the declaration of air defense readiness or air defense WARNING YELLOW or RED, and maintained on that status until released.

The france.

ALR 55-11

- A. AIRCRAFT CONTROL AND WARNING SQUADRONS ALERT REQUIREMENTS.
 - a. Normal Preparedness:

Aircraft Control and Warning Squadrons will maintain continuous radar surveillance and control capability.

b. Any Condition of Increased Preparedness;

Every effort will be exerted to maintain the highest capability possible for an indefinite period of time.

- 5. ANTIAURCRAFT FURE UNITS ALERT REQUIREMENTS.
 - a. Normal Preparedness:

50% of fire units will be maintained on 30-minute alert and the remainder on 3-hour alert.

b. Increased Readiness:

50% of fire units will be maintained on 15-minute alert with the remainder on 1-hour alert.

c Air Defense Readiness:

All fire units will be maintained on 15-minute alert until released.

SECTION II - MB-1 ROCKET

- 6. CONCEPT OF EMPLOYMENT.
 - a. Authorization.

The President of the United States has authorized the expenditure of Type MR-1 versions in the air defense of the United States and its possessions in execution of policy governing interception and engagement of hostile aircraft. The MR-1 spoket will be employed in the Alaskan air defense system in accordance with procedures contained in this regulation, and applicable MAMD agulations.

b. Employment.

Aircraft loaded with MR-l's will be flown only during periods of "Increased Readiness" or higher state of preparedness.

MR-l's will be arrended in accordance with current rules of encagement as contained in CONAIR 55-6 and ALCOM supplements thereto. The declaration of a state of 'increased Readiness" or higher state of preparedness constitutes authority to load MR-l's and fly aircraft so

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55.11A 55.11A YKS8 loaded on active air defense missions. Extreme caution will be exercised in employing the MB-1 below 5,000 feet to minimize damage and hazard to ground installations and personnel.

c. Reservicing Requirement.

The established 15-minute turn-around time requires that MB-1 weapons be readily available when aircraft return from active air defense missions. Therefore, weapons will be moved from the storage sites if necessary and held in designated areas for rearming.

d. General.

The GCI Director will exercise caution in vectoring interceptors to insure that the MB-l is not fired below 5,000 foot terrain clearance over populous areas. In addition, care will be exercised by the GCI Director to insure that friendly aircraft are not affected by the atomic detonations from the MB-l rocket. When all available atomic armament has been expended, the F-89J aircraft will be employed with CAR missiles and/or the 2.75" FFAR.

.) OPERATIONS OVER CANADA.

a. USAF aircraft armed with MB-1 weapons will enter Canadian air space only under conditions of Air Defense Warning YELLOW, or RED.

b. The use of MB-1 weapons over Canadian territory will conform to the rules of interception and engagement as established by the Canadian Government for interceptor aircraft of the RCAF operating over Canada. (Reference CANUS Emergency Air Defense Plan 2-57.)

c. Operational procedures will be established to insure a minimum possibility of public bazard when employment of the MB-1 is necessary over Canada. These procedures will include a restriction of firing the MB-1 at an altitude of less than 5,000 feet above the terrain.

d. Aircraft armed with MB-1 weapons, under Air Defense Warning TKILOW or AKB, are authorized by the Canadian Government to land at, or take off from, Canadian bases in the territory over which they have authority to operate.

e. The Canadian Government will be immediately natified of any crash in Canadian territory of a USAF aircraft carrying MB-1 mockets.

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accident, the USAF will send, upon request, trained personnel to assist in the operation.

FOR THE COMMANDER-IN-CHIEF:

OFFICIAL:

T. R. STOUGHTON Brigadier General, USA Chief of Staff

E. D. BRYSON Major, AGC Adjutant General

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COM ENR STEWART AFB NEWBURGH NY
COM CNR RICHARDS GEBAUR AFB GRANDVIEW MO
CIM WNR HAMILTON AFB CALIF
CO NNR RCAF STATION ST HUBERT PQ CANADA
COM ALASKAN NORAD REGION

INFO: COMUSAFADC ENT AFB COLO (COURIER)

CGUSARADCOM ENT AFB COLO (COURIER)

COMNAVFORNORAD ENT AFB COLO (COURIER)

RCAF/ADC OTTAWA CANADA

JOINT CHIEFS OF STAFF DOD WASH DC

COSC OTTAWA CANADA

CINCLANT NORFOLK VA

CINCPAC PEARL HARBOR T. H.

NORAD will remain on increased readiness and increased intelligence watch. PART II. Reference my NOCOP X101 of 15 July, paragraphs 3A, 3B, and 3C are changed to read as follows: A. Fighter interceptors not repeat not MB-1 equipped. Three interceptors per squadron on five minute alert status and thirty percent of the remaining operational ready aircraft will be maintained on one hour status. B. Fighter interceptors equipped with MB-1 rockets. A minimum of two aircraft per base will be maintained on fifteen minute alert status.

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Thirty percent of remaining operationally ready aircraft will be maintained on one hour alert. MB-1 equipped alert aircraft will not repeat not be scrambled during increased readiness. C. All surface to air weapons units to place fifty percent of fire units on fifteen minute alert status, twenty-five percent of fire units on one hour alert status, and twenty-five percent of fire units on three hour alert status. PART III. These changes will be implemented immediately.

22 1830Z July 58

NOOOP

Col. Callahan

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INTERCEPTORS AB-T					
NORMAL PREPAREDNESS	2 A/C AS SCHEDULED (NOT ARMED)		2 A/C with one MB-1 or 1 A/C with tab MB-1's	SOM OPS FRADY	REMAINDER OPS READY
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HEADQUARTERS AIR DEFENSE COMMAND

TEL MEI 102450 IN REPEY REFER TO: ADOOP-P-

SUBJECT: (U) Air Defense Command Status Under State of

Preparedness

21 106

TO: Commander-in-Chief

North American Air Defense Command

Ent Air Force Base

Colorado Societa

1. (UNCL) Reference CONAD regulation 55-3 and SECRET MORAD Dessage NOOOP X101.

Declassified

Request you approve the following recommendations concerning Air Defense Command actions in order to assume a posture in keeping with the present North American Air Defense Command State of Proparedness Sefer ences are to CONAD legular

Tyndail Air Force Base and Yuma Air Force Base are returned to home station, these aircraft then maintain alert status only. These aircraft will not be committed to nonoperational flying and training until Tactical Air Command airlift sircraft are available to return support elements to home station. Present information indicates airlift will be available from two to three days after departure of sircraft from weapons could

50(2) (a) The electric on one (1) hour stert status be committed to flying at the discretion of the Air Defense Force Commander with particular emphasis placed on those sircraft that can be employed in WEX VAL training and SAGE testing.

c. 5b(2) (b). That WEX VAL and SAGE testing operations, which do not require use of aircraft, continue to be normal. Then, full testing to resume when the present alert is cancelled and Strategic Air Command, Tactical Air Command and issand strongft become available.

CUPLICATE

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d. Sg(2)(b). That Project STTLS DAVID continue as normal due to JCS riorit, on this or set and late (2) TC-191 aircraft risin in new continue.

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HEADQUARTERS

NORTH AMERICAN AIR DEFENSE COMMAND

ADOOP-P, Hq USAF ADRICAN SERVE 3040 8865: (U) Air Defense Command Status Bader State of Preparednose

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Eq North American hir Defense Command, Ent Air Force Base, Colorado Sprioga, Colorado

TO: Commander, USAF Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

1. The recommendations contains a bests communication are a gara

S. With regard to the our out 2s, it is not intanded that units now at Heapons Training Centers be returned to home station before completion of weapons training, acr that weapons training schedules be interrupted.

3. Instructions to this effect have been dispatched to all NORAL commanders this date (Secret NORAL Bessage \$0000 2-120) a coop of which is strached for your ready references.

FOR THE COMP. HUES-IK-CHIEF!

1 Incl Copy mag MOOOP V-120 HARVEY T. ALNESS Major General, USAF ncs /place & Operations

M/R This reques from Lommand . SAY ADC has been anticipated and instruct. The to North Commanders have been dispatched in N-1 ACAP 1-120, 24 July 1958. These instructions indicate that CINCNORAL does not intend to intermit unit normal training requirements and tests as long as minimum alon

AND FORCINGS " in the same L/Col Matteson 2098 24 July 58

87086

months at the same 30 falls a EUGENE ET CALLAHAN USAF Colonel, acting Director of Operations

NORAD NS

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PRIORITY PRIORITY CINCHORAD

TO: COMERR STEVART AFB NEWBURGH BY

COMERR RICHARDS-GEBAUR AFB GRANDVIEW NO

COMURR HAMILTON AFB CALIF

CO MER REAF STATION ST HUBERT PQ CANADA

COM ALABEAN HORAD REGION

COM64CADD PEPPERRELL AFB NEWFOUNDLAND

INFO: COMUSAFADE ENT AFB COLO (COURIER)

COMMANTORNORAD ENT AFB COLO (COURIER)

state of Increased Readiness it is not intended that
normal training and test requirements be discontinued.
Alert commitments at Weapons Training Centers will
be discontinued. Units participating in annual service practices and Weapons Center training will be
scheduled so that a minimum number of units from any
one defense are absent a. One time.

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dtd: 24 July 58

HEADQUARTERS

NORTH AMERICAN AIR DEFENSE COMMAND

ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

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Col. Callahan

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15000 18 July. Reference Made Aldi. Was forces are continuing to smintain a state of Increased Resdiress. N. Al Weapons Status at 15/07001 was:

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Borthern W At Section	27	0	0
Thule AFR	4	0	\$
Alaskan WHAD Region	10	э	6
Western W AD Region	38	25	0
Central MC AD Region	3°	2	0
Resters NOWAR Region	112	22	0
Totals	229	217	8

equipped with ME-1's - 24. kesters of All Region maintaining
3 ANNEC (Sentinel Aircraft) stations and 5 picket ships.

astern NORAD Region maintaining a picket ship stations with
4 APARC stations obtboard of the picket ships. 1 station

manned by Many blimp inhours the picket ships. 1 sentinel airoracle is standing by to assist NAT, double trouble sovements.

Telephone communication to forthern Alaska is still dependent
on emergency radio circuits due to forest firms.

MEMORANDUM FOR RECORD.

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COM CENTRAL NORAD REGION RICHARDS GEBAUR AFB

COM WESTERN NORAD REGION HAMILTON AFB

COM NORTHERN NORAD REGION ST HUBERT CANADA

COM ALASKAN NORAD REGION

RGAF HQ OTTAWA

CINCLANT NORFOLK VA

JOINT CHIEFS OF STAFF DOD WASH

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CINCPAC PEARL HARBOR TH

COMNAVFORNORAD ENT AFB COLO (COURIER)

CG USARADCOM ENT AFB COLO (COURIER)

UNCLASSIFIED From COC CITE <u>08-003</u>. This message in two parts. Part I. CINCNORAD releases all units under his operational control from a State of Increased Readiness. All units are to assume a state of Hormal Preparedness effective immediately. Part II. Increased intelligence watch will be maintained by NORAD Hq only.

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W/Q Edwards 2088 Aug 1958

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INFO: NGSEC, NGOOP, NOOPO, NOINT, NOINT, NOELC N8-2153

ACTION: HOGOC

RJEDDII/CINCHORAD OK HAM Classified

AC741 2 AUG

THIS UESSAGE SUPERCEDES HY A331 25 JUL AND AC732 27 JUL (TO 64 CONAD GC ONLY) PD CINCNORAD RELEASS ALL UNITS UNDER HIS OPERATIONAL CONTROL FROM STATE OF INCREASED READINESS PD ALL UNITS HAY ASSUME STATE OF NORMAL READINESS EFFECTIVE INHEDIATELY UNITS HAY ASSUME STATE OF NORMAL READINESS EFFECTIVE INHEDIATELY PD NO PUBLIC INFORMATION RELEASE ON THE FOREGOING WILL BE MADE PD FIGHTERS STATUS FOR BASES IN CANADA TO BE IN ACCORDANCE WITH ANNEX C APPENDIX I OF ADC OPS PLAN 1 JUL 58

02/21212

AC-PARPHRASE NOT REQUIRED EXCEPT PRIOR TO CATERGORY "B" ENCRYPTION PHYSICALLY REMOVE ALL INTERNAL REFERENCE BY DATE TIME GROUP PRIOR TO DECLASSIFICATION-NO UNCLASSIFIED REFERENCE IF DATE TIME GROUP IS

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HEADQUARTERS UNIN

ROUTINE

28 may 1908

ROUTINE CINCHORAD

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CO USAFADOM OIT AFB COLO (COURISE)
COMAVEGECONAD OIT AFB COLO (COURISE)

UNCLASSIFIED From Mosco-T 084. A recent incident in western CONAD Region (CPNOR Msg CMOOP 17940) where a track was classified unknown and subsequently intercented and identified as a 3-47 on a RPS Rum with bemo-bay doors open her brought to light a discrepancy between CCNACR 55-3, narrowach he, and CCNACR 55-6, paramaph ha(5). To precinds aircraft being engaged because they have bomb-bay doors open, the following will be added to the beginning of paramaph ha(5) make they

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CINCNORSE

HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO-SPRINGS, COLORADO

INSSS OF THER CARPTION OF ALL IT THE -- UNQUOTE. The last sentence of paragraph to CONADR 55-3 will be soluted and the following substituted QUOTE SUBSQUENT TO A CRUBAR COLLARATION OF ALAIR DEFENS. REALTHORS OR HIGHER CONSTITUTE OF ALART, OPENING BOME BAX DOORS OR COLLE OPERATION OF THE ALROHAD PROJECT OF A VITAL MAQUOTE.

THESE AREA WILL CHEST THE A KETTEL ACT. /The current defal Regulations 55-3 and 55-0 are being rewritter as NORAD Regulations and are expected in the field in the near future. ComaD Perion Commanders will near that subordinate units are informed of this change in the above mentioned regulations.

INP COOK OF THE THE ALS THEFTS TO SECURE.

M/R: SAC has been opening pure-bay doors on RHS Runs for years.

Col. Hobbs and Major Panthing, SAC (Training) agrees that
above resease would preclude an incident ever appening as
during an Increased Seadness, or a directors Readiness,
SAC RES Training Ture will be stored and SAC will be involved
in other operations. The new MOSA regulations will include
instructions relarding the problem.

Re-typed on Unclassified Coordination Sheet.

-CHORAL DEP CHICKORNO Cars & ASST Coll Careers SEC 3 402 Auto Visual Sec SPL INFO SERVICES 555 PU .. St. 45 DC: 245 p 3 4 .4 reey Total Confe COC OCA DEV CG ARAD COAS CONNECTIFE ONAT CONUSAR LIC CAA FCDA

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NOR 010 DNA218 XYB155K2CZCSBA031 PP RJEDDN DE RJWPSB 41A P 262455Z FM COMCYWCR TO CINCNORAD

UNCLASSIFIED SPON CHOOD 18940. THIS MESSAGE IN FIVE PARTS.

"0-45 8. A RECENT INCIDENT IN 27TH AIR DIVISION OKDEF) WHEREIN
A B-47 WAS DECLARED UNKNOWN, INTERCEPTED AND THEN OBSERVED TO OPEN
BOMB BAYS PRIOR TO CHOSSIING LOS ANGELES HAS POSED A PROBLEM WHICH
CANNOT BE RESOLVED AT THIS HEADQUARTERS, PART II. NORADE 55-6
PARA 4A(5) CLEARLY DIFINES OPENING DOMB BAYS AS A HOSTILE ACT.
ANNEX A PARA 1J DIRECTS ENGAGEMENT OF TH AIRCRAFT IN THE CIRCUMSTANCE DESCRIPED AROUS, NORADE 55-1 PARA AE DEFINES OPENING BOMB STANCE DESCRIBED ABOVE. NORADR 55-3 PARA 4E DEFINES OPENING BOMB BAYS AS A HOSTILE ACT SUBSEQUENT TO THE DECLARATION OF AN AIR DEFENSE EMERGENCY OR WRNING YELLOW OR WARNING RED. PART III.

T. 19 (3:

XXX

Pub 1-1

PAGE TWO ROWPSB 41A

THIS IS CONSIDERED TO BE A SERIOUS MATTER IN THAT AN AIRCRAFT COULD HAVE BEEN DESTROYED UNDER THE PROVISIONS OF NORADR 55-6. IT IS REALIZED TAT THIS IS STANDARD PRACTICE FOR SAC AIRCRAFT ON RBS RUNS WHEN THE AIRCRAFT IS KNOWN TO BE FRIENDLY AND ON AN RBS RUNS HOUSEVER, NO PROVISIONS ARE MODE IF THE AIRCRAFT IS DECLARED UNKNOWN AND INTERCEPTED. PART IV. A REQUIREMENT FOR SAC AIRCRAFT TO CALL OUR ACAU SQUADRONS PRIOR TO AN RBS RUN WOULD CRATE AN EXCESSIVE WORKLOAD FOR SAC AND ADC AND IS NOT CONSIDERED A WORKABLE SOLUTION. THIS HEADQUARTERS RECOMMENDS THAT NORAD REGS 55-6 AND 55-3 BE CHANGED TO READ; OPENING OF BOMB BAY DOORS SUBSEQUENT TO A STATE CHANGED TO READ; OPENING OF BOMB BAY DOORS SUBSEQUENT TO A STATE OF INCREASED READINESS CONSTITUTES A HOSTILE ACT. PART V. REQUEST AN IMMEDIATE REPLY IN ORDER TO CLARIFIY THIS MATER TO SUBORDINATE UNITS.

UNITS. BT 27/0002Z MAY RJUPSB

answered by 084 29 May 88

fela Rules of Engineer

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ROUT INE UNCLASSIFIED FM COMADO TO COMOR EADY STEWART AFE NY COMOR WADF HAMILTON AFB CALIF ACT's NOCCC COMDR CADF RICHARDS GEBAUR AFT MO INFO: NOOOP COMDR ATC RANDOLPH AFB TEXAS NOOPO ,584 Doc 238 COMDR 64 AIR DIV PEPPERRELL AFB NF NOELC COMDR TAC LANGLEY AFB VA COMOR 73 AIR DIV TYNDALL AFB FLA CHF AFDIV NGB WASHDC INFO CINCHORAD ENT AFB COLO (COURTER) UNCLASSIFIED FROM ADOOP-0 680 THE FOLLOWING MESSAGE FROM CONDR 15 AF IS QUOTED FOR YOUR INFORMATION AND NECESSARY ACTION. (AUTH. MESSAGE AF15, DOTO 32697, 10 MAI 58) QUOTE: SUBJECT: B-47 AND B-52 BOMB RUN - PROCEDURES. IT IS A STANDING BENEARDMENT TRAINING PROCEDURE FOR B47 AND B-52 AIRCRAFT TO OPEN BOMB BAY DOORS DURING PRACTICE BOMB RUNS AGAINST RADAR BOMB SCORING SITES LOCATED IN MANY OF OUR MAJOR CITY COMPLEXES.

THIS PROCEDURE IS NECESSARY IN ORDER TO EXERCISE THE BOMB RELEASE SYSTEM WHEN A WEAPON IS NOT BEING CARRIED. TO MAKE EVERY ASSURANCE THAT THIS IS NOT INTERPRETED AS AN OVERT ACT BY AN OVER-ANXIOUS FIGHTER PILOT, IT IS REQUESTED THAT ALL AIR DEFENSE PILOTS UNDER YOUR COMMAND BE MADE COONIZANT OF THIS PROCEDURE. UNQUOTE.

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MAL ON STEEDMENT . CONAD RES TATELY date1 13 May .

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2 Pat : Mry 195

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Sentite, Washing

CONAD Regulation Sec. New 1 1 is supplemented for the Alaskan

DETERMINATION OF HOSTILE ATROPART.

c. () (UNCLASSIFIED) is on a course which if continued, would fly to within three miles of any Alaskan land wass area of responsibility. (NOTE: in that the Little Diomede is and (U.S.) and the Bug D. mede . Hand (1859) are only two and innee-quarters makes spart, the shore applies over the little fermede or within three miles to the Maria, South, or East f that Island.

THOLLEMENT OF HOSTILE AIRCRAFT.

to (+ 15FRET The general policy for all aircraft under centre. The Alackar Comment, operating to the Alaskan Poastal ADIZ, will be to avoid aggressive action, unless specifically instructed by the Air Mylafor Tormander Defense, or higher authority. If, however, cald United States aircraft are intercepted by Soviet Union (USSR) or unidentified aircraft and engagement appears unavoidable, the foll wing action by the air-raft commander will be taken:

(a) (SETFT) Alert fire control system to operational

(b) (SECRET) If the USER or unidentified aircraft perform obvious identification mane wers, already will be tracked but not (repeat to t) firet won.

[] (SECRET As air rat. commander is responsible to make every effort to safeguard his aircraft and lies by avoiding an engagement If, however, the intercepting 133R or inidentified aircraft takes up the position to cerform a firing tess and closes to within firing range, and there is no other alternative to safeguard the aircraft, one aircraft commander is only then to engage the interreptor with the intent to destroy.

This Supplement supresents ALCOM Supplement # , 4 Mr + 57 to CONAD Regulation 15- . 13 May 17.

Declassified

COMAD TA.

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ALCOM SUPPLEMENT #1 to CONAD REGULATION 55-6 dated 13 May 1957

7. (UNCLASSIFIED) Peports submitted in accordance with CONADR 200-2 will be immediately relayed by telephone to the Commander-in-Chief, Alaska, Elmendorf extension 29103, 23100, or 23205.

FOR THE COMMANDER-IN-CHIEF:

OFFICIAL:

JOHN S. LINN

Major. USAF Dep Adj Jen

DISTRIBUTION

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AG (1)

T. R. STOUGHTON Brigadier General, USA Chief of Staff



Department of Rational Defence

240

Ropal Canadian Bir Force

St Autert. 4me., 15 Oct 57.

Commander-in-Chief, North American Air Defence Command H., Ent Air Force base, Lolorado Springs, Colorado, U.S.A.

Rules of Engagement Signalling of Intercepted Aircraft

Reference is made to U.NAD signal SOCOF-T 0136 dated in Sep 57.

This HC has taken action to suspend the provisions of 48I 2/5 dated 15 Jun 57. paras 14 and 15. The reasons for this action were:

- (a) the visual signalling system used was believed to be impracticable in a high-speed, highaltitude environment.
- (b) the meaning of the signals was unknown to civil aviation since the system used had not received national and international growulgation in civil aviation publications.
- (c) it was considered highly desirable for one signalling system to be applicable on a continental basis.

It is our belief that a signalling system which is suitable for use in a high-speed, high-altitude environment is an important requisite to the effective operation of the air defence system. The need for such a system is expected to become even more acute in the near future when commercial jet-transport operations commence. A few commercial jet transports, penetrating the system as unknowns during a period of high international tension, would encounter a grave risk of being designated as hostiles since only a very limited time would be available for an effort to determine whether or not the unknowns were bonafide friendlies whose flight plans had been lost or delayed. Under these circumstances, a quick, simple and effective signalling system which would give such aircraft an opportunity to land would be an invaluable last-minute resort to the air defence commander charged with the responsibility for deciding whether or not such aircraft should be designated as hostile.

The provision of a feasible signalling system which is quick, simple and effective presents some difficulties. The elaborate visual system stated in ASI 2/5, peras 14 and 15, which depended upon aircraft movements and a coded system of light flashes, is not practical. However, if it is assumed that the problem is mainly confined to the signalling of unknown aircraft whose size and performance gives rise to a suspicion of identity, it can be further assumed that such aircraft operating over or within the approaches to the North American continent.

Declassified

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\$836-126 (SF1a) 69

would be manned by English-speaking crews and equipped with air-toground communications on either 121.5 or 243.0 mc. Since an interception can be expected to occur within the range of the ground environment system, the visual signalling problem is confined to one signal meaning that the intercepted aircraft is to immediately switch to VHF or UHF emergency frequency and call "Air Defence Advisory" for further instructions. Since the air defence radar station which answers the call would normally be the same one as is controlling the interceptor which passed the visual signal, there should be a minimum of time delay in advising the intercepted aircraft that it is to land or carry out some other procedure. Under such circumstances, an intercepted aircraft which did not call "Air Defence Advisory" or, having done so, did not acknowledge or obey instructions, could be designated as hostile with a far higher degree of certainty than is presently the case and without the interests of continental security having been compromised.

Since the visual signalling system is required to convey one meaning only, the problem is simplified to one which basically need only call the attention of the crew of the intercepted aircraft to the fact that it has been intercepted and the interceptor has not broken off as would be normal for an identification run. In the event that the normal vigilance of the intercepted aircraft's crew is considered insufficient to guarantee the sighting of the interceptor holding formation, or its navigation lights at night, with a sufficient degree of assurance, it may be necessary to install in the interceptor, or provide its crew with, some special source of illumination.

6 It would be appreciated if your views on the necessity and feasibility of solving the problem described in this letter could be forwarded.

(W. Weiser) G/C for AOC, ALC.

NOOOP-T

19 Feb 1958

SUBJECT: Rules of Engagement - Signalling of Interceptor Aircraft

Air Officer Commanding TO: Air Defence Command RCAF Station, St. Hubert

Province of Quebec, Canada

- 1. Reference is made to:
 - a. CONAD message COCOP-T 0136, dated 11 September 1957.
 - b. S836-126(SPlans SO) dated 15 October 1957.
- 2. This headquarters is currently reviewing specific CONAD Regulations of the 55-series and related RCAF ADC ASIs for the purpose of preparing consolidated NORAD Regulations. Included in this study are the regulations pertaining to Rules of Engagement which are being re-written to include only engagement procedures for the air defense weapons. The plan is to write a separate NORAD regulation, "Procedures for Air Defense Identification" to cover both the ground environment and air aspects of this subject which are now included in "Rules of Engagement." The problem as visualized in paragraph 3, your letter referenced above, is well founded and does emphasize the need for a quick, simple and effective signalling system of intercepted aircraft. However, this problem is still under consideration at this headquarters. If it is decided that signalling of intercepted aircraft is feasible and practicable in air defense operations, it is proposed to include it in the NORAD regulation, "Procedures for Air Defense Identification."
- 3. It is anticipated that this subject will be discussed further during Group Captain Weiser's next visit to NORAD headquarters.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ ROBERT S. DINGLE, JR. Colonel, USA Acting Director of Operations

DUPLICATE

21 MAR 1958

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Air Officer Contundury Air Tafence Command Province of uses, same

1. Hoferance is lade to:

a. DEAD letter WAR -P. 1) Sebruary 1958.

b. SCAF and letter 5 35-126 (Sillar, So) dated 15 October 1957.

2. The above subject as disused brither with broup Cantain leteer, during his recent visit to unis headmarters.

3. It was concluded that upon the implementation of "CA "ER, the civil authorities are responsible for rounding or diversing all non-essential civil and illiary aircraft. the problem as originally stated in personal 2 is your referenced letter. It above, to longer amount will show the conversed jet aiperational zed as poster the threat sheld as it direct contact with CAA or 10T communications and cor rol facilities. Consenently, the aircraft would receive the recessory instructions to make land-fall or to terdinue at other than the planned destinution.

h. In view of the above, t is wad wanters can see no practical method at this time, for arraning this subject any further.

POR THE CONTRIBUTE OF CHIEF:

W/C 3dwards

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ATR DAYLICE COLLIAND

ALR STAFF INSTRUCTIONS

2/13

AIR DEFENCE MEADINES

Purpose

This instruction establishes responsibility for the declaration and dissemination of a State of Air Defence Bendiness and provides guidance on the actions to be taken on receipt of such a declaration.

Soope

This instruction applies to all units under command or operational control of the ADC, ALC,

Coneral

A State of Air Defence .mediness is declared for the purpose of initiating transition from the day-to-day peacetime readiness status of the air defence system to a maximum state of preparedness prior to the commencement of hostilities. "Laximum state of preparedness" refers to a condition whereby the entire potentially evaluable resources of the air defence system, personnel, equipment and communications, are brought to a state of availability for active participation in the combat functioning of the air defence system.

In this instruction, it is neither necessary nor feasible to detail all of the actions required by all of the elements of the air defence system in arriving at the desired end position of maximum preparedness. The bulk of such actions are taken at unit level and are incorporated into War Books and Amergancy Security Flans which are maintained by all units. This instruction deels primarily with the allocation of responsibility for declaring and promulgating a State of Air Defence Resdings since this allocation is essential to initiating the transition mentioned in pare 3.

Responsibility for Initiation

A State of Air Defence Headiness may be declared only by the Air Defence Commander or his appointed deputy as defined in ASI 2/5. Appendix "A", pares 1 (a) and 1 (b).

Dissemination

- The ADCHG COC is responsible for dissemination of a State of Air Defence Readiness immediately upon dealeration to the following formations:
 - (a) No 1 Sector ADCC
 - (b) No 2 Sector ADCC
 - (a) No 3 Sector ADGC

- (d) 5 Air Division GOC
- (a) 64 (OOKAD) DIVISION TOO V
- (f) MORAD HQ COC
- (g) Air Force Besignarters Operations (War) Boom
- (h) BOAF Station Gold Lake
- (1) All other formations on the Teletype Alert Network Circuit.

The formations specified in (s) to (s) above, inclusive, are responsible for dissemination of a State of Air Defence Seediness, immediately upon receipt, to all six defence units or formations over which the Division/Sector Commenders exercise operational control.

This includes all elements of the Chound Observer Corps.

Actions Bequired

- Since the purpose of declaring a State of air Defence Resistance is the attainment of a maximum state of preparedness, it is incompared upon all formations controlling individual elements of the air defence system to immediately commence all pre-planned actions required for effective mobilization as soon as the declaration is received. Such nations are listed in the War Book and Reergancy Security Plan maintained by each unit and formation in the sir defence system. A few examples of the notions required are:
 - (a) ADDER COC call up emergency circuits.
 call up of f-duty personnel to sugment manning
 of status boards and CDM.
 - (b) Division/Sector COC/ADCC call up off-duty personnel.
 - (a) ACMF Squadron cancellation of all routine maintenance. call up off-duty personnel.
 - (4) Fighter Bases recall all sireraft not on operational flights.
 - same all training.
 - mall up off-duty personnel.
 - lost, and arm all serviceable aircraft.
 - acceleration of aircraft maintenance
- In the development of any air defence situation, a State of Air Defence Seedimes will normally be declared prior to the initial air defence warning state described in ASI 2/14. However, in the event that as air defence warning state is received at any unit without a preceding Air Defence Seediness, all ration required by the latter is to be initiated immediately.

244

2/13

Gode Words

10 Promulgation of a State of Air Defence Readiness is to be by plain language employing the words "Air Defence Readiness". No code word or nickname is to be used.

- 3 -

Simulated hir Defence Readiness

Simulation of the declaration of a State of Air Defence Readiness may be initiated only by the Air Defence Commander or his appointed deputy as specified to pera 5 of this instruction. The nickname "Cocked Pistol" is to be used. On receipt of a "Cocked Pistol", units shall not in exactly the same manner as if a State of Air Defence Beadiness had been declared except that action shall not be taken to recall personnel on leave or TD.

Authentication.

12 The verbal transmission of an actual or simulated State of Air Defence Readiness is to be authenticated.

(L.E. Wray) A/V/M, Air Officer Commanding, Air Defence Command.

30 Apr 58

THE WEST TOP

The following definitions are established for the purpose of this instruction:

(a) Air Defence Commisses

. The Air Officer Communiting, Air Defense Communi MCAF.

- (b) pointed Deputy (see perms 15 and 16)
 - (1) Perputy Air Officer Commanding ADC (RGAF)
 - (11) | Deputy for Operations, ADO (RCAF)
 - (131) Commander, No. 5 Air Division (within his area of
 - (iv) Commonder, 66 Air Division (within his area of Command and subject to the limitations contained in and (RGAF) - OCHAD Agreement total 1 257, pers 4.
 - (v) Such other individuals as the mon, and may designate.

(a) Sestor Commender

- (1) All BOAF Sector Commanders.
- (11) Commander 64th Air Division (Defence) UMAF.
- (111) All CORAD Divinion Commenders whose rater enverage extends over Geradian territory.

(4) QOI Controller

- (1) all son or Interrept Controllers at radars leasted on Genedian territory.
- (11) All GOI or Extersept Controllers of reders whose extends over Canadian territory.

(e) Idem 171 est 198

The determination of an aircraft's character within one of the following antegonies:

- (1) Friendly.
- (11) Unknour.
- (111) Bostile.

244 APPENDIX "A" TO ART 2/5 NAMED 15 JUN 5/

(f) Friendly Aircraft

A friendly sircraft is one which has been classified as "friendly" to accordance with the criteria detailed in ASI 3/2/1, pare 7 (a).

(E) Unknown Alroraft

An unknown aircraft is one which has been classified as "unknown" in accordance with the criteris detailed in ASI 3/2/1, para 7 (b).

(b) Bostile Aircraft

An eircraft which commits a hostile not as defined in (1) below.

(1) Hostile Act

An eircraft or formation of eircraft shall be considered as committing a hostile act if, without previous notification, the eircraft performs any of the following actions:

- (i) An attack on friendly personnel, ground targets, whips or sircraft with bombs, rockets or other meapons. This includes opening fire on a fighter sircraft maintaining surveillance.
- (ii) The opening of bomb bey doors when the aircraft is approaching a vital area.
- (ifi) The dropping of parachutists other than when obviously in distress.
 - (iv) Mine laying operations.

(h) Engage

Action taken to destroy enery siroraft.

(1) Maintain Burreillance

To meintain a surveillance is to keep an aircraft under "close watch" by either visual or Al means from a position where it is possible to detect any suspicious or hostile act.

AIR DEFENCE COMMAND

AIR STAFF INSTRUCTIONS

244

2/1

AIR DETENCE WARNINGS

DUCTORE

This instruction defines the various states of air defence warning, establishes responsibility for their declaration and dissemination and provides guidance on the actions to be taken on receipt of such warnings.

ROADA

This instruction applies to all air defence units under the command or operational control of the ACC. ADC.

Definitions

- 3 A State of Air Defence Warning is a judgment of air attack probability relative to a division/sector as follows:
 - (a) "Air Defence Warming Red" attack is imminent.
 - (b) "Air Defence Warning Tellow" attack is probable.
 - (a) "Air Defence Warning White" attack is improbable.

Application

- Within the Air defence system, the declarations of the various states of air defence warning serve to:
 - (a) initiate specified executive actions as stated in this instruction.
 - (b) initiate the transfer of specified responsibility and authority from the Air Defence Gommander to Division/ Sector Commanders as stated in this instruction.
 - (c) stand-down the defences upon termination of enemy air attack.

Responsibility for Initiation

5 The first air defence warning "Yellow" and "Red" may be declared only by the Air Defence Commander or his appointed deputy as defined in ASI 2/5. Appendix "A", paras 1 (a) and 1 (b).

- In the event that the first air defence marning "Tellow" is not declared for initiation in all of the divisions and sectors under the operational control of the AOC, ADC, the Division/Sector Commanders not so designated shall declare an air defence marning "Tellow" for their individual divisions/sectors. In the seast that the first air defence marning "Red" is not duclared for initiation in all of the divisions and sectors under the operational control of the AOC, ADC, the Division/Sector Commanders not so designated shall declare an air defence marning of at least "Tellow" for their individual divisions/sectors.
- 7 Subsequent to the first declaration of an air defence warning "Red" by the Air Defence Commander or his appointed deputy for any division/sector, all Division/Sector Commanders are authorized to alter their state of air defence warning between "Tallow" and "Red" at their own discretion depending upon the air defence situation prevailing in or adjacent to their divisions/sectors.
- Air defence warning "White" may only be declared by the Air Defence Commander or his appointed deputy. Subsequent to the declaration of a "White", Division/Sector Commanders may continue to promulgate air defence warnings until their authority to do so is withdrawn by the Air Defence Commander.

Dissemination

- The ADDRC COC is responsible for the dissemination of any state of air defence warning declared by the Air Defence Commander to the following formations:
 - (a) No 1 Sector ADCC
 - (b) No 2 Sector ADOC
 - (c) No 3 Sector ADCC
 - (d) 5 Air Division COC
 - (a) 64 (CONAD) Division COC .
 - (f) NORAD HQ COC
 - (g) Air Force Headquarters Operations (War) Room
 - (b) RCAF Station Cold Lake
 - (j) All other formations on the Teletype Alert Network circuit.
- The formations specified in (a) to (e) above, inclusive, are responsible for dissemination of air defence warnings received from the ADCHQ COC to all air defence units or formations over which the Division/Sector Commander exercises operational control. In addition, these formations are responsible for advising the ADCHQ COC and all adjacent divisions/sectors of any air defence warnings originated by the Division/Sector Commander.

3 -

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Actions Required

It The primary purpose of initial air defence marnings declared by the Air Defence Commender or his appointed deputy is to mark the delegation of special authority to Division/Sector Commenders as follows:

- (a) initial "Tollow" Division/Sector Commanders are to assume control of operational readiness states over all air defence Meapons located within their division/sector.
- (b) initial "Red" Division/Sector Commanders are to assume responsibility for designating targets for engagement or telling purposes and are to control or monitor the assignment of weapons against those targets which are to be engaged.

As stated in pare 6 of this instruction, the delegation of these sutherities applies to each and every Division/Sector Commander swen though the initial "Tellow" and "Red" may have been declared for application to due or a limited number of divisions/sectors.

- 12 In addition, air defence warnings will serve to initiate or ognoal passive defence measures in accordance with unit passive defence plans.
- In the event that units receive an initial air defence marring which has not been preceded by an Air Defence Beediness declaration (ASI 2/13), all action required by the latter is to be initiated immediately." In the event that units receive an initial air defence warning "Red" which has not been preceded by a "Tellow", all action required by the latter is to be initiated immediately.

Code Hords

Promulation of a state of air defence marriag of any solow is to be by plain language. No code word or miskname is to be used.

Similated Air Defence Warming

- 15 The declaration of simulated air defence warnings is to be in accordance with paras 5, 6 and 7 of this instruction. This limitation does not, however, preclude local commanders from sounding air defence warning signals for the conduct of local passive defence exercises.
- 16 The nicknames to be used for the dissemination of simulated air defence warnings are:

Warning "Red" - Apple Jack

Warning "Tellow" - Legon Juice

Warning "White" - Snow Many

2/14

Authentication

16 The verbal transmission of actual or simulated air defence warnings is to be authenticated.

30 Apr 58

Air Officer Commanding. Air Defence Command.

E0000P-T

SUBJECT: RCAF Air Staff Instructions - Reissues of ASI 2/13 and 2/14 (U)

Air Officer Commanding Air Defence Command RCAF Station, St. Hubert Province of Quebec, Canada

1. Reference is made to your 870-9 (Migneso), 20 January 1958. This headquarters is in general agreement of the the proposed RCAF ADC ASI 2/13 and 2/14.

2. The following comments are submitted for your consideration:

a. Mormally, the transition from the day-to-day peacetime readiness status of the air defense system to a maximum state or prethrough orderly succession.

b. It is believed that a state of Air Defense Readiness by itself does not permit sufficient variation in the state of preparedness.

c. Intelligence information could indicate the deterioration "MAYFORCOMAL of intermetical relations which would require a state of increased proparedness but not necessarily a state of maximum preparedness whereby the entire resources of the mir defense system are made available for immediate air combat 4 teres

3. This headquarters is currently reviewing specific COMAD regulations of the 55-series and related RCAF ADC ASIS for the purpose of preparing consolidated NORAD regulations. Included in this study ness," of which a copy of the proposed draft is attached as Inclosure 1 for your consideration and comments.

4. It is recommended that consideration be given to an additional 810% state of preparedness such as "Increased Readiness," to allow for gituations other than "Mormal" but not demanding maximum "Air Defense Resiliness." The inclusion of this state of "Increased Rendiness" in your operational readiness procedures would accomplish the initial step in MCRAD standardization of the present COMAD regulation and its related RCAF ADC ASIs.

FOR THE COMMANDER-IN-CHIEF:

Proposed draft of BORAD Rog 55-3 /dues

ROBERT S. DINGLE, JR. Colonel, USA Acting Director of Operations

1 Incl

12-0866181

NCRAD NB.

(Proposed Draft) NORAD Regulation)

HEADQUARTERS NORTH AMERICAN AIR DEFENS Ent Air Force Base, Colorado Springs, Colo. February 1958

OPERATIONS

Conditions of Air Defense Preparedness

- 1. Purpose. This regulation establishes and defines the Conditions of Air Defense Preparedness for all air defense forces of the United States, Canada and Alaska under the operational control of CINCHORAD.
- 2. Scope. This regulation applies to all echelons of command under the operational control of CINCHORAD. It is to be used for the guidance of other commands and agencies having air defense responsibilities to CINCHORAD.
 - 3. Definitions. The following definitions apply to this regulation:
- a. Mormal Readiness. A normal condition of preparedness whereby the primary mission of the air defense system is to safeguard against a surprise attack, concurrent with the combat training program to obtain the maximum air defense potential.
- b. Increased Readiness. A condition of increased preparedness whoreby the air defense system is readied for situations other than "Normal" but not demanding "maximum" preparedness; combat training is continued to provide increased combat capability. Increased Readiness may be declared upon intelligence information or information from other sources indicating the deterioration of international relations.

This regulation supersedes COMADR 55-3, dated 1 November 1955, and RCAF ADC ASIs 2-13 and 2-14. dated 1 December 1956.

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- c. Air Defense Readiness. A condition of maximum preparedness whereby all air defense forces are placed on immediate combat readiness, Air Defense Readiness will be declared during periods of air defense uncertainty, based on the evaluation of information obtained through intelligence sources or through the NORAD warning system.
- d. Air Defense Emergency. A condition of maximum preparedness for war, based upon evaluation of information obtained through the NORAD warning system or other sources, which indicates that hostile action is in progress or is imminent or is sufficiently probable to require, in the interest of national security, the nation-wide implementation of emergency air defense measures.
- 4. The Alert Requirements for Air Defense W apons During Conditions of Air Defense Preparedness are Specified in NCRAD Regulation 55-8.
 - 5. Procedures.
- e. Normal Readiness. Alert requirements as specified in NORADR 55-8 will be maintained and routine combat training operations conducted in accordance with current air defense regulations.
- b. Increased Readiness. Increased Readiness will be declared in preparation so meet any situation which appears to forevern of possible air defense emergency. CINCHORAD, Deputy CINCHORAD, or their appointed representative will inform NCRAD Region commanders when Increased Readiness is to be effected.
- c. Air Defense Readiness. Air Defense Readiness will only be declared by CINCHORAD or Deputy CINCHORAD, to bring the mir defense system up to a maximum condition of preparedness. The following actions will be taken by CINCNORAD, Deputy CINCNORAD or their appointed represen-Declassified tative:

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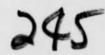
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- (1) Direct all NORAD region and division commande s to place all air defense forces on immediate combat readiness.
- (2) Inform the United States J int Chiefs of Staff and the Canadian Chiefs of Staff Committee.
- (3) Inform such military commanders and other gencies as directed by the United States Joint Chiefs of Staff Committee.
- (4) Request allocation of sugmentation forces as deemed necessary.
 - ()) Inscitute other operational procedures as required.
- d. All Defense Emergency. Air Defense Emergency will be delared only by CINCNOLAD or Deputy CINCNORAD. The declaration of Air Defense Emergency authoritically combinishes the authority for CINCNORAD or Deputy CINCNORAD to order the following:
 - (1) Implement SCATER and CONELLYAD.
- (2) Open fire on enemy directift, missiles, decoys or any other forces the enemy may use.
- e. Upon a declaration of Air Defense Emergency, the following actions will be taken by CINCNORAD, Deputy CINCNORAD or their appointed representative.
- (1) Direct all NORAD region and division commanders to place all air defense forces on immediate readiness for war.
- (2) Inform the United States Joint Chiefs of Staff and the Canadian Chiefs of Staff Committee.
- (3) Inform such military communiors and other agencies as directed by the United States Join: Chiefs of Staff and the Canadian Chiefs of Staff Committee.

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- (4) Request allocation of augmentation forces as deemed necessary.
 - (5) Institute other operational procedures as required.
 - 6. Responsibility for Defense of Assigned Geographical Area.

NoARD division commander from defending his geographical area of responsibility against air attack at any time, should the need arise.

In accordance with NORADR 55-6, "Rules of Engagement," a NORAD division commander will order the engagement of hostile airborne objects regardless of the "Condition of Air Defense Preparedness."

7. After a specified Condition of Air Defense Preparedness is declared, it will remain in effect until changed by CINCNORAD or Deputy CINCNORAD.

(NOOOP)

FOR THE COMMANDER-IN-CHIEF:

OFFICIAL:

MARSHALL S. CARTER Major General, USA Chief of Staff

W. J. BIRMELE LT. COL., USAF Dir. of administrative Services

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OPERATIONS

NORADM 55 -

NORTH AMERICAN AIR DEFENSE COMMAND MANUAL

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NORAD COMBAT SURVEILLANCE and TACTICAL ACTION REPORTING PROCECURES



APRIL 1958

NORTH AMERICAN AIR DEFENSE COMMAND

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NO. 55-1) NORAD MANUALI HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND Ent AFB, Colorado Springs, Colorado April 1958

FOREWORD

- Mission. The mission of NORAD is to defend the continental United States, Canada, and Alaska against air attack and to support other United States and Canadian commands. The NORAD Combat Operations Center (COC) is CINCNORAD's command post. The purpose of the COC is to provide and display current, evaluated, air defense data in order that CINCNORAD may exercise operational control over all forces assigned and/or otherwise made available for air defense.
- Purpose. This Manual establishes the requirements for air defense data that must be provided to CINCNORAD and all subordinate NORAD commanders in order to exercise operational control of all forces made available for air defense.
- 3. Scope. This Manual is directive upon all forces and commands under the operational control of CINCNORAD. Commands supporting NORAD are requested to comply as closely to these instructions as is consistent with their own reporting methods. Augmentation forces are encouraged to adhere to these instructions during air defense exercises to develop familiarity with them.
- 4. Supplements. Component commands, subordinate commands within NORAD, and those other commands contributing to the NORAD system are authorized and encouraged to supplement this Manual. These supplements may consist of additional requirements to those outlined herein.

5. Discussion.

- a. A major factor in the success of air defense operations is the rapid and accurate delivery of information. Rapidity and accuracy depend in turn on the use of simple and reliable brevity systems familiar to all personnel involved.
- b. The contents of this Manual are primarily applicable to the manual air defense system. While in general, the air defense requirements outlined herein will apply in the SAGE era, it is not intended that these procedures supersede already established procedures for SAGE. Procedures applicable only to SAGE will be published in a separate document at a later date.
 - c. This Manual is effective 1 April 1958.
- Reproduction. The reproduction of this Manual in whole, or in part, is authorized without reference to this headquarters.
 (NOOOP)

FOR THE COMMANDER IN CHIEF:

OFFICIAL:

MARSHALL S. CARTER Major General, USA Chief of Staff

W. J. BIRMELE

Lt Col, USAF

Director of Administration

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This supersedes CONADM 55-1, dated September 1955, as amended, (including preliminary NORAD Surv. Proc. effective 1 Nov 57). CONADR 200-2, 8 June 1955.

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CHAPTER I

CONCEPT OF COMBAT REPORTING

101. General. This Manual establishes the combat reporting procedures necessary for the rapid processing of vital air defense data throughout the North American Air Defense System. These procedures are compatible with NORAD's responsibility in respect to: (1) Raid Recognition, and (2) Combat Activities. Raid Recognition requires current and timely information concerning hostile aircraft on which to base necessary defense actions. Combat activities require information on which decisions are based concerning the employment of weapons to destroy or render hos-tile air attacks ineffective. These two categories can be further subdivided into the (1) Pre-Battle Stage, (2) Battle Stage, and (3) Post-Battle Stage, (paragraphs 104, 105, and 106 of this Chapter).

Even though each operations center within NORAD serves its commander in the same relationship as NORAD-COC, it must not be assumed automatically that these commanders make the same type of decisions as CINCNORAD. Common doctrine is, however, essential for mutual understanding and confidence between commanders so that timely and effective action will be taken by all concerned in the absence of specific instructions.

102. Raid Recognition is a determination of an abnormality in the pattern of air activity in those areas in which it can best be made, and in those areas wherein it must be accomplished if proper and timely air defense measures are to be taken. These areas constitute what has been termed the Remote Information Zone, which extends outward from the contiguous radar cover toward potential hostile staging bases, and includes all approaches to the continent through which hostile aircraft may pass.

There are two sources of information within this Remote Information Zone: (1) Systematized information from radar barriers or lines, and (2) General surveillance information from Ground Observer Corps units, transient or itinerant aircraft, ships, and other sources.

103. Combat Activities consist of informing subordinate, lateral, and higher commands at all echelons of the evaluation of

intelligence "Enemy Capabilities and Intentions," surveillance, tactical information, battle damage, nuclear detonation information, and of adjustments to the Weapon Systems. The sources of this information are all operational echelons under operational control of CINCNORAD. This information will be processed during all three battle stages -- pre, during, and post. Combat activities should be processed as expeditiously as possible to all echelons to prevent complete failure of command decisions if communications are disrupted by any means. This is especially important in the "during and post" battle stages.

104. The Pre-Battle Stage includes the peacetime or normal state, but may recur prior to a second or to subsequent battles. The following information is required during this state: (1) Intelligence consisting of enemy's capabilities and intentions, which may be derived from higher head-quarters or other commands. (2) Surveillance information as derived from the Remote Information Zone, and within the contiguous radar cover, and (3) Tactical information, including Weapons Systems status derived from all units under operational control of CINCNORAD.

The surveillance and tactical information contained in Table "A", Chapter II, and Weapons Systems Status Reports, Chapter III, are reported by the appropriate agencies on a priority basis, which is adjusted to the capabilities of the lower echelons to furnish this information.

105. The Battle Stage shall be considered to have commenced upon recognition of overt hostile activities against the United States, Canada, or Alaska and will continue to the temporary cessation of hostile acts by objects against these areas. These objects may include airborne weapons, surface weapons, or direct invasion.

Raid recognition will continue to be performed throughout this period, even though the United States, Canada, or Alaska is under attack. It is, therefore, vital that information from the Remote Information Zone continue to flow at the highest rate compatible with other reporting requirements. All efforts will be exerted

to advise laterally and downward of hostile forces to be expected, and to present an overall situation within the NORAD area of responsibility. During this phase, other information concerning local tactical engagements will be forwarded to higher headquarters in abbreviated formats described in Chapter III of this Manual. This will include tactical information, surveillance, battle damage, nuclear detonation information, and adjustments to the Weapons Systems status.

106. The Post-Battle Stage is the period following overt hostile activities. The termination of this stage will be determined by CINCNORAD. During this stage, insofar as communications permit, assessment of United States, Canadian, or Alaskan damage will be made, estimates of

the situation will be disseminated, and redeployment of forces remaining available will be made. The next Pre-Battle Stage may be difficult to distinguish and, therefore, the Post-Battle Stage and activities associated with it, will depend upon command level guidance. Intelligence (Enemy's Re-Attack Capabilities and Intentions) will, when available, be disseminated in the form of summaries to all echelons by NORAD. Surveillance will continue within the capability of all echelons. Tactical information will be processed. Summary reports will be submitted from Division level in accordance with instructions contained in Chapter IV. Adjustments to the Weapons Systems status will be made.

CHAPTER II

AIR DEFENSE DATA REQUIREMENTS

201. Air Defense Data. The total information which the COCs of NORAD require for proper performance of their missions and tasks will be referred to as Air Defense Data. The broad categories of this information are:

- a. Surveillance Information
- b. Tactical Information
- c. Weapons System Status Information
 - d. Battle Damage Information
- e. Nuclear Detonation Information (other than test)

This information has its sources in a great variety of activities, including military, civilian, and governmental activities with an air defense contribution. The Air Defense Data is gathered by Data Collection Agencies (DCAs) of NORAD; e.g., Filter Centers, Army Air Defense Command Posts, AEW&C aircraft, picket ships, Texas Towers, surveillance stations, augmentation radars, lighter-than-airships, and fighter-interceptor squadrons. Additional data is forwarded and/or exchanged with RCAF Air Defense Command and the United States unified commands.

From the Data Collection Agencies, the Air Defense Data is forwarded to CINCNORAD through the operations centers of the various echelons, with evaluations being made as appropriate at each level. See Figure 2-1 which follows this page for a schematic view of data collection.

202. Surveillance Information consists of reports of the systematic observation of air, surface, or subsurface areas by visual, electronic, photographic, or other means, for intelligence purposes. Although CINCNORAD's main interest is air surveillance, reports of certain other activity which may be corollary to air attack are required by CINCNORAD for a completely integrated picture on which to predicate decisions on the imminence of air attack.

 a. Sources of Surveillance Reports include but are not limited to the following:

(1) Land, ship, and airborne

radar installations of the North American air defense system.

(2) Ground Observer Corps.

(3) Airborne and waterborne sightings.

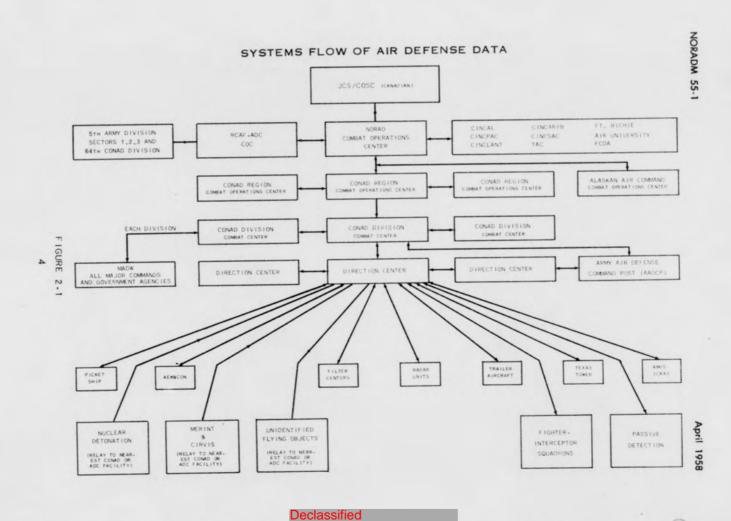
(4) Sightings by miscellaneous activities not a part of the Ground Observer Corps.

b. Air Surveillance Information consists of reports of the systematic observation of air space by electronic, visual, or other means, primarily for the purpose of detecting, identifying, and determining the movements of all aircraft and large missiles, friendly or enemy, in the airspace under observation. These reports have been placed in classifications as shown in Table A. CINCNORAD's reporting requirements are itemized in Table A. bulk of the reports to the NORAD Operations and Combat Centers are air surveillance information; the formats have been designed to be receptive to all surveillance and various other reports which may have a bearing on the air defense process. The three methods by which an air surveillance report may be submitted to or within the NORAD reporting system are:

(1) Individual Track Report (INDRACK) which is used for one aircraft or airborne object, or when several aircraft or objects are in such close proximity and behavior that they may be reported as one. (Merged tracks MG.) This method is the one employed under normal conditions.

(2) Mass Raid Report (MS) which is resorted to by the appropriate reporting agencies when the number of individual or merged tracks become so numerous that their transmission to NORAD COC cannot be rapidly accomplished. In this method, the tracks are grouped according to common characteristics; e.g., location, speed, and altitude threat to a target area or target complex. Division CC's will assign a track number to a mass raid report. The Division letter identifier will prefix the mass raid track number.

(3) Numerical Summary Report (NUSUM) will be submitted as a position report when a designated area becomes saturated with objects and it becomes impossible to report all individual,



No.	Classification	Abbrev.	Definition	Reporting Priority	Method of Reporting	Normal Frequency of Reports	Req by COC
1.	HOSTILE	н	A Hostile track is an airborne object which is determined to be Hostile in accordance with appropriate Command Instructions; i.e., CONAD Reg. 55-6, RCAF/ADC ASI 2/5, and AAC Reg. 55-30.	1	INDRACK, MASS or NUSUM	Every 5 min or 60 miles	yes
2.	UNKNOWN	U	A track will be classified as Unknown when Identification is required and it does not meet the criteria for a Hostile, Friendly, or other Friendly category. Ref. ADC Reg. 55-12, RCAF/ADC ASI 3/2/1. AAC Reg. 55-30.		INDRACK, MASS or NUSUM	Every 5 min or 60 miles	yes
3.	FRIENDLY	F	A track will be classified friendly, based upon currently established criteria. Appropriate regulations referenced in 2. above.	4	OR MASS	Every 5 min or 60 miles	no
4.	UNCLASSI- FIED	NC	The term applies to a track during the period between establishment of the track and its classification of Unknown Hostile or of Friendly category. Unclassified tracks which must be reported that surveillance channels are those inbound detections outside Coasta ADIZ, MIDIZ, or CADIZ, Mexican Southern Border ADIZ, MIDIZ, or DEWIZ which cannot be correlated with available flight plan date and by virtue of heading, speed, strength, altitude, and location poses a threat to the U.S., Canada, or Alaska. Identification as such tracks will be attempted immediately after detection. Track that cannot be identified are of primary interest to NORAD for raid recognition purposes and will be reported to Region and NORAL COCs even though they have not penetrated identification zones.	i i i i i	INDRACK or MASS	Every 5 min or 60 miles	
5.	SMOKE RING	S + LTRS	This includes special aircraft movements such as exercises and projects in which NORAD COC has special interest. Reference CONA Reg. 55-13.	P A R I E S	INDRACK, MASS or NUSUM	Every 15 min or 100 miles	If dir.
6.	ANCHOR MAN	A + No.	The call sign "Anchor Man" is assigned to key personnel designate by NORAD COC who are to be flight followed by the ACW sy tem. Reference NORADR 55-11.	d 3	INDRACK	Every 15 min or 100 miles	If dir.

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SURVEILLANCE DATA CLASSIFICATIONS AND REPORTING REQUIREMENTS Table A (cont'd)

item	Classification	Abbrev.	Definition	Reporting Priority	Method of Reporting	Normal Frequency of Reports	Surv & TAC Rpt Req by COCs
7.	BIG PHOTO	В	A term to designate Strategic Air Command aircraft participating in training missions as outlined in SACR 51-6 for Fighter-Interceptor-Bomber-Antiaircraft Training. Reference NORAD Reg. 51-1.	V A R I E S	INDRACK	Every 15 min or 100 miles	If dir.
8.	FAKER	K	This is a designation applied to exercise aircraft which are simulat- ing Hostile; not to be used without prior approval of NORAD COC.	2	As for Hostile	As for Hostile	yes
9.	STP	x	The System Training Program (STP) simulates the conditions necessary for ACW crews to practice the air defense procedures. Simulated radar presentations are presented and appropriate surveillance and tactical actions are taken.	C	INDRACK, MASS or NUSUM	As for type track being simulated	If dir.
0.	CANNED	c	This is a fabricated track planned for reproduction when required for testing the reporting system or for training personnel.	4	INDRACK, MASS or NUSUM	As for type track being simulated	Simulated
11.	PRESIDENT'S ACFT	AF 1	This report is made on the President's aircraft whenever he is or board.	3	INDRACK	Every 15 min or 100 miles	Surv. Only
12.	COLUMBINE	COL	The President's aircraft "Columbine," when in flight, is a mandator, reporting track even though the President is not aboard. When the President is not, the aircraft will be flight followed using the track abbreviation indicated.		INDRACK	Every 15 min or 100 miles	Surv. Only
13.	GROUND OBSERVER CORPS TRACK	Per C L A	These tracks will be transmitted in accordance with the procedure for their classification.	Per C L A S.			As appro.

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SURVEILLANCE DATA CLASSIFICATIONS AND REPORTING REQUIREMENTS

Table A (cont'd)

Item No.	Classification	Abbrev.	Definition	Reporting Priority	Method of Reporting	Normal Frequency of Reports	Surv & TAC Rpt Req by COCs
14.	ELECTRONIC COUNTER MEASURE ACT	ECM	Reported as suffix to radar site designator without track number to indicate site experiencing ECM. Also used as suffix to track designator to indicate track is emitting ECM. One time report followed by Cliff Report through normal voice relay. Reference CONADS 101-1.		INDRACK	One-Time Report	If Pos.
15.	NUCLEAR DETONA- TIONS	NUDET	This includes all detonations other than test.	1	INDRACK	One time as soon as detected	N/A
16.	DEW POINT	DP	Division commanders are authorized to use this classification to designate a track which requires tracking and lateral-telling by radar sites but is not required forward-tell track to CCs or COCs	1	INDRACK or MASS	As directed by Division CC	No

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April 1958

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merged, or massed tracks in that area. NUSUM Report will include the area, time, strength, weapons committed and tactical results. NUSUM areas for specific target complexes within a Division area will be designated by the CONAD Region commander and made known to all levels of operation. This type of a report may be requested by CINCNORAD for a Division area. See paragraph 304.i. for format.

c. Surveillance Reporting Proced-

(1) Stations Up to Direction Centers. Plots will be told at least once every two minutes until classified by movements identification section and as frequently as possible thereafter. Whenever there is a change in course or speed, plots will be told immediately. Only double arrowhead plots will be forward told.

(2) Direction Centers to Combat Centers. Plots will be told at the same frequency as (1) above.

(3) Division Combat Centers to NORAD COC. Surveillance information will be forwarded from the CONAD Divisions through appropriate channels to NORAD COC. Frequency of reports will be as stipulated in Table A. NORAD Form 14 will be used by CONAD Divison Combat Centers for recording all Surveillance Reports. This form may be used by other commands as necessary. See Chapter III.

203. D/F Procedures for Plotting Hostile Jamming Aircraft.

a. Normal Procedure. The first direction center experiencing jamming will report this jamming to the prime direction center. The reporting direction center will report the AZIMUTH center of the jamming being experienced and the time. The prime direction center will query other direction centers for additional D/F cuts.

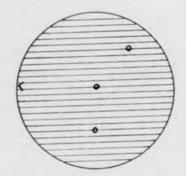
The prime direction center will assign (in accordance with normal procedure) the track number of these reported plots after track has been established.

Follow-up plots of the jamming AZIMUTH will be reported on demand by the prime direction center. These demand plots will be made by the associated direction centers experiencing the jamming. The time interval between plots will be 2, 4, 6, etc., minutes, as requested by the prime direction center.

Prime direction centers will normally be the master D/F station. Under certain conditions, it might be advantageous to use one of the associated direction centers for the master station. This decision will be made by the prime direction

Figure 2-2 illustrates the plastic aid to be used by operator personnel on the PPI scopes in determining the AZIMUTH center of the jamming being experienced. This plastic aid will be used primarily for

PLASTIC PLATE



Adjacent stations are to be drawn on the Recovery Video Plate.

FIGURE 2-2

correlating AZIMUTH plots received from adjacent direction centers. It will be noted that a video mapping plate showing the positions of the adjacent direction centers will be required to be used in conjunction with the plastic aid. (These can be etched on the present recovery plate.) The plastic aid is made to fit over the PPI scope. Parallel lines and grooved separations are provided on the plastic aid to facilitate drawing lines which will converge on the location of the jamming aircraft. A directional arrow is provided on the plastic aid to assist the operator in correctly determining the AZIMUTH center of the jamming source. These plastic aids are being pro-cured by Headquarters, ADC, and will be distributed to each direction center.

b. Procedure in the Event of a Mass Raid Attack. The same procedure will be followed as outlined in paragraph 203.a., except that it is recognized that it will be difficult to determine accurate AZI-MUTH centers of jamming signals. Associated direction centers under these conditions should select the center of the jamming strobes or in heavy jamming, the most probable center of the dark strobes to D/F on and report.

It is anticipated that broadcast control of fighters and the use of CAP tactics and trailer aircraft will be employed under the above condition and that only rough area directions will be given to the interceptor forces.

- 204. Tactical Information consists of reports of action initiated or decisions made on each surveillance report, and the results of the action taken. Reporting requirements placed on commands and forces for Tactical Reports will correspond to the requirements for Surveillance Reports as given in Table A.
- a. Sources of Tactical Reports are the echelons of command authorized to take intercept or missile action. These are generally the CONAD Division Combat and Direction Centers.
- b. Tactical Action Recording is accomplished by Division Combat Centers on NORAD Form 14. Tactical action will be noted as appropriate on Surveillance Reports.

205. Weapons System Status Information consists of periodic and special reports which concern the availability of all types of weapons employed under the operational control of CINCNORAD, e.g., airborne, shipborne, and landbased radar, fighter-interceptors, and antiaircraft artillery.

The CONAD Division Combat Centers will collect and transmit to CONAD Region COC and NORAD COC all such information for activities assigned to, and augmentation forces within, their areas of responsibility.

Normally, unclassified Weapons Systems Status Information should be sent via circuits to NORAD COC as directed in Chapter III; classified information should be sent through proper communications channels

In wartime or emergency situations all Weapons Systems Status Information

should be sent "plain language" to NOR-AD COC.

During exercises or tests, fabricated or Command Post Exercise (CPX) type reports may be sent "plain language" to simulate wartime conditions.

206. Battle Damage Information embraces reports of all damage from enemy action to the NORAD weapons system, to augmentation forces under CINCNORAD's operational control, to airfields, and to any activity or equipment which adversely affects NORAD's ability to defend against subsequent attacks.

Reporting of battle damage information will be made in accordance with instructions in Chapter III.

207. Nuclear Detonation Information includes all nuclear and thermonuclear explosions occurring in or adjacent to the United States, Alaska, and the Canadian area as a result of enemy action. Explosions occurring within or near these areas and known to be tests need not be reported.

Until an adequate remote reading Indirect Bomb Detonation Detection system is available, an interim collection system will consist primarily of observations received from the Ground Observer Corps, installations, and units under jurisdiction of this headquarters.

Nuclear detonation reports will be forwarded immediately over normal Surveillance Reporting Circuits when received by any air defense agency. Duplication in the reporting of detonations will be eliminated by Filter Centers, Direction Centers, and Division Combat Centers by evaluating the reports prior to forwarding to higher headquarters.

The circumstances under which nuclear detonations shall be reported are listed in Table A, Chapter II. The format to be used is as follows:

- a. Nickname "NUDET"
- b. Number Begin with 01 and assign numerals to each weapon consecutively. Direction Centers are responsible for assignment of numerical designators to all detonations of nuclear weapons in the subsector regardless of originator of report.

 c. Suffix - Station designator of Direction Center in whose subsector detonation occurs.

d. Four letter GEOREF and 1st and 3d numbers to indicate coordinates of detonation.

 $\ensuremath{\text{e}}.$ Time of detonation in minutes after the hour.

f. Estimate of size - large or small.

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g.	Туре	Detonation	Code
	(1)	Aerial burst	A
		Ground burst	В
	(3)	Water burst	C

h. Display of report - Use a twoinch red circle with cross-hatched red
diagonal stripes surrounding point of reported detonation. Retain on plotting
board for 15-30 minutes following report.
For purposes of planning fall-out action, location, time, and description should be
transcribed to overlay chart so that continual plotting of reports will not clutter
plotting board.

i. Example of nuclear detonation report:

Item	PLT/CW Report	Report as Forwarded	Voice Report
Track Classification & Designator	NUDET 03AJ		NUDET Zero Three Alfa Juliett
GEOREF Position	HFAX 50		At Hotel Foxtrot Alfa X-Ray Five Zero
Time	2216Z		Time: Two Two One Six Zulu
Estimate of Size	Large		Large
Type Deto- nation	A		Type Alfa

Example of NORAD Form 14 Teletype Report

NUDET03AJ HFAX50/2216 LARGE A

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CHAPTER III

SURVEILLANCE, TACTICAL & WEAPONS STATUS PROCEDURES FOR

DIVISION COMBAT CENTERS & REGION COMBAT OPERATIONS CENTERS

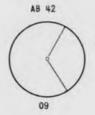
301. General. Under the NORAD concept of operation a Division Combat Center, supervising a Division area, is the primary subordinate agency to exercise operational control of all air defense weapons in the conduct of an air defense battle. In order to carry out this mission the Division Combat Centers must display a current air picture and provide data on all forces available. Outlined in this chapter are the internal operating procedures and requirements for the display and dissemination of surveillance, tactical, and weapons status data by Division Combat Centers.

Region and NORAD COCs have a prime responsibility of supervision, raid recognition, and warning determinations. In order to accomplish these tasks it is imperative that Region commanders and CINCNORAD be provided a current air picture. Due to personnel and communi-cations limitations these commanders will not have a timely air picture unless pro-cedures are established whereby only the minimum essential surveillance and tactical action data is required. The procedures outlined in this chapter are designed to require the Division Combat Centers to pass only the minimum essential data to Region and NORAD COC. In this manner, Region commanders and CINCNORAD are presented a more timely air picture consisting primarily of data essential in accomplishing raid recognition and warning determinations.

302. Plotting Procedures in Division Combat Centers. Plotters at CONAD Division Combat Centers are located behind the vertical plotting board and are provided with voice communications to tellers at adjacent centers, subordinate stations, or tellers at other agencies. The Track Designator and plots will be displayed on the surveillance plotting board. The Track Designator and amplifying track data will be displayed on the tactical mission data board for all compulsory reporting tracks. Plotting of tracks on Division Combat Center plotting boards will be as follows:

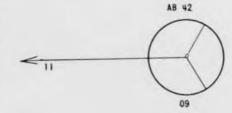
a. Initial Plot. Locate the GEO-REF grid position received, and mark it with a dot and course indicator inside of a circle. The time of the initial plot will be noted and shown by a two-digit figure placed adjacent to the plot. The Track Designator will be placed near the initial plot.

Example:



b. Second Plot. Locate the coordinate and mark it with a dot. Connect this position with the initial plot, thereby creating a track. Direction will be indicated by an arrowhead at the new position. The time of this report will be noted and shown by a two-digit figure placed adjacent to the plot. The Track Designator will be placed near the head of the arrow.

Example:



c. Subsequent Plots. Each radar station will forward tell only confirmed radar plots on tracks having changes in course, speed, and altitude, and at frequent intervals to insure accuracy. When confirmed radar plots are not received, the plotter will, by dead reckoning, make a dot at a position ahead of the last plot at an interval established by previous plots and indicate the direction with a half arrowhead at the new estimated position. At the discretion of the Senior Controller, tracks may be DR'd towards a target complex. When a confirmed radar plot is received, mark the new position with a full arrowhead. arrowhead.

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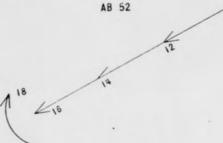
Example:



AB 52

d. **Orbiting Plots.** Indicate on the plotting board by a curved arrow, the head of which indicates the direction of turn. Time should be displayed opposite the orbiting arrowhead at four minute intervals to assure currency of orbit.

Example:

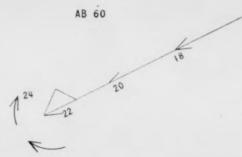


0

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e. Distress Pattern Plots. Indicate on plotting board by a triangle denoting direction, left or right. Time should be displayed opposite the orbiting arrowhead at four minute intervals to assure currency of distress pattern.

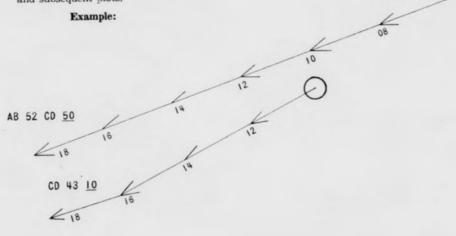
Example:



f. **Split Track Plotting.** The segment of the track retaining the original track designator will reflect the change in amplifying track data.

(1) The segment of the track deviating from the original heading will follow the procedures of initial, second, and subsequent plots.

AB 52 CD 60



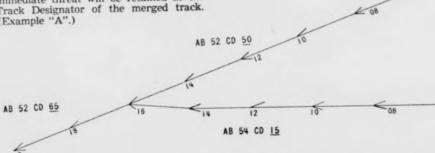
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Example: "A"

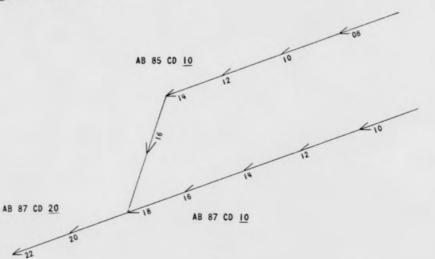
Example: "B"

g. Merging Track Plotting. When the plotter receives word that two or more tracks are merged, he will designate the merged plot as follows: (Inclusion of the number of airborne objects is at the discretion of the Air Division commander.)

(1) The designator of the track which previously presented the most immediate threat will be retained as the Track Designator of the merged track. (Example "A".)



(2) Two tracks merging having the same threat value will be plotted as one track, using the highest Track Designator: (Example "B")



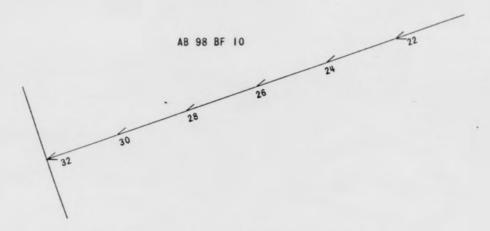
14

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- h. Contact Lost and Dead-Reckoned Plotting. The plotting procedures for Contact Lost and Dead-Reckoned tracks will be as follows:
 - (1) When a Contact Lost is

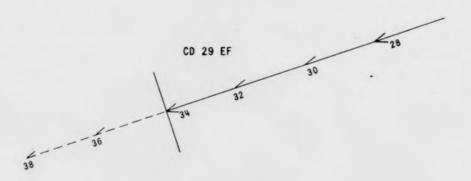
reported on a track, the plotter will display the information by a straight line perpendicular to the direction of flight at the point of Contact Lost. Time will be noted and shown adjacent to this symbol.

Example:



(2) Dead-reckoned positions will be joined by dotted lines.

Example:



15

i. Fighter Tracks. Track data on interceptors armed with conventional weapons may be displayed at Direction Centers and/or at Combat Centers at the discretion of the CONAD Division commanders. These track data need not be forwarded to Region operations centers or the NORAD COC.

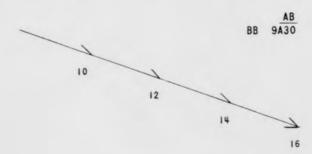
Track data on interceptors armed with atomic weapons will be displayed at Direction Centers and CONAD Division Combat Centers. NORAD Form 14 reports

to COCs will indicate atomic carrier in weapons commitment data.

Track data designators and amplifying data may be displayed on vertical plotting boards in Combat Centers in white pencil for all data except the track number or interceptor number suffix, which will be an **A** (to indicate atomic weapon carrier). This **A** will be in red grease pencil. The number of interceptors in the track may be displayed on the tactical data board. Track data may be displayed in the following manner:

Alphabetical Designation of A in red grease pencil the station currently observindicates atomic weaping the track. on carrier. BB 9A 30 Altitude of fighters in thou-Abbreviated call sign Numerical of fighters Blue Baron Designator sands of feet. Track Number

Track progression may be indicated by half arrowheads on vertical plotting boards in the same manner as other tracks. Example follows:



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Color Code. The color of the Track Designator, the track on the vertical board, and the data on the tactical mission data board indicates the classification of the track. Recommended colors for classifications are as follows:

- Hostile Red

Orange - Unknown

Yellow - Big Photo, Anchor Man, Smoke Ring or Faker - All other Friendly aircraft and canned tracks. White

NOTE: If an Unknown track is identified as Hostile during an exercise, the Track Designator on the vertical board will be encircled immediately in red, and as soon as possible, all known Faker or Big Photo will be changed to Friendly.

303. Teletype Telling Procedures for Transmission of Surveillance and Tactical Data From CCs to COCs. The following procedures for forward telling surveillance and tactical action data from Division Combat Centers are designed to provide Region and NORAD COCs with the minimum of required data. These streamlined procedures will result in a minimum of

personnel and machine actions. This time saving will furnish commanders at COC levels with a timely air picture and permit them to carry out effectively the essential passive and active air defense actions resulting from timely raid recognition. The following procedures will be used by CCs to transmit data via the format of the NORAD Form 14. Abbreviations, definitions, and sample NORAD Form 14 teletype message reports are as follows:

a. Track Classification: Shown as the first letter or letters as a prefix preceding Track Designator.

(H) "V" for STP Invader Single letter for: Hostile

(F) Friendly

(U) (Includes Significant Unknowns) Unknown

(C) Canned

(K) (Exercise) Faker

(B)

Big Photo

Smoke Ring (S)

STP

(X) (Prefix to single and double Track Designators, with exception of H which is indicated by a "V" for STP invaders.)

(NC) Double letter for: Unclassified

(NUDET) Nudet (NU)

Nonsignificant Unknown (DP) Dew Point

Letter & numeral for: Anchor Man (A Plus Number, i.e., A1)

Air Force 1 (AF1) - The abbreviation "AF1" will classify the aircraft in which the President of the United

States is flying.

Columbine (Col) - The abbreviation "Col" will classify the President's aircraft when the President

is not aboard.

Include classification in initial report and when a change occurs.

b. Track Designator.

Double letter prefix identifying Division by the first letter and originating subsector by the second letter. Station identifier suffix indicating station carrying the track need not be reported to COCs unless initial report to COCs is a result of a passed track or a reclassification and the track suffix is required because of the two letter GEOREF reporting system, to assist COC plotters in accurately plotting the initial report.

Track number as assigned by the originating unit.

Example: JF20

c. GEOREF Position.

3d and 4th letters plus 1st and 3d numbers only.

Example: FS34

d. Time.

Four numeral Zulu time in initial and final report only. Two numeral time in each succeeding position report. No time is required in individual reports of reclassification, track recognition, tactical action, tactical result, or merge.

e. Amplifying Data.

(1) Course. Is expressed in a maximum of two letters corresponding to the appropriate cardinal and intercardinal headings. "Orbit" will be reported as "ORB" on the surveillance and tactical report.

(2) Strength. Is the known or estimated number of airborne objects.
(3) Altitude. Is the known or estimated altitude above sea level expres-

sed in two digits indicating thousands of feet. Altitudes below 10,000 feet will be reported as one numeral preceded by a

- (4) Speed. Is the ground speed in knots expressed in tens of knots by two digits such as 35, which indicates 350 knots.
- Comf. Weapons Commitment. mitment will be expressed as a numeral or numerals, indicating the number of interceptors currently committed against a particular track. No indication of AI or NAI will be made. The letter "A" will follow the interceptor commitment number to indicate atomic weapon carrier inter-ceptors are being used. Surface-to-air weapons commitments will not be reported. Tactical decision (TD) and not required (NR) will be reported as appropriate. Tactical actions against a track will be reported by the Division taking the tactical action, even though an adjacent Division has the responsibility for forward telling of surveillance data for the track.
- g. Tactical Results. Results of interceptor and surface-to-air weapons commitments will be expressed in numerals. Interceptor results will be followed by surface-to-air results, using a dash to separate the information.

Example: 3-4 indicates 3 targets were destroyed by interceptors and 4 by surface-to-air weapons. The classification of the track will indicate a mission accomplished (MA) on an exercise track. A splash or kill will only apply to a designated hostile track. Missed intercepts (MI) will not be reported unless it is MIE (which indicates missed intercept due to airborne or ground radar ECM).

h. Remarks; Abbreviations for Surveillance and Tactical Reporting.

(1) ECM - Used as suffix to radar site designator without track number to indicate site experiencing ECM. A one-time report through surveillance circuits will be followed by a Cliff Report through normal voice relay (reference CONADR 101-1). Also used as suffix to Track Designator to indicate track is emitting ECM.

(2)	Identified Friendly Identified Prior to Target Recognition Passed Fade Contact Lost	-TR)	Used as suffix to track number of final reporting only.	on
-----	--	------	---	----

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(3	3) 1	Merge Mass Change	-MG) -MS) -CH) Information-TWI)	Used as followed changed	by m	erged,	massea,	an	d
		Inreat warming	Illiot illianos					of	2
	/45	Dealessified	-RC)	Used to	change	classif	cation	10	a

(4) Reclassified track. -NS) Used in Weapons Commitment Report

(5) No Scramble as required.

Reasons for No Scramble are as follows, and will be reported as appropriate:

TD Tactical Decision NR Not Required WX Weather No AI Equipped Fighter in Suitable Location NAIF OR Out of Range No Fighter Suitable NFSL Location

Examples of Teletype Surveillance and Tactical Reports as Transmitted From NORAD Form 14.

a. Initial.

Classification (U) and Track Designator (JF20) GEOREF position and time UJF20 MF24/1611 SE/3/22/35 Course, strength, altitude, speed Current weapons commitment - omit if no commitment made at time of transmission, and submit with first follow-up after commitment made. The letter "A" after the figure 6, i.e., "6A" would indicate that interceptors carrying atomic weapons are being used.

b. Follow-up.

Track Designator JF20 GEOREF position and time Current weapons commitment (if not included in initial report) MG35/21

c. Follow-up and Change in Altitude and Speed.

JF20 MG46/31 //30/45

d. Track Number Change.

JF21 CH JF20

e. Merge and Strength Change.

JF 21 MG JF25

f. Track Recognition and Reclassification.

RC SBB JG10 Reclassification of track JG10 as Smoke Ring Bravo Bravo B-47 aircraft B-47

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g. Current Weapons Commitment and Tac Action Results.

JF21 4 2-2	Track Designator and track number Four interceptors still committed Two interceptor missions accomplished - two surface-to-air mis-	s-
	sions accomplished	

h. Tac Action Results and Completion of Tac Action. (Final Tactical Report.)

JF21 0 4-2	No interceptors committed Four interceptor missions accomplished two surface-to-air mis-
-	sions accomplished

i. NUSUM. Numerical Summary Report will be submitted as an area report when a designated area becomes saturated with objects and it becomes impossible to report all individual, merged, or massed tracks in that area. NUSUM report will include the area, time, strength, weapons committed and tactical results. NUSUM areas for specific target complexes within a Division area will be designated by the CONAD Region commander and make known to all levels of operation. NUSUM reports may be requested by CINCNORAD or Region commanders for specific target complexes or entire Division areas.

Sample Report

Note and	Pro are pro-
NUSUM SFO/1607 /50//	Classification Position and Time (San Francisco 1607Z) Course (blank), strength (50 objects), altitude (blank), speed (blank).
150 20-15	Weapons committed (150 fighters committed) Tactical results (20 fighter splashes - 15 surface-to-air splashes).

j. When a change in course or amplifying information is to be included in a follow-up report, it will be reported immediately as follows:

Course Change	Strength Change	Altitude Change	Speed Change
JF 20	JF20	JF20	JF20
LF 24/21	LF 24/21	LF 24/21	LF 24/21
SW	/4	//40/	///60

Slashes will indicate unchanged items. These need not be separated by a space.

MIs will be indicated by a reduction in the current commitment, which will be reported immediately in a follow-up report.

k. Final Reports may include but are not restricted to the following sample:

JF21 PA	JF21 F	JF21 FA (Fade)
(Passed)	(Friendly)	1701

Contact Lost (CL); Change (CH); Merge (MG); Identified prior to intercept (IPI); and Target Recognition may also be used in final reports.

305. Frequency of Reports, CC to COCs.

- a. INDRACK (Individual Track) Normally, at least every 5 minutes, as traffic permits, or otherwise as directed.
- b. RAID ASSESSED TRACKS Normally, at least every 5 minutes, as traffic permits, or otherwise as directed.

0

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306. NORAD Form 14.

a. Security Classification. Individual reports, when being passed in accordance with the instructions contained herein, will be treated as UNCLASSIFIED; however, upon receipt and compilation, these reports will be treated as SECRET. A sample of NORAD Form 14 is illustrated below:

SURVEI	LLANCE	AND TA	CTICA	L REPOR	Т
CLASSIFICATION, TRACK DESIGNATOR, OTHER ACTIONS					
GEOREF POSITION AND TIME (Z)					
AMPLIFYING DATA	COURSE	STRE	NGTH	ALT.	SPEED
CURRENT WEAPONS COMMITMENT					
TACTICAL RESULTS	INTER	RCEPTORS	_	SURFACE	

NORAD FORM 14 REPLACES CONAD FORMS 2 AND 3 WHICH ARE OBSOLETE

AIR FORCE (DPS, Ogden, Utah)

UNKNOWN AIRCRAFT REPORT-HOSTILE AIRCRAFT REPORT BEAPONS COMMITTED

INTERCEPTORS TO ATR 13 11 RESULTS INTER-CEPTORS TIME SURFACE. TO.AIR WEAPONS NO. ABN OB-JECTS EST TRACK DESIG-NATOR TIME GEOREF CLASSIF1 -SPEED POSITION CATION IN. REMARKS

22

Declassified

en filled inj

Declassified F.C. 2760

iled in)

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NORAD 1

b. Supply of Forms. NORAD Form 14 (Surveillance and Tactical Report) will be supplied in accordance with NORAD Regulation 9-1. A suggested procedure for the use of NORAD Form 14 is to place a plastic cover over the form thereby permitting the use of grease pencil entries.

307. Telling Policies.

- a. Forward Telling. The Combat Center surveillance plotting board and the tactical mission data board will be the principal sources from which the forward teller will fill out his NORAD Form 14 for transmission over the private-line teletype. In the event of teletype failure, reports will be transmitted by tactical telephone in the same sequence, using as a guide NORAD
- b. Lateral Telling. The Combat Center Air Surveillance Supervisor will contact the Air Surveillance Supervisor at the adjacent Combat Center just prior to passing (PA) a compulsory reporting track to the adjacent sector.
- c. Threat Warning. The primary purpose of threat warning is to permit an adjacent Region, sector, or subsector to prepare its defense before an approaching track(s) enters its area of responsibility. It is the responsibility of the control sec-tions of NORAD COC, Region Combat Operations Centers, Combat Centers, and Direction Centers to disseminate threat warnings to higher, lateral, or lower echelons in the air defense system. Threat warning reports will be submitted as the situation requires. Because of the high speed of bombers and other airborne weapons and the geographic sizes of Division areas, it is mandatory that consideration be given to every potentially threatening track as to what threat warning reports will be required by adjacent Divisions. This is a Division Combat Center responsibility which will be supervised by the Region Combat Operations Center. Division Combat Centers must be flexible in this operation and give every consideration to the defense in depth and not be concerned only with their own area of responsibility. A recommended procedure whereby Region COCs may be assured that Diviision Combat Centers have threat warned

a track is for the Combat Center to indicate on surveillance reports when a track is being threat warned. This is done by adding the letters TWI (Threat Warning Information) in Item 1 of NORAD Form 14. The fact that the track is being threat warned is then displayed on the COC Plotting Board by adding the letter T after the time along the track. This procedure, where not completely satisfactory in all areas, can be closely monitored and further elaborated on by Region commanders and should eliminate many phone calls. Requirements for threat warning reports will be as follows:

(1) The Air Division(s) toward which track(s) is heading, regardless of track location, will be provided

threat warning data.

(2) At five minute or 50-mile intervals, whichever occurs first, until such time as track(s) can be laterally told between Direction Centers at Air Division boundaries

- (3) Threat warning data ex-changed between Air Division Combat Centers should include weapons commitment data for adjacent commanders' consideration in equitable distribution of offensive forces. As appropriate, these tactical data will be included in threat warning
- NORAD Form 1. This form (Fig-3-1) will be used as desired by CCs and COCs to record Unknown and Hostile aircraft reports. In the event of teletype failure, this form may also be used as a guide and record for voice telling. NORAD Form 1 will be supplied in accordance with NORAD Regulation 9-1.
- 309. Weapons Status Reports. In order to furnish CINCNORAD with timely and accurate weapons status information, Division Combat Centers will furnish Region and NORAD COCs with the reports required herein. The NORAD Headquarters alternate command post will be included as an INFO addressee on all weapons status

The following weapons status report will be submitted by Division Combat Centers to Region and NORAD COCs. The report format is as follows:

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a. Division Daily Weapons Status Report.

SAMPLE

V-3 NORAD RCS __

			INTERCEPTORS		
A.	Base	5-Min	1-Hour	3-Hour	Remarks
	HAM KLM NCL NCL	6/4 0/2 2/0 2/0	12/6 4/4 4/6 4/0	57/15 18/5 23/2 10/0	F-86 F-102
	TOTAL	10/6	24/16	108/22	

MISSILE BATTERIES

AA DEFENSE

AREA	15-Min	30-Min	3-Hour
SKF	6	0	18
SAC	2	0	6
momer	0	0	24

GUN BATTERIES

C. AA DEFENSE

AREA	15-Min	30-Min	3-Hour
SKF	3	0	9
SAC	4	0	15 120
NAVY NYC TOTAL	7	0	144

(1) Format Instructions.
(a) Interceptors. The three letter identifier under Base is the authorized abbreviation for the air base. Fig-ures under 5-min, 1-hour, and 3-hour will indicate alert status by the air base as to AI/NAI interceptors. The numbers listed under the 3-hour column will include all operationally ready aircraft, exclusive of those listed on 5-min and 1-hour status. The total figures will represent the totals of the 5-min, 1-hour, and 3-hour columns. Two-squadron bases having different types of interceptors will report on each squadron. Interceptor squadrons, exclusive of ANG and augmentation units, not providing 5-min or 1-hour alert aircraft, will report all operationally-ready aircraft on a 3-hour status, unless relieved of all air defense commitments by proper authority. In the event the number of alert-ready

crews is less than the number of operationally-ready aircraft, units will report the number of alert-ready crews in the remarks section of the Weapons Status re-

(b) AA Weapons. For both Missile Batteries and Gun Batteries a three-letter identifier will be used to identify the defense area under jurisdiction of an AADCP. Figures under 15-min, 30min, and 3-hour will indicate alert status of the complex to include all Navy weapons available. The total figures will represent the totals of the columns in each section. The Gun Batteries report will include Skysweeper, 90-mm, 120-mm, and reported Navy gun batteries. For purposes of this report, a Naval gun battery is defined as one unit afloat, irrespective of size, gun tubes, or fire-control unit.

(c) Remarks. Pertinent information reflecting the status of the base or defense area will be reported in this column, i.e., 333d FIS deployed to weapons training; one F-89J/MB/1 on 30-minute alert; Battery A; 45th Battalion-

Weapons training. The type aircraft will be reported when types differ in twosquadron base reports. Alert-ready interceptor crews will be shown in accordance with (a) above.

(2) Teletype Message Sample.

0 120100Z (Precedence and Date-Time Group of Report)
FM COC 28th CONAD Div., Hamilton AFB, Calif.
TO COC NORAD, Ent AFB, Colo.
INFO COC WCR, Hamilton AFB, Calif.
INFO Alternate NORAD Hq Command Post (ALCOP)
(Address as Required)

A.	NCL :	0/2	12/6 4/4 4/6 4/0 24/16	57/15 18/5 23/2 10/0 108/22	2-30 min 16-Alert crews F-86 F-102
В.	SKF	6 2 8	$\frac{0}{0}$	18 6 24	
C.	SKF SAC Navy SKF	3 4 0	0 0 0	9 15 120	
	12.00	7	0	144	

(3) Reporting Instructions.

(a) Frequency of Reports. The Weapons Status Report RCS V-3 will be submitted by Division Combat Centers twice daily at 0900 and 2100 hours local time, unless otherwise specified.

(b) Method of Transmission. The RCS V-3 will be transmitted by multiple-address messages over the tactical teletype network, using on-line crypto facilities when available, to the Region COCs and NORAD COC. Operational immediate transmission precedence will be assigned to weapons status reports.

(c) Security Classification. Weapons status reports from individual units to the Division Combat Center are UNCLASSIFIED, except when all available weapons are reported through one ACW squadron. Completed Daily Division Weapons Status Reports will be classified SECRET.

(d) Addressee. These reports are of primary interest to COCs of the Regions and of NORAD. To expedite internal delivery, these reports will be addressed to the combat operations centers of the headquarters concerned.

b. Division Consolidated Weapons Status Report. In the event of a NORAD-directed exercise, or hostilities, the Daily Weapons Status V-3 will be replaced by the Consolidated Report V-4 which will be submitted hourly until a stable alert status is reached, or as otherwise specified. Initial reports will be submitted upon the declaration of an Air Defense Readiness (Cocked Pistol) or higher state of preparedness or warning, either actual or simulated. This report may be used to replace the twice-daily report under a stable alert condition when so desired by NORAD COC. A stable alert condition is defined as a condition when there is no more than 10 per-

cent change in the alert status of interceptor or SAM units within the Division since the previous report. A V-4 report is not required when the decrease in status condition is due to interceptors being scrambled. Hourly reports will include interceptor deployments and failure to meet, or changes in, alert status.

	SAMIL LIL				
DTG	-			NORAD	RCS V-4
DIV	5-Min	15-Min	30-Min	1-Hour	3-Hour
A. Interceptors	4/0	20/0	40/20	20/10	180/24
B. Missile Batteries	8	0	30	0	24 144
C. Gun Batteries	0	(.	U	U	111

(1) Format Instructions. The figures shown represent the total weapons within the Division area and their alert status. Generally, these figures will be the same as the total shown on the Division Daily Weapons Status Report.

(2) Sample Teletype Message.

0 120100Z (Precedence and Date-Time Group of Report) FM COC 28th CONAD DIV Hamilton AFB, Calif.

TO COC NORAD Ent AFB, Colo. INFO COC WCR, Hamilton AFB, Calif.

INFO NORAD Hq ALCOP (address as required)

/ Secret	NORAD	RCS	V-4
----------	-------	-----	-----

A.	4/0	20/0
B.	8	0
C	0	7

(3) Reporting instructions are the same as those for the Division Daily Report, with the exception of the frequency of the report. In the event of hostilities, this report may be submitted as UNCLAS-SIFIED via the normal tactical teletype network. An amending V-4 report will be a complete new report, complete in contents, without reference to previous report.

310. Electronic Status Reports. CINC-NORAD and the Region commanders must be kept apprised of the weakness in the contiguous radar system due to outages. To provide the commanders with this information, the following Radar Status Report will be submitted by Division Combat Centers. This report is applicable to radar sites, Texas Towers, DEW Line, MCL, AEW&C aircraft, and picket ships of the contiguous coverage of the North American continent.

 a. The following report format will be used for the Electronic Status Report, NORAD RCS V-5.

(1) Date-time group of status being reported.

(2) Indicate "Initial," "Amending," or "Final" for type of report.

40/20	20/10	180/24
30	0	24
0	0	144

(3) Letter identifier of facility which identifies the area and the station. (4) Coded reason for report. (Omit this entry in final report if not pertinent.)

- 01 Search Radar Inoperative
- 02 Height Finder Inoperative
- 03 IFF
- 04 Calibration
- 05 Modification of Site 06 Major Overhaul
- 07 On Station (AEW&C
- & Pickets) 08 Major Breakdown
- 09 Off-Station (AEW&C & Pickets)
- 10 VHF or UHF Out (Air Ground)
- 11 Land Lines Out
- 12 Fluttar East Out 13 Fluttar West Out
- 14 SAGE Test 15 UHF Tropo-Scatter (Lateral)
- 16 VHF Ionospheric Scatter (Rearward)

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(5) Date-time estimate of return to operation, or of revised estimate of return. (Omit this entry in Final Report.)

b. Sample Teletype Message of Report.

NORAD RCS V-5	NORAD RCS V-5	NORAD RCS V-5
131030Z	131030Z	132000Z
Initial	Amending .	Final
FK	FK	FK
01	01	
1320007	1323007	*

c. Radar status will be reported in accordance with the following requirements:

(1) Frequency.

(a) Division Combat Centers will render V-5 report when;

1. The surveillance function of the AEW&C aircraft or picket ship of the contiguous system ceases or resumes operation by being on-station or offstation.

2. Ground equipment becomes operative or inoperative (except when backup equipment assumes primary function or as noted in (b)2. below),

3. Amending estimated time of outage.

(b) Division Combat

Centers need not report when;
1. Inoperative due

to preventive maintenance, or when backup equipment assumes primary function, 2. Any primary equipment outage will be three hours or

less.
(2) Classification, Precedence, and Transmission. Reports of an individual radar station will be UNCLASSIFIED

except:

(a) When the time of outage is predicted to be greater than twenty-four hours. (Region commanders may specify a shorter time period as de-

(b) When an excessive number of stations in the same general area are inoperative, and the Division or comparable commander directs an appropriate classification of at least CONFI-

DENTIAL.

(c) When reasons for the ou age must be stated in the report other than coded reasons.

(3) Report Routing Instruc-

(a) UNCLASSIFIED reports will be made to Region and NORAD COCs over the Surveillance or Tactical Reporting Circuits, or through normal communication channels with a precedence of Operational Immediate.

(b) Classified reports will normally be sent by multiple address over on-line crypto facilities during normal conditions with a precedence of Operational Immediate. In an emergency or wartime, these reports, when speed is paramount, will be transmitted through Surveillance or Tactical Reporting Circuits as UNCLASSIFIED.

311. Tactical Data and Weapons Status Display.

a. Tactical Mission Data Boards in NORAD/CONAD Combat Centers will be designed to suit the needs of the using command. Data boards should include essentially the same items as contained in NORAD Form 1 with the exception of GEOREF Position and Course.

b. Weapons Status Boards in NORAD/CONAD Combat Centers and Combat Operations Centers will be designed to suit the needs of the using command. Data boards should include appropriate weapons status for all weapons, by base, in the area of concern.

312. COC Plotting Procedures. Surveillance and tactical data transmitted from CCs to COCs by use of the NORAD Form 14 format must be displayed clearly and expeditiously on COC plotting boards. The following plotting procedure displays all data on the plotting board and does not require the tactical mission data board. Commanders may retain the tactical board if desired.

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a. Color Code. The color of the grease pencil used to display data on the plotting board indicates the classification of the track. These colors and classification are as fol-

> - Hostile Red

Orange - Unknown

Yellow - Big Photo, Anchor Man, Smoke Ring, or Faker

White - All other friendly aircraft and canned tracks

b. Recommended Display of Data.

NORAD Form 14 Teletype Reports:

Display

INITIAL REPORT

JF20

UJF20

3/22/35/6

MG24/1611

SE/3/22/35

6

(The letter "A" transmitted after the figure 6 would indicate interceptors carrying Atomic Weapons. The letter "A" should be added after the 6 in the display in red pencil.)

FOLLOW-UP

JF20

MG35/21

JF20 3/22/35/6

FOLLOW-UP & CHANGE IN ALT. & SPD.

JF20

MG46/31

/ /30/45

JF20

3/30/45/6

JF20



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TRACK RECOGNITION & RECLASSIFICATION

JF20 RC SBB JF20 B47 SBB 3/30/45/6 21

CURRENT COMMITMENT & TAC RESULT

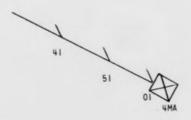
JF20 JF20 4 2-SBB 3/30/45/4 31

TAC RESULT & COMPLETION OF TAC ACTION

JF20 JF20 0 4-SBB 3/30/45

AAA MA

JF20 0 4-4



29

Declassified

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FINAL REPORT

JF20 PS 1710 TRACK SCRUBBED WHEN APPROPRIATE

JF20 FA 1710 JF20 SBB 3/30/45 FADE SYMBOL (///) DISPLAYED, THEN TRACK SCRUBBED

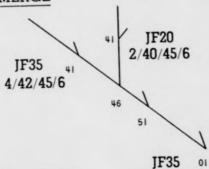


JF20 FR

JF20 SBB 3/30/45 FR SYMBOL DISPLAYED THEN TRACK SCRUBBED

MERGE

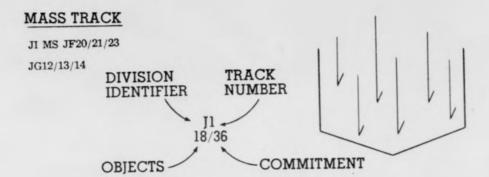
JF35 MG JF20



PLOTTER WILL ADD NO. OF OBJECTS AND CURRENT COMMITMENT FOR DISPLAY IN THE MERGED TRACK.

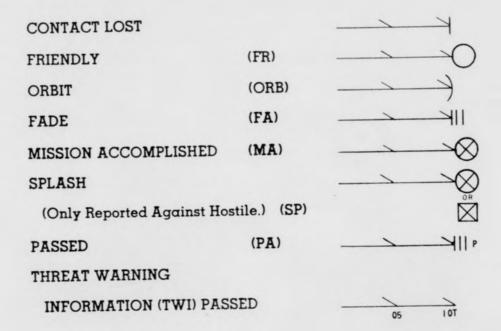
6/42/45/12

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FAKER

The letters \underline{K} will be displayed below the track number for all Faker Tracks



- 313. Weather Display. An appreciation and understanding of the weather elements as they affect air operations is a requisite for every operational member of NORAD. The weather factors must be considered before commanders and staff members can successfully employ the weapons in the air defense system. Strategy and tactics for the conduct of the air battle will depend to a large degree on distinctive weather features.
- a. CONAD Combat Centers. The overall weather situation may dictate the number and type of interceptors scrambled, type of attack, the bases from which they leave, and the recovery bases. In general, the weather factor is so basic to the operation of the air defense mission that the CONAD Division commander, his controllers and directors, must give it full consideration while conducting the air battle. The minimum weather data required at the CONAD Combat Centers are:
- (1) High Cloud Cover, Moon Phase, Contrail Level, Area, and Terminal MET Watch for active air defense missions. (2) Eight-hour area forecasts
- every six hours
- (3) Anomalous propagation analyses.

(4) Advisory service regarding the effect of weather upon air defense mission and operations.

(5) Weather Status Board which will display:

Current weather re-(a) ports for all fighter-interceptor bases and other airfields designated by the CONAD Division commander.

NOTE: At standardized combat centers, where the forecasters are located on the dais, the remaining weather data are not required to be displayed.

(b) Four-hour trend forecast every three hours for each recovery base. The four-hour forecast may be broken into four one-hour periods.

(c) Forecast winds and temperatures aloft for selected sectors for the areas of responsibility.

(d) Runway and braking conditions for each recovery base using the following code system: (The determination of runway and braking conditions is an operational function and must be provided to weather personnel by the base operations.)

Good

Fair

Poor 3.

Nil

BRAKING ACTION

RUNWAY CONDITION

- 1. Wet
- Snow 2
- Ice 3.
- Snow and Ice
- 5. Repair and Construction
- Aircraft Accident 6.
- Damage as a Result of Enemy Action 7.
- Operational

NOTE: "If any one runway is considered suitable for operation (wind, length, etc.), that base is considered operational." EXAMPLE: Condition displayed as 3/4 would mean ice on the run-

way -- braking action nil.

(e) Valid times for current weather data and forecast periods.

b. CONAD Region Operations Centers. Due to the nature of the mission of the Region Operations Centers, only general weather values are needed to assist the commander and his staff to supervise the air defense operations. While spec-

ific and detailed weather data are required at the Control and Direction Centers, only current terminal weather and an ab-breviated synoptic picture for CONAD Regions are required for normal day-to-day activities. This information can be presented by using a weather display chart at the Region Operations Centers. Closely associated with this board will be a small-

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scale map of the geographical area of the Region. This will be used to portray certain symbolic weather features of the synoptic situation within the area. During periods of exercises or actual hostilities, a forecaster will be available in the Operations Center to help correlate the weather with the air situation. The use of a television system for dissemination of weather information (Weathervision) will satisfy most of the requirements for weather service in the Region Operations Centers.

CHAPTER IV

INTELLIGENCE OPERATIONS

- 401. **Purpose.** To outline the NORAD concept of intelligence operations in active air defense and prescribe combat intelligence reporting procedures within the NORAD structure.
- 402. Concept. An important function of NORAD intelligence both prior to and during hostilities is to provide warning of ene-In addition to the warning my attack. function, NORAD Intelligence will perform the following during hostilities: sist combat units through the rapid collection, evaluation, and dissemination of information on enemy equipment, tactics, and techniques for immediate exploitation, and (2) provide timely information on enemy capabilities and intentions. For ease in performing these functions, procedures are outlined in terms of the three battle stages; pre-battle, air-battle, and post-battle. Warning of attack is a requirement during all stages. Intelligence is concerned with two types of warning:
- a. Strategic Warning. That warning of the enemy's intent to attack which is received prior to the departure of enemy aircraft or missiles from their launching bases or SSG's (submarines capable of launching missiles) from their home waters. The dissemination of strategic warning information to subordinate units will be made from Headquarters NORAD.
- Supplementary Early Warning. That warning of the enemy's approach to, or entry over, the North American Continent received subsequent to the departure of enemy aircraft or missiles from their launching bases or SSG's from their home waters, but prior to the penetration of con-tiguous radar cover. This category of warning may result from established surveillance facilities such as the DEW line and its seaward extensions, mid-Canada line, the Canadian GObC, itinerant aircraft or ships, or the radars of the Alaskan or Northeast areas. Information from the above sources will be disseminated through NORAD operations channels. It may also be developed from sources such as friendly governments and overseas commands which case it will be disseminated through NORAD intelligence channels.

403. Battle Stages.

- a. Pre-Battle Stage. The existence of high-speed missiles and bombardment aircraft capable of delivering weapons of total destruction makes it mandatory that commanders be apprised of enemy capabilities and intentions before hostilities begin. Estimates of current enemy
 capabilities are contained in the NORAD
 Current Intelligence Estimate and in the
 intelligence annexes to operations orders
 and plans. Additional current information
 on enemy capabilities and intentions is
 contained in the Weekly Intelligence Review, periodic current intelligence summaries, and spot reports.
- b. Air-Battle Stage. During this phase, the efforts of intelligence personnel can best be utilized to assist combat units by the rapid collection, evaluation, and dissemination of information concerning enemy equipment, tactics, and techniques which may have an immediate effect on the conduct of air defense.
- c. Post-Battle Stage. At this time, nonurgent information collected during the course of the battle will be consolidated and reported. The data forwarded will be used in preparing timely intelligence estimates and reports. Combat estimates will be forwarded to NORAD commands and may be supplemented by subordinate commands as deemed necessary to meet particular command requirements.
- 404. Reporting Procedures During Hostilities.
- a. BLITZ Report -- a report of intelligence information which has been assigned the flag word BLITZ to assure its expeditious handling and delivery to intelligence agencies. Pilot reports, radar director reports, and ARADCOM radar reports are the best sources of immediate BLITZ information.
- (1) Urgent intelligence information about enemy equipment, tactics, or techniques which may influence the immediate conduct of air defense, will be submitted during the course of the air battle as BLITZ Reports. Such data will be transmitted by the most expeditious means

of communication available. ECM information will be reported in accordance with Communications and Electronics instructions. Information pertaining to the enemy, such as the following, should be submitted immediately as BLITZ Reports during the air-battle stage:

(a) Penetration patterns in terms of (1) force strength and composition, (2) vertical and horizontal separations and (3) changes in altitude, speed, and course.

(b) Defensive actions of

attacking aircraft.

(c) Exploitable vulnerabilities detected in the attacking force.

- (2) All nonurgent intelligence information, other than that submitted in the Summary Report, will be submitted during the post-battle stage as BLITZ Reports. These reports will be assigned a communication priority commensurate with their requirement for speed of dissemination. Information pertaining to the enemy, such as the following, should be submitted as BLITZ Reports during the post-battle stage.
- (a) Detailed information on items previously reported as urgent intelligence.
 - (b) Bombing tactics.
- (c) Withdrawal routes employed by enemy aircraft.

(d) Observed configura-

tions of attacking aircraft.

(e) Variations from expected performance characteristics in aircraft and missiles.

(f) Details of new aircraft, missiles, or weapons employed.

(g) Incidents of espionage, subversion, or sabotage against defense installations.

(h) Locations of possible downed enemy aircraft, missiles, or personnel.

b. The Post-Battle Summary Report, will provide the rest of the information required by intelligence from units under CINCNORAD's operational control. While it contains information of interest to both operations and intelligence, for the sake of convenience, it has been included in this Chapter.

405. Post-Battle Summary Report.

a. Purpose. This directive prescribes a Post-Battle Report to provide CINCNORAD and the battle staff timely operational and intelligence summary information to assist in:

(1) Air defense planning and

decision-making.

(2) Fulfilling NORAD reporting responsibilities to the Joint Chiefs of Staff (JCS) and the Canadian Chiefs of Staff Committee (COSC).

b. Scope. Paragraph 405. applies to all air defense Regions and Divisions under the operational control of CINCNO-RAD during hostilities. Reports prescribed herein will be prepared at division/sector level for all defense forces assigned or attached, including all units of the component commands and augmentation forces.

c. Reporting Instructions.

(1) Frequency. One report after the termination of each battle phase. Subsequent reports, adding to or correcting reports previously submitted, will be transmitted as necessary with reference being made to the amended report.

(2) Reporting Period. The reporting period will commence with the first declaration of advanced state of alert or warning condition by any NORAD command and will terminate at the time CINC-NORAD declares the battle phase ended (see paragraph 106.)

(see paragraph 106.).
(3) "As Of" Date. Termina-

tion of battle phase.

(4) Due Date. As soon as possible.

(5) Method of Transmission.

Normally by teletype. Otherwise, by the most expeditious means available. Teletype reports will be prepared in easy read-

ing text (see sample report).

(6) Security Classification. In combat or combat-related situations where speed of transmission is more important than security considerations, information classified no higher than SECRET may be transmitted in the "clear" over the commander's signature. Statements concerning this procedure are contained in Allied Communications Publications, Air Staff Instructions, Air Force Regulations, Army Regulations, OpsNav Instructions, and Joint Army-Navy-Air Force Publications.

(7) Addressees. N O R A D COC, NORAD alternate command post, and appropriate parent Regional com-

mand.

(8) Negative Reports. Negative reports will be submitted by transmitting the unit designation, report control symbol, and the phrase "negative report.

(9) Timeliness. Reports will not be delayed for absolute verification or because of missing items. When unverified information is submitted, an appropriate qualifying statement will be made in the remarks section.

(10) Reports Control Symbol. NORAD V-9.

d. What to Report.

(1) Period of Report. Indicate the time period covered in the report from the start of the air battle until its conclusion.

(2) Total Number of Hostiles in Division Area. This item will include the total number of hostile aircraft and missiles in all tracks carried in the Division area during the reporting period. It will include both those initially acquired within the Division area and those passed from other Divisions.

(3) Number of Hostiles Originating in Division Area. This item will include only the number of hostile aircraft and missiles in all tracks which are initially acquired in the Division area during the reporting period. Tracks passed from another Division will not be included in this item.

(4) Types of Enemy Aircraft and Missiles Employed in the Division Area, if Known. This item will include the name or type of enemy aircraft and missiles employed in the Division area during the reporting period, i.e., Badger, Bi-son, ASM, ICCM, ECM, Decoy, etc.

(5) Altitudes the Were Flying. This item will list, to the nearest thousand feet, the altitudes flown by enemy aircraft. The last three digits of each altitude will be omitted and slash marks will be used between each indicated altitude. Any altitude below 500 feet will be indicated by a zero. Example: 45,000 feet, 35,000 feet, and 300 feet would be shown as 45/35/0.

(6) Formation Hostiles Em-ployed. This item will give the configuration of the formation and the separation between aircraft, i.e., abreast/1 mile, vee/ 2 miles, etc.

Attack Routes Enemy Employed. This item will indicate, based on 8 point compass, the peripheral part of the Division penetrated and the heading of

the aircraft, i.e., E heading SW, or NW heading E.

(8) Total Number of Fighter SP's (MA's) by Type of Enemy Aircraft, if Known. This item will include the number, by type if known, of enemy aircraft destroyed by AAA action during the reporting period, i.e., 10 Bison/5 Unknown.

(9) Number of AAA SP's (MA's) by Type of Enemy Aircraft, if Known. This item will include the number, by type if known, of enemy aircraft destroyed by AAA action during the reporting period, i.e., 10 Bison/5 Unknown.

(10) Total Number of Scram-Indicate the total number of fighters which were scrambled against hostile or unknown tracks during the reporting

(11) Total Number of Fighter MI's. Indicate the total number of fighter missed intercepts. Reasons should not be indicated.

(12) Names of Air Defense In-stallations Destroyed. Indicate by name the air defense installations destroyed within the Division. Include those installations which are damaged to such an extent that they cannot be used for air defense purposes.

(13) Total Number of Fighter-Interceptors Lost, Indicate the total number of fighter-interceptors lost or damaged beyond repair during the reporting period. Include all types of fighters under the operational control of NORAD, regardless of component or service.

(14) Combat Limitations Affecting Air Defense. Indicate the primary factors limiting the air defense mission. This should be determined on the weakest link principle, i.e., aircraft, crews, or logistics.

(15) Remarks. This item is reserved for the Division commander to elaborate on any item(s) which he believes important for higher headquarters' information or decisions in regard to the air

e. Format. The following format will be used in the submission of the Post-Battle Summary Report. The format will be submitted in a sequence as shown below, but items not applicable to the report will be omitted.

(1) Period of report.

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if known.

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(9) Number of AA SP's (2) Total number of hostiles in (MA's) by type of enemy aircraft, if Division area. (3) Number of hostiles origknown. (10) Total number of scrambles. inating in Division area.

(4) Types of enemy aircraft (11) Total number of fighter and missiles employed in the Division area, MI's. (12) Names of air defense inif known. (5) Altitudes the hostiles were stallations. (13) Total number of fighter-inflying. terceptors lost.
(14) Combat limitations affect-(6) Formation hostiles employed. ing air defense. (15) Remarks. (7) Attack routes enemy employed. (8) Total number of fighter

f. Teletype Message Sample.

OP 120100Z (precedence and DTG of report)

From: COC 28 CONAD DIV HAMILTON AFB CALIF

COC NORAD ENT AFB COLO

COC WCR HAMILTON AFB CALIF Info:

ALTERNATE NORAD COMMAND POST (ALCOP)

(address as required)

/SECRET/ NORAD RCS V-9

SP's (MA's) by type of enemy aircraft,

(8) 10 Bison/8 Unknown (1) 112300Z to 120100Z (9) 11 Unknown (2) 16 (3) 10 (10) 25 (11) 14 (4) Bison (12) Castle AFB (5) 45/35/0 (6) Abreast 1 mile (13)Acft - AOCM (7) NW heading S (14)(15) SAC acft departed prior to bomb drop

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CHAPTER V

GLOSSARY OF TERMS AND ABBREVIATIONS

General

These abbreviations, definitions, and explanations of terms are published to provide a standardized source of reference material to be used in air defense.

Abort (ABT)

The forced discontinuance of a mission by a weapon. The diversion or destruction of a missile before intercepting its target; the diverting or failure of a fighter-interceptor to complete the intercept for reasons other than enemy action.

Airborne Early Warning (AEW) Air surveillance provided by long-range reconnaissance aircraft or airships equipped with search radar and communications.

Airborne Early Warning & Control (AEW&C) Air surveillance and control provided by long-range reconnaissance aircraft or airships equipped with search and height-finding radar and communications equipment for controlling weapons.

Airborne Equipment Failure (AEF) This term will be used, when applicable, as a reason for Missed Interception due to airborne equipment failure (MIAFF)

Aircraft Control & Warning System (ACW) A control and warning system established to control and report the movement of aircraft. It consists of observation facilities (radar and/or visual), control centers, and/or filter centers, and the necessary communications.

Aircraft Performance (ACP) Missed Interception due to the performance limitations of the interceptor (MIACP).

Air Defense

All measures designed to nullify or reduce the effectiveness of the attack by hostile aircraft or guided missiles after they are airborne.

- ACTIVE: Direct defensive action taken to destroy or reduce the effectiveness of an enemy air attack. It includes such measures as countermeasures and ground-(ship)-to-air guided missiles.
- (2) PASSIVE: All measures, other than active defense, taken to minimize the effects of hostile air action. These include the use of cover, concealment, camouflage, and dispersion.

Air Defense Identification Zone (ADIZ) Applies Also to Canadian CADIZ, DEWIZ and MIDIZ

Air space of defined dimensions designated by the Administrator of Civil Aeronautics within which the ready identification, location, and control of aircraft is required in the interest of national security.

- DOMESTIC ADIZ: An ADIZ within the United States or along an international boundary of the United States.
- (2) COASTAL ADIZ: An ADIZ over the coastal waters of the United States.

Air Surveillance

The systematic observation of an airspace by electronic, visual, or other means primarily for the purpose of identifying and determining the movements of all aircraft and large missiles, friendly and enemy, in the airspace under observation.

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ANCHOR MAN (AM) (NORADR 55-11)

A code sign assigned by Headquarters NORAD for purposes of flight following key NORAD personnel.

Antiaircraft Defense

All ground-(ship)-to-air action that includes antiaircraft guns, automatic weapons, rockets, guided missiles, searchlights, barrage balloons, and antiaircraft artillery intelligence service.

APPLE JACK

Simulated Air Defense Warning Red.

Army Air Defense Command Post (AADCP)

A center for the collection and evaluation of all radar acquired data for dissemination to antiaircraft fire units and for use in supervising antiaircraft fire. It is the Command Post of the Antiaircraft Defense Commander. The AADCP also has the capability of passing air defense data to ADCC's and ADDC's.

Augmentation Radar Units

Radar units of Commands and Services which are planned for employment in Air Defense under the temporary operational control of CINCNORAD.

BIG NOISE

Simulated Air Defense Emergency.

BIG PHOTO (B)

A term used to designate Strategic Air Command aircraft participating in training missions as outlined in SACR 51-6 for Fighter-Interceptor-Bomber-Antiaircraft Training. Big Photo tracks will be reported in accordance with instruc-tions contained in this Manual and requires lateral and forward telling. (Ref. NORADR 51-1.)

BLAZING SKY

Simulated Battle Stations.

CANNED TRACK (C)

A classification for synthetic tracks used for training or testing the air defense system.

Net (CADW)

Civil Air Defense Warning See - National Warning System

COCKED PISTOL

Simulated Air Defense Readiness.

COMBAT AIR PATROL (CAP)

An aircraft patrol provided over an objective area, over the force protected, over the critical areas of a combat zone, or over an air defense area, for the purpose of intercepting and destroying hostile weapons before they reach their target.

Combat Capable (AA Firing Unit) A Gun Firing Unit is one which has as a primary organiza-tional weapon a minimum of four 120-mm or 90-mm AA guns and related fire equipment.

Combat Capable (Aircraft)

An aircraft which is capable of fulfilling the mission for which it was assigned a unit without the installation of additional equipment and/or maintenance of installed equip-

Combat Operations Center (NORAD COC)

The operations, intelligence, and communications center at Headquarters NORAD where current evaluated air defense data is provided the Commander in Chief for the exercise of operational control over forces assigned and/or otherwise made available in conducting the air defense of the continental United States, Alaska, and Canada.

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Compulsory Reporting Track Those tracks classified as HOSTILE, UNKNOWN, SMOKE RING, ANCHOR MAN, FAKER, and others as required, which require forward, lateral, or overlap telling. A track detected within an ADIZ classified Friendly will be laterally told to adjacent subsectors until it departs the inner limits of the ADIZ. Unclassified tracks established by a Data Collecting Agency without identification function will also be forwarded for classification.

CONAD Control Center

A specified subordinate joint information, communications, and operations center within a CONAD Division, established for the purpose of coordinating and supervising air surveillance and identification activities within an assigned area, and of exercising operational control of air defense units assigned by the CONAD Division commander for the purpose of intercepting and destroying hostile aircraft and missiles. A joint center at which the Air Defense Command Direction Center (ADDC) and the Army Air Defense Command Post (AADCP) may be colocated.

CONAD Division

A geographical subdivision of a CONAD Region, or an area specified by CINCNORAD as a division area, and those CONAD forces within the division area. (Example: 9th and 64th CONAD Divisions.)

CONAD Division Combat Center (CC) The central intelligence, communications, and operations center within a CONAD Division, established for the purpose of supervising and coordinating the combat effort of all aircraft, antiaircraft, guided missiles, and air warning and control activities made available to the CONAD Division commander for air defense. This facility serves as the command post of the CONAD Division commander.

CONAD Forces

All forces operationally responsible to CINCNORAD for air defense. This includes the forces of the United States Air Force Air Defense Command, the United States Army Air Defense Command, Naval Forces CONAD, and any other forces assigned, attached, or otherwise made available for air defense of the continental United States, Alaska, and Canada.

CONAD Region

A geographical subdivision of the CONAD area of air defense responsibility within the United States. (Example: Western CONAD Region.)

CONAD Region Combat Operations Center The central intelligence, communications, and operations center within a CONAD Region, established for the purpose of coordinating the combat effort of all forces available for air defense of the CONAD Region. This facility serves as the command post of the CONAD Region commander.

Conditions of Air Defense Preparedness (NORADR a. Normal Readiness. A normal condition of preparedness whereby the primary mission of the air defense system is to safeguard against a surprise attack, concurrent with the combat training program, to obtain the maximum air defense potential.

b. Increased Readiness. A condition of increased preparedness whereby the air defense system is readied for situations other than "Normal" but not demanding "maximum" preparedness; combat training is continued to proNORADM 55-1

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vide increased combat capability. Increased Readiness may be declared upon intelligence information or information from other sources indicating the deterioration of international relations.

c. Air Defense Readiness. A condition of maximum preparedness whereby all air defense forces are placed on immediate combat readiness. Air Defense Readiness will be declared during periods of air defense uncertainty, based on the evaluation of information obtained through intelligence sources or through the NORAD warning system.

d. Air Defense Emergency. A condition of maximum preparedness for war, based upon evaluation of information obtained through the NORAD warning system or other sources, which indicates that hostile action is in progress or is imminent or is sufficiently probable to require, in the interest of national security, the nation-wide implementation of emergency air defense measures.

CONTACT LOST (CL)

This term will be used, when applicable, in surveillance reports. A track still within the area of radar coverage is no longer discernible by reason of ground clutter, use of Electronic Countermeasures (ECM), operational difficulties, or other reasons.

CONVEY (CN)

The condition that occurs when the ACW system has passed information on a particular track to the AAOC. It is not necessary for the AA radar to have acquired the target for this condition to exist.

DAMP FINGERS

Simulated Discreet Fire.

DARKNESS (DK)

Missed Interception (MIDK) or Missed Recognition (MR-DK) due to limitations imposed by darkness.

Data Collecting Agencies (DCAs)

Agencies such as Filter Centers, AAOC's, AEW&C, Picket Ships, Texas Towers, Surveillance Radar Stations, augmentation radars and Air Force Security Service Units that provide air defense data to their parent direction centers.

DEW POINT (DP)

A classification to designate a track which requires tracking and lateral-telling by radar sites but is not a required forward-tell track to CCs or COCs.

Direction Center (DC)

A primary radar installation having the capability of performing air surveillance, air interception, control, and direction of allocated air defense weapons within an assigned subsector. Also may have an identification capability. Differs from CONAD Control Center in that an AADCP is not integrated into the center.

DISCREET FIRE

Fire at specified airborne objects as assigned by designated NORAD commanders. Minimum normal burst altitudes (MNBA) will be observed when atomic warheads are used. Targets below MNBA for a small yield weapon will be engaged with NIKE-AJAX missiles.

DOUBLE TAKE

Simulated Increased Intelligence Watch.

EARLY WARNING (EW)

Information on airborne objects from the Remote Information Zone, i.e., beyond the limits of the contiguous radar system.

NORADM 55-1

Electronic Coutermeasures (ECM)

That major subdivision of the use of electronics involving actions taken to reduce the effectiveness of enemy equipment and/or tactics employing or affected by electromagnetic radiations.

Electronic Counter-Countermeasures (ECCM) Those measures used to minimize the effectiveness of ECM.

Electronic Deception

The radiation or reradiation of electromagnetic waves in a manner intended to mislead the enemy in the interpretation of data received by his electronic equipment.

ENGAGE

An order to enter into combat or battle to destroy HOS-TILE airborne objects by use of air defense weapons. Also used in reporting to indicate that targets are in AAA weapons range.

ESTABLISHED TRACK

A track on which movement has been confirmed by subsequent plots. Normally, a track will be established on a second plot.

FADE (FA)

The term used for a track which has been carried as Contact Lost (CL) for a minimum of five minutes.

FADE OUT

End of Exercise, System Training Post Exercise, or Command Post Exercise.

Faded Prior to Interception (FP)

This term will be used, as applicable, in Missed Interception reports when the radar tracking time after scramble is less than the time necessary for the interceptors to proceed from their scramble point to the point of planned interception.

FAKER (K)

FAKER is a simulated HOSTILE track used during exercises. It may be used only with prior consent or knowledge by NORAD COC.

Filter Center (FC)

A Ground Observer Corps installation at which Ground Observer Post reports are collected, displayed, filtered, and disseminated. Filter Centers may also have an identification responsibility.

Final Surveillance Report

A final or special report submitted by PLT/CW or voice from DCAs to a DC which indicates final information on a track - for example, track departed surveillance area and folded.

Fire Unit

A Missile Firing Unit is one which has a capability of controlling one surface-to-air missile in flight.

A Gun Firing Unit is one which has as a primary organizational weapon a minimum of four 120-mm or 90-mm AA guns and related fire-control equipment.

A Skysweeper Firing Unit is one 75-mm gun and allied equipment.

Flight Following

A term used to indicate a requirement for reporting Surveillance Information on a track or tracks of particular interest.

Follow-up Report

 Surveillance Report which forwards a change in GE-OREF position only.

 A tactical action report containing amplifying or special information concerning the air battle in progress. NORADM 55-1

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Forward Telling

The process of reporting tactical and surveillance data to higher echelon of command.

Friendly Track (F)

The classification of tracks known to be friendly when no special classification is applied; IDFR is used to indicate termination of compulsory reporting tracks.

GEOREF Position

Geographic location expressed in terms of the GEOREF Grid System. At units below control center level, GEOREF Position is expressed in the last two grid letters plus four digits; at control centers and above, the last two grid letters plus the first and third digits are used.

EXAMPLE: AJ2048 (below Control Center level) AJ24 (at Control Centers and above)

Ground Equipment Failure (GEF)

This term is used, when applicable, with Missed Interception reports.

Ground Observer Corps (GOC-US; GObC-CanaThis is the organized visual surveillance system, civil and military; operates in conjunction with radar surveillance

Ground Observer Post (GOP) A station from which visual surveillance is effected.

Gun Firing Unit

A Gun Firing Unit is one which has as a primary organizational weapon a minimum of four 120-mm or 90-mm AA guns and related fire-control equipment.

HANDS FOLDED

Simulated Hold Fire.

HOLD FIRE (HF)
(See also Simulated Nick-names)

Do not Open Fire, Cease Fire. Hold Fire may be imposed on a temporary basis for the purpose of permitting safe operation of friendly aircraft through or within predetermined corridors, altitudes, or sectors only in those exceptional instances wherein other weapon control procedures would prove unsuitable for this purpose.

HOSTILE TRACK (H)

The track classification for airborne objects declared to be hostile.

Identification

The determination of an aircraft's classification by any means or combination of means including visual recognition, flight plan correlation, electronic interrogation, track behavior, etc.

Identified Friendly Prior to Interception (IPI) This term is used when reporting Results of Scramble Action. It is applicable when the reported track is identified Friendly by a means available to the ACW system prior to the completion of the interception. When this occurs, neither the method of identification, number, nor type of ownership of the target will be reported. When no weapons have been committed against the track this term will not be reported.

Increased Intelligence Watch Command echelons down to and including air divisions and corresponding levels of ARADCOM and NAVFORCONAD will increase alertness for intelligence developments when the condition of Increased Intelligence Watch is directed by CINCNORAD. Each echelon of the command down to and including joint air defense divisions will insure that a 24-

NORADM 55-1

hour intelligence watch is maintained until the situation is clarified and release is directed by CINCNORAD. Significant intelligence reports originating within component commands will be passed simultaneously through originating service intelligence channels and joint intelligence channels to CINCNORAD for command evaluation.

Interception Air

To effect visual or radar contact by a friendly aircraft with an unidentified aircraft.

1

CLOSE CONTROLLED: An interception in which the interceptor is continuously controlled by a surface or air station.

BROADCAST CONTROLLED: An interception in which the interceptor is given the area of interception by a surface or air station and effects interception without further

Lateral Telling

The passing of air surveillance information on a track to adjacent subsector, sectors or regions toward which the track is heading.

Late Scramble (LS)

Missed Interception as a result of late airborne; i.e., when the difference between the scramble time and the airborne time is greater than the state of readiness of the interceptor.

.....

Simulated Air Defense Warning Yellow.

LEMON JUICE MASS (MS)

Term used to indicate a number of individual tracks are in close proximity heading for the same area and are being reported as a mass raid.

MERGED (MG)

Term used to indicate that two or more radar blips have been combined to form one track.

Military Air Defense Warning Control Network (MADW) To provide prompt warnings of impending air attack to units assigned or under the operational control of NORAD and to other designated services and agencies. Further dissemination of air defense warnings to subordinate echelons is the responsibility of the receiving key point.

Missed Interception (MI)

A term used to indicate that the attempted interception did not result in visual or electronic contact with the target. The reason for failing to intercept is indicated as MIAEF -Airborne Equipment Failure, MIACP - Aircraft Performance, MIDK - Darkness.

Missed Recognition (MR)

A term used to report that although the interception of an unknown track was successful, weather or darkness precluded positive identification.

EXAMPLE: MRDK or MRWX.

Missile Firing Unit

A unit which has the capability of controlling one surface-toair missile in flight. Synonymous with missile battery.

Mission Accomplished (MA) A term used for training purposes to report results of tactical action to indicate that the required air defense action has been accomplished.

Mission Data Telling

The passing of timely information to the combat center or parent DC, concerning actions or results of actions against any airborne threat.

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National Warning System (NAWAS) Warning system designed to disseminate civil defense warning information from the FCDA Attack Warning Center at Headquarters NORAD to all civil defense key points in the country, all state civil defense centers and all FCDA offices.

NORAD Combat Operations Center (NORAD COC) The operations, intelligence, and communications center at Headquarters NORAD, where current evaluated air defense data is provided the Commander in Chief for the exercise of operational control over forces assigned and/or otherwise made available in conducting the air defense of the continental United States, Alaska, and Canada.

Nuclear Detonation Report (NUDET)

A term used to identify a report of a nuclear detonation.

Numerical Summary Report (NUSUM) A type of surveillance or tactical report used when a designated area becomes saturated with tracks and it becomes impossible to report all individual, merged, or massed tracks in that area. NUSUM reports will include the area, time, strength (number of unknown or hostile objects), weapons committed, and tactical results.

Operationally Ready or Combat Capable (Aircraft) An aircraft which is capable of fulfilling the mission for which it was assigned without the installation of additional equipment and/or maintenance of installed equipment.

(Aircraft) ORBIT

This term will be used, when applicable, for the Course when a target appears to be in orbit (circle).

OUTBOUND TRACKS

Tracks within a coastal ADIZ indicating movement away from the continental United States and tracks outbound from a domestic ADIZ not indicating movement toward a target complex may be classified Outbound at the discretion of joint air defense division commanders, but these tracks will be laterally told when indicating movement toward an adjacent sector or subsector.

OUT OF RANGE (OR)

This term will be used, as applicable, as a reason for NO SCRAMBLE when detection time is such that the target is at a range, bearing, and course which indicates that the tracking time remaining is less than the time necessary for interception and/or no other facilities are available to track the target and complete the interception.

Overlap Telling

The passing of air surveillance information to a Direction Center within whose subsector plots or tracks are detected by a CC/DC in another subsector.

PASSED TO THE ADJA-CENT SECTOR (PA) This term will be used, when applicable, in SPECIAL or FINAL ACTION, to indicate that the designated track has become the reporting responsibility of an adjacent sector. Before reporting PA, the sector will determine that the adjacent sector will assume responsibility.

Passive Detection

The detection of electronic emissions of Unknown or Hostile forces.

Picket Ships

Ships of the U.S. Navy equipped and manned for employment in the CONAD Contiguous Radar Cover under operational control of CINCNORAD.

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Pounce

A term used to report that the interceptor has reached a position from which a successful attack can be launched.

Plot

The visual display of the geographical location of an airborne object.

Region

The visual determination of type, nationality, ownership, and numbers (where applicable, serial numbers, registration or markings) of aircraft in an intercepted target.

Recognition

(See CONAD Region.)

Remote Information Zone

This is the area constituted of those areas extending outward from the Contiguous Radar Cover toward potentially hostile staging bases and includes all approaches to the continent through which hostile aircraft of assumed capability

Round House

Simulated Increased Readiness.

Safety Zone

Simulated Secure.

SCAT

This plan prescribes the joint action to be taken by Air Defense and the CAA to effect security control of civil and military nontactical aircraft entering, departing, or moving within the airspace above the continental United States and the coastal approaches during a military emergency (AFR

SCATER

Plan for Security Control of Aircraft and Electromagnetic Radiation. (CONADR 55-2. May be requisitioned from Headquarters, NORAD.)

Scramble

An order directing one or more fighter-interceptor aircraft to become airborne for an air defense mission.

Scramble Action

That portion of the tactical action report which reflects the current interceptor commitment; or when no interceptors are committed, the reason for no scramble, i.e., NSTD, NSN-

Scramble Authority

The term used to indicate that authority by which an ADDC may initiate scramble action on its own initiative.

REMARKS: Clarification is needed to differentiate between scramble authority and scramble responsibility. A term used to indicate those ADDC's which, because of

Scramble Responsibility

their physical proximity to fighter-interceptor squadrons, have been charged with the responsibility for effecting scramble and recovery control of the fighter squadron air-

Sector

A geographical subdivision of a region, e.g., 9th CONAD Division Sector.

SMOKE RING (S)

SMOKE RING Track - A track classification for friendly aircraft which NORAD desires to be flight followed and forward told, such as flights of very important persons, mis-sions, or exercise aircraft. These tracks will also contain an explanatory suffix.

SNOW MAN

Simulated Air Defense Warning White.

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SPLASH (SP)

The term used to denote enemy weapons have been shot down (followed by number and type).

Subsector

A geographical subdivision of a sector normally assigned as the area of responsibility for a direction center.

Subsequent Attack

Any attack launched against the United States after the initial attack phase.

Surface-to-Air Missiles

itial attack phase.

Weapons and equipment for actively combating aerial targets from the ground.

(SAM) Surveillance Station (SS) gets from the ground.

A secondary radar installation which has the capability of extending the surveillance coverage of a direction center.

Systems Training Program (STP) (X)

Simulates the conditions necessary for ACW crews to practice the air defense procedures. Simulated radar presentations are made and appropriate surveillance and tactical actions are taken

25.00

tions are taken.

The action initiated or decision made on a surveillance track.

Tactical Action
Tactical Decision (TD)

This is the term used in Tactical Reports to indicate that no weapons commitment will be made. This will not be used for "lack of aircraft."

Tactical Report

A report submitted by PLT/CW or voice to COCs from CONAD Division Combat Centers on NORAD Form 14 which gives tactical actions taken against a track requiring

Tallyho (TH)

A term used by a fighter-interceptor crew to indicate that the aircraft which has been sighted is presumably the one that it is intended to intercept.

Target Recognition (TR)

This term will be used when applicable to report the results of Tactical Action to Combat Centers to indicate that the interceptor pilot has made visual recognition of the airborne object he is intercepting.

Teletype Telling

Forwarding of surveillance and tactical data by teletype from Combat Centers to the NORAD COC through Region

Texas Tower

A fixed off-shore installation capable of performing the functions of air surveillance, identification, and control.

Threat Warning Information (TWI) Information other than routine surveillance reports which give location, magnitude, and progress of any threat.

These warnings are passed by the most expeditious means to air defense units. The letters TWI are placed in Item 1, NORAD Form 14, after track number to indicate the track has been threat warning told to adjacent divisions.

Time

Time will be expressed in Greenwich Mean Time (Zulu). For all other reports, two digits will be used to indicate minutes past the hour.

Track Classification

utes past the nour.

The evaluated result of the application of established criteria to surveillance information.

Track Designator

The Track Designator is formed by the multiple letter identifier of the facility detecting the track plus a serial number for the track.

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Track Number

The number assigned a track for ready reference.

Unclassified Track

The term applied to a track during the period between establishment of track and its classification as Unknown, Hostile, or a Friendly category. Also applies to all tracks forwarded to direction centers with GOC classification of Unknown.

Unknown (U)

The classification assigned to a track where its identity cannot be determined within the prescribed time limits. Nonsignificant Unknown (NU).

Visual Mission Accomplish-

A term used for reporting results of tactical action to indicate that the required air defense action has been accomp-

ed (VMA)

lished by visual means. YELLOW--Attack by hostile aircraft is probable. (This means that hostile aircraft are en route toward an air de-fense sector, or unknown aircraft suspected to be hostile are en route toward or are within an air defense sector.)

Warnings

RED--Attack by hostile aircraft is imminent or it is taking place. (This means that hostile aircraft are within an air defense sector, or are in the immediate vicinity of an air defense sector with a high probability of entering the sec-

tor.) WHITE--Attack by hostile aircraft is improbable. (All Clear.)

NOTE: The initial declaration of an Air Defense Emergency will automatically establish a condition of Warning WHITE for purposes of the Security Control of Air Traffic (SCAT) provided no higher degree of warning has been specified.

Weapons Free (WF) Weapons Tight (WT) Warm Touch Wild Fight

Fire at any target not identified as Friendly. Fire only at targets identified as Hostile. Simulated Weapons Tight. Simulated Weapons Free.

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

MOOOP-T

12 Harch 1755

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SUBJ .CT: Nuclear Detonation Reporting (Uncl)

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Commander USAF Air Defense Command. Int Air Force dese
Colorado Sorins, Colorado
Commanding Deneral, United States Army Air Defense Command,
Ant Air Force dase, Colorado Springs, Colorado
Commander, Naval Forces, Continental Air Defense Command,
Ent Air Force dase, Colorado Springs, Colorado
Commander, Naval Force dase, Colorado Springs, Colorado
Commander, Continental Air Defense Forces, Eastern CONAD Region,
Stewart Air Force dase, Navburgh, New York
Commander, Continental Air Defense Forces, Central CONAD Region,
Richards-Gebaur Air Force dase, Grandview, Missouri
Commander, Continental Air Defense Forces, Western CONAD Region,
Hamilton Air Force dase, California
Commander, Shth Continental Air Defense Division (CONAD Division)
APO 862, New York, New York

1. Teferences:

a. Letter this headquarters, subject as above, File: COCOP, 6 March 1957.

b. Letter this headquarters, subject as above, File: COCOP, 12 June 1957.

2. The above letters are rescinded effective 17 April 1958. The procedures contained in NORADM 55-1, 1 April 1958, will apply.

FOR THE COMMANDER-IN-CHIEF:

Copy Jurnished:

Major General, USAF DCS/Plans & Operations

Declassified

JPLICATE

Declassified

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MEADO AFTERS

TACTICAL AIR CONNAND
"NITED STATES AIR FORCE
Langley Air Force Base, irginia

TOCE-C

19 MAT 1958

S"BJECT. (_) fransmission of V DET Reports

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Common er-in-Clief
North American Air Defense Common
Ert Air Force Ba-e
Colora o Spring Colora o

- 1. (Unclassifie) A ferences are male to the following correspon ence:
- a. Letter, Hea quarter CONAD, file COTRE, ate 19 Sectember 1957. Subject: Elimination of hea quarters CONAD Protographic Reconnaissance E quirements.
- b. Letter, dea quarter PSAF, file AFOOP-OC-R. ate 24 March 1958, Subject) Deview of Tactical Air Commun. Oberations Ilan 57-33, rate 1 January 1958.
- CSecret) In reference to para 3 of letter reference in la an para 3 of reference lb, your aea quarters retains the responsibility of transmitting Nuclear Detonation Reports to Tactical Air Comman. The action agency for N DET report is the quarters Ninth Air Force. Show Air Force Base, South Carolina. Request that the COC Tolety, e Network 1 be extensed to include the Ninth Air Force so that NODET reports may be sent irect and thereby climinate the slay cause by relaying by TAC dea quarters. In the meantime, reports should be sent to TAC dea quarters which will relay to the Ninth Air Force.
- Engineere L. litary Circuit (EMC) & 7. Communication, Engineere L. litary Circuit (EMC) & 7. Comman' Post, 337th Air Division, Shaw Air Force Base. South Carolina, to dec quarters NORAD. Ent Air Force Base, Colora o, will be retaine. The following circuits will be seactivate as of 1 June 1938:

Declassified

DUPLICATE

TOCE-C, Hq TAC, Subject: (U) Transmission of NUDET b

Hq NORAD 8372 Comman i Post Ent AFB, Colo 837th Air Div Shaw AFB, S.C. HQ NORAD 902 Comman' Post Ent AFB, Colo 117 TRW Hill AFB, Utah Hq NORAD 8370 Hq USAF Ent AFB, Colo

4. (Unclassified) This correspondence is classified Secret due to the reference to classified correspondence and plans.

FOR THE COMMANDER:

A R SWINGLE CWO (W-2) . USAF Asst Dep for Almin

Declassified

Declassified

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HEADQUARTERS

TOCE-C, Hq TAC, 19	CONTINENTAL AIR DEFENSE COMMENTAL PROPERTY TO THE MAN TO THE PROPERTY OF THE P	grission of NUDET Repo	orte
NOSIR-R	let Ind	\$ and 1858	CINCONAD
Colorado Springs,	American Air Defense Com Colorado		
To: Commander, Te	otical Air Conseand, Langl	Ley Air Force Base, Vi	ASST Coff (Secretary)
1 Defember	is made to paragraph 2	of the basic correspon	Augro-Visual Svc
1. Reference	letype Network was conver	rted to a semi-automat	Protocol
The Alere No. 1 1	1958. The new system has	an absolute limitation	n cm
system on I July	1958. The new syrtem has of stations. The method	of transmitting NUDET	records
the total number	study by this headquart	ers, and you will be a	dV1860 SERVICES
is presently under	Broad at marticable.		-
of capabilities at	soon as june order		DCS/CRE
2. Your Engineered Military Circuit (MMC) 8373 is presently terminated in the NCRAD COC switchboard.			Systems
			Plans & Roi
			Elct Wartare
FOR THE COMMIDER-IN-CHIEF:			DCS/I
			Coll & Dissem
			Rsch & Estimales
			Ogn Intel
			Op. ma.
	F. F. UHGU	ANE	
		USA	DCS/PBO
/	DCS/Com as	nd Elect	Priens & Ret
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lustron. Permanent, Long Term Value		***	63

UNCLASSIFIED DISPOSITION FORM

FILE NO

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Alert #1 Tele ype Network

NOUPO ATTN: Gen Stayton

The DATE 31 Janyas Maj DL Foulkier /2040/sc

1. Original subscribers to Aleri #1 were selected by Hg ADC approximately four and one-half years ago. The original subscribers. selected by the COC, were all ADave all Regions. RCAF/ADC, and the SthADCC. Later requests by Eq USAF and other organizations were instrumental in the addition of Ha Wajor Air Forces, Pentagon, Vt. Ritchie, CUNCLANT, The Presidio of San Francisco, Alaska, and NEAC.

- 2. At present, Alert #1 is being modified with a new automatic teletype system. This system will have the capability of 35 transmit and receive stations, plus an indefinite number of receive only stations.
 - a. Transmit and receive stations for the new system are

16 AD VS 64th ADiv* Sthadcc (RCAF) B CONAD Regions SAC Hq ** - 42 51 1/4 1/20 - 100 101 CINCLANT** war Room Hitchie** Alaskan Air Command*

Hq LSAF Hq USAF Rear (Maxwell AFB.

RCAF/ADC Ho

NORAD Hq.....TOTAL 29

LUMINE THE COUNTY

NOTE: * in operation approximately June 58

- ** Have equipment to receive and transmit, but under present concept will acknowledge only
- b. Present receive ... itiona:

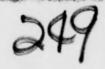
7 TAC Hg - Sandia Base

3. Should your staff agency determine the necessity for any additions or deletions to Alert #1, please advise this agency accordlingly. It is to be noted that additions to the network will necessitate programming action for equipment presently not available nor funded.

DD 1 FEB 50 96 REPLACES NINE FORM W. LOCT B. WHICH MAY WE USED. 1199-8 55-16:

10-56501-5 \$ 9. 8. 40 eccusated

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Hq NORAD, Subj: Alert #1 Teletype Network (Cont'd)

a. A buffer of approximately five complete components is desired to provide a backup capability until SAGE is completely operational. During the period of time a manual division is moving to its new SAGE location, a dual installation will be required to provide continuous alert.

b. After SAGE is implemented, a number of components will be available, due to the reduction in divisions plus the 5 components wised during conversion to SAGE.

Ford Town CP. WIAR

F. F. UHRHAND

Brig Gen, USA

DCS/COMM and Elect

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1584 250

AUBURGO. No. Alaza / Symon s

251 10

4 17 197 E

TC:

Sommander (e-Daug) Both America I' Detress Tressan Both Air Force Boss Colorado Springe, o mado

I hermost this headness to a be not sed on later than at hime. If the new A art \$1 network is a compatible of the art is tolerated been posed.

2. If the network is not associable what changes or additions are required.

3. For your information the old fiert of occurary will be discontinued affective 1 July on will be revised by the new Alers #1 network equipment.

POR THE DIMMAN KE

AND HURT Telenel, TEAF toting Director Amountestions-Kleetspales

UNCLASSIFIED

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ADOCE-CS, Hq ADC, 25 June 58, subj: New Alert #1 Network

NOESS-C

1st Ind

3 Jul 1958

Hq North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, Ent AFB, Colorado Springs, Colorado

- The new Alert #1 network is acceptable and any changes or additions required will be submitted at a later date.
- 2. Per conversation between Colonel Long and Lt. Colonel Horvath, in addition to the new Alert #1 becoming operational effective 1 July 1958, the old Alert #1 will remain in operation until 1 August 1958.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ F. F. UHRHANE Brig Gen, USA DCS/Comma and Elect

COMEBACK NOELC

M/R: This indorsement informs ADC that we are accepting the new Alert #1 network as /s/t/ Capt. M.E. Young it is. The old Alert #1 network will be 2029 retained for backup purposes by COC personnel 30 June 58 until 1 August 1958. When this requirement 0131 no longer exists, we will inform ADC to remove the equipment.

Declassified

UNCLASSIFIED

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NORTH AMERICAN AIR DEFENSE COMMAND

NOESS-C

JUL 28 1458

SUBJECY: Improvement to Alert Not #1

TO:

Commander
BEAF Ally Delense lower mi
Ent Air Fince Besc
Colorado Springs, Polyrado

it requirement selsts. For improvements to Alect det wi to provide the No-AD dombat Sperations Conter greater flexibility in the operational utilization of this network. These requirements are as follows:

a. Irovice a breakin cature in order that the

b. Dravide selective calling to allow the TARAS and the capability to mil any station or combination of stations.

c. Pervise relective relling to allow the Writing to allow the Writing to sail the Writing to sail Divisions in the respective region.

d. Provide relentive anilia, so allow the PAND

2. It is felt these requirements on the met by a vidise, in addition to the present all-contions call code, individual sintion call codes and remember around call code testimate groups desired are as indicated to inclosure &

3. It is requested this requirement be investigated course and implementation date province Coordination staff office cer for this eroject is the Director of Systems, OCS/CLE, included this headquarters.

POR THE COMMANDED IN . WILET:

3 Incls

1. Group Codes Required

2. Alert No.1-

W.R. Teletypuntics de.

F. F. UURHANE Brig Gea, USA NOE/Comm and Sleet

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COMEBACK NOELC

M/R: In response to COC requirements to allow greater flexibility in the operational utilization of the Alert Net #1, this proposal is forwarded to ADC for implementation.

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STATION #

5 - 3,4,6,27,11

11 - 1,5,14,29,32,31

14 - 15, 16, 33, 10, 11

29 - 30, 28, 17, 19, 18, 85, 35, 11

Present all station code is a continuing requirement and has priority over establishment of the required improvements.

By provision of individual station codes the use of these codes in combination with group codes will allow complete flexibility.

252

DEPARTMENT OF THE AIR FORCE

8 January 1958

NOOOP OC F/#

SUBJECT: Military Requirement for the Control of Electromagnetic Radiations (CONELRAD)

To: Comman der-in-Chief
North American Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado

1. This is an Executive Agency Letter. This Headquarters anticipates being confronted with activity advocating a complete re-study and reappraisal of CONELRAD in the near future.

2. There is considerable opinion outside the Department of Defense that the military requirment for COMELRAD is no longer valid in view of thermonuclear weapons and sophisticated weapons delivery systems. In answer to a request form this Headquarters, ADC message ADOP DO 5308, Ohl5h9 Feb 57 stated that the CONAD ADC position was that the military requirment for CONELRAD was still valid. This is the current department of defense position.

3/ However, in view of the expected activity, it is requested that you advise this Headquarters of your present requirement for the control of electromagnetic radiations to deny navigational aid to histile manned bombers, air to surface missiles, sub launched missile and intercontinental ballistic missiles. Since the assertation that the military requirement still exists is no longer generally accepted as adequate justification to continue CONELRAD in its present form, your requirement should be supported with technical information wherever possible. Additionally, your comments area requested regarding the necessity to confrol electromagnetic radiations within the Uni ed States so that interference with the guided systems of your own defensive missiles would be precluded.

FOR THE CHIEF OF STAFF

BING! ASSI

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NOOOP-7

SU-JECT: Mili ary facul memons for the Control of leaven-magnetic Fe Hariors (F. 1847)

Older of Staff, "SAF 48 Executive trant for That setting for 25, 1.0.

1. This is an interim remy to paerbly Agency Letter, deadquarters USAF, file \$5000-1-8/3, subject, "Military Requirement for the Control of Restrong metho ledications (COMELRAD), # 8 Jamiary 1958.

2. This headquarters still has begond remont for CONSLICAD, as proviously stated and as supported by the Department of the Air Porce, to deep news attors eastetance to hostile serial targets during an Air Defense over ency.

3. With regard to the remest contained in paragraph 3, letter referenced above, this headquarters, in ecordination with Air Defense Commend, as Initiated a review of the Comments in the areas referred to in order that supporting technical data, if applicable, may be provided as rechasted. However, almos this headquarters does not have the technical sepability to do plets the required study in certain areas, coordination must be effected with appropriate commends and agencies within the Department of Defense for advice and guidance in reaching justificals conclusions.

4. Four headquarters will a provided with a final report on the contact raview at the earliest practicable date.

FOR ILE COMMAND GR-IN-CHIEF:

MARSHALL S. CAPTER Major Jameral, USA Chief of Staff

(FOR OFFICIAL USE ONLY)

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CONAD RO ... T. T. . 1 -34

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MEMORANDUM FOR THE REDORD

UNCLASSIFIED 252

Recent discussions with FCC engineers and with Department of Defense personnel have indicated that the stated requirement for CONELFAD should be expanded to include denial of interference of our own missiles systems as well as the probability of guidance for any missile systems which may be employed against the U.S. It was pointed out that the CONELFAD System not only controls the standard broadcast facilities, but controls any facility licensed by the FCC, including cerain high powered experimental transmitters whose frequency range may well affect guidance systems ob both surface-to-air and air-to-air missiles. Healquartes USAF, as executive Agency, has requested this headquarters investigage the expanded requirement for conelrad in order that they may further justify the CONELFAD system.

UNCLASSIFIED

COPY

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AFOOP-OC-F/3, Hq USAF, 8 Jan 58, Subject: Military Requirement for the Control of Electromagnetic Radiations (CONELRAD)

NOCOP-T

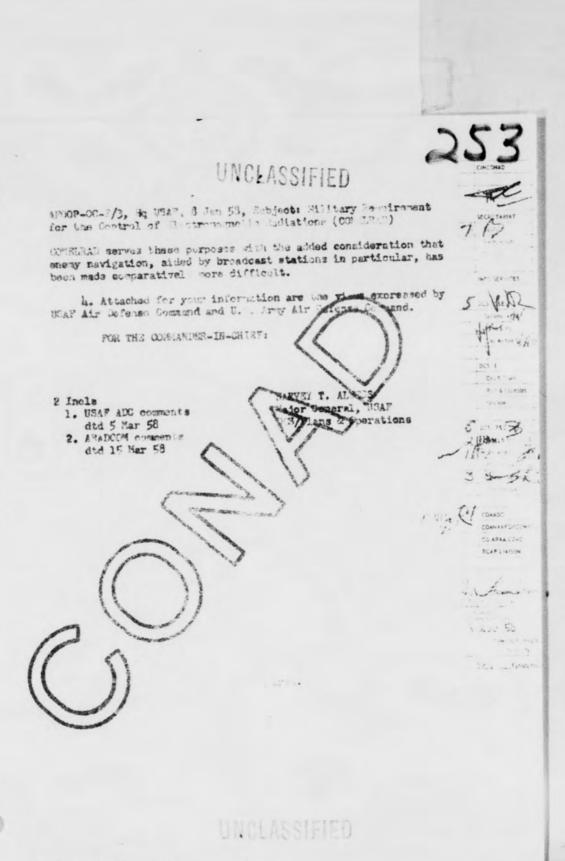
1st Ind

11 Apr 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

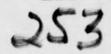
TO: Chief of Staff, USAF, As Executive Agent for NORAD, Washington 25, D. C.

- 1. This headquarters in coordination with USAF Air Defense Command and U.S. Army Air Defense Command has completed a review of CONELRAD requirements within the limitations of available resources. Results of this study reaffirm our position, "that CONELRAD is a requirement and will remain a requirement for the foreseeable future."
- 2. For the next 10-year time period the postulated hostile manned bomber threat does not lessen the requirement to control high-power, identifiable electromagnetic radiation stations and devices. Should CONEIRAD be discontinued during this period, we would again be providing very usable aids to navigation and bombing for an enemy bomber attack force. In addition, installation of relatively simple automatic direction finding (ADF) equipment in the IRBM would further ensure the reliability of such a weapon to strike the heart of major cities and industrial areas. Discontinuance of CONELRAD would be immediately known to the enemy, thereby simplifying his attack plans and navigationbomb equipment requirements. Notwithstanding that there exists considerably more sophisticated navigation-bomb systems, radio direction finding and all other modes of navigation are still most useful aids to the basic navigation problem. Taken together, accuracy and ease of penetration to the target is increased.
- 3. All radiating devices in a national emergency, which do not directly contribute to continental defense and necessary national operations, should cease operation to reduce mutual interference associated with missile tracking and control, fighter-interceptor control, early warning, and defense communications. The electromagnetic radiation portion of SCATTER requires authority under Executive Order 10312 (CONELRAD) for implementation. When SCATER is fully implemented, the enemy will be denied the use of established electromagnetic navigation aids systems. BROFICOM will require the use of certain broadcast radio stations for broadcast fighter control. FCDA has a need for dissemination of civil instructions over the Emergency Broadcast facilities.



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AFOOP-OC-F/3, Eq USAF, 8 Jan 58, Subject: Military Requirement for the Control of Electromagnetic Radiations (COMSERAD)

ADOOP-C

2nd Ind

5 MAR 1958

Headquarters Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander-in-Chief, North American Air Defense Command, Rut Air Force Base, Colorado Springs, Colorado

The following comments are made relative to the basic correspondence from Headquarters USAF.

a. Reference paragraph 2. COMPLEAD is and will remain a valid requirement as lone as the manned bomber continues to be a threat.

b. Reference paragraph 3. In so far as the requirement for CONSTRAD to prevent interference with guidance systems of our own defensive missiles is concerned, full technical information in most instances will not be available until a complete operational complex is completed. This headquarters is not fully informed as to future systems, and it is not considered that the problem will be confined to defensive missiles, but missiles of all types that are established in an air defense sector. For this reason both the Air Research and Development Command and the Rand Corporation will be requested to consider and advise on the factors mentioned above, and the technical information requested by Headquarters USAF is not immediately available.

FOR THE COMMA IDER:

MAROLD W. SHANT Major General, USAF Deputy for Operations

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UnuLhounie

ADGCL 311.23 (24 Feb 1958) Lst Ind SUBJECT: Military sequirement for the Control of electromagnetic sediations (CO ELEAD)

HEADQUARTES U. S. ALMY AIR D. MAR COMMAND, Ent Air Force Base, Colorado Springs, Colorado 15 115 168

- TO: Commander-in-Chief, North American Air Defense Command, Ent Air Force Sase, Colorado Sprines, Colorado
- 1. This neadquarters strongly supports any passive defense action which will deny navigational aid to the expected hostile threat.
- 2. There is a continuing requirement for the control of electromagnetic radiations which can degrade the capabilities of Army surface-to-air missile systems by interference with the missile guidance system. Such interference can occur in the television proadcast band, particularly channels 2, 3 and 4.
- 3. COMBINAD is also desirable in those radio broadcast frequencies used by the military services to optimize their use during periods of tactical necessity.

FOR THE COMMANDER:

1 Incl

D. B. Johnson Erforden of Line a South

 Declassified JOINT MESSAGEFORM SPACE RESOR RESERVED FOR COMMUNE THON CONTES PRECEDENCE PF00F-D5710 ACTION ECUTINE AF NFO FROM: CINCNORAD CINCPACAF HICKAN AFB TH Declassified From NOCOP-T XO23 . YOUR PROUP-D5710. This headquarters does not have a plan for CONMLRAD but operates under the Department of Defense CAMALRAD plan developed for all agencies under the Department of Defense and administered by Headquarters USAF. Mr. Ernest C. Thelemann, Federal Communications Cormission Field Engineer assigned to MORAD, has been requested to furnish your headquarters with a sample of a CONAD Division COMMELRAD plan. A request will be made to Headquarters USAF, to furnish you with a revised copy of the Department of Defense plan. Flans for CUNILLIM have not been developed since the Department of Defense has directed this headquarters to take no further action on this subject until further advised, However, CONAD Division commanders have working agreements with major DATE 12 TIME 2200Z metropolitan areas for adequate control of illuminations. MONTH 1958 Suggest that any further queries regarding CONMIRAD be made EIGNATURE NODOP-T TYPEC IST PANER! NAME AND TITLE YPEO NAME AND TITLE (VENE'ST, If required) Maj. Fuss 2078 J. W. LELOUX LCDR, USN Asst Lir, Aiministrative Bervices

REPLACES DO FORM 173 1"OCT 49. WHICH WILL BE USED UNTIL EXHAUSTED

FORM 173

Declassified JOINT MESSAGEFORM - CONT...JATION SHEET CINCHORAD direct to CONAD Forces, Central CONAD Region, Richards-Gebaur Air Force Base, Grandview, Missouri, attention: Mr. Ernest C. Thelemann, SYMBOL NOODP-T DD: MAY so 173-1

MEMORANDIM OF AGREEMENT CONCERNING THE EMERCIENCY CONFEL,

CONTROL OF ELECTROMAGNETIC RADIATIONS (COMELRAD)

9 May 1958

The Department of Defense The Federal Communications Commission The Federal Civil Defense Administration

I. PURPOSE

The purpose of this memorandum is to identify and fix by agreement the separate responsibilities and functions of the Department of Defense (DOD), The Federal Communications Commission (FCC), and the Federal Civil Defense Administration (FCDA), concerning CONELRAD.

II. REFERENCES

- (1) The Communications Act of 1934, as amended.
- (2) Executive Order 10312, dated 10 December 1951, "Providing for Emergency Control over Certain Government and Mon-Government Radio Stations Engaged in Radio Communications or Radio Transmission of Energy.
- (3) Executive Order 10438, "Transferring Certain Functions of the National Security Resources Board and of the Chairman thereof to the Director of Defense Mobilization."
- (4) Federal Civil Defense Act of 1950 (Public Law 920-81st Congress).
- (5) Chart "Attack Warning Channels and Procedures for Civilians" (Unclassified) dated 1 May 1957.
- (6) CONAD/FCC Memorandum of Understanding dated 11 September, 1957.

Reference (1) is the Public Law which provides for the regulation of all interstate and foreign communication by wire and radio, and all interstate and foreign transmission of energy by radio which originates and/or is received within the United States and grants the President certain emergency powers concerning all radio stations and other devices capable of emitting electromagnetic radiations suitable for use as a navigational aid beyond 5 miles.

Reference (2) is the Executive Order which implements appropriate sections of reference (1). The Executive Order stipulates that due consideration shall be given to civil defense and other national security requirements.

Reference (3) smends Executive Order 10312 by assigning the CORELRAD responsibilities of the Chairman, National Security Resources Board, to the Director, Office of Defense Mobilization. (ODM).

Reference (4) is the Public Law designed to provide a plan of civil defense for the protection of life and property in the United States from attack.

Reference (5) contains in part, national policy pertaining to the warning function and the COMELRAD program.

Reference (6) sets forth mutually agreed arrangements regarding responsibility, functions, and working relationships between the FCC and COMAD concerning CONKLRAD.

III. POLICY

It is the policy of the United States to exercise emergency control of radio communications and radio transmission of energy in order to minimize the navigational aid to hostile aircraft, guided missiles, and other devices capable of direct attack upon the United States, while at the same time giving due consideration to civil defense and other national security requirements. Changes in CONELMAD plans or procedures will be recommended by signatory agencies as preseribed herein.

IV. MISSIONS

The signatory Federal agencies are the United States Air Force, (USAF), as CONELRAD action agent for the Department of Defense; the Federal Communications Commission (FCC); and the Federal Civil Defense Administration (FCDA).

The basic missions of the signatory agencies pertinent to CONKLRAD are as follows:

A. The Department of Defense

- Provide for the defense of the United States and conduct the military operations incident thereto.
- (2) Provide for the defense of the United States against air attack, including the declaration and termination of Air Defense Emergencies and appropriate states of military warning.
- (3) Make available appropriate information concerning the declaration and termination of Air Defense Emergencies and states of military warning to designated FCDA attack warning officers.

B. The Federal Communications Commission

(1) Regulate all interstate and foreign communication by wire and radio, and all interstate and foreign transmission of energy by radio which originates and/or is received within the United States, with the exception of radio stations belonging to and operated by any department or agency of the United States.



- (2) Carry out that authority vested in the President by Section 606(c) of reference (1), as provided in references (2) & (3), with respect to radio stations, with the exception of radio stations belonging to and operated by any department or agency of the United States.
- (3) Issue appropriate rules, regulations, orders, and instructions, and take such other action as may be necessary to assure the timely and effective operation of the plans to effect the control of electromagnetic radiations between 10 kilocycles and 100,000 megacycles (CONELRAD).

C. The Federal Civil Defense Administration

- (1) Prepare national plans and programs for the non-military derense of the United States.
- (2) Establish civil defense measures designed to afford adequate protection of life and property.
- (3) Make appropriate provision for necessary civil defense communications and for dissemination of warnings of enemy attacks to the civilian population.
- (4) Publicly disseminate appropriate civil defense information by all appropriate means.
- (5) Provide necessary coordination and guidance to the States in the implementation of such plans and programs; and request such reports on State plans and operations for civil defense as may be necessary to keep the President, the Congress and the several States advised of the status of civil defense in the United States.

V. CONELRAD RESPONSIBILITIES OF SIGNATORY AGENCIES

A. The Department of Defense

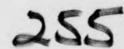
- (1) Determine the military necessity for declaration and termination of the CONELRAD Radio Alert and disseminate these decisions through the CONELRAD alerting system to all radio stations as defined herein. (See Appendix 1.)
- (2) Make available to designated FCDA attack warning officers, current and timely information concerning declaration or termination of the COMELRAD Radio Alert.
- (3) Be prepared to re-declare the CONELRAD Radio Alert after the initial CONELRAD Radio Alert is terminated, in the event military necessity so dictates.
- (4) Budget and pay for (a) all costs to the government incurred in meeting military requirements associated with CONKLRAD, and (b) CONKLRAD administrative costs as prescribed in reference (6).

(NOTE: The purpose of the provision in Section V A (4) (a) and the related provision in Section V C (4), is to establish the principle that DOD should budget for military aspects of CONELRAD and that portions of CONELRAD which meet civil defense requirements should be budgeted for by FCDA. Determination as to which portions of CONELRAD meet civil requirements and which meet military requirements is a matter for continuing review, negotiation and agreement as to funding, if indicated, by DOD and FCDA.)

- (5) Review proposals for technical and operational changes in CONELRAD to insure that such proposed changes conform to the provisions of references (2) and (3).
- (6) Recommend changes to CONELRAD plans as necessary to meet military requirements.
 - (7) Carry out the applicable provisions of reference (2).

B. The Federal Communications Commission

- (1) Provide technical advice, assistance, research and development concerning CONELRAD to the USAF and the PCDA.
- (2) Encourage the CONELRAD emergency broadcasting stations to participate in nationwide CONELRAD drills or tests for the purposes of civil defense training and general public education, at such dates and times as may be determined by the FCDA in consultation with FCC, and coordinated in accordance with current FCC rules.
- (3) Provide CONELRAD technical limison with the communications industry as provided in Section 8 of reference (2), and as provided in Section 4(1) of reference (1).
- (4) Prepare and put into effect in accordance with reference (2) with particular reference to Sections 1 and 4 thereof, plans with respect to radio stations as defined in Section 5, reference (2), except those owned and operated by any department or agency of the United States Government, to minimize the use of such stations, in event of attack or imminent threat thereof, as an aid to the navigation of hostile aircraft, guided missiles, and other devices capable of direct attack upon the United States.
- (5) Give due consideration to civil defense and other national security requirements in carrying out the provisions of sub-paragraph (4) of this paragraph as provided in Section 3 of reference (2).
- (6) Carry out such other provisions of reference (2) as may be applicable.



- (7) Plans of the Commission for exercising its authority under reference (2) shall not become effective until concurred in by the Secretary of Defense and Director, Office of Defense Mobilization, as provided in references (2) and (3).
- (8) Prepare and put into effect, in terms of its own responsibility, plans to achieve the technical capability for national and regional programing of the Emergency Broadcasting System and its integral parts and coordinate such plans with the nationwide radio broadcasting networks, in accordance with Sections 1, 3, and 8 of reference 2.

C. The Federal Civil Defense Administration

- (1) Furnish the FCC with requirements pertaining to development of COMELRAD plans for all civil, and governmental (other than Federal) communications in accordance with Section 3, reference (2) in order that the FCC may carry out its responsibilities under Section 1 of reference (2).
- (2) Furnish the FCC with requirements as they are developed pertaining to utilization of any civil and governmental (other than Federal) communications licensed by FCC, which have been authorized to operate in accordance with plans developed under reference (2) Sections 1 and 4, and reference (3) in order that the FCC may carry out the provisions of reference (1).
- (3) Recommend detailed and basic changes to CONELRAD plans in accordance with sub-paragraph (1) of this paragraph to meet civil defense requirements.
 - (4) Budget and pay for all federal government costs incurred in:
 - a) Providing an emergency communications capability under COMELRAD required to carry out the FCDA mission except for costs which are the responsibility of other federal agencies.
 - Providing capability for disseminating civil defense information to the public employing broadcast facilities under COMELRAD.
 - (NOTE: The purpose of the provision in Section V C (4) and the related provision in Section V A (4) (a), is to establish the principle that DOD should budget for military aspects of CONELRAD and that portions of CONELRAD which meet civil defense requirements should be budgeted for by the FCDA. Determination as to which portions of CONELRAD meet civil requirements and which meet military requirements is a matter for continuing review, negotiation, and agreement as to funding if indicated by DOD and FCDA.)
- (5) Assist the State and local authorities in providing, on a continuing basis:

- a) All necessary technical facilities as required in the Emergency Broadcasting System under CONELRAD and as provided in plans and current arrangements for the Emergency Broadcasting System under CONELRAD that have been developed in accordance with references (2) and (3).
- b) Current program source material for use in disseminating civil defense information suitable for broadcasting by stations in the Emergency Broadcasting System under CONELRAD, with delivery to State and local civil defense headquarters, as provided in plans and current arrangments developed in accordance with Section V C (1) and references (2) and (3) for use by the individual broadcaster in providing local civil defense programming.

The FCDA provides program source material to State and local Civil Defense headquarters for use in civil defense programming of an emergency nature suitable for broadcasting by stations operating in the Emergency Broadcasting System under CONELRAD. FCDA assumes no over-all operational or management responsibilities for such broadcasts.

- (6) Coordinate with State and local civil defense organizations in the appropriate utilization of certain radio facilities as provided in plans developed in accordance with Section V C (1) and references (2) and (3).
- (7) Establish standards for all civil defense programming of the Emergency Broadcasting System under CONELRAD.

VI. OPERATIONAL AND POLICY CHANGES

It is recognized by the signatories hereto that substantial progress has been made in the Emergency Broadcasting System under CONELRAD. It is agreed, however, that the existing capability needs to be improved. It is necessary, therefore, that provision should be made for instituting changes in CONELRAD policy or operating procedures as may be necessary to improve the effectiveness of the system. Such changes will be effected as follows:

- a) Changes in operating procedures, other than minor changes in internal agency plans, will be coordinated through existing command or liaison channels with the Commander in Chief, North American Air Defense Command (CINCNORAD).
- b) Recommendations for changes in national CONELRAD policy will be submitted to the ODM and the DOD for consideration as to conformance with the intent of Sec. 606(c) of reference 1. Information copies of such recommendations will be submitted to the FCC and the FCDA.

Department of Defense

ative Assistant to the Secretary of the Air Force

Date 25 APRIL 1958

Federal Communications Commission

John C. Doerfer, Chairman

Federal Civil Defense Administration

Leo A. Roegh, Administrator
Federal Civil Defense Administration

Att.

Appendix 1 - Definitions

DEFINITIONS

CONKLRAD -

COEtrol of Electromagnetic RADiations. Action required to minimize the use of electromagnetic radiations, in event of attack or imminent threat thereof, as an ald to the navigation of hostile aircraft, guided missiles, or other devices capable of direct attack upon the United States.

COMELRAD PLAN -

A method or procedure, or arrangement; project, program, outline or schedule or radio operations to achieve the objective of minimizing use of electromagnetic radiations as a navigational aid to hostile forces in the event of attack or imminent threat thereof, and providing for civil defense and other national security requirements.

EMERGENCY BROADCASTING SYSTEM -

Any system for utilizing radio broadcast stations and interconnecting communications facilities which conforms to the military requirement for CONELRAD as defined above, which gives due consideration to the dissemination of civil defense information to the public.

HAVIGATIONAL AID -

Any radio station as defined herein.

RADIO STATIONS -

Includes any station for radio communication, and also any device capable of emitting electromagnetic radiations between 10 kilocycles, and 100,000 megacycles, suitable for use as a navigational aid beyond 5 miles.

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NOOOP-T

SUBJECT: Installation of Operational Lines from SAC Control Tower to AADCPB

C mande , CONAD Forces, Eastern CONAD Region TO: C.mmunder, CONAD Forces, Central CONAD Region Commander, CONAD Forces, Western CONAD Region

- 1. A review of current p. .. edures to safeguard Strategic Air Command aircraft, once NIKE installations have been placed at or near SAC bases, is contained below to indicate that a problem exists which requires immediate action on the part of CONAD Region Commanders. Specifically, this action is to insure that sufficient direction is exercised so that SAC direct, ab rting within MIKE range of the take-off base, are not taken unde. fire by the NIKE defense unit.
- 2. The following procedures are presently in elistence for safeguarding SAC EWP, deployment, orbit, and dispersal truffic:
- .. SAC aircraft amplayed in long range missions will be protected through standard flight plan correlation identification procedures.
- b. SAC traffir departing from . SAC base will be protected as satisfied in CONAD Regulation 55-6, Rules of Engagement, in that they all be identified intendly by victue of position and dire tion of flight.
- c. SAC aircraft borting outside of the NIKE-defended are. surrounding the SAC base will be guaranteed safe passage for ecovery by the filing of .. : evised flight plan with the ne est seronautical facility and through the use of present procedures of IFF mode ogoling and appropriate voice authentication code.
- 3. It is evident that the above procedures do not afford protection to table sircraft aborting within NIKE range of, and returning to, the tast-off base. This situation could be rectified to a large degree by installing a direct limiten line from the SAC control tower or other suitable facility at the base which has knowledge of SAC operations, to the local AADCP. The anti-ircraft defense commander would then be immediately advised of the abort and the direction of flight the aircraft would take when returning to base.

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NOOOP-T, Hq NORAD, Subj: Installation of Operational Lines from BAC Control Tover to AADCPs

4. The following actions are recommended:

a. A study be made by the applicable COMAD Idvision Commander to determine the fo. sibility for operational circuits from the SAC control tower or other suitable of findlity, to the NADCE .

b. That development of requests for communications changes that may be desirable be accomplished.

Comes of this lense fit about this date to:

c. This hendquarters be advised of the gatome of both a. and b. above.

FOR THE COMMANDER-IN-DETER-

MARYSY T. ALHESS Major General, USAF

DCS/Plans & Operations

10 Jan 30

CO ARAA COMD REAF LIAISON

MOOOP-T, Ho MOMAF, 21 Jan 58, Subj: Installation of Operational Lines from SAC Control Tower to AADCPs.

CFEOP

Eq COMAD Forces, Eastern D MAI Region, Stewart Air Porce Pase, New York

To: Commander-in-Chief, North American Air Defense Command, Ent Air Force Base, Colorado Springe, Colorado

- 1. In compliance with paragraph 4 of the basic letter, applicable COMAI Divisions have studied the need for a direct liaison circuit from SAC base control facilities to local AADCP's.
- 2. This headquarters and the majority of the divisions concur in the requirement for such limison lines to provide additional safeguards to aborting SAC aircraft. However, these circuits should not terminate at AADCP's for the following reasons:
- a. This procedure would divide the identification function, which is an Air Force responsibility, between the AADYP's and the Direction Centers.
- b. More importantly, it would divide operational control of the MIKE batteries which must remain solely in the CORAL chain.
- 3. It is recommended that the liaison lines be installed between the SAC base control facility and the Direction Center associated with the AADCP commanding the NIKE defended area around the SAC base. In the SAGE system, Direction Centers will exercise operational control of the AA units as well as he responsible for identification. In the manual system, Direction Centers exercise sufficient operational control in accordance with paragraph 3d, Annex C, COMAD Regulation 55-6, Rules of Engagement, to provide necessary safety to SAC aircraft.
- 4. If your headquarters approves this plan, CORAL Divisions will be directed to request necessary circuits.
- 5. This correspondence is classified SECERT in accordance with paragraph 30b(2)(b), AFR 204-1.

FOR THE COMMANDER:

Colonel, USAF

Chief of Staff, OFFICE

228

CONTINENTAL AIR DEFENSE FORCES
CENTRAL CONAD REGION
AICHARDISGEBAUR AIR FORCE BASE, MISSOURI

CDOPP-P

4 MAR 1958

SUBJECT:

Installation of Operational Lines from SAC Control Towers to AADCP's

TO:

Commander-in-Chiei
North American Air Defense Command
ATTN: BOOOP-7
Ent Air Force Base, Colorado

- Reference is made to your letter, subject as above, dated
 January 1958, concerning action to insure that sufficient direction is exercised so that SAC aircraft, aborting within NIKE range of the take-off base, are not taken under fire by a NIKE defense unit.
- 2. In compliance with paragraph 4a of referenced letter, a study has been made of the problem posed. As a result of this study, the following conclusions have been reached:
- a. A direct line between an air defense facility and a SAC base facility is required in order that SAC aircraft receive adequate protection from engagement by ground to air weapons.
- b. It is desirable that the landline circuit at a SAC base be terminated in the form of a loop to include tower, base operations, and wing control center. Terminations at these locations are necessary to insure the availability of accurate flight plan data to be used for identification of SAC aircraft within an antiaircraft defended area.
- c. The air defense facility at which the landline circuit should terminate is the movements identification section of the associated direction center. The responsibility for the positive identification of all air traffic is a responsibility of an Air Defense Direction Center.
- d. Special air to ground communications procedures between an aircraft and a direction center are necessary to provide for the contingency of a SAG aircraft aborting within an anti-aircraft defended area. These procedures should be developed and agreed upon at the operating level and should not depend upon the use of the proposed landline communications between a SAC facility and a direction center. It is worthy of note that although an AADCP possesses Mark X IFF equipment, this is not a positive means of identification. Further, an AADCP does not possess ground to air communications to assist in the identification of aborting aircraft.

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CDOPP-P, Rq CFCCR, Subj: Installation of Operational Lines for SAC Control Towers to AADCP's

3. It is recommended that Headquarters ADC be advised of the requirement for landline remnunications as proposed. Additional communications for this purpose are not required within this region at this time but as additional missile defended areas are phased in at SAC locations, a request will be submitted.

FOR THE COMMANDER - IN -CHIEF:

VESLET J COOK let Lt. USAF Assistant Adjutant

259

HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE DASE COLORADO SPRINGS, COLORADO

HOOOF-T

2 JUN 1958

SUBJECT: Installation of Operational Lines from SAC Facilities to Air Defense Direction Centers (U)

TO:

DUPLICATE

Commander, COMAD Forces, Eastern COMAD R. gion Commander, COMAD Forces, Central COMAD Region Commander, COMAD Forces, Vesters COMAD Region

- 1. Reference: MCRAD letter, MODOF-T, "Installation of Operational Lines from SAC Control Tower to AADCPs," 21 January 1958.
- 2. The requirement for a direct liuison line between ADDCs and related SAC base facilities to provide additional safeguards for aborting SAC sircraft is considered an operational necessity by this headquarters.
- 3. As a result of the studies conducted by the COMAD Regions and Divisions, the following procedures are directed to establish s direct landline circuit for operational limison between air defense facilities (ADDCs) and SAC facilities.
- a. The landline circuit will terminate in the Air Movements Identification Section of the Air Defense Direction Center associated with the AADCP commanding the WIKE defended ares around the SAC base.
- b. The landline circuit at the SAC base will terminate in the form of a loop circuit to include the SAC control tower, buse operations and the SAC Wing Control Center. Terminations at these locations are necessary to insure the availability of accurate flight plan data to be used for identification of SAC sireraft within an antiaircraft defended area. The exect manner in which the termination at SAC bases will be made should be a local determination, but in the interest of reducing the confusion factor generated by having too many people on one line, the number of terminations on a SAC base should be held to a minimum.
- c. Special air-to-ground communications procedures between an aircraft and a direction center may be necessary to provide for the contingency of a SAC sircraft aborting within an anti-aircraft defended area. These procedures should be developed and agreed upon at the operating level and should not depend upon the use of the proposed landline communications between a SAC facility and a direction center.

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HEADQUARTERS

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4. Request COMAD Divisions concerned provide the necessary micrations in accordance with paragraph 4b(3) of COMADE 102-1 Subject: Communication Systems, dated 1 August 1957.

FOR THE COMMANDER-IN-SMILEY:

Come Furnished: COMEMATADO COMMATTORCOMAD CO HEARADCOM

HARVEY T. ALBESS Major General, USAF DCS/Plans & Operations

M/R: A review of procedures to safeguard SAC aircraft once NIKE installations had been placed at or near SAC bases indicated a problem existed requiring immediate action on the part of CONAD Region Commanders. Specifically, the action was to insure sufficient direction be exercised, so that SAC aircraft, aborting within MIKE range of the take-off base, would not be taken under fire by the NIKE defense unit.

On 16 Jan 58, the regions were instructed to conduct studies on this problem and to advise NORAD of the outcome of these studies. It was suggest ed that this situation could be rectified to a large degree by installing a direct liaison line from the SAC control tower or other suitable facility at the SAC base to the local AADCP. The antiaircraft defense commander would then be immediately advised of the abort and the direction of flight, the aircraft would take when returning to base.

CFECR concurred in the need for such a line but recommended the line terminate at the ADDC associated with the AADCP commanding the NIKE defended area around the SAC base. This recommendation was based On: (a) To terminate at the AADCP would divide identification function between the AADCP and the ADDC. Identification is a primary ADDC function, and (b) to terminate at the AADCP would divide the operational control of NIKE batteries which must remain solely in the CONAD chain.

CFCCR concurred and also recommended terminating at the ADDC for simi lar reasons. However, they suggested that the line terminate on the SAC facility in the form of the loop circuit. This would insure availability of accurate flight information with relation to the aborting aircraft.

CFCCR also recommended special communication procedure be developed between the aircraft and the ADDC.

CFWCR stated that no requirement existed for operational lines nes il.

between SAC towers and AABCPs. NOELC strongly supported the CFCCR attitudes of terminating on the SAC base with a loop circuit but cautioned against too many people on one line and recommended that the number of terminations on a SAC base be held to a minimum.

a minimum.

This letter is a compilation of the recommendations by CFECR and CFCR and has directed that the operational liaison landline be installed where necessary.

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s957-102 (Acting/VCAS)

Department of National Defence

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OTTAWA. Ontario,

Commander in Chief, North American Air Defence Command, Ent Air Force Base, Colorado, U^A.

Electronic Warfare Unit

- An RCAF Electronic Warfare Unit to provide simulated operational conditions for training aircrews and fighter controllers in electronic counter and counter measures (ECM/ECCM) has been under consideration for some time.
- The size and scope of such a unit have been the chief points of discussion. It is our view that our unit should complement present forces operating in this field and development follow co-ordinated plans that take into account the full utilization of all North American sireraft operating directly or indirectly in the ECM/ECCM roles
- 3 Before RCAF action is taken to form the necessary unit, the views of your Headquerters with respect to the following points are requested:
 - (a) What is NURAD s policy with respect to the standard of BCM and ECCM operational training expected of those forces under your operational control?
 - (b) The value of using the inherent facilities of SAC aircraft during their routine flights?
 - (c) Has consideration been given to co-ordinate the planning of USAF/RCAF in this field to ensure full utilization of the forces available and complementary development to meet deficiencies?
 - (d) If a central combined unit is deemed adviseable, what organization and composition do you envisage?

(JA Easton), Air Commodore, for Chief of the Air Staff.

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Chief of the as Staff Seron of them. Onterior of Assistant Deformations

- 1. Reference is made to your labour 1957-12, 27 Fearmary 1958, subject: Electronic Auriery Unit, and to your parallime tries Pirective 1/58, 16 February 1958, subject: Unrined CAF/doff at 4 108 Operations, operations? Training and hader deglerates Programme, recently received in this sendquarters.
- This headquarters is heartily in accord with the importance your headquarters attaches to appended training.
- Regulation 101-2, b Jermany 1953, comiss of which have been distributed to your headquarters, as well as to HEAF(AMC). In examply, he SMAD policy with respect to the three must important actions that one be taken now to most the bostile Min threat in first, to emphasize operator and unit training with increased attention to TCM tactics and techniques to provide a maximum establisty within our current weapons and ground environment; secure, to retrofit our present weapons and ground environment with all possible proven antifurming devices; and third, to program the maximum antifurming features, as well as diversity of weapons and frequencies into our future weapons and support equipments.
- 4. As a specific guide for levels of training for fighter and ACAN units, UEAFARC Mammals 51-2, 51-3, 51-4, 51-5, and UEAFARC Mammals 51-2, 51-3, 51-4, 51-5, and UEAFARC Tactics Mammal 55-5 are recommended as recognised levels of crew proficiency or standards in MOSA. These manuals are available through Petachment 1, Mandquerters ARC, at Ottams.
- 5. With respect to questions raised in subparagraphs is and b of your letter, EDDM and fighter training for all MORAD components is conducted under the provisions of NORAD Regulation 51-1, 31 January 1958, subject: Flying Training. This regulation charges the Gosmander, USAF Air Defense Commend, with the responsibility of providing the airborne EDM facilities to all ES components of EDMD. Mowever, in view of the fact that SAC has the sajor capability of providing EDM training facilities, monthly meetings are held with representatives of BORAD, SAC, USAFADO, REAF(ADC), USAFADOM, and all three CORAL Air

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before Region to conclude the conclude the second of the conclusion of the conclusio

- 6. The ADA radar evaluation Plights a sticuted above are correctly located at Hill sir Force Pave, Openen, Usan; busilton hir Force Pave, San Rafael, California; and at Griffing Air Porce Rase, have. New York.
- 7. The proposed extansion of som current SDN sincreft training effort would contribute such to the an demand of a high sevel or SDN operator proficiency, principally in the matter linearing through the pedium of the SAC/ROAF, conflict mentals accounting meetings, efforts should be directed towards utilizing the or bines resources of SAC, SACAF, and USAFADO flights in SDA training and rules evaluation of all SCRAD units.
- S. Reference subparage h to of your lotter. Following the receipt of the formalized terms of reference for divide operation, this headquarters plans to invite your best quarters to deels at acceptant to the HORAD Electronic warfare Committee. This constitute was formal sometime ago for the purpose of examinate GAUM information, formalizing BOUM policies, and coordinates the BOUM program within the lating BOUM policies, and coordinates the BOUM program within the NORAD components. Brigadier General phone (USA), GOU Generalizations and Electronics at RORAD Resources, is the chairman of this and Electronics at RORAD Resources, is the chairman of this committee. At present, Group Septain . W. NoReill, member, and wing committees. At present, Group Septain . W. NoReill, member, and wing committees as members of Resolutions a NAD. However, it is believed interests as members of Resolutions a NAD. However, it is believed that this representation should be for alized with representation of one member and one alternate each from Headquarters Daff and BCAY(ADC).
- 9. Reference subparagraph 36 of your letter. It is universtood that your headquarters will univers modified C-109 and CF-100 circustras EUM training aircraft. This headquarters at any recommends that consideration be given to assigning the additional mission of radar evaluation to the proposed electronic perform unit in a manner similar to that of the USAFATC HOM radar evaluation flights. The radar evaluation mission is for the purpose of evaluation radar coverage, as well as periodic evaluation of purpose of evaluation proficiently of each ACEM site. USAFATC to purpose of evaluation proficiently of each ACEM site.

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a total of 23 TS-29 aircraft with DM officers conting the MTM aquipment. This headquarters has rectmended that Beat marks a full replace the TS-29's with a notion DEM aquipped sincreft such as the D-47.

10. Inclosures 1 and 2 are the ascening documents recommended by Meadquarters USAF and are currently authorized for the Eastern Air Defense Force MDM Radar Dynamatics Thight. These are indicative of the type of organization which you may wish to consider for MCAF unit training and redar evaluation.

11. Your further comments to the above would be velocine.

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Copies furnished COS, USAF, as Brows Agent for MORAD USAFADC USAFADCOM G. K. Signon
Air Matchell, RCAT
Deruty Commander-in-Chief

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MOSSEM

24 April 1958

SUBJECT: (U) NORAD MOCH Training

TO: Chief of Staff, United States Air Force
As Resentive Agent for NURAD
Nashington 25, D. C.

1. Beferenses!

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a. Letter, Headquarters NCRAD, 4 October 1957, subject: NCM Training.

b. Letter, Beadquarters IEAF, 13 November 1957, subject: EM Training.

- e. Letter, Hendguarters HCBAD, 20 January 1958, subject: Reduction of HDM Vulnerability of the Total U.S. Air Defense Weapons and Control Systems (CONF).
- d. Letter, Hendquarters SAC, 29 January 1958, subject: BAG/ADC MDN Training.
- e. Letter, Headquarters USAFADC, 19 March 1958, subject: (U) Support Aircraft for ECM Training, Radar Symbol and SAGE Testing.
- 2. The above referenced correspondence confirms that MURAD's MUCH training requirements cannot be not by any scancard or combination of commands now in being. The importance that MURAD places on an MUCH training expability for its component commands is of such magnitude that this headquarters wishes to re-emphasize and restate its requirement for a suitably equipped MUM siroraft possessing high-speed, high-altitude performance capabilities.
- 3. Valuable training has been gained by MCRAD ecomponent commands through the SAG/ARC training missions and the ADC radar evaluation flights; however, the amount of SAC ECM training capability available does not meet our requirements nor does the APC radar evaluation flight capability fulfill our requirements in either quantity or quality of ECM.
- 4. Experience gained in past exercises and tests has shown that a ground operator's learning curve can best be improved to combat the affects of active ECH by affording him the opportunity to identify jerming, operate in a jermed condition, reading through where possible, and utilizing built-in antijarning capabilities of the ground reder system to combat the affects of ECH.

__ Temporary Units*____

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5. Planned developments in Elvi and ECCN equipments and techniques, including the future defense Fraquency Mersity Radar Progress with its broad frequency range of 200 to 10,000 megacycles, makes the current and future capabilities SAC may have available much less ocupatible for NCSAD SDM training. This is largely due to the SAC requirements for MF The configuration.

6. For USAFADC, RCAF/ALC, USARADGOM and US Navy Defense Forces of MORAD to realize an effective BON/SICH training program, it is imperative that a training force be established within the NORAD operational structure which will fulfill current defense and future frequency diversity radar progress.

7. In view of the above, it is requested that further reconsideration be given to the re-equipping of the AIC radar scalnation flights with a modern high-speed, high-parformance eircraft such as the F-17, turbo prop C-131, or too Lookhood CL-229 Jetster, suitably equipped with modern Mil equipment in the frequency spectrum competible with the planned MCRAD ground defence environment.

> E. A. PARKINGS Gereral, mar

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NOELC COMERACK

MEMO FOR RECORD: Above letter to Hq USAF, As Executive Agent, restates NORAD's requirement for a modern high-speed, high-performance aircraft to fulfill NORAD's ECCM training requirement. The present and future availability of SAC effort, and the present capability of the ADC radar evaluation flights do not meet the ECCM training requirements of NORAD. Therefore, if the ECCM requirements of NORAT are to be met, a force of modern aircraft suitably equipped to operate against present and future ADC ground environments must be made available for operational control by NORAD. This letter was further prompted by a Memo to the NCRAD staff to reinstitute this requirement.

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Re FORAD Letter, MOREM, Subjects (9) MOVAD ACCH Training

5. Planned developments in distant ECON equipments and techniques, including the future defense frequency Diversity Radar Program with its broad frequency range of 200 to 10,000 megacycles, makes the current and future capabilities SAC may have available much less compatible for NOSAR SDM training. This is largely due to the SAC requirements for EMP FOR configuration.

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Gereral, MGAF

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NOELC COMERACK

MEMO FOR RECORD: Above letter to Hq USAF, As Executive Agent, restates NORAD's requirement for a modern high-speed, high-performance aircraft to fulfill NORAD's ECOM training requirement. The present and future availability of SAC effort, and the present capability of the ADC radar evaluation flights do not meet the ECOM training requirements of NORAD. Therefore, if the ECOM requirements of NORAD are to be met, a force of modern aircraft suitably equipped to operate against present and future ADC ground environments must be made available for operational control by NORAD. This letter was further prompted by a Memo to the NORAD staff to reinstitute this requirement.

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2L January 1958

General Sarle 2. Partridge Commander-in-Chief North American Air Defense Command ant Air Force Base Colorado Springs, Colorado

Dear Pat,

Although we are making substantial progress in the drone area, we cannot offer you a target at this time which combines all the characteristics necessary for a full MCHAD exercise. The immediate alternatives for support of your proposed exercise are therefore extremely limited.

as an initial suggestion, the Q-2 drone might be used to carry sut a portion of your exercise. It will be equipped by September 1958 with radar sugmentation approximating a B-47 to manned interceptors and with an 1-band beacon trackable with QCI radars to 100 miles. Although the drone can be controlled from its ground station to a range of 100 miles, for your purposes this range might be extended by use of manned aircraft such as a B-47 providing track from 400 to 100 miles. The launch aircraft would have to rendesvous with the B-47 and launch the drone at 100 miles for the live firing run to the coast. Simultaneous simulation of a B-47 to both airborne interceptors and NIKS will not be possible since different radar sugmentation devices are necessary for NIKS. The Q-2 could be made compatible with NIKS acquisition and tracking radars by June 1959.

A second alternative, applicable only to airborne intercepts, is to tow a frangible target with a B-57s utilizing the same techniques new in operational use within the Air Defense Command.

The QF-80 without radar augmentation could be used in lieu of the Q-2. The inbound run would begin approximately 400 miles offshore, with DT-33 direction until within 100 miles of a ground control station. Control could then be transferred and live firings begin. Radar augmentation of the QF-80 is programmed but will not be available until 1960. There will be no QF-80's available for allocation to support your exercise until at least the first quarter, FT 60.

We have very recently approved a program to drone a small quantity of B-47 aircraft to be used in support of the air defense weapon system development program. We expect to have an operational capability at Hollowan

Ltr to General Partridge (Cont)

and aglin in the fall of 1959. These drones will have a substantial countermeasures capability and should more nearly fulfill your needs than any other programmed target system. I want to suphasise that our QB-47 program is trimmed to the bone and is based solely on weapon system test requirements. It does not include quantities for operational exercises. Should you feel that less sophisticated systems cannot adequately do your job and that normal phase testing procedures on new weapons at established test sites are inadequate, I suggest you make your quantitative requirements known in order that we can consider them together with other QB-47 requirements.

The Chief of Naval operations has advised that no major problems are foreseen in equipping the Regulus I with an L-band beacon in lieu of the present 3-band unit, or in installing Q-2 I-band bistatic radar augmentation pods. There are operational problems such as lack of ground control and landing facilities in the Bay area which need resolution.

Of the above alternatives, the QB-47 offers the best solution, although it will not be available as early as you would like. The next best solution appears to be use of the augmented Regulus, provided an acceptable operational concept can be worked out between your people and the Navy. Should this be possible and you want to try the Regulus, please let me know so we can provide the Havy with the equipment and support they will need.

Because we have drone operating facilities and weapon systems test facilities in being in the right and Holloman areas, I strongly recommend that live firings be conducted at these facilities, and that exercises in other localities be limited to dry firings against manned aircraft. Although this does not completely represent the tastical situation to be expected in major industrial areas, I believe we can correlate the data acquired through simulated missions with manned airoreft, live missions at established sites, and reder evaluation flights with sufficient accuracy to establish our defense capability for each strategic target.

Sincerely,

CURTIS E. LEMAY General, U.S. Air Force Vice Chief of Staff

Observer Report Stationed at 28th ADCC Exercise "Fir Fly," Phase I, 10 January 1958

NOOOP-E

14 Jan 58 Comdr Smith/2723/def

MOCOP-E Thrus

1. This is a NORAD observer's report on Exercise "Fir Fly" Phase I, as viewed from the 28th ADCC, Hamilton AFB, California.

2. "Fir Fly," scheduled for 10 January 1958, was a NORAD-directed exercise. Paker forces were composed of 12 B-47 aircraft of the 9th BW (SAC), redeploying from the Far Bast via Hickam AFB to Mountain Home AFB. These twelve aircraft composed the first of four waves of the SAC "Blockhouse" Exercise. SAC strikes were approximately 1 + 15 shead of schedule (not significant). In addition, U.S. Navy attacking forces were composed of the following:

launched from USS HANCOCK a. Eight F-80's

b. Eight F-4D'S

c. Two A-LD's launched from shore

d. Four P-2V-7's

One AJ-3 Two A-3D's

The Navy shore-based A/C arrived at landfall and targets on schedule (0700 local). Carrier-launched A/C were approximately 45 minutes late on schedule (not significant). Targets for all striking and faker A/C were within the San Francisco/Oakland/Bay areas and immediate surrounding areas.

- 3. SAC strike routes were down the usual "boulevard," penetrating defenses from the west. Force composition, cell and sircraft separation, altitudes, speeds, tactics, and the use of ECM were congruent with routine, standard, and stereotyped SAC exercise procedures. ECM was employed, though apparently did not have adverse effects on defense radars. "Fir Fly" is the second of two recent exercises wherein other attacking or striking forces were utilized in conjunction with SAC fakers. (Reference is made to "Iron Ber" on 2 December 57, during which TAC provided B-57's.) Attention is invited to the SCR final summary presentation, wherein it is believed that the value of TAC strikes showed superiority over SAC fakers insofar as providing realistic and active targets. As stated by this observer in a previous report, it is still believed that the value of SAC efforts in these types of air defense exercises has become outmoded and has greatly degenerated. Consideration to procurement and utilization of more realistic targets with varying tactics is recommended.
- 4. In contrast to those fakar activities as provided by SAC, it is considered that the Navy "Fir Fly" strikes were most realistic and were laid on in an excellent fashion, providing an over-all test of air defense capabilities in a coastal air division. Navy A/C penetrated the contiguous coverage through the seaward extension from 50 to 50,000 feet. Acceleration and changes of altitude and course tactice were employed. Speeds ranged from approximately 150 kts to 680 kts. Strike routes were nearly normal to the beach line. All A/C flew through NIKE-defended areas. All fighter and small attack types of A/C squawked mode 3 IFF in order to simplify detection and tracking. No Navy A/C used ECM.

Thru: NOOOP-L

MOOOP-E

Observe Report Stationed at 28th ADCC Exercis. *Fir Fly* Phase I 10 Jan 58

- 5. During "Fir Fly" the picket stations were moved about 60 miles closer to the beach. Particularly when operating against high speed, high altitude targets, it is considered that a decision to move these early warming stations may have been dictated by other factors.
- 6. Weather over the coastal areas and inward was amazingly good, yet there were many requests for RAPCON recoveries. It is considered that generally fighter interceptor scrembles and ensuing defense action are a "one shot" proposition; however, this was a case whe rein turn-around time was important and critical, and had recoveries been expeditious, defense A/C could have been better of A/C while strikes were continuing to arrive in the defense system.
- 7. The physical property and operational design of the 28th ADCC is normal. B/Gen. Low was SOP during the exercise. COC procedures, personnel direction and activities were excellent. This center operated without the confusion that has been observed at other facilities. Periodic photographic exposures were being conditions, weather displays, status board displays, showing of alert and results of tactical action boards were not standard nor in accordance with as previously stated, the COC functions of this center appeared better than most. Perhaps it would be advisable to review the procedural action of all similar air defense facilities. Common errors which were noticed:
 - a. Insufficient information available from subordinate units.
- b. That information which was available was several minutes late in being posted.

These two broad discrepancies preclude the commander and his battle staff from keeping current with the conduct of battle and hinder them in making decisions as to the best courses of action. The conduct of air defense appeared to be generally inflexible, once the attack commenced.

- 8. Presence of various observers overtaxed available space facilities. The decorum, conduct, and actions of some observers would appear to have had a detracting influence upon the battle staff and COC personnel.
- 9. Significant chronological events of "Fir Fly" are as follows: (All times local 10 January 1958)
- a. Declaration of various states of alert, simulated SCATER and CONFIRAD, status of alert of ADC A/C, etc. all normal.
 - b. 0242 First SAC fakers detected

Observer Report Stationated at 28th ADCC Exercise "Fi: ly" Phase I 10 Jan 58

NOOOP-E NOOOP Thru 1

- c. 0300 (1) Scrambled ftrs when fakers approx. 200 ml. out. Ftr scramble direction was being performed presumably by DC.
 - (2) Status of Wavy augmentation at NAS Moffett not available; will be subsequently discussed.
- . d. 0342 First ECM activity being displayed
 - e. 0400 Ftr control appearing to reach saturation
 - f. 0405 Eight M/A's posted
 - g. 0408 28 ftrs now committed. Considering the number of tracks and types of targets involved, this appears to be a very heavy commitment.
 - h. O415 SAC fakers are approaching, at or past tgts.
 - 1. Brief surmary as involving SAC fakers: 13 ftr M'A's on 9 detected targets. These are excellent results, but consider ftrs were over-committed, particularly when available intelligence information indicated that subsequent raids were to follow. The CC held WT (for AMA) after several requests from ARADCP for WF.
 - j. Ohli 0600 Lull in strike actions. SAC is thru the system. Navy strikes are approaching.
 - k. 0610 Picket detection, raid recognition, and track designation on following: (Nevy strikes)
 - 7544, 360 kts, 25,000 ft.

 - (2) F543, 300 kts, 30,000 ft. (3) F545, 680 kts, 50,000 ft.
 - 1. 0620 10 ftrs ordered on CAP.
 - m. 0630 All previously painted targets have been lost.
 - m. 0632 19 ftrs now on CAP, but deployed too high for low strikes, and too low for high strikes.
 - o. 0642 ECM being reported (Navy performed no ECM).
 - 0644 680 kt targets at 47,000 ft. lost.
 - 0648 First ftr M/A claimed.

Observer Repor' Stationed at 28th ADCC Exercis

Thru I NOOOP-E

NOOOP-E

- r. 0649 Previously held "few" targets have now expanded to "many" targets.
- O705 Navy sir augmentation at NAS Moffett are now ready; composition: 6 P-8U and 4 P-4D A/C.
- t. 0709 Additional ECM being reported. (Navy performed no ECM)
- u. 0720 Additional ECM being declared. " "
- v. 0734 4 ftr M/A's on two P-2V-7's.
- w. 0740 3 ftr M/A's on outbound strike A/C.
- x. 0755 Confusion of tracks being carried in system.
- y. 0820 All Navy strikes are through system by now.
- z. Brief summary as involving Navy strikes:
 - (1) 9 ftr M/A's on 4 detected and continuously tracked targets.
 - (2) The CC continued to hold WT after requests from ARADCP for WF.
- 10. "Fir Fly" commentary, 10 January 1958:
- a. The CC positively maintained Weapons Tight for AAA units during the exercise. After initial picket detection and tracking, targets were frequently lost as they approached the beach. In an unacceptable number of cases, MT Tam was unable to acquire and track. In several cases, AAA surveillance radars obviously reacquired and tracked these inbound Navy targets, but because of elapsed time during attempted correlation with the DC, the targets came through the AAA-defended areas without engagement.
- b. Deployment and utilization of CAP produced few, if any, M/A's. It is believed that CAP capabilities are not fully appreciated, exploited, or possibly even understood. It is strongly recommended that CAP potential be studied, practiced and utilized. This type of an exercise pointed up the weakness of successful engagements predicated upon scrambles from in-place against slow, very low targets or fast (800 kt) high altitude (50,000 ft) targets. It should be berne in mind that some of these strike A/C were over their target areas within 24 minutes after initial detection at the outer fringes of the areas of contiguous coverage.
- c. Navy sir sugmentation A/C were not made available to the commander (after his request) in sufficient time. The actual reason for this delay in alert status is not known; however, it sppeared that previously agreed alert times were either misunderstood or not received. The CC requested Navy air sugmentation at approximately 0300 and received them at 0705.

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erver Report Stationed at 20th aDCC roise r Flym Phase I, 10 Jan 58

I MOOOP-E

d. In spite of good detection, tracking and raid assessment provided by the pickets, intercept scrambles usually were not ordered until detection was made by shore-based radars.

- e. This exercise was purported to be a no-notice exercise. A considerable amount of information concerning the strike force, composition, times, tactics, etc. seemed to be the knowledge of the battle staff. During the conduct of the exercise, additional (though in several cases erroneous) information was being provided by an observer. It is considered that such practices are not within keeping of desired objectives, and in several instances may have caused the staff to be adversely influenced in tactical decisions.
- 11. In summation, it appeared that the defense system successfully defended against conventional attacks (mediocre altitudes and speeds and well known tactics) but was unsuccessful in defending against not too frequently practiced, though realistic type attacks.

B. C. SMITH Commander, USN

Declassified







HEADQUARTERS

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

TEL: MELROSE 2-5511 EXT_2150

20 JAN 1958

SUBJECT: Observer's Report Exercise "Fir Fly"

TO:

Commander-in-Chief Centinental Air Defense Command Attn: DCS/P&O Training and Exercise Division Ent AFB, Colorado

- 1. In accordance with Par 6.a.(1) CONAD Reg 55-16, Subj: Exercises, the following report is submitted.
- Major Dunbar and Major Jorgensen represented this Headquarters as ADC component observers. They were positioned at the CFWCR center during the exercise.
- 3. By the time the first strike aircraft entered the system, the 28th Air Division had experienced states of warnings and alerts, such as "Cocked Pistel" "Lemon Juice" and "Apple Jack". The 28th AD had reached "Apple Jack" approximately thirty-five (35) minutes prior to the time the first strike aircraft entered the system. As a result of the alert conditions, the 28th AD had seventy-one (71) fighter interceptors "operationally ready" by the time the first strike aircraft entered the system and of this total, fifty-six (56) were placed on fifteen (15) minute or higher alert. The 28th AD reached a maximum of seventy-three (73) fighters "operationally ready" of which a maximum of seventy-one (71) were on fifteen (15) minutes alert or higher.
- 4. The SAC wave of twelve (12) B-h7's was approximately one hour shead of schedule. According to the vertical board in the CFWCR, the maximum number of strike aircraft in the system during any fifteen minute period was eleven (11). Nine (9) MA's were accomplished against these aircraft, seven (7) of which were completed prior to land-fall. The tracking efficiency on the SAC aircraft was quite good as reflected by the CFWCR vertical board presentation. It was noted that the vertical boards in CFWCR did not pertray the fighter control picture; however, during any fifteen (15) minute period, no more than twenty-four (2h) fighters were observed to be committed. Unless one radar station was controlling all twenty-four (2h) fighters, it did not appear that a saturation condition existed.
- 5. The Navy aircraft entered the system approximately ene (1) heur after the SAC aircraft had cleared the 28th AD area. The Navy strike differed in number and types of aircraft when compared with the briefing given by NORAD two days before the exercise. There was

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a maximum of seven (7) strike aircraft in the system during any fifteen (15) minute period and a maximum of twenty-three (23) fighters committed during any fifteen (15) minute period. The fighters committed during any fifteen (15) minute period. The tracking efficiency on the Navy strike aircraft was poor. Examples: Track JF 59h appeared initially to be moving Northwest (wrong direction) and further, it remained stationary thirty-seven (37) direction) and further, it remained stationary thirty-seven (37) minutes and was then scrubbed. Twenty-seven (27) minutes after this imitial plot had appeared, two (2) MA's were shown for this same track!

6. CWCR had changed the method of displaying the air battle on the vertical beards in the centrel center. This change did away with the tactical action beards. Track information, fighters committed and aggregate MA's were displayed beside the track. It was also noted that the speed and altitude assigned initially to a strike track did that the speed and altitude assigned initially to a strike track did not change during the remaining period the tracks were in the system. The pre-exercise briefing revealed that strike forces would change speeds and altitudes.

FOR THE COMMANDER:

JOHN M. KONOSKY Celemel, USAF

Director of Operations Deputy for Operations

Declassified - SPL B0000P-8 Commander's Susmary Report of Exercise "Fir Fly" Conducted 8-15 January 1958 INFO SERVICES SUBJECT: ELC DCS CAE ESS Commander UBAF Air Defense Command Ext Air Force Base Systems TO: EPR Plans & Roy EEA Flec-Wartare Coloredo Springe, Coloredo DCS I The inclosed material is forwarded for Coll & Disem IRE POR THE COMMANDER-IN-OLD 1 Incl General, USAF Cepy B/L from 25CAMD and Inda Plans & Operations COMADC COMNAYFORCONAD CG ARAA COMD Reproduced by History Cdr Santh 2723 Telephone 14 Feb 58 ... Refers to Fanfold No. mvl __Typists mitials 82054 M/R: Not required. 11 10

____. AFR 205-1, or for reason's) stated,

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Record Evaluation: Persument, Long Time Viviue

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X8-15-69-A

280CO, 28th ADD, undated, Subj: Commander's Summary Report of Exercise "FIR FLY" Conducted 8-15 January 1958

- (6) Number of Targets Penetrating AAA Defense Area: 26
- (7) Number of Targets Cenveyed to AAA: 45
- (8) Number of Conveyed Targets Acquired by AAA: 34
- (9) Number of Conveyed Targets Engaged by AAA: 16
- (10) Number of Conveyed Targets MA'd by AAA: 15
- (11) Fighter Overall Percentage: 35%
- (UNCLASSIFIED) Concur with the comments of the 28th Air Division (Befense) with the following additions and amplifications:
- a. Many of the comments contained in the basic letter do not apply to Exercise "FIR FLY" but rather to the 3-day ORI. The complication of baving a NORAD ECM exercise in conjunction with an ADC ORI leads to confusion for all.
- b. Consideration must be given to limiting the number of observers present. During the first day of the exercise, there were some 42 visitors at Mill Valley alone. This large number of observers greatly distracted and complicated the efforts of these trying to fight the battle. The divergent interests of the observers, the varied reports required, and the extra data necessary to compile the reports, placed a tremendous additional work load on an already heavy schedule for the members of the combat teem.
- (UNCLASSIFIED) This indermment is classified SECRET in accordance with paragraph 30b(2)(c), AFE 205-1, and also because it discloses capability of the sir defense within the 28th CADD.

HUGH A. PARKER

Major General, USAF

Commander

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26000, 28th ADD, undated, Commander's Summary Report of Exercise "Fir Fly" Conducted 8-15 January 1958

1st Ind

29 JAN 1958

Hq CONAD Forces, Western CONAD Region, Hamilton Air Force Base, California

TO: Commander-in-Chief, Continental Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

1. (SECRET) Due to a misuaderstanding at this headquarters, the statistics shown in the basic letter are for three days of the exercise and against all targets. The following statistics are submitted for and against all targets. The following statistics are submitted for the "FIR FLY" portion of the exercise, i.e., against SAC and Navy Targets on 10 January 1958 only.

a. Statistics:

- (1) Total number of targets available for intercept: 23
- (2) Total number of fighters committed: 94 (35 F-89J's, 27 F-86L's, 18 F-102's, 8 F8U's, 6F4D's)
- (3) Total number of fighter MA's: 33 (21 F-89J's, 3 F-86L's, 7 F-102's, 2 F4D's)
- (4) Total number of fighter MI's: 61 (14 F-89J's, 24 F-86L's, 11 F-102's, 8 F8U's, 4 F4D's)
 - (5) Reasons for MI's:
 - (a) EUM: 3 (1 F-89J, 2 F-102's)
- (b) Personnel Error (director): 19 (1 F-89J, 9 F-86L's, 8 F8U's, 1 F-102)
 - (c) Personnel Error (pilot): None
- (d) Fade Prior to Intercept: 22 (6 F-89J's, 6 F-86L's, 6 F-102's, 4 F4D's)
 - (e) Aircraft Performance: None
 - (f) Aberts: 5 (2 F-89J's, 3 F-86L's)
 - (g) Ground Equipment Failure: 8 (2 F-89J's, 6 F-86L's)
 - (h) Airborne Equipment Failure: 4 (2 F-89J's,

2 F-102's)

HEADQUARTERS 28TH AIR DIVISION (DEFENSE) UNITED STATES AIR FORCE HAMILTON AIR FORCE BASE, CALIFORNIA

28000

SUBJECT: Commander's Summary Report of Exercise "Fir Fly" Conducted 8-15 January 1958

TO: Commander
Western Air Defense Force
Bamilton Air Force Base
California

1. (SECRET) The following report is forwarded in compliance with CONADE 55-16, dated 19 June 1957:

a. Statistics:

- (1) Total number of targets available for intercept: 106
- (2) Total number of fighters committed: 309 (107 F89J's, 92 F86L's, 57 F102A's, 8 F4U's, 12 F100's, 10 F4D's, 14 F86A's and 9 F8U's)
- (3) Total number of fighter MA's: 163 (71 F89J's, 33 F86L's, 31 F102A's, 4 F100's, 4 F40's, 14 F86A's and 6 F8U's)
- (4) Total number of fighter MI's: 146 (36 F89J's, 59 F86L's, 26 F102A's, 8 F4U's, 8 F100's, 6 F4D's and 3 F8U's)
 - (5) Reasons for MI's:
 - (a) BCM: 21 (3 Flo2A's, 9 F89J's and 9 F86L's)
- (b) Personnel error (director): 19 (3 Flo2A's, 2 F89J's and 14 F86L's)
 - (c) Personnel error (pilot): 4 (1 F86L and 3 F8U's)
- (d) Fade prior to intercept: 50 (10 F102A's, 14 F89J's, 10 F86L's, 8 F4U's, 4 F4D's and 4 F100's)
 - (e) Aircraft performance: 5 (1 F89J and \$ \$100's)
 - (f) Aborts: 16 (3 FlO2A's, 2 F89J's and 11 F86L's)
 - (g) Ground equipment failures: 10 (2 F89J's and 8 F86L's)
- (h) Airborne equipment failure: 21 (7 FlO2A's, 6 F86,'s, 6 F89J's and 2 F4D's)

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- (6) Number of targets penetrating AAA defense area: 89
- (7) Number of targets conveyed to AAA: 198
- (8) Number of conveyed targets acquired by AAA: 116
- (9) Number of conveyed targets engaged by AAA: 77
- (10) Number of conveyed targets MA'd by AAA: 77
- (11) Fighter overall percentage: 53%
- b. (UNCLAS) Considerable valuable training and experience was gained from this exercise by all participating units. It also served to point out areas where additional training and work are required.
- c. (CONF) AEWSC units performed exceptionally well, consistently providing early warning information. It is strongly recommended that the AEWSC units be retained as an integral part of our air defense complex, with locations used during the ORI to be made permanent.
- d. (UNCLAS) Picket ships continued to furnish valuable early detection and tracking information.
- e. Moderate to heavy intermittent mechanical jamming encountered throughout the exercise caused erroneous estimates in the evaluation of airborne objects in some cases. Sporadic electronic jamming was ineffective. Several sarambles were ordered against tracks which proved to be chaff drops. In the majority of cases, however, interceptors scrambled for these false tracks were subsequently diverted to other faker tracks or to CAP.
- f. (CONF) Air/ground communications jamming was reported by several interceptor crows; however, this was considered ineffective since the controlling stations transmitter volume overrode the faker forces' attempt to jam control frequencies. In the interest of continued training, it is recommended that ECM of all types be included in future exercises.
- g. (CONF) Some problems were encountered in the weapons assignment function in passing control of interceptors to other outlying stations. Late scrambles in some cases procluded successful interception of fakers at maximum range consistent with interceptors' capability. In some instances this discrepancy was due to delays in obtaining proper track classification from umpires located at the air defense control center.

h. Both mechanical and electronic jamming were encountered by the AAA radars. The ECN did not interfere with the engagement of targets or attainment of MA's.

- i. (UNCLAS) An excessive number of track designators for mission aircraft tended to cause some confusion at the direction centers.
- j. (UNCLAS) Submission of reports concerning results of an exercise should be made at the conclusion of the exercise rather than after each phase or time period within the exercise period.
- k. (UNCLAS) Utilization of B-29 targets during the exercise was considered unrealistic. It is felt that these aircraft should penetrate the area being evaluated at greater ranges and from the greatest threat directions.
- 1. (UNCLAS) Further consideration should be given to the number of observers and other persons conducting the evaluation that are assigned to any particular site or operations. Excessive personnel within the limited space of a direction center operations room is a definite handicap to the entire operations.
- m. (UNCLAS) The use of Navy, fighter-type aircraft is not considered a realistic target for testing the air defense facilities.

n Declassifi then conducting a large scale exercise in a decentralized control system, it is suggested that identification of faker tracks be accomplished at direction centers rather than from the sir defense control center.

- o. (UNCLAS) After faker aircraft have been intercepted and a sufficient number of MA's accomplished to simulate destruction, the faker classification should be removed from the track. It is felt this procedure would inhance the desired realism.
- p. (UNCLAS) It is suggested that, when T-33 type aircraft are used as fakers in a division-wide exercise, these tracks originate at greater distances outside the area of responsibility.
- q. (UNCLAS) In the interest of familiarizing interceptor pilots with intercept director procedures, it is suggested that pilots be required to accomplish the directors proficiency examination.
- 2. (UNCLAS) This correspondence is classified SECRET in accordance with paragraph 30b(2)(c), AFR 205-1.

JAMES D. MAYDEN

Colombi USAF

3 Colonel USA Vice Commander

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Commander's Summary Report of Exercise "FIR FLY" Conducted 8-15 January 1958

NOOPO

NOCOC

10 Feb 58 Cdr JW Lawyer/2725/pc

Reference par 1j, basic letter from 28th ADiv, subject as above, during actual hostilities the CINC will not tolerate such reports arriving several days after the action. Recommend we accept tactical action reports when compiling initial results. It is understood that these results fill vary considerably from the final results as compiled from debriefings and processed gun camera film. However, we must exercise the NORAD System on as near to a wartime basis as possible at all times if we expect to accomplish our mission during actual hostilities.

> HARRY W SHOUP Colonel, USAF Director, Cmbt Opr

(when filled .

COPY OF INCOMING CL. JIFIED MESSAG

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of this message in whole or in part is prohibited without approval of CONAD Adjutant SEE CRYPTO SECTION BEFORE DECLASSIFYING

7P _____

NOROO TP SBAO 5 9SBCO 1 2 MM RJEDDN DE RJWPSB 148C M 1721202

READING FILE

ACTION: COOOP INFO: COOPO I8-2256

17 Feb 1958

TH COMCEWER HAMILTON AFR CALIF

Declassified

WOOP 8S-5015. SUBJECT: REPORT TO COMFIRSTFLT ON
MISSION FIR FLY. THIS MESSAGE IN TWO PARTS. PART 1. THE FOLLOWING
MESSAGE WAS SENT TO COMFIRSTFLT, COMFAIR ALAMEDA, INFO COMCARDIV
SEVEN, ON 25 JAN 58. QUOTE. THIS COMMAND GREATLY APPRECIATES
ASSISTANCE RENDERED DURING EXERCISE FIR FLY, 10 JAN, WHEN NAVAL
SHORE-BASED AND CARRIER AIRCRAFT PARTICIPATED IN EXERCISE AGAINST
THE 28TH CADD. ANALYSIS OF THE DEFENSIVE ACTION AGAINST NAVAL
AIRCRAFT PENETRATING 28TH CADD IN INDICATE FOLLOWING RESULTS:
AGAINST FOUR PZV PENETRATING - FOUR DETECTED, EIGHT MA'S; AGAINST
ONE AJ PENETRATING - ONE DETECTED, SIX MA'S; AGAINST SIX CARRIER

DUPLICATE

PAGE TWO RJWPSB
TRACKS PENETRATING - FIVE DETECTED, NINE MA'S. UNQUOTE.
PART II. THIS MESSAGE CONFIRMS PHONE CALL COMMANDER SMITH,
YOUR HEADQUARTERS, AND CAPTAIN NEEF, THIS HEADQUARTERS, AND
ANSWERS MESSAGE NOOOP-E 034, SUBJECT AS ABOVE, 11 FEB 58.
BT
17/2128Z FEB RJWPSB

CONAD HIST FILE

ACJAPARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTION-PHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR T DECLASSIFICATION- NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS QUOTED.

4-2751-7

RETURN TO:

Director
Research Studies Institute
Attn: Archives Branch
Maxwell AFB, Alabama

Declassified

HISTORICAL SUMMARY
SUPPORTING DOCUMENTS
VOL VI
268 Thru 320

Exelused from Concord Declarations Sel

Declassified HEADQUARTERS HORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO NOOOP-E SUBJECT: (Unclassified) Exercise FIR FLY, Phase I Commander CONAD Forces Western CONAD Region Hamilton AFB, California 1. Reference is made to Headquarters 28th COMAD Division (defense) 28000, SECRET letter, undated, Subject: Commander's Summary Report of Exercise FIR FLY conducted 8-15 January 1958 and Headquarters CUNAD Forces, Western CONAD Region 1st indorsement of 29 January 1958, thereto. 2. There are two items in the above referenced correspondence of immediate interest to this Headquarters which require further amplification: a. The basic letter recommended that the "Alikko units be retained as an integral part of our air defense complex, with locations used during the ORI to be made permanent" (paragraph 1. c.). As you are well aware, consideration is being given to the

be retained as an integral part of our air delense toughts, attained as an integral part of our air delense toughts, attained locations used during the ORI to be made permanent (paragraph I. c.). As you are well aware, consideration is being given to the relocation of all AEWAC and picket stations. It is therefore, requested that the location, tracks, and general activities of all AEWAC aircraft for each day of the exercise (FIR FLY, Phase I and Block House) be provided this Headquarters for further study.

b. The basic letter stated, and was concurred in by the lst indorsement, that "the use of Navy fighter type aircraft is not considered a realistic target for testing the air defense facilities" (paragraph 1. m.). It is recognized that the use of IFF by these fighters was necessary in order to assure detection and tracking, and perhaps was not fully realistic from this aspect; however, it appeared that the speeds, altitudes, tactics, target approaches, distances penetrated, and targets offered and available for air intercept and NIKE action were most realistic. It is requested that reasons for such considerations at region and division levels be provided.

Excluded from tracked Doubscript Schedule,

FOR THE COMMANDER-IN-CHIEF:

Copy furnished: COM28CADD HARVEY F. ALMESS Major beneral, USAF DOS/Plans & Operations

Declassified

cuis-116 01851

NOOOP-E, Hq NORAD, 17 Feb 58, Subject: (U) Exercise FIR FLY, Phase I

CHOOP

1st Ind

3MAR 1958

Mq Continental Air Defense Command Forces, Western CONAD Region, Hamilton Air Force Base, California

TO: Commander-in-Chief, North American Air Defense Command, Ent Air Force Base. Celorado Springs, Colorado

In compliance with paragraph 2a, basic letter, track overlays from special AENEC Stations 5A and 7A for the exercise period on 10, 11, and 12 January 1958 (Inclosure #1) are forwarded for your information. It will be moted that detections occurred well outbound of the normal picket ship radar coverage and provided excellent information for timely scramble of the F-89J. Without reliable early warning in the neighborhood of 600 miles, the long-range capability of the F-89J cannot be exploited. In the interest of joining the air battle as far as possible from the target area, the seaward extension elements must be relocated. A recommended realignment plan was submitted to ADC on 28 January 1958, and indications are that final approval will be held in abeyance pending completion of a similar test in the Eastern CONAD Region on 31 March 1958.

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2d Reference paragraph 2b, basic letter, any faker aircraft using IFF 1s considered unrealistic for system evaluation for
the following reasons:

- a. Detection range is greatly enhanced.
- b. Tracking continuity is achieved without use of normal techniques of lobe selection, MTI, video gain and range slew.
- c. Identification becomes confused when multiple interceptors are being used against multiple targets since all aircraft in a given area (friendly and faker) present the same return on the ground radar scope whether ACN or AAA.
- d. During day-to-day training missions, tactical evaluations and ORI's, the T-33 is usually used as the target aircraft. Its use, however, is dictated by necessity, not by choice. Also, a spinner or bomb to amplify X-band radar return is attached to the T-33 whenever it is used as a target aircraft. Since the Navy fighter-type aircraft exhibited all the undesirable characteristics listed above, minus an X-band spinner, they were not considered realistic targets for testing the air defense system.
- (UNCLASSIFIED) This indorsement is classified because it denotes combat capability.

FOR THE COMMANDER:

THE COL. USAF 325

1 Incl Track Overlays (74 pgs) Declassified

SONAD XB

CWOOP, Hq CFWCR, 31 Dec 57, Subject: Exercise FIR FLY

NOOOP

1st Ind

4 Feb 1958

Hq North American Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

- 1. This headquarters concurs in paragraph 4 of basic communication.
- 2. Because of the present unsatisfactory capability of the air surveillance system to provide reliable detection and tracking of Regulus I and II missiles in WCR, it has been necessary to cancel the active firing phase of Exercise "Fir Fly" (Phase II).
- 3. In view of the present and projected Soviet capability of launching cruise missiles of this type from submarines, surface vessels, and/or aircraft, the limited ability of air defense radars to detect and track the Regulus has considerable significance. It is essential that continued and increased emphasis be placed on improving radar performance against high speed targets of small reflectivity.

FOR THE COMMANDER-IN-CHIEF:

/s/t/ Col Seibert 2130 30 Jan 58

daf

6 Incls

/s/t/ MARSHALL S.CARTER
Major General, USA
Chief of Staff

Copies furnished: USARADCOM NAVFORCONAD

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HEADQUARTERS

AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

TEL MELROSE 2-5511

FXT

APR 58

ADC Ground Environment Detection Capability SUBJECT:

Commander-in-Chief TO:

North American Air Defense Command ATTN: DCS/Plans and Operations

Ent Air Force Base

Colorado Springs, Colorado

1. Reference:

a. Letter Western CONAD Region, Subject: Exercise Fir Fly, 31 December 1957, and 1st Indorsement NOOP, 4 February 1958.

2. The basic USAF documents guiding the development of improved ground environment for the Air Defense Command are General Operational Requirements 79, 24 February 1955, and 97, 10 June 1955. Both specify a capability to detect targets of small radar cross-section, based on the threat of cruise missiles. Theoretical performance of equipments programmed and proposed for future inventory indicate that this specification will be met. On 23 January 1958, Head-quarters ARDC was requested to verify the ability of the programmed frequency diversity radars to meet the specification for detection of cruise missile targets. You will be advised of the answer upon receipt. In addition, Lincoln Laboratory and the 4620th ADW are preparing an exercise to determine the capability of the FPS-20 and FPS-31 to operate against such small targets in a SAGE sector.

FOR THE COMMANDER:

TOLF B. MURBLEISEN GOLDEN

Separts for Plans

Declassified

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ADGCC 354

SUBJECT: Exercise Pegasus (U)

TO: Deputy Chief of Staff for Military Operations
Department of the Army
Washington 25, D. C.

1. Exercise Pegasus was conducted in the Boston-Providence area during the period 14-22 May 1958. A REGULUS I missile was utilized as a target with five flights being made, one of which was submarine launched.

- 2. ARADCOM units in the Boston-Providence Defense participating were: two FPS-36 defense acquisition radars, one ANTPS-1D defense acquisition radar, and six NIKE-AJAX fire units.
 - 3. The following results were obtained:
- a. Course No. 1, conducted on 14 May 1958, consisted of a REGULUS missile as "primary target" and necessary chase aircraft. Two FPS-36 radars detected the REGULUS, one approximately one minute after launch. Radar operators were able to give one minute plots on the missile with no difficulty. It was possible to discriminate between the REGULUS and the chase aircraft. Four NIKE fire units were able to "lock-on" with the target tracking radars. The target flew at approximately 35,000 feet at a speed of approximately .85 mach.
- b. Course No. 2 was flown on 14 May at an altitude of approximately 35,000 feet, speed .85 mach. Only one FPS-36 radar acquired the primary target, as the presence of numerous aircraft in the vicinity of the flight path made discrimination difficult for the remaining radar. Four NIKE-AJAX fire units "locked-on" and tracked the REGULUS missile for periods varying from two to fourteen minutes.
- c. Course No. 3 was flown on 21 May at the same altitude and speed. This course was picked up by one FPS-36 radar, two minutes after launch, and tracked until target was out of range. The primary target was again acquired on return course and tracked to point of recovery.

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ADGCC 354 SUBJECT: Exercise Pegasus (U)

ANTPS-ID radar tracked the target on its return leg. The course was out of range of the missile fire units.

- d. Course No. 4 was flown on 20 May at approximately 3000 feet altitude and .70 mach speed. The REGULUS was detected approximately six minutes after launch at a range of 85 nautical miles. For a period of three minutes the target was lost because the chase planes passed between the target and the radar. Three NIKE-AJAX units were able to "lock-on" and track the target.
- e. Course No. 5 was flown on 22 May at an altitude of 35,000 feet and .80 mach speed. The missile was launched from a surface submarine well out of the range of the Army Air Defense radars. The target ceme within range of only one of the FPS-36 radars and was detected at a range of 150 nautical miles. It did not come within range of any of the NIKE-AJAX radars.
- f. Course No. 6 was never completed. The target was destroyed shortly after launch, and was not detected by any of the Army radars.

FOR THE COMMANDER:

Copies furnished:
CINCONAD
CGLRGNARADCOM
CG2RGNARADCOM
CG5RGNARADCOM
CG6RGNARADCOM
CO4RGNARADCOM
USARADCOM InO, Fort Monroe, Va.
USARADCOM InO, Fort Bliss, Tex.

/s/t/ J. A. PONGONIS Colonel, AGC Adjutant General

HEADQUARTERS CONAD FORCES EASTERN CONAD REGION Stewart Air Force Base, New York

CFEOP-W

2 January 1958

SUBJECT: (U) Exercise Ocean Waves

TO: Commander-in-Chief, North American Air Defense, Ent Air Force

Rase, Colorado Springs, Colorado Commander, Second Fleet, U.S. Naval Base, Norfolk, Virginia Commander, U.S. Atlantic Fleet, U.S. Naval Base, Norfolk,

Commander, Naval Forces, Eastern Continental Air Defense Region, Stewart Air Force Base, New York

Commander, Eastern Air Defense Force, Stewart Air Force Base, New York

Commander, 85th Continental Air Defense Division, Andrews Air Force Base, Washington 25, D.C.

Commander, 26th Continental Air Defense Division, Roslyn Air Force Station, Roslyn, New York

Commander, 551st AEW&C Wing, Otis Air Force Pase, Massachusetts Commanding General, Second Region, U.S. Army Air Defense Comrand, Fort Meade, Maryland

1. On 29 July 1957 a CONAD Commanders' Conference was held at Stewart Air Force Pase, New York. One item of discussion at this conference was the possibility of a submarine-launched missile attack against the North American Defense System. At that time, it was decided to conduct an exercise to determine our capability against this type of attack. It has been determine, in coordination with NORAD, CINCLANFLT, and Commander, Second Fle , that Eastern COMAL Region would assume the responsibility to fu er plan, coordinate, and execute this exercise. Certain units of 100 26th and 85th Continental Air Defense Divisions and Naval Forces will be committed to the defense of a simulated missile attack. Pendir minor changes, the basic concept of this exercise is that high performance Naval aircraft will be launched from carriers outside contiguous radar average to simulate the missile attack. Norfolk, Virginia, has been so ted as the target complex.

 On 12 December 1957, represent tives of this headquarters met with Operations personnel of the Second Set at Norfolk, Virginia. It was resolved at this conference that from two aircraft carriers: The FRANKI . D. ROCSEVELT, equipped with F4D and A3D aircraft; and the RANDOLH, will be in three waves, with a 45-minut will take place at first light, 24 February hundred (500) miles seaward, and between of North latitude. Wave One will const of two (2) F4Ds, climbing to

inching would be conducted uipped with FJ3s. Launching eparation. The first launching y 1958, approximately five the 34th and 38th parallels

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Declassified

81-071

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CFEOP-W, Hq East CONAD Region, Subj (U) Exercise Ocean Waves.

an altitude in excess of 40,000 feet, maintaining this altitude until just short of landfall, then culminating in a near vertical descent to target. Wave Two, consisting of two (2) FJJs, climbing to an altitude in excess of 40,000 feet, will, at a pre-determined point, make a constant descent to target. The Third Wave will be one (1) A3D, maintaining 500 feet from launching to target. Weather permitting, the second aircraft in the first two waves will maintain a position at least one mile to the rear of the lead aircraft.

- 3. Since evaluation of the defense system equipment is the primary objective, picket ships and AEW&C ai. raft will undoubtedly be redeployed. The Second Fleet has stated flight plans of strike aircraft will reach this headquarters in sufficient time to allow releployment of applicable elements in the seaward extension. ECM will not be employed. If weather is such that this exercise cannot safely be conducted on 24 February 1955, it will be cancelled. (This is necessary because both aircraft carriers are enroute from the Maditerranean to their home bases.) This headquarters desires that all personnel at all levels who will participate in this exercise become thoroughly familiar with the contents of this letter. This will not be a no-notice exercise. Information pertaining to this exercise will not be made available to the general public through press releases or other media.
- 4. At present, interceptors from the 46th and 98th Interceptor Squadrons of the 26th CADD, and from the 48th, 95th, and 482nd Interceptor Squadrons of the 85th CADD will comprise the USAF interceptor force. CINCLAMFLT will provide interceptor aircraft from Naval forces in the Norfolk area. Picket ships under COMMAVEASTOUNADREG, and RC-121 aircraft of the 55ls AEW&C Wing will provide detection capabilities and assume control of interceptor aircraft in the seaward element of the defense system when practical The Army anti-aircraft complex in the Norfolk area will complete the defense against the simulated submarine-launched missile attack.
 - 5. An operations order for Exercise "Ocean Waves" will be forthcoming.
- This letter is classified CONFIDENTIAL in accordance with paragraph 30c(2)(h), AFR 205-1.

FOR THE COMMANDER:

Distribution: CINCLANFLT

CINCLANFLT 10 cys Second Fleet 10 cys NORAD 5 cys

NORAD 5 cys 26th CADD 25 cys 85th CADD 25 cys COMNAVEASTCONAD 10 cys

EADF 5 cys 551st AEW&C 10 cys

CG, 2nd RAADCOM 25 cys

Declassified

Major, USAF Adjutant

C-CFE 0005-58

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DISPOSITION FORM

FILE NO.

SUBJECT

FROM

Observer Report Stationed at Hq NORAD, COC

Exercise "Ocean Waves" 3 March 1958

COMMENT NO. 1

NOOP E

NOOOP E

5 March 1958 Cmdr Smith

- 1. This is a NORAD observer's report submitted in accordance with CONAD REG 55-16, on Exercise "Ocean Waves" as viewed from Hq NORAD, COC.
- 2. "Ocean Waves" was scheduled for 24 February 1958; however, due to part of the strike forces being diverted for an emergency operation, the exercise was conducted on 3 March 1958. "Ocean Waves" simulated five submarine launched missile attacks on the industrial, population, and military complexes of Norfolk, Virginia. Strike forces consisted of two F-4D Navy fighters (Wave I) conducting a simulated high altitude (50,000 feet) missile attack; two F-4D Navy fighters (Wave II) conducting a simulated ballistic profile (mid-point, 50,000 feet) missile attack; one A-3D Navy attack aircraft (Wave III) conducting a simulated low level missile attack. All aircraft were launched from the USS FRANKLIN D. ROOSEVELT (CVA), 550 miles ESE of the target area. First launch was approximately 1200 MST: Waves II and III were launched at 15 minute intervals. Smoke Ring Designators were assigned to all three waves; SRFA, SRFB, and SRFC. Tracks were assigned as follows: Wave I, 08587, Wave II, 08591, Wave III, 08593.)08593 was assigned to a true unknown which was not the strikeA-3D A/C. There was no indication that this low level attack was ever detected, tracked, or intercepted.)
- At the beginning of the exercises it appeared that CAP of F-11F, F-3H, and FJ-3 A/C (all augmentation) were already in place.
- 4. Initial detection on tracks OB587 and OB591 was made by picket ships at altitudes of 48,000 and 40 plus thousand feet respectively, and ground speeds of 360 kts. There were very strong prevailing westerlies up to 125 kts. The picket makeing the detections and performing tracking was equipped with MK 17 radars, which it is belie ed has been the first instance of detecting and tracking operational exercise targets by the seaward elements with the new gear. The low level attacking A-3D (Wave III) was not detected by the pickets.
- 5. OB587 was tracked and forward told by pickets to GCI radars. Scrambles and diversion of CAP were ordered. MA's were acheved in the combat zone well to seaward. The execution of defense against the first wave was near perfect; although, no information of tactical results by AAA units was indicated on the COC TAC result board.
- 6. OB591 was tracked and forward told by pickets to GCI radars. "Jitney" was assigned FTS control. It appeared that "Jitney" was not capable of tracking and accurately vectoring interceptors. There was no report of MA's by interceptors on this track. Action by AAA units was not indicated on the CCC board.
- 7. The third wave apparently was never detected or tracked. Action by AAA units was not indicated on the COC board. It appeared that this strike was successful in reaching the target.

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DD 1 FORM 96 REPLACES NIME FORM 36, 1 OCT 46, WHICH MAY BE USED.

16-54801-3 # B. B. GOVERNMENT PRINTING SPRICE

PLICAT

Observer Report **Declass** NOOOP E Exercise "Ocean Waves" Thru NOOOP 8. Significant observations with chronological times are as follows. a. 1212 first target detected b. 1247 first posting on summary plot board. c. 1300 ten to fifteen minutes clarsed before any changes on summary plot board d. 1315 seven interceptors committed to Wave I e. 1325 contact lost on Wave I f. 1333 MI, ACP on Wave I, but immediately following 2 MA's achieved.

g. 13h0 contact lost on Wave II (presumable by "Jitney")

h. 1343 OB593 was assigned SRFC ut was 200 mi south of planned attack

1355 MI on Wave II. Reason unknown.

J. 1359 by this time there has never appeared any change to target sppeds and altitudes as intially posted.

k. 1402 Red phone reports AAA had achieved an undetermined number of MA's

1. 1115 boards wiped clean

- 9. The info mation as posted on the COC boards was fragmentary, untimely, and incomplete - to such a degree that it was impossible to keep abreast of the tactical situation. It is believed that certain actical information was being received at COC, but due to misunderstandings and procedural errors , this information was not being displayed.
- 10. Attention is invited to the fact that representative elements of the efense system have just completed the Phase II test program of "FIR FLY" against a "clean" REGULUS I as the target. It is assumed the DB rating of REGULUS I is approximately 16. The DB rating of the F-hD is approximately-lh. It is considered that the controlled conditions under which Phase II tests were conducted were more favorable than those conditions under which Exercise "Ocean Waves" operated - yet successes in detexting, tracking, and intercepting simulated air breathing missile targets of "Ocean Waves" were proportionately Far Superior than those successes of the Phase II tests. As it is recalled, the Phase II tests were totally unsatisfactory It is believed that the final surmary of "Ocean Waves" will show that small, high sppeed, high altitude targets (simulating air breathing missile attacks) can be detected, tracked, and intercepted to an acceptable degree with the equipment which is now in the defense system.
 - 11. In summary, it is believed that:
 - a. the seaward extension detected, tracked, and forward told excellently.
 - b. The ACW's tracked and con rolled interceptors to an acceptable degree.
- c. The interceptors, when properly controlled by GCI, performed their intercept function excellently.
 - d. No results of AAA action were observed.
- e. The low level attack continues to be a paramount threat against which the defense system is currently totally incapable of defending.

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EUGENE C. SMITH Commander USM Act Ch, Tng & Exercise Div

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Tr'p Report on Exercise OCEAN WAVE

ADGCS G3

Major Mooney

10 Mar 58

- 1. Exercise OCEAN WAVE was conducted in the Norfolk area on 3 March 1958. The exercise was BORAD directed and was participated in by elements of ARADCOM, ADC, and the Second Fleet. The purpose of the mission was to determine system capabilities against submarine-launched missile attacks and to provide an air defense training exercise against submarine launched missiles.
- 2. This was not a no-notice exercise and detailed information was available to all elements. The aircraft used were launched from the aircraft carrier Franklin D. Roosevelt located approximately 500 miles at sea from Norfolk. Mission aircraft were launched in three waves as follows:
- a. FIRST WAVE. 2 aircreft climbing to maximum cruising altitude, then flying at maximum speed to the target area for a dive attack on the target.
- b. SECOND WAVE. 2 eircraft flying a bellistic flight path with a constant climb to maximum altitude midway between carrier and target then constant descent to
- c. THIRD WAVE. 1 aircraft flying not over 500 feet altitude during entire run-in to target.
- 3. Exercise aircraft were not permitted to use IFF, ECM or any deceptive maneuvers of any type.
- 4. The exercise was obse ved at the Norfolk AADCP, Norfolk Army Base. The AADCP is manned by personnel of the 3rd AAA Gp. Results of the exercise were as follows:
- a. FIRST WAVE. The first strike was reported from the AADCP at 144AR; the aircraft were picked up by the picket ship approximately 350 miles from the defense. The track was reported at 2 a/c at 35,000; this altitude was not changed throughout the run to the target. Early warning plots were timely and accurate and both FPS 36 radars acquired the target 190 miles from the defense. The TPS-ID had the target at 120 iles. At maximum acquisition range 3 battery radars acquired the targets with the remaining batteries acquiring shortly thereafter. Four batteries were locked on at 90,000 yds and MA'd the target at maximum range. The target aircraft were carried ar 48,000 feet until they approached the defense area, at which time they went into a dive attack leveling off at 12,000 feet.
- b. SECOND WAVE. The initial pick-up on WAVE TWO was by the picket ship at approximately 230 miles from the target area. Plots were received from the ADDC until the target was lost at 150 miles, however, the two FPS 36s acquired the target at 180 and supplied the ADDC with plot information until they reacquired the target at 100 miles. FPS 36 plots, which were timely and accurate, were used by the AADCP for telling to the batteries and all batteries acquired the targets a maximum range, with 6 batteries claiming MA's at the maximum intercept ring.
- c. THIRD WAVE. The third wave, as outlined in par 2, was a low level attack with the run in being below 500 feet. This strike was to be launched 45

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ADGCS

SUBJECT: Trip Report on Exercise OCEAN WAVE

10 Mar 58

minutes after wave two. There was no early warning from the ADDC on this wave, and although all defense radars were scenning in this area, no pick-ups were made of aircraft flying at the specified altitude. The defense was at Weapons Free throughout the exercise and MA'd an aircraft close to the center of the target with flight characteristics similiar to the mission aircraft. This could have been the target aircraft, however, positive identification could not be made.

5. Comments.

- a. The AADCP was operated in an outstanding manner, noise level was low, and all personnel on duty were well trained and functioned in a quiet, efficient manner.
- b. The FPS 36 pick-up and tracking were excellent and aided the batteries in acquiring the mission aircraft at maximum range.

COPY FURNISHED

HARRY F. MOONEY, Major, GS Cht Rdy Bral Br, G3 Tng Div

2 MAY 1958

MODOP-E

SUBJECT: NORAD Simulated Submarine-Launched Missile Exercise (Exercise OCHAN MAVES) (U)

TO: Gommander-in-Chief
U. S. Atlantic Fleet
U. S. Naval Base
Worfolk 11, Virginia

1. The final summary and evaluation of exercise CCEAN WAVES was presented to Headquarters NORAD on 25 April 1958. The following Statements of Fact, Conclusions, and Recommendations are deemed pertinent and of interest to Recy units:

a. Statements of Facts

- (1) Exercise was condusted as planned and scheduled, and with minimum edministrative actions.
- (2) Navy attacking forces provided outstanding services.
- (3) Exercise objectives (determination of air defense system capabilities against submarine-launched missile attacks, and maximum training) were achieved.
- (h) Tactical employment of air defense forces (including Navy and Marine air augmentation) was normal.

b. Conclusions:

- (1) Initial detection of FLD targets at 160-190 miles by SPS-17 redar aboard USS SKYWATCHER (IAGR-3) was outstanding
- (2) Defense fighter interception of the first wave, as commodied by the YAGE, was excellent.
- (3) Track talling and communications between the MAGR and the shore-based prime radar on the first two waves was excellent.
- (4) Detection and tracking of the third wave (low level) by all defense radars was unsatisfactory.

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Hq NORAD, Subject: NORAD Simulated Submarine-Launched Missile Exercise (Exercise OCEAN WAVES)

- (5) Detection, tracking, and intercept control by AMEC sireraft was unsatisfactory.
- (6) Though the tactical doctrine of amploying fighterinteresptors on airborns stations (CAP) was sound, these sireraft did not achieve the anticipated number of intercepts, primarily because the directors allowed or vectored the interceptors off station at critical times. Several "Tally No's" were made, but because defense aircraft were of equal or lesser performance than the attackers, effective firing runs could not be made.
- (7) AAA sequisition, tracking, and simulated destruction at maximum weapons range of the first two waves was outstanding.
- (8) The tectic of engaging faker tracks as far seaward as possible within the contiguous radar coverage is sound.
- (9) Greater utilization of height finder radars must be made.
- (10) Simulated destruction of all targets was claimed; however, it is considered that the third wave was successful in its attack. The second wave was not intercepted by fighters until the targets had passed over the coast line, although they were engaged by five AAA missiles as far as 27 miles from the defenses. The first wave was intercepted by fighters approximately 300 miles off the coast, and were engaged by four AAA missiles as far as 25 miles from the defenses.

c. Recommendations:

- (1) That continued training in day fighter testics, as well as all-weather tactics, be carried on at direction centers. Though applicable to all fighter elements, this particularly applies to air sugmentation units.
- (2) That greater utilisation of defense aircraft on sirberne station, in support of attempting intercepts far to seaward within the contiguous radar cover area, be made.
- (3) That more emphasis (with increased training) be placed on picket ship control of fighters.
- (4) That this type of exercise be used more often. OCEAN WAVES was considered to be one of the most valuable and interesting exercises in which the 85th CONAD Division has participated. It afforded an opportunity for realistic training and system exercising against most difficult targets.

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Bernt (+mallon []

Hq MORAD, Subject: NORAD Simulated Submarine-Launched Missile Exercise (Exercise OCTAN WAVES)

2. The services as provided by the Navy, including both the attacking forces and the air sugmentation units, were excellent. The success of this exercise largely can be attributed to the efforts and cooperation of Commander, SECOND FLAT and his task forces. It is desired to express the appreciation of the NORAD organisation, and it is hoped that similar exercises jointly may be conducted and continued in the future.

FOR THE COMMANDER-IN-CHIEF:

MARSHALL S. CARTER Major General, USA Chief of Staff

Copies furnished: CNO NAVFORCONAD USAF ADC USA AUCUM CFECR

29 Apr 58

daf

M/R: Not required

Declassified

Record Evaluation Permanent, I tong Time Value

Extract from U.S.S. SKYWATCHER (YAGR-3)

Ser: Oll 14 March 1958

From: Commanding Officer, USS SKTWATCHER (YAGR-3)

Commander Naval Forces, Eastern Continental Air Defense Command Commander YAGR Division TWENTY-ONE

Via:

- 2. At \$112000 operations were commenced on station with control point 36 00M, 71 30M to participate in exercise Ocean Waves. This exercise lasted from \$319602 to \$322552. Some observations which are felt noteworthy are as follows:
- a. The lat penetrating raid was initially detected early at 195 miles, the 2nd raid at 165 miles and the 3rd raid at 3h miles. This latter raid quickly faded due to a low altitude of 500 feet.
- b. At \$3192 0 positive control of Ablase Green was assumed and and intercept on targets in the 1st raid was accomplished. However, targets in the 1st raid were not identified prior to interception. Targets were selected by speed, altitude and advance information. Jitney subsequently sent a standby to take control of Ablaze Yellow and Black, however control on these A/C were never passed.
 - o. At Autoniz a phase in was again effected on station 20A.

DUPLICATE

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FEOP

SLEJECT: Summary and Evaluation reports on Exercise "Icesn Waves"

Commander-in-Chief
North American Air Defense Command
Cont Air 7 ree Pase
Colorum Continue, Colorum

1. The primary objective of exercise "locan layer" was to evaluate the capability of the air defense system to detect and destroy submarine-launched surface-to-surface riseiles. This leadquarters concurs did the rajor conclusions an recommendations contained in the inclosed reports of the 25th 25th Division and the 4713th Madar Evaluation Flight. However, certain portions of these reports should be amplified to emphasize callent features or to correct minor erroneous impressions.

a. Paragraph A-1-a-(4), 85th COMAL Division's Report, states that the majority of the rissed intercepts were attributable to low mirers't performance. Last COMAD Legion observers at the squadron during the exercise stated that the target mireraft were not tracking with sufficiently high blip-scan ratios for the not tracking with sufficiently high blip-scan ratios for the directors to complete successful intercepts. The directors attempted to conduct intercepts on OPA-37 equipment using target data obtained from Arry and picket ship radars to suncherent the intermittent data obtained from the FFS-3. Since the rajority of the interceptor pilots reported a "Tally ho", ground equipment failure or personnel pilots reported a "Tally ho", ground equipment failure or personnel error were the causes of the missed intercepts. The spacial evaluation report of the 4713th Gadar Evaluation Flight confirms this conclusion.

b. In reference to the comments on quality Central, contained in Section I, Summary of the A713th Eder valuation flight tained in Section I, Summary of the 85th CONAD Division by the 771st Report, the figures reported to the 85th CONAD Division by the 771st Report, the figures reported to the 85th CONAD Division by the 771st Report, the figures reported to the beginning and end of the exercise, respectively.

c. This herdquarters considers the comment on operational employment of the "Jitrey" height finder raiar (Section V, CASONS FUNT FOR ABBOAMAL FROM MANOR, particularly significant. The FPS-6 recar detected the bight level targets of the first wave at 1580% and those of the second wave at 1650% and tracked ther with a blip-scan ratio of .d. lowever, because of the remote location of the scopes ratio of .d. lowever, because of the remote location of the scopes in the EAGE Annex, insiequate communications, and lack of catablished builts, no effective use could be made of this data. This situation exists at all-AGAW sites which have been retro-fitted for SAGE.

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CPSOP, Eq COMAD Forces, Enstern COMAD Ragion, Subj: Summary and Evaluation Reports on Exercise "Ocean Waves" (Cont'd)

- 2. The picket ship "Corn Beef", 20 miles south of Station 20A, was equipped with the new SPS-1" Tearch Endar which detected the first and second waves approximately 120NM from station (See Incl 3). Nowever, tracking was intermittent. The low level target of the third wave was beyond the theoretical limits of the SPS-17. The Arry acquisition radar FPS-36 detected the first wave at 150NM and the second wave at 180NM. Although the Arry and Navy defense units had complete knowledge of the planned strike routes, and the Norfolk AADCF received early warning and lateral-tell data from "Jitnew" (350 miles early warning, lateral-tell plot time interval up to 9 minutes on the first wave; 190 miles early warning, lateral-tell plot time interval up to 15 minutes on the second wave), both corponents achieved better results than bad been expected.
- 3. The ARWAR alteraft, "Gin Fizz", on station 8 was equipped with an APS-20E radar which did not letted any of the targets. In view of the size of the targets and the limited capability of the APS-20E, this failure to detect was anticipated.
- 4. Attached as Inclosures A and 5 are news releases on "Idean Waves". Both reporters were obviously vell-informed on the exercise, and, although both implied that their information was not released by any of the services, it is anyment that each received the same detailed information which they could not obtain merely from observation.
- 5. Considering the amount of advance planning, the special preparations, and the fact that target routes and altitudes were fully known by all participants in this exercise, it is clear that the capability to defend against a submarine-launched missile in the Norfolk area is dangerously low. A semawhat higher capability should exist in areas where FPS-20 radars are installed.
- This correspondence is classified SECRET in accordance with managraph 30b(f)(c). AFR 205-1.

PUR TIE C MHANDER:

5 Incls
1-Sum & Evel, 85th CALL
2-Spec Eval apt, 4713th GEVELT-cy
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Copies Curnished: COMNAVFUREASTOUNABRIGN, 3 eye 85th CALD, 2 eys CG, 2nd .AADCOM, 2 eys

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Colonel LCAP

Tief of Staff, OFECR

LEAD, LARTUES

Solt Continental and Defense Division Andrews air Force Care

destington 25, listrict of Columbia

8501090

17 Mar 1958

Schuzer: (Inclassified) Surmary and Evaluation on Exercise "Opean eves" (NCS: Order V-1)

10: Cormander

Comi Porces, Sastern al A egion

45.51 (FRO)

Stewart Air Force Pase heaburgh, New York

1. The inclosed operations surmary on Exercise "Cosen Waves" is forwarded in accordance with FR R Operations Order 4-57, dated 1 Lecepter 1957.

 Upon renoval of inclosure (1, this letter may be downgraded to Unital 1715) in accordance with paragraph 37h, AFR 205-1.

P. R. 167, C. MALLESI

1 Incl Surmary & Svaluation, exercise "Scene Suves" CFA 1 : A. CAULIANAS Major, ISAF Secretariat

Declassified



EXERCITE " COM VIV.S"

SUMAN AND MALLA TO

3 March 1758

A. Su sary of activities.

 Employment of wearons and results obtained by organic weapons and augmentation forces.

a. Figiter Activities

	(1)	Commitments	20
	(2)	Total MA's and VMA's	3
	(3)	lime and location of each 12 a VMA	
		(a) 1946Z 15EF 4040	1 '4
		(b) 22042 GRG 2050	1 14 1 1 14
	(4)	Wissel intercepts	2 GEF
			15 10P
b.	AA Ac	tivity	
	(1)	Number targets convered to AADCP's	4
	(2)	harter targets observed by MAA radar	4
	(3)	lumber targets panetrating weapons radar	5
	(4)	Number targets for which simulated angagement was authorized	4
	(5)	unber of M's	4
	(6)	Reasons for unc edessful engagement	
		Track No. 3 not detected soon enough f	or mass.

Battle plane and utilization of farces.

(1) Decause the tanget almost? were expected to be at Collous: For trucks surbor one and two (OE 587) are I 591. 1, two 7855 sirerest under control of form Feet fifty 1206 west of the pic-et versol, two For aircraft I C rilee Ton Care Cherles towned the direction of strack, and two RIB afromatt 50 miles from case Charles.

Seef control and 4 213's at % files from Laps Charles took of Circuiton of attack.

2. Paker Activities.

a. offect of ice

NA

b. offent of forer Trace. The extrere all tides, both light and low, rendered medar tracking ve. disflicult. The light allitude taker objected us a context of stores to re-speckrances. while the low eltitude faxer ass not elected until " files of the craft.

3. included avaluation.

· -: ++- 12/-26 -15

s. The initial detection and tracelized the first two wayor was considered jond and in fact better than expected. etention of the triod wave was uncutisfactory and about as exceeded. He am was a this target were made after it has passed over the con illine.

b. The number of PA's by interceptors we considered unsettisfuntory and is attributed to two main factors:

) the target alrerate sers thigher performance that ary of the interceptors evaluable and

(a) the controllers of the fir ction that a fid not utilize or position the interceptors propersy.

c. ANA acquisition and tracking were considered excellent. hix fire units engaged target number one and seven engaged number two.

4. certifical evaluation is being substited by the 4713th adar valuation /light.

B. Conclusions.

- 1. Problems encountered and lessons learned.
- a. It is extremely difficult to detect and track high flying targets. It is next to impossible to detect low flying targets. This exercise confirmed what was already well known.
- b. The aircraft made available did not have sufficient performance to give any margin of superiority over the target aircraft.
- c. Although the airborne stations directed were situated so that the interceptors would be in front of the target aircraft, the controllers at the direction center did not keep thes close enough to these stations, resulting in the target aircraft satting by the interceptors before they could get into position.

2. General Conclusions.

- a. This exercise pointed up the need for higher performance radar on the picket vesnels, ATAMAC aircraft and at the store based radar sites in order that sufficient early warning and continuous tracking be accomplished.
- b. It also indicated that the aircraft available for this exercise at the present are not capable of combating targets of the type employed.
- c. In view of the fact that information as to position of launch, tracks and altitudes were known in advance of this exercise, it is felt that the overall results were unsatisfactory.

C. Recommendations.

- 1. That immediate steps be taken to procure radar which has at least double the performance of present sets.
- 2. That as long as the Navy is saddled with aircraft of only mediocre performance for use as augmentation fighters, a requirement be placed upon it to build storage facilities and ready service magazines for the handling of missiles of the sidewinder and sparrow types at the fleet bases supporting these equadrons. A missile capability would effectively reduce the results of the inferior performance of the aircraft. In addition, it is considered randatory that these aircraft have the capability and facilities available to them at all times in order to carry out their augmentation role.



- 3. That continued training in day fighter tactics as well as all weather tactics be carried on at direction centers as most augmentation fighters available are not AI configured.
- 4. From the results of this exercise it can be seen that steps must be taken to insure that immediate and timely information of any impending submarine missile attack must be provided to Work! channels by the Navy if the present air defense system is to effectively cope

1. This exercise pointed up, quite glaringly

knesses we already knew. Significantly, CINCNORAD
is on record to seal the gaps, revealed at high and
low levels (Ltr to JCS on 7 Jan 58).

ADC should be jacked up on Controller Training.
 Maybe these people should be included in PRO pay).

Signed Maj Ramph

Denciled Note

SAC Bomber/ADC Fighter Interceptor Training

MORCS

NOOPO

28 Mar 58 Col Dingle/2130/daf

1. Attached is a draft of a proposed message from CINCMPRAD to CINCGAC relative to the above subject.

2. Also attached is a chronology of events pertaining to SAC bomber/ADC fighter interceptor participation in training.

2 Attachments

1. Draft of proposed mas to SAC

2. Chronology

HARVEY T. ALNESS
Major General, USAF
DGS/Plans & Operations

MOOOP Reading File

Declassified

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Chronological History of SAC/ADC Fighter Affiliation Curtailment Problem

1. Last previous mid-air between Air Defense fighter and SAC bomber was in December 152, involving a 3-50 and F-94.

2. Subject accident, which has brought about current restriction. occurred in early morning of 4 February 58, involving SAU B-47 carrying a weapon and an 7-86. The accident investigation indicated that the eatrolished procedures in effect at this time were not being followed.

3. Messages pertaining thereto follows

a. From: SAC (1505 of 5 Feb) Action: CINCHORAD - others incl. ADC, CANAIRHED, COFS USAF, etc. Texts UFN, All, repeat, all fighter attacks erainst SAC A/C are prohibited. Addressess take necessary action to insure compliance with above restriction.

b. From: CINCNOTAD (AD18 of 7 Feb)

Action: CINCSAC COMUSAFADO Info:

Texts Training procedures now being used demonstrate thousands of uneventful ftr attacks. Cont'd mutual trng as prescribed in SAC Reg. 51-6 and CONAD Reg. 51-1 is essential. No changes in regulations should be made without representation from this Mg. In meantime, urgently recommend reinstatement of ftr/bomber affiliation.

c. From: Hq USAF (56313 of 7 Feb)

Action: CINCSAC

Info: Chief ADIS Project Officer, ADC, CINCYD'AD, Lincoln Lab.

Text: Desire immediate reconsideration since evaluation of ESS has bearing on McGuire SATE Sector becoming operational 1 Jul 58. Support must continue or operational date will slip. Assume support will continue.

d. From: CINCSAC (DO 1856 of 13 Feb)

Action: COFS USAF, CINCHOTAD

Chief ADES Project, Lincoln Lab. and others

Text: SAC realizes the offect of restriction, and action is being taken to alleviate situation. Initial investigation reveals inconsistencies with present fighter rules. Until these can be revised by SAC/ADC, present policy to remain in effect. SAC support of SAGE to continue, except no

ftr intercepts.

e. From: CINCNORAD (X025 of 14 Feb)

Actions CINCSAC, ADC Info COPS USAF

Text: (Refers to SAC Mag of 13 Feb)

Subj restriction has seriously negated value of AI, Ground Environment Defense Trng, and Strategic Air Trng. Recommend SAC/ADC/NTRAD take immediate action, commencing with conference at NORAD Hq on 17 Feb 58. Advise soonest.

COM ADC (0067 of 18 Feb) f. From:

Actions CINCSAC

Texts PERSONAL for Power from Atkinson. Appreciate your problem. Welcome opportunity to have my personnel participate in discussions with your staff to insure SAC/AC procedures in providing maximum safety. Two

areas of trng which your prohibitive policy is seriously jeopardizing - testing in Lincoln Lab. Sub-sector,

and New York Air Defense Sector.

g. From: Hq USAF (56728 of 19 Feb) Actions CINCSAC

ADC, ARDC, Lincoln Lab.

Infos Texts Earliest operational date of SAJE is important to USAF and the nation. Must have support for ESS and SAGE. Desire that ESS/SAGE testing and day-to-day ADC fighter/SAC bomber training be resolved separately. Since 7 Feb sufficient time has slopsed for solution of ESS/SAGE problem, but there is no evidence of this solution. Immediately inform this Ho when SS/SAGE support will continue, or reason why solution cannot

be reached to enable you to resume tests on 24 Feb.

h. From: CINCSAC (DO 2238 of 21 Feb) Hq USAF, Mumbered AFS, Lincoln Lab. and others Actions

Infor CINCHORAD, ADC

Text: MCRAD/SAC/ADC representatives will meet 27 Feb to resolve day-to-tay ADC/SAC trng problem. SAC amborises ftr affiliation in support of ESS and SAGE only, subject to restrictions of break at 5 mi. or AI look-on; min. separation of 2 mi.; ident. pass of 1 mi. All other requirements of MAC leg. 51-6

will be met.

i. From: CIMCSAC (DO 17023 of 24 Feb)

Actions CINCHORAD

Info: AX

Text: Working level conference scheduled for 27 Peb discussing problems of SAC/ADC fighter day-to-day trng. Partici-

pation is invited.

4. Representatives from this healquarters and ADC met with AC on 5 Merch 58 at Offutt. Because of the issues at hand and of the many compounded facets which immediately became apparent, this conference quickly arrived at a stalemate. The proposed SAC Regulation 51-6 was brought back to this headquarters for further study by NORAD and ADC. A brief of the proposed SAC Reg S1-6, with comments, is provided in Inclosure #1. A brief of proposed ADC Regulation 51-1 is provided in Inclosure #2. MORAD Regulation 51-1 was promulgated in January 1958. It is considered that this regulation is sound; however, certain proposals which would modify the regulation and still be acceptable are contained in Inclosure #3.

3 Incls

- 1. Brief on proposed 340 51-6
- ADC 51-1
- 3. Proposed new procedures for incorporation in MORAD 51-1

Brief of SAC Proposed Changes in Fighter/Somber Intercept Procedures (Proposed SAC Regulation 51-6)

1. Fighter affiliation will not be approved if weapons are carried.

Comment: This restriction will preclude fighter affiliation on approximately 75% of all large scale exercises, thus seriously degrading NCRAD training against sizeable numbers of faker A/C.

 All types of fighter attacks are restricted to the period of daylight VFR, where visibility at attack altitude is 5 miles or more.

Comment: An across-the-board restriction of this type would dony fighter forces training in the critical areas of night and weather. Combat ready forces cannot be attained under this type restriction.

3. Fighter affiliation on large scale missions will not be scheduled without prior approval from SAC Headquarters and coordination with MORAD Headquarters. (Note: SAC considers any mission involving more than three aircraft to be large scale.)

Comment: Proper coordination is always desirable; however, to confine this approval to SAC/NCRAD Headquarters is far too restrictive. There will be missions which should have SAC/NCRAD coordination, but in most cases approval for missions of this type should be coordinated at lemest echelon practical; i.e., CONAD Division/SAC Wings.

4. Fighter affiliation on large scale missions will be by only those air divisions specified by SAC Headquarters and only along a specifically designated portion of the bomber track.

Comment: See comment under paragraph 3.

5. No unplanned attacks will be conducted against any type of SAC mission.

Comment: This restriction may result in the loss of some training; however, greater benefits will accrue on missions conducted with thorough pre-planning. If "unplanned attacks" refer to "boot-leg" attacks, then item 5 should be supported and approved.

 In normal daily training missions, direct communications between SAC Wings and participating defense divisions will establish portions of the bomber track upon which intercepts can be conducted.

Comment: Coordination of this type is desirable but will be a tremendous undertaking. At present, communications facilities are not adequate to accomplish this coordination.

7. "No Notice" missions for fighter intercepter units will apply only to the period prior to GCI painting the first target. Once a target is painted, positive identification and communications must be established prior to intercept.

Comment: This precedure is unacceptable for exercise type training. If positive identification and communications must be established prior to intercept, no realistic exercise of the defense system can accrus.

 On large scale missions, arrangements will be made to chanmelise the bomber/fighter and OCI sites involved in the mission on the SAC call frequency.

Comment: This procedure was attempted in the early days of SAC/ADC training and found completely unacceptable. In addition to the problem of preper channelization of all agencies and aircraft involved, air defense interceptors would in most cases be perferning effective jamming against themselves, due to the number of aircraft attempting to operate on one channel. The procedure of establishing communications between GCI/bomber, and fighter intercepter/GCI on difficult frequencies should suffice.

9. We intercept will be conducted unless the CCI site has positive IFF identification and position of booker aircraft. In addition, fighters launched against SAC aircraft on the basis of cross-tell information will not be directed on an attack until positive identification and position of all bembers is known.

Comment: This precedure is of questionable value as a safety device. The attack phase takes place after the IFF identification, and changes in the call structure of SAC sireraft would negate value of IFF positioning. Promiscuous use of IFF definitely negates training value to OCI sites on any type of mission, particularly exercise missions.

10. In the event the bomber cannot contact the GCI site at any time during the intercept, the bomber will switch to emergency IFF and the GCI site will cancel the intercept.

Comment: Procedure other than use of emergency IFF will have to be adopted. Situation of this type does not warrant use of emergency IFF.

11. No fighter attacks within 60 n.m. of any RBS site.

Comment: This restriction originally started at 30 n.m.
The old 51-6 raised it to 50 n.m. The proposed 51-6 raises it to 60 n.m.

12. NCRAD will provide a personent assignment of one liaison officer to SAC Headquarters.

Comment: WCRAD limits on officer should be made available to SAC; however, recommend that limits on officer be assigned to each of the SAC numbered air forces in place of SAC Headquarters, in order to perticipate in mission planning as well as in coordinating of all large scale exercises.

- 13. Listed below are the proposed restrictions in fighter interceptor attacks:
- a. Pursuit Curve, Daylight VFR conditions only when visibility at intercept altitude is 5 miles or more. At no time during the attack, including the break-may, will the fighter come closer than 1500 yards to the bomber.
- b. Al intercepts (other than lead collision). During daylight VFR only when visibility at intercept altitude is 5 miles or more. Under no circumstances will fighter come closer than 20 seconds to 00.
- e. Lead collision intercepts. During daylight VFR only when visibility at intercept altitude is 5 miles or more. Under no circumstances will fighter come closer than 20 seconds to 00. Pilots not alert ready on the fire control system installed in U/S aircraft will not make attacks against SAC aircraft.
- d. Snap Up attacks. During daylight VFR only when visibility at intercept altitude is 5 miles or more.

NORALE 51-1, with only minor changes.

14. WATCH DOG Procedures:

- a. At no time will less than 2 fighters intercept a SAC aircraft.
- b. When in position to attack, the second fighter will act as observer, keeping fighter and target in visual contact and advising the attacking aircraft of its position in relation to the bomber.
- e. Only one fighter will intercept or make an attack run at any time.

Comment: Completely unrealistic.

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Brief of Proposed ADC Regulation 51-1

ADC's proposed 51-1 basically ignores most of the new proposals found in SAC Regulation 51-6. However, experience criteria for both pilots and controllers are far more restrictive than in NORAD regulation 51-1. The new regulation also agrees with pre-mission coordination requirements as proposed by MC.

Briefly, ADC's new regulation establishes three general categories of exercises (category to be defided in pre-mission planning) devised to denote the degree of interception complexity. Pilots and controllers are then placed in categories, by experience level, for participation in the various categories of exercises.

The categories of pilots and the intercept rules as proposed by ADC completely ignore all augmentation forces and Canada. No provision is made for other type fire central systems utilizing Curve of Pursuit attack, and day fighters are left out completely.

Incorporating the new ADC proposals in MORADR 51-1 will greatly increase the complexity of the latter regulation, as these changes would apply to ADC units only and may or may not aid in the solution of the present problem.

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Proposed New Procedures To Be Incorporated In NORAD Reg 51-1

- 1. Direct limison between SAC Wings and Air Defense Divisions is muthorized only in the planning, scheduling, and coordination of normal daily training missions. This will not include formation or large scale exercise missions. (Note: This is acceptable only if SAC will agree that Wing size and larger missions will be defined as "large scale.")
- 2. Fighter affiliation on large scale missions will not be scheduled without prior joint approval of CONAD Region/SAC Numbered Air Force involved.
- 3. No attack will be conducted against any type of GAC mission without prior coordination.
- 4. NORAD will provide a permanent assignment of one limison officer to each of SAC Numbered AF Headquarters to participate in mission planning and coordination.
- 5. On normal daily training missions, direct communications between SAC Wings and participating Defense Divisions will establish portions of the bomber track upon which intercepts can be conducted.
- 6. On normal daily training missions, consumications must be established and maintained between GCI site and bomber during intercept.

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dated 5 Feb 1958. Matual training procedures now in effect have proved successful over a period of years as demonstrated by the hundreds of thousands of uneventful simulated fighter attacks on SAG bombers. Rending complete investigation of the cause factors involved in the unfortunate collision of the F-86 and B-47 on 5 Feb 1958, it is believed that continued use of notual training procedures as prescribed in SAG Reg 51-6 and CUNAD Reg 51-1 is essential. We also believe that no permanent changes in present procedures should be made without a coordination with this Headquarters. To this end it is suggested that any discussions which may be directed toward changing these procedures include representatives from the

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USAF ADC. In the magnitume, we urgantly recommend the statement of policy in the above referenced message be reconsidered.

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FROM ADDIT-ACCO'T

prohibiting all fighter attacks against SAC tectical aircraft.

I approxiate your concern at problems involved and understand you intend to clarify policy as soon as investigation of limiter accident is completed. I would unleaded opportunity to have my personnel participate in discussions with your staff to insure that SAC/ADC procedures are, in fact, providing maximum safety. There are two areas of training which your prohibitive policy is seriously jeopardizing. I cannot over emphasise importance of continuous testing of Lincoln Laboratory Sub-Scotor and New York hir Defense Sector.

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John M. KNACKY Colonel, USAP Director of Operations Journal for Departies

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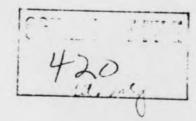
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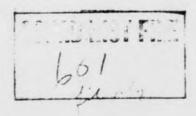
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REFERENCE YOUR MESSAGE AFOOD OF 7/2 5:771, 13 MAY 58. SUBJECT JOINT SAC/ADC TRAINING EXERCISES. RESTRICTIVE MEASURES OF PROPOSED SAC REG 51-6 WOULD COMPLETELY PROHIBIT TESTING AND EVALUATING THE PRIMARY MISSION OF DETECTION, SURVEILLANCE, AND INTERCEPTION OF PENETRATING AIRCRAFT, AND COULD NOT BE EVALUATED AGAINST EXISTIONS USAF APPROVED CRITERIA. RECOMMEND ORI OF 11TH AIR DIVISION (DEFENSE) BE HELD IN ABEYANCE UNTIL COMPLETE AGREEMENO IS REACHED BETWEEN CINCSAC AND CINCHORAD. Declassified 17/73302 MAY RJIMAG

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JOSTRPU 4501, SUBJECT: (U) FIGHTER/BOUDER

INTERCEPTS, REFERENCE YOUR HESSAGE OF 20 05342, 10 APR 58. THE
PROVISIONS OF SAG HESSAGE DO 1509, 5 FEB 30 ARE STILL IN EFFECT. IT
IS ANTICIPATED THAT HEU RULES OF ENGAGEMENT WILL BE PUBLISHED BY 1
MAY 50 AT MINICH TIME THE EXISTING RESTRICTIONS WILL BE LIFTED. Declassified 15/21 42Z APR BJEDDR

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/DOTRPW 6397. FOR AFOOD OC F/2 AT USAE.

SUBJECT: (U) JOINT THAIRING EXERCISES. REFERENCE PART II F YOUR
MESSAGE AFOOD OC F/2 52771, 13 .-6 58. IT IS REQUESTED THAT TARGET
DATE FOR FINAL RESOLUTION OF FIGHTER/OGMBER AFFILIATION PROCEDURES
BE DELAYED TILL 31 JULY 58. SINCE THE DRAFT SAC REGULATION: 51-6
SPECIFIES NEV AND UNTRIED COORDINATION, COMMUNICATIONS AND IFF
PROCEDURES, IT IS FELT A REASONABLE CAMPLING OF ATTEMPTS TO EMPLOY
THIME SHOULD BE OBTAINED PRICE TO REWRITING THE DRAFT REGULATION.
THE IMPACT OF THESE PROCEDURES ON SINGLE PLANE DAILY TRDINING
MISSIONS AND LARGE SCALE MULTIPLE AIRCRAFT PENETRATIONS MAY VARY TO

PAGE TWO RJEDDE 373

A GREAT EXTENT AND REQUIRE SEPARATE TREATMENT. THEREFORE THESE
PROCEDURES SHOULD BE EXAMINED AGAINST THE REQUIREMENTS OF BOTH TYPES
OF MISSIONS. THIS COMMAND WILL NOT BE FLYING ANY USCN OR LARGE
SCALE TYPE MISSIONS PRIOR TO 1 JYLY 58 WHEN THE USEG TESTS BEGIN.
BY DELAYING THE FINAL RESOLUTION DATE TO 31 JULY 58 WE CAN SAMPLE
THESE PROCEDURES ON DAILY TRAINING MISSIONS AND THE WSEG TESTS,
WHICH SHOULD PROVIDE SUFFICIENT INFORMATION UPON WHICH WE CAN
ESTABLISH FIRM PROCEDURES.

ET 02/2243Z JUN RJEDDR COOOP Cys Initials

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REFERENCE ADC MESSAGE ADOTS-D 5-9-4, 9 MAY 1958, AND AAC MESSAGE
IG 02559, 10 MAY 1958. SUBJECT: JOINT SAC/ADC TRAINING EXERCISES.
MESSAGE IN THREE PARTS. PART I, FOR SAC/ADC. THIS HEADQUARTERS
IS CONCERNED OVER INABILITY OF SAC AND ADC TO REACH AN AGREEMENT ON
JOINT TRAINING OF SAC/ADC CREWS. AS AN INTERIM MEASURE, SAC
PROPOSED SAC REG 51-6 WILL BE USED TO RESUME SAC/ADC INTERCEPT
TRAINING WITHOUT DELAY. PART II FOR SAC/ADC. CONCURRENTLY, ACTION
WILL BE TAKEN TO REACH A COMPLETE AGREEMENT ON REALISTIC TRAINING
PROCEDURES ACCEPTABLE TO CINCSAC, CINCNORAD AND COMMANDER ADC. THIS

PAGE TWO RJEPHQ 138
HEADQUARTERS WILL BE INFORMED BY 30 JUNE 1958 OF COMPLETED ACTION.
PART III FOR SAC/AAC. SAC WILL PROVIDE TARGET AIRCRAFT FOR 11TH AIR
DIVISION (DEFENSE) AAC ORI. PROPOSED SAC REG 51-6 WILL BE USED AS
RULES GOVERNING BOMBER/INTERCEPTOR TRAINING. PENETRATION MISSION
WILL BE RUN IN CONJUNCTION WITH SCHEDULED SAC EXERCISE.
BT
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6 May 1958

General Thomas S. Power Commander in Chief Strategic Air Command Offett AFB, Nebrasks

Dear Torrmy:

The attached correspondence is returned without action because I feel very strongly that we are setting up by this proposed regulation only a temporary solution to our mutual problems and that it will not prove batteragtory to long-term use.

We have already lost three menths of valuable training, and I am anxious to resume fighter-homber intercept and exercise training as soon to possible. The longer we delay, the more difficult is going to be the problem of resuming joint operations.

Will you please take another look at this and, in conjugation with the Air Defense Command, see what it takes to work out as arrangement most beneficial to both of us. Incidentally, I am asynight of the fact that General Atkinson agreed to the resumption of training on a daylight VFH basis only. This just won't fall the bill for a long-term arrangement.

Sincerely,

E. E. PARTRIDGE General, USAF Commander in-Chief

Lir, 30 Apr, DOTRPW, subj: Fir/Bmr Intep Tng, w/l Incl. Draft of SACR 51-6

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PLICATE

1355

DOTRPW

3 APR 1958

SUBJECT: Fighter/Bomber Intercept Training

ro:

Commander in Chief North American Air Defense Command Ent AFB, Colorado Springs, Colorado

- 1. Attached hereto are draft copies of SAC Regulation 51-6, pending formal publication, under the provisions of which fighter/bomber intercept affiliation with SAC aircraft may be resumed.
- 2. Implementation of this regulation and subsequent lifting of the restriction imposed by Headquarters SAC message DC 1505, 5 February 1958, will be permitted upon receipt in this headquarters of documentary evidence in the form of a regulation or other directive that the procedures and restrictions therein have been promuleated to all units of your command.
- 3. It is recognized that these procedures are restrictive, however, they are considered necessary to guarantee safe operations for this type training, and therefore no alteration can be considered at this time.

FOR THE COMMANDER IN CHIEF:

1 Incl Draft of SACR 51-6

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SAC REGULATION)

MUMBER 51-6)

HEADQUARTERS STRAT DIC AIR COMMAND Offutt Air Force Base, Nebraska

FLYTT TUNERO

Fighter/Somber Intercept Procedures

- 1. FURRISD. This regulation establishes standing operating procedures for all commands parkicipating in joi t fighter-interception/homber training.
 - 2. OBJ MINE, a. Strategie Air Command.
- (1) Maximum camera gunnery and radar gunlaying system target acquisition training for bombardment and reconcaissance crews.
- (2) To develop and practice defensive tactics for fire control systems.
- (3) Devalopment of tactics and techniques for most effective employment of bomber aircraft.
 - b. Participating Commands.
 - (1) Air defense system training.
 - (2) Fighter-interceptor
 - (a) Training in attacking bember aircraft.
- (b) Development of tactics and techniques for use when attacking bombers.
 - (c) Camera gunnery.
 - (3) Aircraft Control and Marning (ACM) units.
 - (a) Training in air surveillance.
 - (b) Development of tactics and techniques for controlling

fighter-interceptors.

*Supersedes SAC Reg 51-6, 1 May 56. Cl, 6 Oct 56, C2, 7 Feb 57, and SAC message DOTFUM 21534, 12 Sep 57; Annex I, 13 Oct 56, Cl, 17 Jun 57; Annex IL, 7 Feb 57; Annex III, 1 May 56, Cl, 6 Oct 56; Annex II, 6 Oct 56

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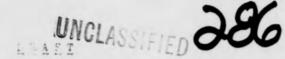
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SAC Res 51- 6

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- 3. BEFIGUELS. To insure understanding of the intest of serminology used in this regulation the following definitions will apply:
- a. Special Mission Any mission directed by a numbered Air Force or higher floadquarters such as MISTOR Mefflex Marge scale penetration missions and missions conducted in support of test programs.
- b. Air Division An ADC Air Division, RCAF/AGG Sector Meadquarters or compacitive headquarters in other participating commands or services.
- h. GCLLIL a. It is recognized that certain deviations from the fighter bamber affiliation requirements outlined in this regulation will be necessary to replize the objectives of missions which are conducted for the prime purpose of evaluating new or improved tautics and .2% procedures. Missions in this category will be considered on an individual basis, and deviations from the policies outlined in this regulation will be only those necessary to insure accomplishment of the mission. Such deviations can only be authorized by this headquarters.
- b. Training flights or perstration missions employing carera gunnery or target acquisition will be known as "Big Brother" missions.
- o In order to derive maximum benefit from "Big Brother" missions, joint mission analysis and critiques will be held whenever practicable. Direct communication between SAC wings and participating Defense Air Divisions is authorized and encouraged for the purpose of ascablishing and conducting mission analysis and critiques.
- d. Direct linison between MAC lings and Peferss Air Divisions is authorized for the purpose or planning, sub-valing, and co-relinating procedural difficulties for normal daily training missions only. This does not include close formation (separation Classified Procedural missions.

SAC Rag 51-6



- e. Fighter affiliation on special missions will not be schoduled without prior approval of SAC headquarters and coordinated with appropriate headquarters.
- f. Fighter affiliation on special missions will be by only those
 Air Divisions specified in the Operations Order and only along a specifically
 designated portion of the bomber track.
 - g. No attack will be made on SAC bombers at altitudes below 5,000 feet.
- h. No unplanned attacks will be conducted against SAC bombers Participating commands will not "bootleg" attacks.
- ADC or NOFAD will provide, on permanent assignment, a minimum of one liaison officer to this headquarters
- j. Authority is granted for SAC units to, upon request, exchange liaison officers with participating defense air divisions for the duration of special missions.
 - k. No attacks will take place within 60 MM of any Radar Bomb Scoring site.
- 1. All "Big Brother" flights over Canada will be cleared and conducted in accordance with the provisions of SAC Reg 55-18. Over flight messages will include information to specify if the James Bay Range will be used during the overflight and no intercepts will take place while bomber is on the range.
- m. No notice missions for fighter units will only apply to the period to GCI painting the first target. Once a target is painted positive identification and communications must be established prior to practice intercept.
 - 5. GENERAL I "LEMENTATION PROCEDUTE, a. Daily Training Mission:
- (1) Direct communication by phone or message between SAC wings and and participating air divisions, establishing bomber track and portions of the track where intercepts can be conducted is authorized.

SAC Reg 51-6

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- (2) When filling the Torm 175, Aircraft Commanders will include in the remark the remark this Brother mission, pass to (Specified air division, only)
 - J. Special Masiens,
- Air livisions to participate in the exercise will be designated in the SAC Commutations order.
- (2) Numbered Air Forces will coordinate with the specified air Divisions of scenned to plan, schedule and coordinate the mission in accordance with the provisions of this regulation and the Operations Order.
- (3) The numbered Air Forces will forward a copy of the SAC mission plan to each participating air division in sufficient time to insure its arrival prior to comfuct of the mission. No attacks will be made if the participating air division does not ressess a copy of this plan.
- (4) It the present time no approval will be granted if weapons are carried in GAC aircraft.
- 6 OCCURIONAL PROGRESS. The following operational procedures apply to all commands participating in special or daily training missions against SAC aircraft.
- a. SAC overseas Air Divisions will insure that an agreement has been reached with allied foreign forces involved in joint training to agree to the provisions of this regulation.
- b. The following restrictions are applicable to all "Big Srother" activity:
- (1) GAS aircraft will not request fighter intercention unless specifically planned by their headquarters prior to start of the mission.
- (2) SAG borders will not take evasive action or conduct violent nameuvers during intercept missions unless such action or maneuver has been whele luled as part of the exercise between the units concerned.

UNCLASSIFIED 286

(a) we represent the formula of the control of the

a manier to and arms of Safety MacLin

- (1) The transmission will be taled a will be taled to instance the foundary of the rod of survillance also are the anternation of the rod of survillance also are the anternational containing to the except of rains succeilance area a constrained S.7557. All corps well will be briefly accordingly, and will be advised to exercise extrate that on to avoid a raining any in ordanier relative to radar coverage.
- (1) Call Signs. In all communications with aircraft and direction once of a receipting communication and aircraft radio call signs will be in cordinate with the communication below.
 - (a) The following call arms are assigned as endicated:
 - 1. BIT WROTER all SAC momber and veconvalsance aircraft.
 - g. GRAN. NEW cl? bir defense time radar units.
 - 3. LITTLE F TEA all fighter aircraft, when engaging

: these owncions.

- (b) tall signs for outs each direction contern are listed in add parters of 3 1 stall grows inset Nation 155. Call sign are individual MC ther units are obtained from surrent 353 to of the air defends for us. Each surbered Air Force isologue our offl formula their units with call signs are changes thereto from surrent Gal's of the six defense forces or by direct communication with the air dail are forces. All errors in SAG Intelligence Brief 156 or accommoded changes thereto will be reported to this beedquarters, AFTENTION: DISAD.
- (3) something reports to air traffic control communications stations (SAC, APIG), or report not of Transport (COT) A FAC: station) are primary and will be made. In order to meet this consideration and requirement, adherence to the following code fore to directed:

54C RIG 51-6

(a) Prior to changing from the SAA or BOT air traffic control frequency to the direction center (CO) frequency, the aircraft commonder will:

2. Contact the nearest CAn Inter-State Airway Communications Station (INSAC) or air Houte Praffic Control Center (A ANG) air/ground station (or Canadian Department of Transport ADMIII) station) as listed in the standard radio facility charts.

- 2. Advise this sin/ground station operator of his intentions to exercise a contain GENCE PROTO facility giving the identity of the facility and estimated duration of the abssion.
- (b) Upon receipt of charance from the air/ground station operator to leave the CAA or TOT air traffic cornel frequency, the aircraft communes will immediately establish communications with the direction center to be exercised.

 The aircraft communder will pass compulsory sir/traffic control reports to the related A TOO wis the direction center intercept controller while under the patrol of a direction center.
- (c) Aircraft equipped with a VOR receiver will confident the A..

 Frair traffic control frequency on the VOR receiver while communicating with or emitoring the GCI common frequency of the UHF command set. In addition, all aircraft will also monitor the UHF mare receiver. In lieu of VOR equipment, mircraft having radio commans or low frequency receivers as a monitor the appropriate of Requency of the INSAC station concerned.
- (d) Upon completion of the mission with the FOUND CHATC facility, the aircraft commander will immediately re-outablish communications with the mearest CAA air/ground station on the normal CAA air traffic control frequency.
- (4) Propercies. All describe centers will be prepared to transmit on the VEP or CHF GOI common frequencies, high are the fighter-bomber liaison prequencies common to ADC and GAC. These frequencies will be used for all air,

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SAC Reg 51-6

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ground and alm/mir communications between ADC and SAC units. [AC strength and ADC fighter aircraft persicipating in this training program will be crystallized on company frequencies.

- (5) Us daily training displors communication must be established and maintained throughout the intercept period. This communication will be established on the same Prequency for Firster/bomber/GCI site.
- (6) Any time communication between the bomber and G.I site or Sighter is lost the GCI site and/or fighter will break off the track
- (7) In the event the bosoer cannot contact the GCI site at any time during the intercept, he will switch to Squark ITI TEF, and the GCI site will discontinue the intercept.
- (8) On special missions, arrangements will a more to dannelize the bomber/fighter and GCI sites involved in the mission on the Mu well frequency.
 - (9) Interceptor leader and tomber leader will notify bull site that all argument safety checks have been and prior to interce.
 - 6. Identification incledures.
 - (1) he intercept will be consected unless the 500 site has positive 187 identification and position of all person aircraft.
 - (2) The lead bomber in each cell will Soutak fi on I'm unless asked to change for identification. All other bombers in the cell will be on stantay.

 IFF unless asked to change.
 - (3) The OCI site can confirm comber positions assking the leaf tember to go to standby and master two to Squawk II and so on throughout the cell.

 This will anable the GM site to positively position all bonders in the cell.

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- (he downtime large on intercept that communications with the bomber or inter's lost wife he torque wint fodes or is lost the intercept will be discounted.
- (5) Introcepts will not be only against and allerafy on the basis of forces tell "information of all positive for identification and position of all others is known.
- (6) Interception ill forminates at the respect of AC or defence air root.
- 7. Whis do not be still to set a at fighter interceptor pilots prior to ergoment in interceptor/ording training. Attends will be made in 1/2 (unit equipped) aircraft only. Now a wiers of a ster/interceptor units will insure that all participating pilots are about any and:
 - (1) Iro hours total time.
 - (2) 100 hours in Figurer aircraft.
 - (3) 20 bours in U/ air ruft, in past three palement months.
 - (1.1 8 hours in the alcomoth is onet unlendar month.
 - b. Fursuit Cirie Witness. Firewit corve attracts will be conducted under daylight conditions only when visibility at intercept altitude is 5 miles or more. At no time during the attack, including the preakaway, will the fighter come closer than 1500 yards from the bother. The following attacks are authorized:
 - (1) Wish and low to a sparter stacks be than right which place the fighter between the angles of 5-1000 when headered from the bumber stern, and not more than 300 above or selection horizonas.
- (2) No Front quarter is head to attrace will be made; i.e., attacks

 O forward of 100° azimuta when takened from the replace sterm

AG R-7 51-6

BRAET UNCLASSIFIED 386

- T. AT intercepts (other than leaf collision course)
- (1) At the present time during daylight only and with visibility is tiles or the at intercept altitude.
- () Water no circumstrices will dighters one closer and ,500 years from the booker.
- (3) At no time will the relative position of the fighter and comber be any greater than 100° measured from the bomber sterm. We head on an front quarter attacks will be made.
 - d. Lead Collision courses.
- (1) At the present time during daylight only and when visibility a 5 miles or open at intercept altitude.
- (2) At no time will the fighter come closer than 1,077 yards from the bumber.
- (3) At no time will the relative position of the fighter and bomber be any greater than 100° measured from the bomber stern. No head on or front quarter attacks will be made.
 - e Snap-up attacks.
 - At the present time during daylight only and when visibility
 us 5 miles or more at intercept altitude.
 - (7) Permitted 360° around bomber providing attack is initiated a minimum of 5,000 feet below the bomber and break-off is completed a initium of 2,000 feet below the bomber.
 - 8. VIOLATINES. In the instance of any richation of the provisions of this regulation the following action will be taken:
 - a. Aircraft corraiders will notify use mearest GOI site irradiately
- b. An operations immediate message will be subsitted to this head
 Quarters giving date, time, altitude, whather conditions, location, type of

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c. The one of this court this belignators of forms the Commanded to MME IV, Do ton A. D. Dal' Sords, as a special 100 ...



DEPARTMENT OF THE ARMY OFFICE OF THE ADJUTANT GENERAL WASHINGTON 25 D.C.

AGAM-P (M) 471.6 (7 Feb 58) CRD

14 February 1958

SUBJECT: Guidance for Conduct of the NIKE-ZEUS Program (U)

TO:

Deputy Chiefs of Staff Assistant Chief of Staff, Intelligence Comptroller of the Army Chief of Research and Development Chief of Ordnance Chief of Engineers Chief Signal Officer Commanding Generals US Army Air Defense Command US Continental Army Command

- 1. The Army has been directed by the Secretary of Defense to continue development of the NIKE-ZEUS as a matter of urgency. However, a decision has not yet been given on the early deployment of NIKE-ZEUS as proposed in the accelerated NIKE-ZEUS program. This letter is written to provide guidance on the future NIKE-ZEUS effort.
- 2. The Army will prosecute at maximum rate consistent with available funds the development of an integrated weapon system. Specific elements of this system are:
 - a. Missiles and Launchers.
 - b. Battery computers.
 - c. Missile Tracking Radars.
 - d. Target Tracking Radars.
 - e. Missile Defense Center (Local Defense Center).
 - f. Local Acquisition Radar.
 - g. Forward Acquisition Radar.
 - h. Communications and data switching between:
 - (1) Batteries and Missile Defense Centers.
 - (2) Missile Defense Centers and Forward Acquisition Radars.
 - (3) Lateral communications between the above elements

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- 3. Effort on the communications between the above listed NIKE-ZEUS system elements and the elements of the Air Force Ballistic Missile Detection System and SAGE will be limited to that necessary to insure compatibility of the systems.
- 4. The Army will continue to plan for the early implementation of the accelerated NIKE-ZEUS program.
- 5. Army agencies will insure a high degree of coordination with the Air Force agencies working in related fields. The channels and methods of interchange of information with other service organizations and contractors which have been in use will be reviewed and expanded as necessary to assure effective and coordinated National effort.

By Order of Wilber M. Brucker, Secretary of the Army:

Copies furnished:
Assistant Secretary (F&E), OSD
Director of Guided Missiles, OSD
Chief of Staff, US Air Force

HERBERT M. MES Major General, USA The Adjutant General



3. 31.25

COPY OF INCOMING CL. JIFIED MESSAGE

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READING FILE

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FM JCS WASH DC
TO RJEDDIVC INCOVAD ENT AFB COLO INFO ZENICSA WASH DC ZENICNO WASH DC

ACTION: COOPR INFO: COOPO 18-2973

ZEN/CSAF WASH DC ZEN/CONDT WASH DC

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A 93781 G FROM JCS. THE ARMY HAS SUBMITTED TO THE SECRETARY OF DEFENSE AND ACCELERATED NIME-ZEUS PROGRAM UNICH, IF APPROVED, WOULD PROVIDE THREE OPERATIONAL BATTERIES BY DECEMBER 1962, 30 OPERATIONAL BATTERIES BY DECEMBER 1962 AND ADDITIONAL BATTERIES THEREAFTER OF SEVEN PER QUARTER. IN ORDER FOR THE ARMY TO PROCEED WITH PLANNING, THE JCS DESIRE THAT YOU PREPARE AND SUBMIT A PROPOSED DEPLOYMENT PLAN FOR THE NIME-ZEUS BY INCREMENTS AS SET FORTH ABOVE. CONSIDERATION SHOULD BE GIVEN TO THE TOTAL NUMBER OF BATTERIES REQUIRED.

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23 APR 1958

COOPR

SUBJECT: Proposed Deployment for Nike Zeus

70: Chief of Staff, United States Air Force As Executive Agent for CUNAD Washington 25, D. C.

1. This is an interim reply to searet message A937816 from JCS to CINCONAD, dated 1 March 1958.

2. Headquarters North American Air Defense Command is now preparing a North American Air Defense Objectives Plan 1958-1968
(NADOP 58-68), which will replace the Continental Air Defense
Objectives Plan (CADOP 56-66). NADOP 58-68 is planned for publication in June 1958 and will contain a teplogment plan for Nike Zeus batteries.

3. This head warters would prefer to defer submitting a proposed Nike Zeus Deployment Plan in reply to the referenced message until present prescent for NATOP 58-68 are firm. If this delay is not acceptable, a tentative Nike Zeus Deployment Plan can be submitted pending completion of the NORAD Nike Zeus Deployment

OR THE COMMINDER DI-CHIEF:

MARSHALL S. CARTER Major General, USAF

Chief of Staff

The referenced message (A937816) from the JCS requested proposed deployment alsa for Nike Zeus, based on the Accelerated ew program submitted to the Secretary of Defense by the Department of Army.

2. MADOP 58-68 will include the recommended deployment plan for Nike Zeus, but it is planned to advance the timing of the requirements shead of the progra. This will require separate correspondence with the JCS to comply with the request for deployment plan by increments as set forth in the Accelerated Nike Zeus Program.

(Continued on Reverse Side) Walter Munay Cal usa ART UR J. PIERCE Brig General, Dir. Plans & Requirements

Securitivistics Personal, Julius or vice

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- 3. When work was started on developing a Nike Zeus Denloyment Plan it was thought that it could be developed and submitted to the JCS independently from NADCP. As work progressed, it became apparent that Zeus must be considered with all the air defense objectives and that the final Zeus deployment plan must be developed along with NADCP.
- 4. At the present time a tentative Nike Zeus Derloyment Plan developed by PKR is being studied by ARADCOM. A draft plan will be circulated to all components with the draft of NADCP on about 21 April. It is not considered advisable to submit a Nike Zeus deployment plan to the JCS now and to include a different plan with NADCP.

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MOOPR

SUBJECT: Integration of Zeus Local Acquisition Raders with SACE (8)

Chief of Staff, United States Air Force, As Executive Apent for NORAD Mashington 25, D. C.

1. Preliminary feasibility studies at this headquarters indicate that substitution of Zeus-type boost Acquisition Radars (LAR) for selected USAF ADC prime radars is tempically and economically desirable. However, with the information evallable, economically desirable. However, with the information available, it is not possible to determine the technical compatibility of the Local Acquisition Radars of the Local system and the data transmission requirements of the fall system. Similarly, no attempt has been made to measure the effect of the LAR program upon the frequency Diversity program. It appears certain that almost total duplication of high altitude coverage will result if both programs exist in the same environment and that, to achieve optimum coverage, exists the same geographical locations will be involved in automorphis testinger. will be involved to memorous burthaces.

?. Based on bundalive reus decloyment plans, it appears the communication that approximately 75 cer cent of the Zeus Local Acquisition (1987 ADC prime of the second to be sites of existing USAF ADC prime of the requirements of air defense against both the air supported of balliero missile threat. If the marriage of the JAF program of the Zeus anti-missile system to the SAGE of the JAF program of the Zeus the air datage system. The economic savings alone would repre-Departments of the irmy and hir Porce.

3. Both the Zeus LAR and the USAF ADC Frequency Diversity programs are in the preliminary stages of planning and engineering. Both are costly programs and are scheduled for implementation so espentially the same time period (except for the inclusion of of the present day production raders such as the FPS-7's and the FF. -6's in the Frequency Diversity program, the remaining types will probably not enter the active system for several years). Inasmuch as both programs are of very high priority, and any integration policies must be developed at the Department of Defense level, it is strongly recommended that the Department of

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Defense initiate a study, as early as practicable, to determine the feasibility and desirability of integration of the two systems. The study should not, however, be permitted to impede the development of the active phases of the Ballistic Missile Defense System.

FOR THE COMMANDER-IN-CHIEF!

MARSHALL S. CAPPER Major Ceneral, USA Crief of Staff

MENDRANDIM FOR RECO.D:

1. Present information is that the criteria for the establishment of Zeus Id. is that each Zeus battery must be fed data from an acquisition radar located within 75 n.m. of the battery. One radar may feel one ar more batteries. 91 LAR's will be required to serve the 116 targets scheduled for Zeus batteries.

2. The 91 Like should also give complete high altitude coverage ever the combat zone. It appears that a duplication of coverage tall exist unless some of the programmed FD radars are replaced with Zens Lakes. However, available technical information does no permit an appraisal of the compatibility of the Likes with the data transmission facilities of SAGE.

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Adjutant	5
Audio - Visial	5
Protocol	5
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Systems	3
Plans & Rep	E
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NOHDC

SUBJECT: Integration of ZEUS Local Acquisition Radars with SAGE (S)

TO: Chief of Staff
Department of Army
Washington 25, D. C.

 Attached is a copy of a letter sent to Chief of Staff USAF as Executive Agent for NORAD.

2. It is requested that the Department of Army support the integration of the ZEUS Local Acquisition Radars with SAGE. It is further requested that the Department of Army insure, as practical, that the ZEUS Local Acquisition Radars are technically compatible with the data input system of SAGE insofar as surveillance against the air breathing threat is concerned.

/s/t/ C. R. SLEMON Air Marshal, RCAF Deputy Commander-in-Chief

> /s/t/ Col Scott 2234-5 12 Jun 58

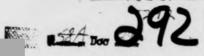
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THE SECRETARY OF DEFENSE ASHINGTON

JAN 14 1958

MEMORANDUM FOR THE SECRETARY OF THE AIR FORCE

SUBJECT: Bellistic Missile Corty Werning Progress

- Reference: (a) Maso for Sac/Del it to Sec/AF dated 27 Dec 57 subject as above.
 - (b) Memo for Sec/Def from Ass' Sec/AF (PM) dated Jan Se, subject as above.

Having considered the materia: in your memorandum, and additional information presented by the Office of the Deputy Chief of Staff (Development), approval is given to the Department of the Air Force to proceed immediately with the ballistic missile early sarning program senerally as outlined, subject to the following suidelines and priorities:

Pirst: With the objective of providing an operational capability by the end of calendar year 1959, the raders employing scanning torus antennae should be installed at an appropriate site in Greenland incorporating double beams in elevation for increasing the reliability of detection and trajectory predictions. With respect to these vadars, as brought out previously by the Ad Hoc Advisory Committee of the Office of the Director of Guided Missiles, there are radar design characteristics which will direct y effect the reliability of the system, and there ore deserve additional technical consideration. After the contract has been maced, and the contractor for the Ai. Force is in a position to discuss this aspect of the system, it is requested that a meeting be scheduled with the Ad Hoc Committee. The necessary local display, computer, and communications links to the United States (NORAD) should also be provided for Greenland. Giving primary consideration to nuclear reactors for electrical power generation, the power station and bare support facilities should have the capacity to accommodate the installation of tracking radars ut a later date.

In order to provide reliable, mechanical tracking radars at the Greenland site which are capable of operating continuously, an expedited development program for the tracking indare should be initiated ismediately. Installation of the traciing radars at Greenland should proceed as soon as the Air Police considers that appropriate designs are available. The objective for this phase of the

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program is to provide additional capability for the early warning system at the Greenland site before the time when the number of satellite vehicles may be sufficiently large to confuse the initial early warning system.

Sacond: Taking account of the AN/FPS 17 radar to be installed in Alaska for intelligence purposes, and the possibility or using base support facilities at an existing Air Force installation, the siting and coverage of the Alaskan station should be studied immediately. The requirement for tracking raders should be considered and included in the facility proposal it found to be necessary. Then an appropriate plan is evolved for the Alaskan station it should be submitted separately for approval.

Third: Negotiations should be started as soon as practical with the United Kin, done to establish an early warning station in Scotland, or at an appropriate alternative site, as a cooperative UK-US venture. It is requested that the Air Force coordinate their negotiations in the usual way with the Office of the Assistant Secretary of Defense (International Security Affairs), and that the UK-US plan we approved by the Secretary of Defense before proceeding with production or installation at this site.

Fourth: It has been recommended by the Ad Hoc Committee mentioned above that a computer facility and appropriate communications be installed within the Continental United States to assist in the evaluation of tracking data of satellite vehicles which are pertinent to the early werning system. Inputs to this computer would be from other sources including scientific satellite tracking stations, in addition to the inputs from the early warning reders. The request for authorization of this facility relates to plans for headquarters tacilities for the Commander-in-Chief, NORAD. We would be glad to receive a recommendation from the Air Force for the NORAD computer facility when the Air Force is prepared to discuss this feature of the system.

This memorandum authorizes the Air Force to proceed and approves the programming of the funds listed below. The funds are to be applied with due regard for the priorities listed above, and subject to the normal administrative procedures.

Weapons System 224-A Phase 1

11000		(millions of dollars)	
A: 66 P-2: A: 66 P-3	(Equipment) (Construction)	FY 58 Supplemental 161.1	\$ 67. 29.3
	is by Year	329.7	

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In accordance with the request included in ref. (b), it will be satisfactory, pending availability of funds from the FY 1958 supplemental appropriation, for the Air Force to reprogram funds available in the Procurement Other than Aircroft account, in the amount of \$100.5 million in order to initiate contracts, with due regard to the priorities listed above. We assurance can be given, but experience to date indicates that it is quite likely that the punding Supplemental Appropriation request will receive prompt and favorable action by the Congress. There are no funds available to the Office of the Secretary of Defense for transfer to the Air Force in the event the Supplemental Appropriation should not be approved by the Congress. The Assistant Secretary of Defense (Comptroller) has already discussed this matter with the Bureau of the Budget, who raised no questions as to availability upon passage. It is expected that the Air Force will conduct the necessary discussions relative to the reprogramming actions with the Congress as indicated in ref. (a).

This office is reviewing the revised Master Urgency List for this program and final action is expected about 15 January.

Your memorandum (ref. a) requested \$11.3 million from the Emergency Fund for RAD work directed toward development of high powered raders. We feel that this request is a separate item from the early warning system outlined in this memorandum. Your request therefore will be given separate consideration based upon the merits of the projects proposed.

The importance of achieving the 1959 initial operating date is emphasized. Early completion and approval of the plans for the Alaskan and UK site will also enable the contractor to schedule common item equipment production for greatest efficiency. With respect to the guidelines and priorities outlined in this memorandum, it is appreciated that, as the detailed plan for the system and production and installation schedules evolve, the Air Force may need to seek variations in the broad plan herein outlined.

/s/ DONALD A. QUARLES

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HEADQUARTERS
NORTH AMERICAN AIR DEFENSE COMMAND
ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

MEMORANDUM FOR RECORD

SUBJECT: BMEWR Briefing

- 1. Information contained in the following paragraphs was presented by Lt. Col. Veneziano, Headquarters ADC, in a briefing on the BMEW System, to General Carter, Gen. Alness, Gen. Taylor, and other members of the NORAD staff on 7 Feb 58.
- 2. BMEW radars will be located near Fairbanks, Alaska; Thule, Greenland; and Aberdeen, Scotland. The radars are to be capable of detecting a 0.5 square meter target at 1500 nautical miles, thus giving 15-20 minutes warning to NORAD defense forces. The system is to be operational by the end of CY 60 (there will be a limited capability at Thule by the end of CY 59).
- 3. Each station will cover an area approximately 3600 by 1500 feet; will use four search radars and three tracking radars. A minimum of two physically separated routes for communications from each radar site to a central computer location in the United States will be provided.
- 4. Each surveillance radar radiates energy on three vertically stacked beams 1 degree thick in elevation and $37\frac{1}{2}$ degrees wide in azimuth. The four surveillance radars, therefore, cover a total azimuth of four times $37\frac{1}{2}$ degrees or 150 degrees. When a surveillance set detects a target, the information is given to a computer at the site, which assigns the target to a tracking radar. These trackers can slew at a rate of 15 degrees per second, and will have to stay on a target 5 to 7 seconds to obtain the necessary information as to speed, direction, and impact area. One site will have a capacity of from 15 to 30 tracks per minute. Impact determination by the BMEWR is within an area of 1000 miles by 600 miles. When combined with the tracking radar, impact determination accuracy increases to approximately 100 miles square.
- 5. On-site computers perform calculations as to speed, re-entry area, impact point and identification, and then transmit this processing information to the central computer. The central computer will be programmed to provide information on time-to-go, impact area, status of radars, status of communications, self-checking, and will provide a display of this information.
- 6. RCA is prime contractor for design, development and construction of the radar gear, on-site communications and for the central computer in the United States. Western Electric Company has a prime contract for BMEWS communications, plus SAC recall plan com-

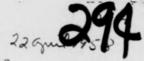
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MEMORANDUM FOR RECORD (Cont'd) subj: BMEWR Briefing

munications and NORAD COC communications requirements. Money programmed for the BMEW project through FY 60 is \$718,000,000. This project has the same priority as the missile development program and is listed in the Department of Defense Master Emergency Priority Plan.

- 7. ADC has the responsibility for preparing the preliminary operational plan. Their first meeting to develop this plan will be held on Tuesday, 11 February. Representatives of NORAD C&E and P&Q will attend. ADC will have C&E and Installations representatives on site teams for the three locations and will have a liaison officer in the BMEWS project office in New York. ADC also will have to plan for manning the sites and for training of these personnel.
- 8. All of the above actions are included in Phase I, the passive phase, which is designed entirely to alert and to get SAC aircraft airborne. The next phase, the active phase, will tie in the detection and tracking system with launching and guidance of anti-ICBM missiles.

/s/t/ F. W. H. WEHNER
Lt Col USAF
Ch Opnl Rqrmts Div



PRESENTATION ON THE AIR FORCE BALLISTIC MISSILE EARLY WARNING SYSTEM

TO THE PERMANENT JOINT BOARD ON DEFENSE, CANADA-U. S. AT COLORADO SPRINGS, COLORADO 22 APRIL 1958

GENERAL MCNAUGHTON, DR. HANNAH AND GENTLEMEN:

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- CHART 1 My objective this afternoon will be to present the Air Porce

 Ballistic Missile Early Warning Program that is being planned

 for implementation in the 1960-61 time period. You recall this

 presentation was requested by the Canadian Section at the last

 meeting of the PJBD held in January 1958.
 - My discussion will include a little of the background history, the Air Force Research and Development program in SMENS, a brief technical description of the system including the redars, the central display and computer facility and the proposed supporting communications facilities.

My presentation will last approximately 30 minutes after which time I should be most happy to answer any questions which you may have

CHART 2 The Air Force Ballistic Missile Defense program started in 1946, with the General Electric Company and the University of Michigan, called the WIZARD program. This program, initially, was broken up into three phases as shown on this chart. From 1946 to 1953 to determine the effectiveness of a surface-to-air missile to

past three years this program has been accelerated with technical results being passed freely between the two countries. During this same time period accreditation procedures were established which permitted Canadian government representatives to visit the Air Force development centers and U. S. contractor firms engaged in Ballistic Missile Defense studies. The Canadian Joint Staff and the Canadian Defense Research Board provided most competent representation to the various committees and sub-committees of the Air Force Scientific Advisory Board. One of the strong recommendations of the Ballistic Missiles Defense Committee of the SAB to the Chief of Staff USAF in mid 1956 called for the installation of a long range radar facility within Canada for the purpose of conducting propagation studies. This resulted in the Prince Albert radar which I shall discuss in a few moments. Approval was also obtained which enabled the Defense Research Board of Canada to provide liaison and scientific working members of the Lincoln Laboratory Lexington Massachusetts and the RAND Corporation Santa Monica California. The U. S. and Canadian Governments have made major strides with the formation of NORAD here at Colorado Springs. As many of you here know one of the joint conclusions reached at the USAF-DEB Conference held in Ottawa on 4 and 5 November 1957 was the agreement that greater collaboration is possible and desirable in the fields of Aeromechanics, Materials, Propulsion, Electronics, Geophysics and Diosciences. As a first step in furtherance of the coordination of research activities, arrangements were made for the immediate exchange of research planning documents in their respective research programs. These very few ex-

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amples illustrate the close relationship these two nations have enjoyed in the past and give the trend for the future.

And now the problem of Early Warning.

CHART 3 On 29 July 1955 the Air Force published a System Requirement which established as its objective an operational system which would detect and identify each enemy ballistic missile at the maximum practical distances from the United States and furnish warning, with sufficient time (12 to 20 minutes), to the Strategic Air Command (SAC) and Civil Defense authorities so that the necessary offensive and defensive measures could be taken. Another objective of the system was to predict the impact point of each ICBM with an error of less than approximately 50 nautical miles and to predict the launch point of each ICBM with an error of less than approximately 10 nautical miles. Six months study contracts on 29 August 1955 were awarded to Sylvania Electric Corporation, Hughes Aircraft Corporation and General Electric Company. The objective of the study contracts was to design a system which would meet the above requirements and be operational by 1960. The offensive missile against which the detection and warning system had to defend had the following assumed characteristics.

* Speed at re-entry

-22,000 to 24,000 ft/sec

* Range

-4000 to 5500 nautical miles

* Launch angle (re-entry angle)

-15° to 65°

* Reflective area

-approx. 0.1 meter2

The system was required to have an extremely high probability of detection (approximately 9%) on a missile when launched from any

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point in the USSR against any target in the United States. The three contractors proposed three different radar systems consisting of from three to six northern radar sites, using brute force radar techniques, nuclear power, with a total estimated cost of from 1.0 to 1.5 billion dollars. Now as I have stated, these designs were proposed to meet a 1960 operational date established by the Air Force. However, upon weighing the technical risks and costs

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against the usefulness of the system, we decided in mid-1956 to set aside production plans for the time being, but to ahead with a sizeable RAD program simed at reducing the technical and oners innal ricks.

- The rajor troblems in the that required solution were two-fold. First, there are those problems thick confront the designers of radar detection systems. Specific tests with memorical results own be devised to answer questions about the target itself, the equipment ith which we view the target, and the background against which we must see the target. Secon', there are problems of feasibility - the invertication of truly new possibilities, the emploration of ideas which do not seem canable of i-rediate or even of schedulad application to a system.
- CHART 5 First, to meet the radar problems which can be colved by direct experimentation, we are installing radar transmitting and receiving and associated equipment at three experimental sites:
 - . Milstone Hill Massachusetts
 - . Trinifad
 - · Arctic ANACA SITE

I will cover them in that order.

- The Millstone "ill radar which is located in "estford, Massachusetts some CHART 6 22 miles from Lincoln Laboratory was designed for use as a research tool, primarily for the study of problems in ballistic missile defense. It will provide valuable information on the overation and applications of high-nower, long-range radar and will be of assistance in securing a better understanding of the radio effects of neteors and the aurora.
- "evelopment of the "fillstone mader required new tools and techniques in the design of both the radar and its associated ecuipment. Advances were made in transmitter power, in large entance, and mount mechanics, and in other types

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of equipment. For example, a special transistorized digital computer was designed and constructed by Lincoln Laboratory. This computer processes the radar return signal on a real-time basis at very high speeds. Also a tape printer records these radar returns at a rate of thousands of characters per second.

This slide shows an aerial view of the Millstone Hill radar which became operational with limited transmitting power in October 1957.

The antenna system consists of a parabolic reflector, 84-feet in diameter, mounted on a concrete and steel tower ninety feet high.

The rotating portion of the antenna structure weighs 90 tons.

I would like to show a few slides which depict the size and complexity of a few components of the high powered transmitters which are required to obtain the long detection ranges (2500 nautical miles) against the ballistic missile.

CHART 8 This first chart shows the large pulse transformers which weigh 25 tons - an indication of the size can be gathered by the man standing adjacent to the equipment.

CHART 9 This chart shows the late transformer which weighs about 14 tons.

It stands 12 feet high.

CHART 10 This chart shows a part of the large condenser bank which provides 10,000 volts of power to the radar transmitter. Again, compare the size as shown with the man standing in the foreground.

CHART 11 This chart shows the 11-foot long ____ developed 3-cavity Klystron amplifier tube used in the Millstone radar. This tube operates in a vertical position with the gun or lower portion of the tube immersed in oil. The beam voltage is about 110,000 volts. Two of these tubes are required to provide the

required 2 million watts of peak power and 150,000 watts of average transmitted power.

- This slide is a photograph of a relar ecto from the third stare rocket of the Russian satellite which was observed at a range of 595 miles from the Millstone redar. It is interesting to note that this observation was made with the driver portion of the radar transmitter during the time the EIMAC klystrons were being installed in October 1957. The relative radar echoes were about 1/10 sq meter.
- With the installation of the Trinidad site which will be in operation in

 March 1959 we expect to obtain experience in the operation of radar compo ents

 that have been untested up to now at the sizes and powers required for

 Ballistic Missile Early Warning Radars and to test the operation of a complete

 system that has been designed as a possible BMENS system. Our second

 from

 objective is to obtain information as our own missiles fired from the Air Force

 Missile Test Center at Patrick AFB to obtain technical data on missile radar

 echoing characteristics under various conditions of operation, including the

 effects of multiple bodies such as tank fragments, decoys, chaff, etc moving

 along with the re-entry missile. The system that we envision at Trinidad may

 not necessarily be the most desirable system configuration to perform the ICEM

 warning function, but the system proposed is considered to be the most

 promosing for early implementation. Furthermore, it offers a few degree of

 flexibility and capability for future growth.
- As I pointed out earlier in my discussion one of the strong recommendations of the Ballistic Missile Befonse committe of the "cientific Advisory Board to the USAF Chief of Staff in mid 1956 included the installation of a long range radar facility within Canada. As the result of the early planning efforts of the Canadian Defense Research Board, Declassified pry and the USAF, the US

2.3

Secretary of Defense concurred in the Air Force recommendation and approved come 2 mil'ion dollars of electronic equipment to complete this facility.

As a result of an exchange of notes between the US and Canadian covernments the Air Force will use the equipment to the DRB and the research program will be jointly agreed upon between the USAF and the DRB. Transmitter building, antenna foundations, wrime power access roads will be provided by the DRB. Construction of this joint proparation facility is currently underway and I've been told that hopefully the radar should be operational by the end of this year. It is expected that this radar facility will provide experimental answers to the all-important questions of the character and occurence of suroral echoes, the aspect sensitivity of the suroral echoes and of the effect on signals reflected from moving targets observed in and through regions of suroral activity. Persearch will also be conducted on meteor echoes, lumar echoes, galactic and terrestrial noise. This elicate the Milletone will also be conducted on meteor echoes,

- The Canadian facility which is planned for installation near Prince Albert
 in Saskatchevan will be similar to the Millstone Hill radar which you see
 hereon This Soile.
- Now, I said previously there were two types of problems those which contribute to the reasonably straightforward design of radar systems, which I have just described, and those which relate to feasibility of other approaches not so well in hand. In this latter category the Air Force is continuing studies of infrared and ultraviolet detectors and electronic scanning systems, studies of satellite-horne warning systems, investigations of detectors based on disturbance of the earth's magnetic field and so forth. We recognize, of course, that the detection problem may get a hint or a boost from an unsuspected source and we may find a better solution than the radar approach we must use now. This brings me now to the ore ent EMENS system.

SLIDE 17

As a result of recent scientific breakthroughs in the development of high powered transmitters, a Teneral Operational Requirement OR-156 was published on 7 November 1957. The key requirements as specified to be met by the varning system are as shown on this charts

- 1. Detect and identify ICHM's at a maximum practicable distance from the U.S. and Canada to insure maximum warning time.
- 2. Determine the trajectory of ICHM's with sufficient accuracy to define their potential as a threat
- Transmit to designated monitor and control points early warming with automatic authentication and acknowledgement feature.

In Sammary 1958 the Air Force selected 35% the Radio Corporation of America as its systems management contractor who was given the responsibility of

4. Be operational by 1960.

Declassified

designing, developing and installing apsystem that would meet these thater is ill from contrate to U. all of commons laws requirements. And the tracker land a surregion to Elected and experient to the ownellossed no how trobuler we would extract ! The primary objective of BENS is to warm NYAD contr that a suspected Sowiet ballistic missile attack is in progress. This is accomplished by observing objects on ballistic trajectories and assessing whether they will impact in or near the United States. It is desired that the warning reach NCRAD at least 15 minutes before impact. This is possible in many cases, but some launch site-target combinations exist where the total time of flight is less than 15 minutes. The main use of this warning time is to maximise the size and effect of our retaliatory blow. The following information is presented to give some idea of the value of various amounts of warning time. It is estimated that one B-52 per base wer minute could take off, starting about 7 minutes after warning, during the time neriod in which we are interested. It is also estimated that two F-47's per base ner minute could take off, start-

CHART IS

2-3

This chart shows, in a plain view, the amount of reversge in both arimuth and range to be obtained over Russia. To take full advanture of the long de ection ranges, up to 3,000 mikes, and to obtain the maximum amount of warning time, the RMFWS must be located in the far north regions. The proposed locations of these sites are Alaska, Greenland and United Kingdom.

CHART 20 This slide shows the characteristics of the surveillance radar that will be caployed in the system. The attenna reflector "easures 165" high by 400" long and will cover a 40 degree azimuth scan, 4 of these reflectors will be required to provide the required 160 ferree coverage at the Greenland site. The radar transmitters will have capability of recviding 10,000,000 watte of reak radiated power and 600,000 watts of average radiated power. The system could of 2 narrow rencil beams 1 degree by 1 degree at 2 very low angles of elevation, the lower beam will scan at about 22 degrees and the second beam will sean a selected area at 7 degrees off the horizontal. A third beam at 10 degrees will be provided but only the 2 and 7 degree beams will be fully active. Essentially the system works comething like this. The ICEM first is detected by the lower scanning fan beam of the surveillance radar, and fed into a central comput r at the rite. Within a few minutes it is detected by the second scanning beam and the information is correlated with the target detected by the lower beam. Rough trajectory and prediction of probable impact point is obtained and the tracker is placed on the

of time until positive identification is made. The role of the

CHART 21 tracker which you see on this chart is an important one. In order

to provide a positive alert with a high degree of confidence, BMEWS

must filter out returns from a large number of non-dangerous objects,

such as satellites, meteors, aurora, stellar, solar and artificial

noise. Most of the returns can be eliminated by radar orientation

and relatively simple range gating and scan-to-scan correlation.

The satellite characteristics, however, closely approximate those

of a missile, filtering of these returns consequently requires more

complex computer operations.

- CHART 22 This chart shows how a tracker in this case operated in a scanning mode would acquire and automatically lockon the target in the initial mode and then switch automatically to a tracking mode. Only short tracking time is required to provide positive identification, and more refined impact area prediction.
- CHART 23 This chart shows the tracking radar characteristics. The antenna dish is 84' in diameter, the radome about 140'. It can scan 360 degrees in azimuth, and from 0 to 90 degrees in elevation. The operational slew rate is 22 degrees per second. The transmitter operates at approximately 425 mc/s, provides 10,000,000 watts of peak power and 600,000 watts of average power. The range has been calculated at 2500 nautical miles against a 0.5 square meter target.

TURN PROJECTOR OFF AT TIME POINT

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Extract from USAF Research & Development, Quarterly Review, Winter 1957-1958

Ballistic Missile Early Warning System

Declassified Responsibility for the establishment of a Ballistic Missile Early Warning System, as part of a Ballistic Missile Defense System for Canada and the United States, has been assigned to the Air Force Ballistic Missile Division. A contractor selection board convened at AFBMD in December 1957 to select a single contractor to manage the installation of the high-powered radar and communications network, which is designed to provide early warning of a possible ballistic missile attack on the United States or Canada. The system is to be operational in 1960.

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WHAT DOES THE SYSTEM ENTAIL?

1. Look at the large map.

Basic to what the system will do is where and how the system will be deployed.

2. Look at the transparency on the arrangement of radar beams.

Now there is an evaluation problem.

- 3. Evaluation of the radar responses.
 - a. Lower SC beam A.

Second beam

- C. Third

- b. The number of beams and combination of beams gives us a Confidence factor. Confidence factors x number of missiles gives us a Confidence Value Total.
- c. The CVT results in alarm levels, and the alarm levels, as interpreted by the various agencies, will or may result in an alert.

Alarm level of 3

- d. Look at Comm transparency.
- e. Computers

By way of bringing you up to date on the current status General, ADC's position and some recent developments in costing.

1. ADC believes that nothing less than the full system is required to satisfy the warning reliability

and confidence Declassified

2. Second fact is that the original cost estimate of \$721 million has doubled to \$1.5 billion. Various studies have been made to see where they can degrade the system to make it fit within our monetary limitation.

CONCLUSIONS,

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- 1. Apparently the system would require very serious degradation to fit it within the monetary limitations.
- 2. More money will be requested to afford a satisfactory interim system.



HEADQUARTERS
AIR DEFENSE COMMAND

UNITED STATES AIR FORCE ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO



TEL MELROSE 2-5511 EXT 6063

ADORQ-E

2 6 MAR 1958

SUBJECT:

(U) Ballistic Missile Early Warning System (BMEWS)

TO:

Commander-in-Chief

North American Air Defense Command

Ent Air Force Base

Colorado Springs, Colorado

- 1. Representatives from this headquarters attended a meeting on the Ballistic Missile Early Warning System called at the direction of Headquarters USAF. The purpose of the meeting was to review the contractor-prepared configuration and cost (one and one half billion dollars). This cost is approximately twice the original estimate. Headquarters USAF considered that there is a probability the system may be over-sophisticated and that a less sophisticated system might satisfy the operational requirement. The over-sophistication is, in many cases, high reliability such as dual communications routes, etc.
- 2. It was the opinion of all military agencies represented at the meeting that the contractor's configuration of the cited cost figure contained considerable redundancy to obtain high reliability. The principle reason for this was to satisfy GOR 156 which established 100 percent reliability. It was felt that a system satisfying the operational requirement could be constructed and installed at a lesser figure. The degree of degradation acceptable could be determined by a group having necessary data available.
- 3. As a result of the meeting, the contractor was given a directive to review his proposed program and to develop at least three alternate proposals. The proposals are to be prepared on a package basis by primary operating equipments so the Air Force can select a reasonable configuration within monetary limitations and defer desirable portions for future implementation. Examples of items of possible deferral are: single communications routing versus dual communications routing; scanning radar only versus scanning radar and tracking radar, computer capabilities, etc.
- 4. The contractor is to have these alternatives prepared for presentation to the BMEWS Project Office by

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ADORQ-E, Subject: (U) Ballistic Missile Early Warning System (BMEWS)

27 March 1958. The subsequent review will be prepared for presentation to Headquarters USAF on 31 March 1958.

- 5. It is strongly recommended that NORAD and ADC take the stand that our requirements are the best operational capabilities permitted by the state-of-the-art. The operational capabilities outlined in the Preliminary Plan are the minimum capabilities required and every effort should be made to accomplish the installation of all equipment, less tracking radar, to meet the operational date of December 1960. Tracking radars must be installed when development of the tracker permits. Exercises geared toward austerity should follow this priority:
 - a. Review construction and buildings, but still assure these are adequate to satisfy the minimum requirements.
 - b. If sufficient savings do not result from the above, a study aimed at reducing facilities to insure the high reliability requirements such as duplexing of rearward communications, etc. should be undertaken. Certain calculated risks may be assumed if the cost figures are beyond a reasonable figure to obtain a small increase in reliability.
 - c. If it should become necessary to accept a priority for installation of equipment due to budgetary limitations, the interim system must have an initial capability to detect and estimate time of impact of missiles with a probable impact anywhere on the North American continent. The equipment for determining precise trajectory and point of impact data could be deferred. This date of deferral should be no later than December 1962.

J. H. ATKINSON

Lieutenant General, USAF

Commander

28 MAR 1958.

PRIORITY

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COFS USAF WASH DC

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CHIEF OF STAFF, USAF, ATTN: AFOAC. WE HAVE BEEN INFORMED BY COMUSAFADO THAT A NUMBER OF COMPROMISES IN THE PROPOSED EMEMS ARE BEING CONSIDERED. IT IS OUR UNDERSTANDING THAT THESE COM-PROMISES ARE BEING CONSIDERED FOR ECONOMIC REASONS AND THAT THEY WOULD DEGRADE THE ORIGINALLY PLANNED PERFORMANCE OF THE SYSTEM IN VARYING DECREES IF ADOPTED. OUR POSITION ON THIS MATTER IS AS FOLLOWS: A. IT IS ESSENTIAL THAT THE DECREE OF TRACK PRECISION FURNISHED BY BREWS TO THE APPROPRIATE ACQUI-SITION RADARS OR REGIONAL CONTROL POINTS OF THE ACTIVE BMDS BE ADEQUATE TO INSURE MAXIMUM WEAPONS EFFECTIVENESS. B. IT ALSO WOULD APPEAR THAT A RATHER HIGH DEGREE OF TRACKING AC-CURACY WOULD BE REQUIRED TO SORT OUT AND CORRELATE ALL TRACKS IN ORDER TO KEEP THE FALSE ALARM RATE TO A REASONABLE FIGURE. C. IT IS NOT ABSOLUTELY ESSENTIAL THAT WE HAVE 100 PERCENT RE-LIABILITY BUT WE FEEL THAT THE DEGREE OF RELIABILITY MUST BE CLOSE TO 100 PERCENT THAT DUAL COMMUNICATION ROUTING MUST BE FURNISHED. WE WOULD POINT OUT THAT THIS DOES NOT NECESSARILY MEAN CONSTRUCTION OF COMPLETELY NEW ALTERNATE ROUTES. REQUEST WE BE INFORMED OF ANY DEVELOPMENTS PERTINENT TO THE BMEMS CAPA-BILITIES NOT IN CONSONANCE WITH THIS POSITION.

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INOTAL COMPUTER-DISPALY FACILITY IS TO BE PHASED IN TO MEET OPERATIONAL REQUIRMENT. LOCATION OF ALASKA SITE HAS NOT BEEN RESOLVED
BART III FOR ARC AND CINCAL IN FURTHER DETAILS ON SYSTEM REQUIRED, PART III FOR ADC AND CINCAL IF FURTHER DETAILS ON SYSTEM REQUIRED, CONTACT BHEUS PROJECT OFFICE IN NEW YOUK.

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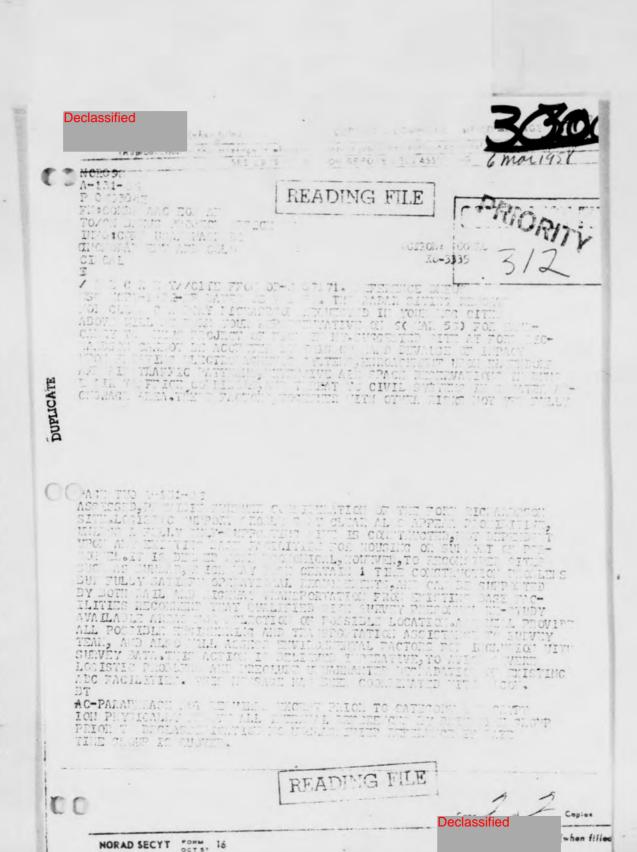
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ADORQ-E

29 MAY 1958

MEMORANDUM FOR GENERAL PARTRIDGE, COMMANDER-IN-C"1EF, NORTH AMERICAN AIR DEFENSE COMMAND

SUBJECT: (U) HMEWS Implementation

- 1. The BMEWS implementation is proceeding in accordance with the configuration presented to you on 15 May 1958. In brief, it includes a station at hule with scanners operational in September 1960 and trackers in September 1961, a second station near Fairbanks, Alaska with scanners operational in December 1960 with trackers in December 1961, and a central computer and display in the ZI. The tird station in the UK will be indefinitely deferred pending political and monetary decisions. The configuration cited above is planned to be built within a budgetary limitation of 822 million dollars. Regarding the discussion on Thule, I have gone on record with USAF in a personal message recommending consolidation of the living and operation sites at Thule.
- 2. USAF has assigned the operational responsibilities associated with this program to ADC, and all staff agencies are actively participating in their functional areas in the program. In view of its importance, I have activated in the Directorate of Requirements a BMEWS Branch to insure this program retains the impetus required, and that the AMC/ARDC Joint Project Office (BMEWS Project Office) is provided with all operational requirements. This office acts as a central point of contact between this Headquarters and the implementing agency, the BMEWS Project Office.
- 3. In order that I may insure that all NORAD requirements are incorporated in the Operational Plan or other documents containing operational guidance to the contractor in the expeditious manner necessary to a crash program of this type, it is suggested that you establish a central point of contact for EMEWS matters. My concern is that we have the closest coordination during the period of concept formulation.

J.H. ATKINSON Lieutenant General, USAF Commander

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PLICATE

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ZEN/COMADSID LG NAVI COM FLD MASS
ZEN/COMDR LINCOLD LAD BEDFORD MASS Declassified REFERENCE OF ALL CONCERNED IN EMENS PROJ OF ST APR 58.
FOR SUIDANCE OR ALL CONCERNED IN EMENS DISPLAY REQUIREMENTS:
A. PRESENTLY REPROVEDLEMENS PROGRAM PROVIDES A DISPLAY FOR A CENTRAL ZI FACILITY AT NORAD, IF OTHER COMMANDS OR USERS HAVE A
REQUIREMENT FOR BREVS DISPLAYS THEY SHOULD BE STATED, TOGETHER WITH
JUSTIFICATION, TO DIRECTOR OF REQUIREMENTS, THIS HEADQUARTERS, FOR
CONSIDERATION AND NECESSARY PROGRAMMING ACTION.

Be THE CENTRAL FACILITY FOR NORAD HEADQUARTERS WILL STRV—
ICE NORAD, ADC AND ARMYLAIR DEFENSE COMMAND, BREVS DISPLAY SHOULD CONAD HIST FILE PAGE TWO RJETHO 263 NOT BE TECHNICALLY INTEGRATED WITH OTHER NORAD COC DISPLATS, BUT SHOULD BE CO-LOCATED WITHIN THE NORAD COC.
C. THE BMEWS MINIMUM DISPLAY AT NORAD SHOULD PROVIDE FOR C. THE BMEWS MUNIMUM DISPLAY AT NORAD SHOULD PROVIDE FOR DISPLAY OF WARNING, IMPACT PREDICTION WITHIN CAPABILITY OF APPROVED SMEWS DESIGN, AND STATUS OF MAJOR STEMS OF EQUIPMENT, INCLUDING COMMUNICATION LINKS. AT THE FORWARD SITES.

D. PROVISIONS SHOULD BE MADE AVAILABLE AT THE CENTRAL MORAD FACILITY FOR TAKE-OFF OF ALL AVAILABLE, USEFUL DATA WHICH CAN BE OBTAINED FROM THE APPROVED BNEWS DESIGN. SUCC DATA MAY INCLUDE NUMBER OF MISSILES, IMPACT PREDICTION, PROXIMITY TO PRIMARY TARGETS, LAUNCH POINTS OR AREA, MINIMUM TIME-TO-GO TO IMPACT. THE CAPACITY OF TAKE-OFF PROVISIONS SHOULD PROVIDE FOR ALL PROBABLE USERS SUCH AS THE ACTIVE DEFENSE SYSTEM, FCDA, JCS, SAC, HQ COMMAND POST, AND THE CHIEF EXECUTIVE.

E. NORAD WILL MAKE KNOWN TO THIS HO DISPLAY RECHIPMENTS E. NORAD WILL MAKE KNOWN TO THIS HO DISPLAY REQUIREMENTS IN ADDITION TO THOSE IN C. ABOVE AND WILL RECOMMEND THE METHOD AND TYPE OF PRESENTATION; NORAD SHOULD COORDINATE WITH OTHER USERS AS REFERENCED IN D. ABOVE AND DETERMINE THAT TAKE-OFF PROVISIONS WILL SATISTY THEIR REQUIREMENTS. 10/21212 JUN RJEPHQ
AC-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTIONPHYSICALLY REMOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR TO
DECLASSIFICATION- NO UNCLASSIFIED REFERENCE IF DATE-TIME GROUP IS QUOTED. MADVANCE COPY OF THIS Declassified REAL

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JOINT MESSAGEFORM PRECEDENCE ORIG OR REFFRS TO ACTION PRIORITY FROM CINCHORAD COFF USAF WASH DC COMUSAFADO ENT AFB COLD (COURIER) Declassified TOM NOESS-E REFERENCE MESSAGE AFDAQ 51908. REFERENCE YOUR ITEM (B), WORAD AGREES THAT THE BMEWS DISPLAY SHOULD BE COLLOCATED BUT NOT NECESSARILY TECHNICALLY INTEGRATED WITH THE AIR BREATHING THREAT DISPLAYS. HOWEVER, THE GROWTH POTENTIAL OF THE BMENS DISPLAY SHOULD BE SUCH THAT DATA ON THE IRBM THREAT FROM THE ACTIVE DEPENSE SYSTEM SHOULD BE TECHNICALLY INTEGRATED INTO THE BHEWS DISPLAY, PARTI-CULARLY FOR THE ATLANTIC AND PACIFIC EXTENSIONS. HEAD-QUARTERS USAF ADC HAS BEEN FURNISHED MORAD'S CONCEPT OF BREWS OPERATIONS FOR FORWARDING TO HEADQUARTERS USAF AND EMENS PROJECT OFFICE. REFERENCE YOUR ITEM (D) AND (E), DATE TIME HEADQUARTERS USAF ADC IS OBTAINING FROM THE USERS THEIR 21302 1958 NOESS-E TYPED NAME AND TITLE Signature of required Declassified

REPLACES DO FORM 173. 1 OCT 49. WHICH WILL BE USED UNTIL EXHAUSTED

DUPLICATE

DD FORM 173

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JOINT MESSAGEFORM - CO. .. NUATION SHEET

SECURITY CLASSIFICATION

FROM:

CINCHORAD

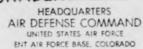
DATA REQUIREMENTS FROM BMEWS. THESE REQUIREMENTS WILL BE COORDINATED WITH MORAD. MORAD IS REVIEWING THE DISPLAY PROPOSALS SUBMITTED BY RCA AND WILL MAKE ENOWN ITS REQUIREMENTS TO USAF ADC AS SOON AS POSSIBLE.

COMEBACK NOELC

M/R: This message is in answer to the query made by Headquarters USAF requesting NORAD's requirements for displays for BMEWS. NORAD's concept for BMEWS operation has been furnished ADC NORAD is reviewing the RCA display proposals and will submit its requirements for displays to ADC in the very near future.

NOTES 2 2 RU. S. GOVERNMENT PRINTING OFFICE: 1995-6821

DD 1 MAY 55 173-1



TEL: MELROSS 305511

IN MERCAL TOUR TO ACCRE-D

28 :

STRUCT: // Central Zi Nicrlay, NORAD

FG: Commander-in-Chief
Continental Air Defence Command
Ent Air Force Base
Colorado Springs, Colorado

1. The Ballistic Missile Early Warming System (B* AS) implementation has progressed to a point where the IDBAC display requirements and display board configurations and the display requirements of other arencies i.e. SAC and the active system must be developed in detail.

2. At a recent meeting at the THIMP Project Office in New York at which NOWAD was represented, the following questions were asked.

a. Is BMOWN ZI display system to be designed as an integral part of the MORAD control and display center? (1) If yes, what are the detailed requirements to be implemented by BMENS.

b. Is BMEWS 31 computer facility to be designed to provide only outputs required by BMEWS?

c. Does a requirement exist for alternate display facilities? (Identical or different from basic displays?)

d. Are BMCWS warnings to be evaluated by (1) BMCWS? prior to distribution of warnings (2) MCRAD?

e. Is growth capability to automatically provide data to the active defense systems required?

f. Where do BYEMS outputs go?

g. That are BMSAS outputs in detail (Type and Precedence)?

3. The answers to all of these questions are contained in general form in the Table Preliminary Operations Tlan. More specific data is now required to enable the contractor to ensineer the computer and distrlay boards.

1. It is requested that our comments on the above questions with detailed comments covering the FODA requirements and the NORAD display be provided this Headquarters, AFTT: Directorate of Requirements, BMOWS Branch.

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ADO Q-E, SUM: () Central ZI 's lay, ')

5. Requests are being forwarded to Ser and 1 TV, concerning their requirements from the Table system.

6. A moeting will be called as soon as the onesers are received and consolide ed. These requirements will show so no mitted to the RESE Project Office for implementation.

FOR THE CALL VIEWS

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SPECIAL HAMDLING FOURE

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Approved by CI John on 11 June 1958

NORAD CONCEPT OF BMENS OPERATION

- develop a detailed concept of operation of a system such as BMEWS without considerable detailed knowledge of related systems. Such knowledge, particularly that pertaining to the active defense against ICBM's and IRBM's, is not yet firm enough to enable us to spell out a NORAD operational concept in detail. However, the discussion which follows represents present thinking and should be of assistance to the designers, at least as a starting point for study and discussion.
- active defense against the air and missile threat, CINCNORAD also has definite responsibilities relative to passive defense, and these should not be overlooked in the design of the BMEWS. It is assumed that the BMEWS will detect and identify incoming ICEM's and will in the process produce trajectory data. It is assumed further that these data will be transmitted directly to at least one point in the U.S. (the NORAD COC). At present, it seems immaterial from the NORAD viewpoint whether the identification, discrimination, or track determinations are analyzed and evaluated at the point of detection or at the central point. Therefore, the technical designers of the system may choose freely on these points. However, it appears that certain

correlation functions could best be performed at the latter place. These are functions which relate to data track coming from two or more detection sites and perhaps/data on satellites entering orbit, in orbit or leaving orbit.

- 3. In consideration of the overall CINCNORAD mission, we look at the ZI portion of the BMEWS (ZI Central Complex) not only as an integral portion of the BMEWS but, in fact, as the heart of the entire Ballistic Missile Defense System. Therefore, the Central must, in fact, not only accept inputs from BMEWS/but must be capable of accepting certain types of information which may be available from the active defense elements or from other sources not yet developed (such as satellites). For example, if the first attacks were to be made by IRBM type missiles launched against the Continental U. S. from submarines or "Q" ships off the coasts, it would be essential that this information (including detection and engagement) be transmitted from the active defense elements and displayed in the Central at the NORAD COC as well as the information from the BMEWS Radar Sites.
 - 4. The modus operandi of the entire AICEM system
 must be founded upon the premise that practically all
 tactical decisions will have been made in advance long in
 advance of detection or defensive action. It follows from
 this that certain portions of the derived data must flow

must be designed to optimize automatic reaction. It is therefore a definite requirement that the NORAD COC not only have an electronic computer which will sort and evaluate incoming data, but the computer must include a high-speed automatic communication switching facility designed to handle a high volume of outgoing data on a selective basis involving numerous combinations of outgoing circuits, all programmed in advance.

- 5. It is recognized that many factors (spoofing, ECM, equipment malfunctioning, environmental effects, etc.) will have a bearing on the overall computer program and that the logic on which the system may be required to act will be continually changing with new technological developments, with varying time and circumstances, with intelligence data, etc. Therefore, the system should be designed with considerable flexibility in computer logic.
- 8. If one were to assume that the BMEWS had a very small, but nevertheless discrete false alarm rate, and that it reported a single ICHM enroute to Milwaukee without previous alert the following actions (as a minimum) should be automatic:
- a. Time and space coordinates compatible with the active defense element should be transmitted without interruption to selected active defense units in a predetermined

area. It should be assumed that the appropriate batteries will fire without further orders as soon as they are able to engage the incoming missile.

- b. SAC bases within a previously determined radius should automatically receive scramble orders.
- c. Other important military installations within a predetermined radius should automatically receive appropriate alert orders. (ADC bases, TAC bases, etc.)
 - d. FCDA area alerts should be delivered.
- e. Pentagon and Ft. Ritchie command posts should receive predicted impact and engagement data. (Maybe other agencies in Washington.)
- f. CAA should receive alert possibly direct control points to major xxxixxixx/in the impact area.
- g. CINCNORAD (COC) must be informed of all pertinent data received and all actions taken this by a combination of alarm signals and data displays.
- 7. The above discussion assumed the detection of only one ICBM. Obviously the system must be able to cope with a very rapid succession of incoming missiles the so-called simultaneous attack by many missiles. The reaction should be, in general, the same as described above, but at some point in the flow of information a general alert should be sounded. Just when this should be done is not clear but the precise time is probably associated with numbers of incoming missiles over a time period, and

the calculated impact areas. At any rate, the system must be able to cope with various levels of attack and make an appropriate decision at each level - always with human override capability.

- 8. There has been considerable discussion as to the type of display desired by CINCNORAD. There are no very firm convictions on this subject at present. It would seem that a display could be designed in a very wide variety of formats and still be satisfactory provided it met the basic requirement of portraying the situation in a readily readable form. Close cooperation between data processers and human engineers is indicated. Since CINCNORAD will still have to cope with the air-breathing threat and since a large scale map display is convenient for this purpose, it would seem that a reasonably large scale map portrayal of the missile situation is also in order as a basic display. Certainly a real time picture of all defensive and retaliatory action will be needed - these data could be furnished by combinations of pictorial and tabular displays, backed up by a permanent record of all significant events. Further, the display system should provide the opportunity for personal judgment of the credibility and meaning of the data furnished by the system and for override of decisions where desirable in the interest of the overall mission.
- 9. The question has been raised, "If the system is fully automatic, how do we prevent our own ICBM's being fired in the case of a false alarm?" For the immediate

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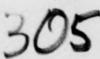
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the count-down time for launching an ICBM is apt to be somewhat longer than the maximum time available between first warning and the first enemy impact. An override could therefore be readily arranged to interrupt the retaliatory firing. Or aximum count-down sequence could be arranged to include a "fail-safe" feature with a positive last minute human decision contingent upon actual arrival of an enemy weapon somewhere within the defended area. This part of the problem will have to be studied as we go along and it would seem that progressively better answers will only be obtained as actual operating experience with both the offensive and defensive systems is built up.

- 10. Obviously this discussion does not cover all possible contingencies nor does it attempt to specify all possible reactions. Its main purpose has been to point out three basic requirements.
- a. The system must be designed so that the complete sequence of events, from warning to reaction, is automatic. For the initial reaction and most subsequent reactions, the tactical response is based on decisions made in advance.
- b. The system must be completely compatible with the active defense weapon complex and must handle pertinent data from all available sources.
- c. The ZI computer, display, and switching complex must not be considered as a terminal point but rather as the heart of an ICBM-IRBM defense control system.

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Hq ADC, ADORQ-E, 28 May 58, subj: (U) Central ZI Display,

NOESS-E

1st Ind

11 Jun 1958

Hq North American Air Defense Command, Ent AFB, Colorado Springs, Colorado

TO: Commander, USAF Air Defense Command, ATTN: ADORQ-E, Ent AFB, Colorado Springs, Colorado

 Based upon current information available to this headquarters the following answers are submitted in relation to specific sub-paragraphs of paragraph 2, basic letter:

a. The BMEWS ZI display system is to be designed as an integral part of NORAD control and display center (COC). The display requirements to be met by BMEWS are outlined in detail in attachment 1.

b. The BMEWS ZI computer facility is to be designed to provide any and all types of outputs required by the entire ballistic missile defense system.

c. A requirement does exist for alternate display facilities. The specific type of display to be furnished each agency involved cannot accurately be determined until such time as display concepts, formats, etc. have been presented for further analysis. Although CINCNORAD is the prime user for the entire output display, various other agencies will, in the future, require varying amounts and portions of the integrated display. For example, Strategic Air Command will undoubtedly require those portions of the display pertaining to impending attack. The active defense element of the BMD's will require not only warning of impending attack but specific track information. Similarly the detailed quantity and type of information that may be required at Washington, D. C., or the Alternate Joint Communication Center can only be determined after further system development.

/s/t/ L/CWilliam 2029 10 Jun 58 X8-6888 egl

d. BMEWS data warnings will not normally be delayed for human evaluation by any staff in the chain of command. A considerable amount of automatic evaluation within the BMEWS system will therefore be necessary. (See



e. A growth capability to automatically provide data to the active elements is required as outlined in our answer to question 2c above. (See attachment 1)

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f. BMEWS outputs are as outlined in 2c above.

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System

g. Refer to information contained in reply to sub-paragraph 2c and inclosure 1.

2. It is desired that we be furnished any technical proposals and studies made by your headquarters or contractor personnel which pertains to the NORAD COC facility. Contract In addition, periodic and detailed briefings will be required in order to develop further refinements and/or to clarify certain stated requirements as the proposals develop toward the hardware stage.

FOR THE COMMANDER-IN-CHIEF:

Incl Concept of Operation F. F. UHRHANE Brig Gen, USA DCS/Comm and Elect

COMMAYFORCOMA

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Recurs Evaluation | Permanent | Long Time Value

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30 June 1958 CINCHORAD

HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

	SUBJECT: (U) ICBM-1RBM Defense Display System, NORAD	Scientific Coneu
	TO: Commander	
	USAF Air Defense Command	DEP/CINCHOR
	Ent Air Force Base	CefS
	Colorado Springs, Colorado	ASST Coff George
	Colorado Spilago, Colorado	Admin
	1. Reference is made to our 1st Indorsement to	Audio-Visual Sv
	letter ADORQ-E, Hq USAF ADC, 28 May 1958, subject:	Protocel
	Central ZI Display, NORAD.	IMPO SERVICES
	2. Our inclosure to the above lat Indorsement	DES/CRE TX
	was a preliminary outline of the NORAD concept of	Systems
	BMEWS operation and did not deal adequately with	
	specific requirements for the NORAD COC display as	Plans & Ro
	such. The attached paper represents an effort to	Elet Gertere
	provide additional guidance on this subject.	
	personal personal da unit subject,	DCS/I A
	FOR THE COMMANDER-IN-CHIEF	Coll & Dresem
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	NORAR BMEWS and ATCHM Major General, UBA	Operations
	System Display (trip) Chief of Staff	Plans Analysis
		Combat Opn (47%)
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Approved by C

NORAD BMEWS AND AICBM SYSTEM DISPLAY

In order to design a display system it is first necessary to consider the data which it must show and the kind of information which is to be derived from it. In the ICBM defense system it is important also that events which will help CINCNORAD to personally judge the validity of the data, be displayed in reasonable detail and in a form readily understood under conditions of stress. If it is to be a display in real time sequence, it is helpful to visualize the progression of events which are significant to the observer,

Let us assume the firing of a single ICBM from enemy territory into the North American Area and normal operation of the defense system. The first indication will then be a detection in the lower fan beam of a BMEWS radar. At this point the validity of the data is very questionable, but it is nevertheless the first warning of a possible emergency. The following indications should be automatic:

- a. A warning bell or other audible signal.
- b. A map indication of the point of detection and the station reporting the detection.
 - c. Track designation.
- d. Subsequently, another radar station may report the same event. This verification should also be indicated.

As the missile rises through the upper fan beam of the radar the following indications should be recorded:

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- a. Another audible signal similar to the first but with enough difference to be distinguished from it.
 - b. A map indication of the point of detection.
- c. A preliminary indication of the probable point of origin and point of impact.
- d. Again, any verification by another radar station should be shown.

As the tracking radar takes over it will perform the extremely important functions of track refinement and identification. Its output should produce the following indication:

- a. An alarm bell (the alert at this time is of high reliability).
 - b. A predicted point of impact.
 - c. A predicted time of impact.
 - d. A corrected point of origin,
- e. A trajectory extrapolation to point of impact displayed in real time sequence.
- f. If tracking data from another radar becomes available, it should be combined with the original in such a manner as to refine the probable impact point.

Although the above actions refer to an impact point, this point is really only a point on the axis of a cone which intersects with the earth to form an elliptical danger area. Therefore the predicted impact point only represents the best available knowledge as to the probable Declassified

should be designed to show both the computed aiming point and the surrounding area of possible impact. As successively better data are introduced during missile flight the danger area should be moved and corrected in size to correspond.

As the missile enters the active defense complex

(assumed to be ZEUS initially) the forward acquisition

radar will acquire the target at some point and provide

very valuable correlation information. Unless the BMEWS

track data were very accurate there should also be further

corrective information. (Identity is now virtually certain.)

The following should be displayed:

a. The point of acquisition by ZEU3.

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- b. The corrected track in real time sequence.
- c. Possibly the predicted intercept point.

Shortly after the ZEUS forward acquisition radar has started to track, a missile battery will be fired. The following data should be displayed:

- a. Location of the firing battery.
- b. How many missiles were fired.

The ZEUS local acquisition radar and target tracking radar should, between them, be able to report accurately on the success of the firing. Since a miss on the part of ZEUS might well result in destruction of any further reporting capability from the impact area for an appreciable period of time, it is vitally important that ZEUS

report results of engagement. The following should be displayed:

- a. Hit or miss.
- b. In case of hit, the point of detonation.
- c. In case of miss, the incoming track and the point of detonation, including altitude.

Thus far the discussion has centered around only one part of the display system -- that part which shows the minute-by-minute progress of the battle between an enemy ICBM and the defensive AICBM. As more ICBM's are engaged this display must be kept cleared for action and, at the same time, certain data must be preserved and recorded elsewhere. For example, it is necessary to evaluate the relative importance of enemy launching sites. One way to do this is to keep a cumulative record of missiles launched from each one and their targets. This could be done readily by a coordinated display on a separate board -- either map or tabular. As an individual engagement is completed the salient points are erased from the main board and simultaneously added to the auxiliary board. Successful engagements should likewise be recorded as should actual impacts. In coordination with weather data the latter should be used to predict successive approximations of probable fall-out areas and displayed on a map.

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There are other possible sources of warning information which must not be overlooked in the display system:

- a. Equipment has been designed which will detect the launch of an ICBM or IRBM which is radio controlled to the burn-out point. From available information this equipment will give good warning at about the same range as the BMEWS fan beam radars and about the same quality of trajectory and impact data as those radars but will not be able to refine these data any further. The computer and display should be designed to utilize this for what it proves to be worth.xprsbablyxabsutxikexsamexxalwaxasxikexBMEWSxamaky warmingxradarxiakexxalwaxasxikexBMEWSxamaky
- b. ZEUS radars, particularly the local acquisition radar when sited to overlook ocean boundaries, can provide useful warning and engagement data against IRBM's launched from Q-boats or submarines. The display should permit full use of this information.
- c. At least one radar whose primary mission is strategic ELINT may also be able to contribute to the early warning capability. Its output should be integrated into the system and displayed for what it proves to be worth.

It is therefore obvious that the computer-display complex must be designed with sufficient flexibility and capacity so that it can handle warning and track data from these and other sources such as reconnaissance satellites.

Likewise it should function so as to recognize and report
on various raid levels.

Some of the other actions or status information which need to be recorded and displayed are:

- a. Boundary of the FCDA area alerted.
- b. SAC bomber bases alerted.
- c. SAC ICBM bases alerted.
- d. Friendly ICBM-IRBM strikes, to include point of origin, target, and number of missiles fired. Friendly bomber strikes.
- e. Senior headquarters and other commands alerted (SHAPE, CINCAL, etc.).
 - f. Cumulative North American damage reports.
 - g. Defense bases alerted (TAC, ADC, etc.).
- h. NORAD air defense system alerts (DEW Line, Atlantic and Pacific Barriers, etc.).
- CAA alerts, CONELRAD status, SCATER status,
 etc.
- j. Information on satellites entering orbit, in orbit, or leaving orbit.
 - k. Defense system status.

Probably none of these need to be continuously displayed on a real time basis except d. and f. The others might be displayed only as changes are made or on a call-up basis.

one of the important responsibilities of CINCNORAD is to advise the U. S. and Canadian governments on the progress of the air battle and to provide them with periodic summaries of the overall situation. To do this CINCNORAD must have the best possible picture of offensive results as well as the defensive situation. Displays should therefore be included to show friendly strike results. This would seem to call for a map of Soviet and satellite countries so drawn that important targets and strikes against them could be recorded. Sook recording madelian because manuscrips. Likewise, the situation in Western Europe and other free world areas needs to be portrayed in its bare essentials at least.

As to the physical format of the display system and the general layout of the Combat Operations Center, it should be noted that NORAD will still be the nerve center for defense against the air-breathing threat as well as the ICBM-IRBM defense. The above discussion has deliberately avoided any mention of specific needs for the older role, but it will readily be appreciated that some of the status information is a common requirement—such things as FCDA alert boundaries, SAC bomber bases alerted,

etc. For control of the airborne defense a basic map display will also be required and it is assumed this will be a separate display. So this brings us to a concept which involves two large scale maps, one or more smaller maps, and probably several tabular units. Of these, one large map will be devoted to ICBM-IRBM action and one large map to airborne action. Of the smaller displays, it would seem that at least one, and probably more, will be devoted exclusively to ICBM-IRBM actions while others will fill a joint need.

The size of the display system is dictated largely by the number of people required to perform or monitor the individual functions involved. It should be borne in mind that NORAD does not attempt to control all functions in detail and that a layout with numerous individual control consoles would therefore not be appropriate. A layout which suggests itself as being realistic as well as convenient is a circular or semicircular amphitheater with a fixed lower dais and a revolving upper dais in the center. In view of the fact that most data to be displayed are closely related to map coordinates and that great circle arcs are most easily plotted and read on a spherical surface, consideration should be given to a spherical format for the main displays.

Although the above discussion has been developed primarily as a guide to the design of an ICBM-IRBM display system for the COC at NORAD Headquarters, it has been necessary to mention requirements which are not unique to that particular role. These have been mentioned not only because some of the display requirements are common, but to point out the need for a systems approach to the whole computer-display problem. From the NORAD viewpoint it is difficult, for example, to consider the BMEWS as a self-contained entity separate from NIKE-ZEUS, or vice versa. It follows that the design of these two systems must come together at various points so that CINCNORAD can monitor and control the tactical action from an integrated source of information. To build such a picture obviously calls for careful consideration of technical matters beyond the scope of this paper -- system parameters such as data bit rates, language compatibility, coordinate data compatibility, and the like. CINCNORAD is dependent upon the joint effort of the Army and Air Force to resolve these details.

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HEADQUARTERS NORTH AMERICAN AIR DEFENSE COMMAND ENT AIR FORCE BASE COLORADO SPRINGS, COLORADO

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that they be disseminated to all appropriate agencies working on these systems and that coordination of development be undertaken at all levels.

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HORTH AMERICAN AIR DEPENSE COMMAND

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- THE THEATTH AND THE HINGE

General Nathan F. Twining Chairman Joint Chiefs of Staff Washington 25, D. C. Same Ltr to:
General C. Foulkes, C.P., C.B.E., D.S.O.
C.D.
Chairman, Chiefs of Staff Committee
National Defence Fracquarters
Ottawa, Ontario, Canada

Dear Nate:

So much is happening in the air defense business and my meetings with you and General Foulkes are so infrequent that it would appear desirable, at least on an interim basis, for me to write you both identical letters (as these letters initiate) in a very informal fashion to keep you abreast of developments as seen from Colorado Springs. It is obvious to me that some sort of machinery must be established to serve as a channel for passing NORAD information laterally between the Chiefs of Staff Committee and the Joint Chiefs of Staff, and in the reverse direction, so that activities started by one body will be immediately known to the other. We realize here that there have been such communications passing back and forth but by what machinery we are not quite sure nor are we under ordinary circumstances immediately aware of what transpires.

In any event, until such time as clear-cut channels of communication are established. I would hope that these informal identical letters to each of you will be considered in the light of personal conversations between us. I assume that certain portions of these letters might be of interest to one or more of the service Chiefs of Staff and must leave to your judgment what further dissemination might be necessary within your organisation. As you will see, these conversations are not designed to generate staff action, nor are they intended for general governmental consumption.

The requirement for the establishment of a system by which my two bosses keep immediately abreast of instructions

General N. F. Twining

and information passed to me by one of them is highlighted by our current studies on the emplacement of NIKE Zeus batteries in providing for anti-missile defense. The Joint Chiefs of Staff have asked for recommendations as to the location of the first 16 NIKE Zeus firing batteries and for the siting of 5 forward acquisition radars. There is no guidance provided to indicate the targets which these 16 batteries should defend, and our initial efforts were directed towards giving protection to the most important Strategic Air Command bases in the United States. However, our best estimate of the accuracy of the pre-1962 Seviet ICBM leads us to the conclusion that in this time period, the Soviets would probably decide to employ these weapons against area targets such as our larger cities rather than against our relatively smaller targets such as our air bases. For this reason, we are now engaged in studies which will probably establish a good case for anti-missile defense around the 16 most important cities of Canada and the United States with forward acquisition radars sited well to the north and in several cases on Canadian territory. In this time period we will give primary importance to the protection of our population and industrial centers and try to locate the batteries in such a way that incidental protection may accrue to certain nearby SAC installations.

It should be borne in mind that we are now working on only the first 16 firing batteries and that as subsequent firing units become available, protection can then be extended to include our retaliatory striking forces which at that time will have both aircraft and intercontinental ballistic missile firing installations.

In locating the forward acquisition radars, which should be somewhere between 200 and 600 miles ahead of the firing batteries, we find ourselves in somewhat the same sort of discussions which developed from our BOMARC planning. Had we got together with the Canadians in the early planning stages for BOMARC, the Canadians feel that some of our

General N. F. Twining

BOMARC installations, notably in the northwest, could well have been located farther north, in Canada, and thus would have provided a great deal more protection for populated areas of Canada. We, therefore, feel quite strongly that we should approach the siting of our anti-missile firing units on a North American rather than a United States basis. Therefore, the siting of forward acquisition radars should take into consideration the eventuality of anti-missile firing batteries at Canadian as well as U. S. cities and other targets. We are anxious to include the best Canadian thinking which we can secure in order to make certain that we have not overlooked any important factors.

Before any firm recommendations are submitted to the United States Chiefs of Staff concerning anti-missile defense, we plan to dispatch an officer to both the Chiefs of Staff Committee and to the Joint Chiefs of Staff with a tentative proposal. This will permit both bodies to get into the act before any firm plans or recommendations are formulated.

While the matter of siting our anti-missile system is the most pressing at the moment, I should like to take this opportunity to hit a few other points. In the field of public relations, we find ourselves at NORAD to be caught in the bind between two dissimilar public relations policies. In the United States, it is customary to try to educate the news media representatives by giving them whatever information can be made available within the bounds of security. We have been pursuing this position actively at NORAD, as did the organizations which preceded NOPAD, with the result that, generally speaking, we have been treated with great understanding throughout the United States. On the other hand, in Canada the military services are not encouraged to nearly as great a degree to reveal activities to the news media, so a great deal of conjecture takes place in the public press and in other public relations media. It is quite routine for us to arrange within the United States to have press representatives visit our various NORAD activities. But when such arrangements were initiated with respect to a group of Canadian news media representatives, the project was cancelled General N. F. Twining

at what, I believe, was Minister of Defense level. I mention this matter in some detail because Canadian news representatives will continue pressure to visit NORAD Headquarters, and it is inevitable that I will be forced to explain why Canadian newsmen are not brought to NORAD Headquarters in the same manner as U. S. representatives. The only answer that I can think of at present is that I work for two bosses and that I follow in the U. S., the rules laid down by the Secretary of Defense, whereas for Canadians, I must clear this type of activity with the Canadian authorities. This is not a very good answer but frankly, I don't know what else to say.

One other matter is under consideration by the U. S. Joint Chiefs of Staff which has an impact on our relationship with Canada, and this is the matter of locating NORAD Headquarters elsewhere than at Ent Air Force Base in the city of Colorado Springs. It has been recognized for several years that the facilities at Ent are quite inadequate both from a point of view of availability of floor space as well as security. The Combat Operations Center is a concrete block building of extremely light construction and is exposed to the traffic on the adjacent street so that a man with a baseoka passing in a car could put the establishment out of commission. Presently, the United States Air Force is building the first two of three stations of the Ballistic Missile Early Warning System, one in Alaska near Fairbanks, and one in northern Greenland, near Thule. The fecal point of the Ballistic Missile Defense System must be at NORAD Headquarters. No one yet knows exactly what this focal point should comprise but everyone agrees that a large electronic computer, similar to that of a SAGE Direction Center, will be essential. If a SAGE type computer is to be employed, it is to be expected that it will cost 20 million dollars at the minimum and that the installation would be one of considerable delicacy, requiring protection against atomic attack, including the shocks produced in the earth by megaton type explosions.

The U. S. Air Force Academy is scheduled this summer to vacate quarters at Lowry Air Force Base, in the southeast

General N. F. Twining

corner of the city of Denver, and it is U. S. Air Force view that these facilities should be made available for NORAD Head-quarters in order to save money on the administrative part of the establishment. I am firmly convinced that this is an entirely unsound and unacceptable solution to the problem of providing this headquarters with adequate facilities. The matter is being studied further and in due course this headquarters will submit to the Chiefs of Staff of Canada and the U. S., a proposal which will involve the construction of a hardened Combat Operations Center under a mountain in the vicinity of Colorado Springs. Adequate granite formations exist nearby and our preliminary estimates indicate that the cost of construction will be no greater in a mountain than it would be if a hole were dug and a massive concrete structure were built to provide the necessary security from hostile attack.

For your information on another subject, on the 22d and 23d of June, Admiral Rodee and I, along with some of my staff, made a visit to Argentia to get a look at the Atlantic Barrier operations. Captain Masterton is doing a fine job and I came away with a feeling of confidence that the Barrier operates on a sound and productive footing.

On the 4th of July, I intend to go again with Admiral Rodee and some of my staff to Honolulu where we will make a similar visit to the Pacific Barrier Headquarters at Barbers Point. The Pacific Barrier is to become operational the let of July on a partial basis. Admiral Moore, the Barrier Commander, has visited this headquarters for indoctrination purposes. Since the Hawaiian Islands are outside my territory, Air Marshal Slemon will be in full charge of the NOKAD system from the 4th to the 9th of July.

It is of interest to note in passing that on the same date as the Facific Barrier becomes operational, the first SACE sector will also become operational in the NOTAD system. This establishment was formally dedicated on the 27th of June at McGuire Air Force Base.

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General N. F. Twining

Finally, if there appears to be any reason why this interim method of communication is inappropriate, I would appreciate your views soonest.

Sincerely,

E. E. PARTRIDGE General, USAF Commander-in-Chief

when filled .

COPY OF INCOMING CL. IFIED MESSAGE

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SEE CRYPTO SECTION BEFORE DECLASSIFYING

7 FEB 1958

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ZEN/CONDR AFBIID INGLEWOOD CALIF ZENICHTEF DEN PROJECT OFFICE 220 CHURCH ST NY NY PRIORITY

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AIR FORCE IS PROCEEDING WITH ASSIGNED RESPONSIBILITY FOR DEVELOPMENT OF A BALLISTIC MISSILE EARLY WARNING SYSTE. SYSTEM CONFIGURATION INVOLVES THREE OVERSEAS RADAR STATION OF AIRBANKS AREA,
ALASKA; THULE AREA, GREENLAND; ABERDEEN AREA, SCOTLAND), A ZI COMPUTER CENTRAL AND DISPLAY FACILITY AND DITERCONNECTING COMMUNICATIONS. PART I. DECISION REQUIRED FROM YOUR COMMAND REGARDED
LOCATION OF ZI CENTRAL COMPUTER AND DISPLAY FACILITY. ABVISE SPECIFICALLY AS TO EXACT LOCATION AND FUNCTIONS DESIRED OF CENTRAL
FACILITY. PART II. FURTHER STUDY REQUIREMENT FOR ABBITIONAL DISPLAY FACILITIES FOR CANADA-SAC, ETC. AND SUBMIT PLANS FOR IMPLEMENTATION. PART I ANSWER REQUESTED SOONEST. Declassified

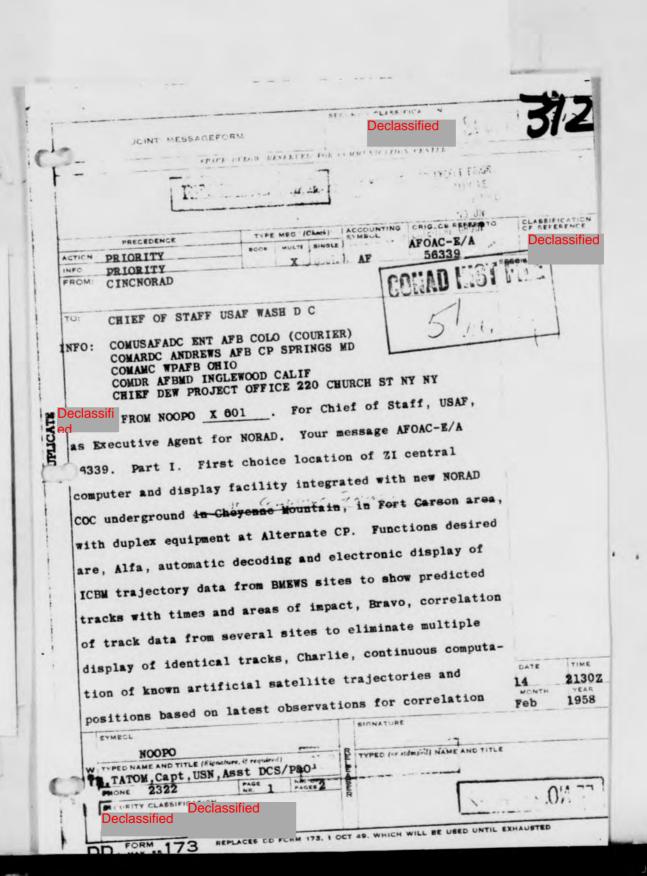
07/2305Z FEB RJEPHO

AC-PARAPHRASE NOT REQUIRED EXCEPT PRIOR TO CATEGORY B ENCRYPTICH-PHYSICALLY REHOVE ALL INTERNAL REFERENCES BY DATE-TIME GROUP PRIOR TO DECLASS IF ICATION- NO UNCLASS IF IED REFERENCE IF DATE-TIME GROUP IS QUOTED.

///ADVANCE COPY OF THIS MESSAGE HAS BEEN DELIVERED TO COC///

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JOINT MESSAGEFORM - CONT. ATION SHEET

SECURITY CLASSIFICATION
Declassified

CINCHORAD

with new observations for purpose of identification, Delta, automatic transmission of all correlated track predictions to interested military commands and FCDA, and selected track predictions to active ICBM defense installations on geographic basis. Part II. Requirement for additional display facilities under study but as presently visualized would consist of automatic electronic display of predicted impact area together with predicted time of impact for each track in the system. These should be located in each NORAD Region COC, SAC CP, SAC Alternate CP, Pentagon CP, Fort Ritchie and FCDA headquarters. Commander ADC and OG ARADCO. concur.

MEMO FOR THE RECORD: Not required

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1958.

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CHIEF OF STAFF, USAF, WASH D C

INFO:

COMUSAFADC ENT AFB COLO CG USARADCOM ENT AFB COLO COMNAVFORCONAD

Declassified

from NOOPO X 001

PERSONAL FROM PARTRIDGE TO WHITE. I understand that as a result of the emphasis being placed upon the Ballistic Missile Early Warning System active consideration is again being given to a new command post for NORAD which will include the central computing and display equipment to be associated with the Ballistic Missile Early Warning System. I should like to take this opportunity to reaffirm certain requirements which I feel pertain to the NORAD Hq complex: First, it is my conviction that operating elements of the component staffs, i.e., USAF ADC, USARADCOM and NAVFOR-CONAD, must be situated in a common command complex. DATE Second, that the command post must be hardened for protection against several hundred pounds of over pressure Feb

NOOPO

TYPED NAME AND TITLE (Symmure, I require)

E TYPED (- MUMPAL) NAME AND TITLE

Capt E TATOM, USN ASST DCS/P&O E STATEM 2322

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JOINT MESSAGEFORM - CON.... JUATION SHEET

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to insure continuation of its operation after thermonuclear attack and, third, that the facilities associated with the command post must be self-contained insofar as auxiliary power, water supply and austere living facilities are concerned to insure a continuous operation for an indefinite period in the presence of radioactive fallout and severance of external utilities. The specific location of the Hq and command post complex I do not believe to be significant provided it meets two governing criteria, i.e., that the location be one in which natural geographical features lend themselves to deep underground construction, and that it be convenient to an existing commercial communications focal point, for unless multiroute communication facilities are available at the selected site they must be established as a part to the essential services of the command post. I do not believe that the present availability of any above ground facilities, such as those shortly to become available at Lowry Air Force Base, should be a factor in the site selection for this command complex unless they meet the criteria enumerated above. The total requirements for floor space and internal equipment have been expressed by this Hq and are a matter of record with ADC. In view of the urgency placed upon the development of the Ballistic

Missile Early Warning System, and the requirement that NR OF SPOURITY CLASSIFICATION PAGES Declassified 3 NOOPO 2000

SECURITY CLASSIFICATION Declassified JOINT MESSAGEFORM - CON .UATION SHEET Declassified CINCHORAD its zone of interior terminal be integrated with a MORAD command post, I earnestly urge that you do all that you can to get this program off dead center. A PRANTY-ASSIGN TO A SECTION OF THE PARTY OF Capt Tatom 2322 10 Feb 58 MEMO FOR RECORD: Not required Declassified NR OF SECURITY CLASSIFICATION MOOPO

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COMDR ADC ENT AFB COLORADO SPRINGS COLO (COURIER)

CG USARADCOM ENT AFB (COURIER)

COMNAVFORCONAD ENT AFB (COURIER)

Declassified OM NOHCR X- 013 . To JCS. Subject is location of ZI computing center for ballistic missile early warning system. This message in 8 parts. Part I. Consider it essential that BMEWS ZI central computer be integrated with NORAD COC. Part II. Consider that NORAD and component command headquarters must be collocated and adjacent to COC for rapid assembly of battle staff and joint detailed planning functions. Part III. It is of paramount importance that COC be hardened to withstand several hundred pounds per square inch overpressure and accompanying earth shock from thermonuclear blast in order to continue in operation after initial attack. Part IV. Location should be far removed from other prime targets such as SAC installations, war industries, ABC installations, and major centers of population. Part V. Location should be convenient for access to diversified communication routes. Part VI. Rand Corporation is surveying possible site locations meeting above criteria and promises report about last week this month.

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Part VII. Essential that decision as to location be deferred pending review of Rand Study. Part VIII. All NORAD component commanders concur.

/s/t/ E. .E PARTRIDGE, Gen. USAF 2201-2

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best solution at reasonable cost. Part III. Understand that JCS are to deliberate this question and stands ready to make a presentation on subject at any time it may be desired. All component commanders concur.

M/R: Not required

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NORAD SECYT FORM, 16

THE JOINT CHIEFS OF STAFF Washington 25, D. C.

30 JUN 1958 SM-449-58

MEMORANDUM FOR THE COMMANDER IN CHIEF, NORTH AMERICAN AIR DEFENSE COMMAND

Subject: Location of NORAD Headquarters (U)

- The Joint Chiefs of Staff have considered the question of facilities required to accommodate the prospective enlargement of your headquarters and have been advised of your proposal and the alternative proposals suggested by the Chief of Staff, U.S. Air Force.
- 2. Customarily, the selection of a headquarters site and the degree of protection to be given to the vital elements of such headquarters, is a matter for determination of the unified commander in collaboration with his component commanders and through them with the respective Services. Although your Terms of Reference are not specifically applicable to this particular problem, the coordination required, including that of the Air Defense Command of Canada is comparable to that entailed in your operational planning matters.
- 3. It is, therefore, requested that you develop and submit your justification and recommendations for a new headquarters following the procedures in paragraphs 10b and 11 of your Terms of Reference. Technical assistance not available on your staff may be obtained from the Services through your component commanders. Your recommendations will include cost estimates.
- 4. The following criteria, which are not intended to be restrictive, are provided to assist you in your study:
 - a. The location of the headquarters should be determined by the optimum location for the hardened Combat Operation Center (CCC).
 - b. The COC, wherever located will be a prime target, consequently the site should be selected, as far as practicable, remote from other key facilities so, if attacked, a minimum "bonus effect" to the enemy would result.

Declassified

UPLICATE

- c. Although it is possible that a space in the interior of a mountain will resist an overpressure of 500-800 pounds per square inch (psi), the design of closures to entrances and ventilating inlets, to resist the above pressures is not currently practicable. To be consistent with approved policy, the structures should be designed for an overpressure of not more than 800 psi. Your recommendations on the necessity for any hardening are requested particularly in view of the vulnerability of the Ballistic Missile Early Warning System (BMEWS) and your subordinate control centers.
- d. The conventional administrative headquarters should be located convenient to the COC site. Headquarters siting and construction should conform to current Department of Defense directives with respect to austerity, economy and use of government-owned land.

For the Joint Chiefs of Staff:

/s/t/ R. D. WENTWORTH
Brig. General, USAF,
Secretary

13 Aug 58

NOOPO

SUBJECT: Location of NOPAD Headquarters

Commander USAF Air Defense Command Ent Air Force Base Colorado Springs, Colorado

1. A. Reference JCS Memorandum SM-449-58 of 30 June requesting recommendations of this command concerning location of NORAD Headquarters.

B. Reference NORAD Memorandum for the JCS, dated 31 July, in reply to a bove.

- 2. Reference 1. b. recommedned that the NORAD Headquarters be located in the Colorado Springs, area. The Air Force Academy site and Fort Carson were indicated as preferable sites in this area, with the COC to be constructed in the mountains nearby. It was stated, however, that before a firm statement of preference for one of these sites over the other can be made, a detailed survey of the rock formations of these mountains must be made, and that a comparison must be made of the extenstof support which can be given the headquarters by the respective military establishments.
- 3. For the purpose of preliminary comparison of the merits of the two sites mentioned above, certain a ssumptions have been made as to availability of support facilities available at the Air Force Academy and at Fort Carson. (See Inclosure #1).
- 4. Request that your headquarters review these assumptions insofar as they relate to the Air Force Academy site. If they appear to be reasonable, request that your headquarters solicit a commitment by the Department of the Air Force of facilities at the Air Force Academy site which can be made available to this command.

FOR THE COMMANDER-IN-CHIEF:

1 Incl Assumptions concerning AFA site and Fort Carson support facilities HARVEY T. ALNESS Major General, USAF Acting Chief of Staff

M/R - self-explanatory

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Assumptions concersing the Air Force Academy Site and Fort Carmon Facilities to Support the MCLID Rendquarters

- 1. Assumptions applying to both sites:
- a. The COC will be built underground in a mountain, either Blodgett Peak or Cherenna Mountain, and countraction comta will not be significantly different, whichever mite is smlected. Excavation will be commenced as Phase 8 of the project, with \$4.400,000 allocated for the first year's work.
- b. Administrative beadquarters for those staff divimions which are required in the COC during battle will be provided within the underground or will be built above ground within five minutes travel time of the COC portsi.
- will be accomplished in Phase I. At the Air Academy site the lend is government owned, but requires extensive preparation for construction of a headquarters. because of the rugged terrain. At the Cheyenne Monatain site, the land must be acquired, but its preparation would be somewhat easier than in the case of the alternate site at the Academy. A very rough estimate of comparative costs of land acquisition plus preparation at the two sites reveals so significant difference in the total.
 - d. Quarters for key personnel must be within ton minutes travel time of the COC portal.
 - e. Construction of the COC will be the item determining the time for completing the project, and can commence
 approximately one year is advance of other construction.

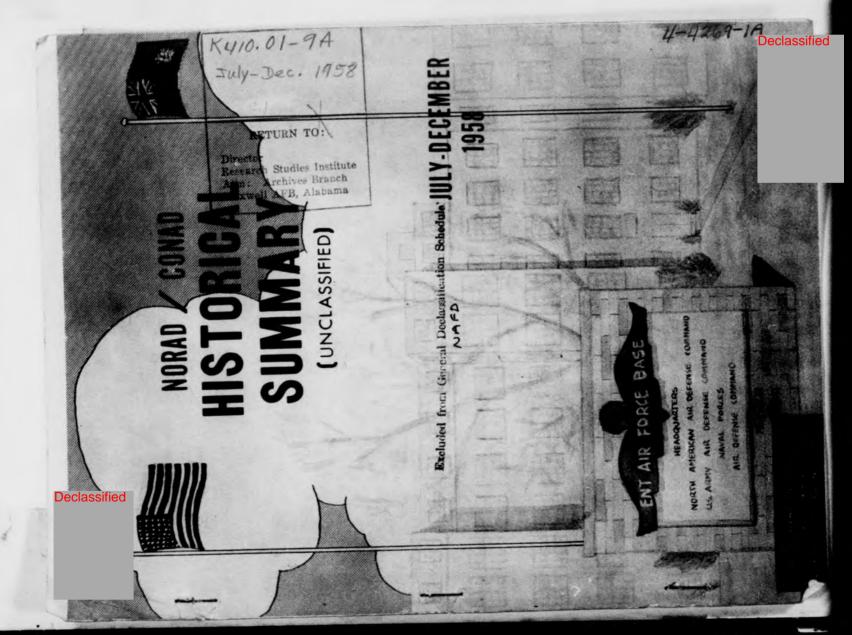
- f. Temporary headquarters must remain at Ent Air Force Base until the new COC is completed.
- g. For efficient operation of a Meadquarters Complex, the staffs of CIMCHORAD and the component commanders should be collocated. However, if significant economies can be effected by moving one of the component staffs, or certain elements of it, to Fort Carson or the Air Academy in advance of the movement of the entire complex, the resulting inconvenience can be tolerated temporarily.
- h. Flying activities can continue to be supported at Peterson Field.
- Phase II construction must be completed by the time the COC is operational.
 - j. Phase III construction may be deferred.

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2. Requirements. (No figure indicates current availability)

FORT CARSON (Cost \$000)			Ä	AF ACADEMY (Cost \$9	
Phase II Phase III	Facility	Unit	Total Required	Phase II	Phase
	Vehicle Fueling Sta	OL	2		4
	Communications, Base	9F	28,000	(Included in	a COC)
60	Tech Photo Lab.	SF	2,383		70
204	Auto Maint Shop	3 7	6,000		80
	Auto Storage. Spen	ST	17,500		88
	Storage, Base, Mogas	BL	1,800		15
	Cold Stor, Food, Base, Adda	SP	7,000	175	
700	Warehouse, Base	SF	100,000	700	
40	Shed Storage, Base, Addu	57	9,500		8
	Open Storage	अष्ट	2,500		1
	Deutal Clinic, Addn	OB	1.5		25
	Dispensary & Flt Surg, Adda	30F	4,000		12
16,800	Ma Bldg & COC	SF	669,220	16,800	
57	Mq. Base Unit	SF	3,000	84	
230	Hq, Group, Air	3 3 F	12,147	220	
272	Mq, Wing	37	14,720	272	
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	200	300	Dining Hall, Air-	SF	29,400	400	490
		1,500	OQ Mes (20% / 100 Transient	RESE	400		2,200
	2		Traffic Check House	SF	144	2	
		240	Chapel, Base w/ Ed Wing, Addn	SE	300		240
		18	Store, Clothing Sales	SF	1,300		18
0		150	Store, Commis- sary, Adda	SP	10,000		150
			Club, Service	52	15,000		300
			Exchange Service Station, Addn	SP	1,000		20
			Exchange Sales Store, Adda	87	2,500		
		380	Open Messe, MCO	SF	14,000		350
		580	Open Mess, Office:	SF	32,300		580
		350	Recreation, Sym-	87	21,000		350
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Excluded from General Declaration Schedule

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4-1984-14

NORTH AMERICAN AIR DEFENSE COMMAND and CONTINENTAL AIR DEFENSE COMMAND

HISTORICAL SUMMARY

July-December 1958

Directorate of Command History Office of Information Services Headquarters NORAD/CONAD

PREFACE

This historical summary is one of a series of semi annual reports on the North American Air Defense Command and Continental Air Defense Command. Its purpose is two-fold. First, it provides a ready reference to NORAD and CONAD activities by bringing together in a single document the key data found in several hundred documents. Secondly, it records for all time the activities of NORAD and CONAD during the period of the report.

The source materials from which this history was written are on file in the historical office and are available for use by all authorized persons. For security reasons, a list of the documents is not included with this history.

Colorado Springs, Colorado 15 April 1959 L. H. BUSS Director of Command History

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CHAPTER I

Proposed NORAD/CONAD Reorganization

DEFENSE REORGANIZATION ACT

During the period of this report, July to December 1958, an overhaul of the Defense Department was started. This involved new concepts, new channels of command, and shifts in authority. This realignment and reorganization, which would take some time to complete, was required by the Department of Defense Reorganization Act of 1958. To carry out this legislation, a number of Department of Defense and Joint Chiefs of Staff directives had to be rewritten. This act and other pertinent directives are considered briefly as a basis for a discussion of the proposed NORAD/CONAD reorganization.

Cn 3 April 1958, the President of the United States went before Congress to propose a reorganization of the Department of Defense. The President stated that what he wanted to achieve and what was absolutely essential was that there be complete unity in strategic planning and basic operational direction. It was mandatory, he declared, that the initiative for this planning and direction not be with the separate services, but that it be with the Secretary of Defense and his operational advisers, the Joint Chiefs of Staff. This unified effort should apply, he said, not only to long range planning, but also to command over military operations.

To accomplish this unity in planning and direction, the President outlined a number of requirements. He asked that all doubts be removed as to the full authority of the Secretary of Defense. He asked that the military staff of the Secretary of Defense be increased to provide him and the President with the professional help needed for strategic planning and operational direction of unified commands.

He asked that command channels be cleared so that orders could go directly from the Commander-in-Chief and Secretary of Defense to the commanders of unified commands. Every additional

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level between these commanders and the President caused delay, confusion, and diffusion of responsibility, he said. Under the current system, the channel ran from the President to the Secretary of Defense, then to the Secretary of one of the service departments, then to a chief of the service, and then to the unified commander. President Eisenhower said that he considered this chain cumbersome and unreliable in time of peace and unusable in time of war.

He stated that, accordingly, he had directed the Secretary of Defense to discontinue the use of military departments as executive agencies for unified commands.*

Lastly, the President asked that the fighting forces be organized into operational commands that were truly unified. He told Congress that:

Our unified commands (by which term I also include the joint and specified commands which exist today) are the cutting edge of our military machine—the units which would do the fighting. Our entire defense organization exists to make them effective. ... Because I have often seen the evils of diluted command, I emphasize that each unified commander must have unquestioned authority over all units of his command. Forces must be assigned to the command and be removed only by central direction, by the Secretary of Defense or the Commander-in-Chief, and not by orders of individual military departments.

These requirements for achieving unified strategic planning and operational direction were, for the most part, provided for by Congress in the reorganization act. This became law on 6 August 1958.

Secretary of Defense authority was clarified and strengthened by the provision that each military department would be separately organized (rather than administered as had been previously provided)

^{*} See page 7.

under its own secretary and would function under the direction, authority, and control of the Secretary of Defense. The department secretaries and their assistants were responsible for cooperating fully with the Office of the Secretary of Defense to achieve efficient administration and effective direction, authority, and control by the Secretary of Defense.

The military chiefs of the services were to exercise supervision (rather than command) over such members and organizations of the services as the civilian secretary determined. And this supervision was to be exercised in a manner consistent with the "full operational command" vested in unified or specified commanders.

Finally, the act provided that unified and specified combatant commands would be established by the President with the assistance of the JCS and through the Secretary of Defense. Such commands were to be responsible to the President and Secretary of Defense for the strategic missions assigned to them by the Secretary of Defense with the approval of the President. The President would also determine the force structure of these commands. The forces were to be assigned by the service departments. These forces were then to be under the full operational command of the unified or specified commander. No forces could be removed except as authorized by the Secretary of Defense with the approval of the President. Normally, each military department would be responsible to the Secretary of Defense for administration of the forces assigned from its department to the unified or specified commands.

DOD FUNCTIONS DIRECTIVE

Passage of this act made it necessary to revise existing directives on functions and responsibilities of the Department of Defense. A basic directive was the statement of functions of the DOD, the latest one of which was issued in March 1954. A new functions directive was issued by the Secretary of Defense on 31 December 1958.

This directive provided that commanders of unified and specified commands were responsible to the President and the Secretary

^{*} For definition, see Page 5.

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of Defense for the missions assigned. The chain of command ran from the President to the Secretary of Defense and through the JCS to the unified and specified commanders. The latter were to have full operational command over the forces assigned to them.

The JCS were to serve as advisers and as military staff in the chain of operational command for unified and specified commands and provide a channel of communications from the President and Secretary of Defense to these commands. The JCS were to be responsible for preparing strategic plans and providing for the strategic direction of the armed forces, including the direction of operations conducted by unified and specified commands. They were also responsible for any other functions of command as directed by the Defense Secretary. The JCS were to review the plans and programs of commanders of unified and specified commands to determine their adequacy, feasibility, and suitability. Also of interest was the fact that the JCS were to determine the head-quarters support required by unified and specified commanders and to recommend the assignment of responsibility for giving such support.

UNIFIED COMMAND PLAN

A new unified command plan was issued by the JCS on 8 September 1958. In this plan, CONAD was listed as a unified command. The plan provided that CINCONAD would be the commander of a unified command comprising all forces assigned for the accomplishment of his missions. CINCONAD was to be responsible to the Secretary of Defense, then the JCS.

FULL OPERATIONAL COMMAND

Congress did not define the full operational command given to unified and specified commanders. The only place, upon passage of

^{*} CONAD had always been a joint command, for this had been considered the best arrangement for CONAD's functional mission carried out on a geographic basis. For a discussion of joint versus unified command arrangements for CONAD, see CONAD Historical Summary, July 1956-June 1957, pp 1-3.

the act, where even a quasi-official definition could be found was in a House of Representatives report, dated 22 May 1958, which explained the legislation. The definition given by the House report was exactly the same as the definition for operational control which had existed for years.

A definition for operational command was approved by the Secretary of Defense early in 1959 and it and accompanying specific authority guidance was made effective 2 February 1959. The definition of operational command was similar to the existing definition of operational control. The two are compared.

Operational Command .

Those functions of command over assigned forces involving the composition of subordinate forces, the assignment of tasks, the designation of objectives, the over-all control of assigned resources, and the full authoritative direction necessary to accomplish the mission.

Operational Control

Those functions of command involving the composition of subordinate forces, the assignment of tasks, the designation of objectives, and the authoritative direction necessary to accomplish the mission.

Along with this definition, the Secretary of Defense approved a statement of specific guidance for unified and specified commands. These commands were authorized to:

- a. conduct joint training exercises and establish training policies for joint operations;
- b. exercise directive logistics authority (the services to have responsibility for logistical support of component commands);
- c. establish personnel policies required to insure uniform standards of military conduct;

^{*} For example as found in <u>Joint Action</u> Armed Forces, 19 September 1951.

^{**} Italics mine.

- d. exercise directive authority over all command elements in relationships with foreign governments, including the armed forces thereof, and other agencies of the U. S. government;
- e. establish and coordinate intelligence matters;
- f. review budget recommendations of component commands to their services to assure agreement with plans and programs; and
- g. plan for, deploy, direct, control, and coordinate the actions of assigned forces.

The paper also provided that unified commanders would exercise operational command through the service component commanders or through the commanders of subordinate commands (when such commands were established by the unified commander).

TERMS OF REFERENCE FOR CINCONAD

New terms of reference for CINCONAD, as commander of a unified command, were approved by the JCS on 31 December 1958 and made effective on 1 January 1959. The terms provided that CINCONAD was the senior U. S. officer in Headquarters NORAD. In the absence of CINCONAD, his U. S. responsibilities were to be discharged by the next senior U. S. officer.

CINCONAD's missions and tasks remained essentially the same as those prescribed in the preceding terms: defending U. S. installations in Greenland against air attack, assisting in the air defense of Mexico in accordance with approved plans and agreements, handling purely national matters pertaining to air defense, and supporting other commands in their missions.

ASSIGNMENT OF FORCES TO CONAD

The Defense Reorganization Act provided that the forces making up unified and specified commands would be assigned to these commands, that these forces would then be under the operational command of these commands, and that no forces could be removed

without Secretary of Defense approval. Accordingly, on the same dates that the unified and specified commands shifted to JCS control, the combat forces were transferred. For CONAD, this date was 1 January 1959. To CONAD went 62 battalions of the Army, ten ships (DER's) and one-fourth AEW squadron (blimps) of the Navy, and 60 fighter-interceptor squadrons of the Air Force.

These forces represented what the JCS considered to be the forces available at that time. It was not accurate for CONAD, however. It left out, for example, the YAGR-type radar ships of the Navy, the AEW&C squadrons of the Air Force, and the ground-based radar units of the Air Force.

TERMINATION OF THE EXECUTIVE AGENCY SYSTEM

The President stated to Congress on 3 April 1958 that he had directed the Secretary of Defense to discontinue the use of military departments as executive agencies for unified commands.

The executive agency system was not actually discontinued until some months later, however. A phased transfer was made after passage of the Reorganization Act, issuance of a new unified command plan, and a reorganization and staff build-up of the JCS. The dates of transfer were as follows: for U. S. European Command, 15 September 1958; for Alaskan Command and Caribbean Command, 1 December 1958; and for Continental Air Defense Command, Strategic Air Command, Atlantic Command, Pacific Command, and U. S. Naval Forces, Eastern Atlantic and Mediterranean, 1 January 1959.

ASSUMPTION OF OPERATIONAL COMMAND

By general order, effective 1 January 1959, CINCNORAD assumed operational command over ARADCOM, NAVFORCONAD, USAF ADC, the air defense forces of these commands, and over all other U. S. air defense forces that might be assigned to NORAD.

A similar general order was not issued for assumption of operational command by CINCONAD. There were two reasons for this:

^{*} As of 1 December 1958, Alaskan Command was assigned two Army battalions and three fighter-interceptor squadrons.

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the thinking at Headquarters NORAD/CONAD that since CINCNORAD and CINCONAD were one and the same person, a separate general order was unnecessary and redundant, for the CINCONAD authority was incorporated within CINCNORAD; and the desire of CINCNORAD that NORAD be the important, predominant command, that there be no separate CONAD organization, and that CONAD affairs be handled by U. S. members of the NORAD staff. This matter had not been settled definitely, however. The distinction between NORAD and CONAD was yet to be determined.

PROPOSED REORGANIZATION OF HEADQUARTERS NORAD/CONAD

Just prior to passage of the Defense Reorganization Act, preparations were started at Headquarters NORAD/CONAD for drawing up a reorganization plan to meet the new law. On 24 July 1958, General Partridge established an ad hoc committee to prepare a plan for what he termed the "United States Forces, NORAD," which was to take the place of CONAD. The committee was made up of senior officers from NORAD/CONAD and each component command headquarters.

The tasks of the committee included determining USFORNORAD functions and recommending elimination of duplicating component functions, developing a command headquarters and subordinate headquarters organization, and determining functions of subordinate USFORNORAD organizations.

Among the criteria provided for use as guidelines were that the service components were to continue to exist, USFORNORAD would have direct command over the U. S. components, and that the components would conduct training, administration, and logistic support of USFORNORAD.

It very soon became obvious that attempting to reorganize the entire command in one gulp was too much. Efforts were concentrated on a plan for the headquarters only. By 15 August 1958, this ad hoc committee produced a very general statement of functions and organizational structure for USFORNORAD. Shortly thereafter, the unified command plan was issued by the JCS which continued the command designation of CONAD, and the term USFORNORAD was dropped.

The work of the ad hoc committee (which was now disbanded) became the basis for the next step. A working group was formed to

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closely examine the realignment of functions, using the ad hoc group's statement as a starting point.

CONAD advised the components in September that this working group would examine the functions performed by the different head-quarters at Ent Air Force Base, determine whether a component or NORAD/CONAD should perform a function, determine to what degree NORAD/CONAD should perform a function, and determine the number of spaces to come to NORAD/CONAD. A tentative schedule was made in September under which the NORAD/CONAD organization was to be implemented on 1 January 1959.

CONAD also advised the components that it interpreted the combatant forces, over which the Defense Reorganization Act gave operational command, to mean the operational units assigned, their integral headquarters and supporting elements, and their component headquarters.

By 20 October, a proposed organization and functions plan for Headquarters NORAD/CONAD had been prepared and sent to the component commands. This plan contained the proposed structure, functions, and manpower.

The guidelines approved by CINCNORAD for this plan were as follows:

- a. CINCNORAD/CONAD would have full authority to direct, control and coordinate the operational activities of assigned forces and the logistics essential to accomplish the mission.
- b. Component operational and planning functions might have to be realigned, consolidated, or absorbed by NORAD/CONAD to prevent duplication and to increase efficiency.
- c. Manpower spaces for absorbed functions should remain within current authorizations for both component and NORAD/CONAD Headquarters.
- d. Manpower spaces taken from components should equal the magnitude of the functions taken.

The headquarters staff established by this plan provided for a NORAD side under a chief of staff for operations who would have

under him deputies for operations, plans, communications and electroncis, and intelligence; and a CONAD side under a chief of staff for administration, training, and logistics. The latter would have under him a "J" staff which would include personnel, operations, logistics, and fiscal affairs.

Not one component agreed with the proposal. Both ARADCOM and NAVFORCONAD said that NORAD/CONAD was interpreting the reorganization act and DOD and JCS directives incorrectly. Much greater authority was being assumed than was actually given, they said. Both commands declared that too much was being taken and too little left.

ARADCOM wrote that:

The proposed reorganization does not show residual functions of component commands. Contrarily, it provides for absorption by NORAD of functions and personnel to perform these functions. The net effect is that all authority and responsibilities of CINCNORAD/CINCONAD are assigned as functions to the NORAD/CONAD staff and are exercised through NORAD subordinate commanders. The only responsibilities of component commanders are those derived from their respective services. ... The significance of greatest importance to this headquarters is that its mission remains the same, while it is apparently without functions to perform in support of the unified command, since the training of units prior to assumption of an on-site role is a responsibility of CONARC.

NAVFORCONAD echoed these words:

The paper did not appear to spell out the residual functions left to the component commands. In fact, the size and scope of the organization seems to leave little or nothing for the components to do other than to pass on to their commands directives from the headquarters staff on matters concerned with training, logistic support, and operational readiness.

The USAF Air Defense Command took an entirely different approach: the proposal did not go nearly far enough in absorbing functions and people. ADC recommended a highly centralized,

monolithic type of organization. Two steps were proposed to achieve it. First, on 1 January 1959, the three component command headquarters would be eliminated and three U. S. Vice Commanders to CINCONAD/CINCNORAD would be established. These Vice Commanders would advise the commander-in-chief, exercise direction through the unified staff to the component elements, and maintain contact with the military departments. Then, six to twelve months later, the three Vice Commanders would be eliminated.

While these component command comments were under consideration, a new staff structure for Headquarters NORAD/CONAD was approved by General Partridge. The idea of having a NORAD and a CONAD side, each with four sections, was dropped.

Two chiefs of staff remained (one for administration and logistics and one for operations), but they were brought together to have authority flow through both. Under the previous plan, both the NORAD and the CONAD side had operations sections. Under the new plan, the operations sections were combined. Seven sections remained: J-1, Personnel; J-2, Intelligence; J-3, Operations; J-4, Logistics; J-5, Plans and Policy; J-6, Communications and Electronics; and Programs (there was also a secretariat and an information services). Those matters that were purely U. S., or CONAD, were to be handled by the U. S. personnel that would be in each staff agency of the headquarters. This would simply be a continuation of the procedure currently used at NORAD/CONAD Headquarters.

On 5 December 1958, NORAD replied to each component that the "Commander-in-Chief has considered your comments...and has made the decision to proceed with plans for the reorganization of this headquarters in general accordance with the revised staff structure...."

General Partridge wanted to complete the plans for reorganization by 10 December 1958. To finish up the plan, another ad hoc committee of component and NORAD/CONAD representatives was formed. This committee was to refine the functional statements and manpower space requirements, determine the functions to be left to the components, and develop a schedule for the transfer of functions and manpower spaces.

A new organization and functions proposal was completed on 15 December and submitted to the JCS. Submission of a reorganization plan had been asked by the JCS on 4 December. The JCS stipulated

that reorganization would not be implemented until approved by

This plan differed from the one of 20 October mainly in that it was geared to the new staff structure, which resulted in a different alignment of functions, manpower spaces, etc. Also, unlike the preceding plan, this plan carried no manpower space requirements. This was left for separate submission. However, in the overall scope, in the extent of functions absorbed, and in the number of manpower spaces that would be required to be taken, this plan was essentially the same as that of 20 October.

NORAD explained to the JCS that in preparing its plan it had these principles and objectives in view:

- a. NORAD will be predominant; specifically, the NORAD commander will have unquestioned authority over all assigned forces and will write the effectiveness reports or rate subordinates on their performance in his area of responsibility, as well as approve the appointments of subordinates and request their replacement for cause.
- b. Certain specific functions in the areas of operations, plans and requirements, communications and electronics, intelligence and systems integration, which are now being performed in part by the components, will be consolidated and absorbed by NORAD.
- c. To fulfill additional manpower requirements occasioned by the absorption of functions, appropriate reallocation of manpower spaces from the component headquarters will be made, consistent with the magnitude of the functions absorbed.
- d. There will not be a separate CONAD organization. CONAD actions essential to fulfill U. S. requirements will be accomplished by the U. S. members of the NORAD organizations.
- e. U. S. Service responsibilities -- administration, training and logistics -- are technical matters and will be handled by appropriate Service elements, in a manner responsive to the needs of NORAD commanders at all levels.

SUMMARY

The JCS did not approve the NORAD/CONAD reorganization proposal by 1 January 1959 and there was no reorganization by this date. A number of actions did take place on 1 January, as discussed in separate sections of this chapter. Briefly, these were:

- The termination of executive agency control by the Air Force and the shift to control by the JCS.
- The establishment of CONAD as a unified command with new terms of reference.
- 3. The assumption by CINCNORAD of operational $_{\star}$ command over the component commands and their forces.
- 4. The assignment of the Services' combat forces to CONAD.

^{*} See Page 7.

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CHAPTER 11

Region/Division Organization

SAGE GEOGRAPHIC REORGANIZATION PLAN

The first SAGE air defense sector, New York, became operational on 26 June 1958, the second one, Boston, on 15 September 1958.* For the next few years, SAGE installations all over the country would be phased into the air defense system, replacing the manual system. During this transition, the manual system would be operating everywhere that SAGE was not operating. Also, to accommodate the SAGE system, the geographic structure would have to be altered. To realign boundaries and to avert problems arising from coexistence of manual and SAGE operations, NORAD prepared a reorganization plan. The stated purpose was to provide a means for the orderly transition and phasing from the manual to the SAGE system.

NORAD completed its plan on 25 July 1958 and sent it to the components for comment. Under this plan, there were to be eight SAGE divisions -- seven in the U. S. and one in Canada (the solid state computer program would change this, see Chapter Three). These divisions were to be directed from NORAD Headquarters. The existing region headquarters, which were not to get SAGE computers, were to be phased out when SAGE was implemented.

To ease the transition, NORAD proposed to organize the current manual boundaries to conform to the SAGE boundaries as soon as possible. This would mean inactivation of certain manual divisions as soon as possible, the establishment of SAGE divisions, and the consolidation of areas of responsibility.

The Canadian SAGE division was designated the 35th in NORAD's plan. The 1st, 2d, and 3d Divisions were to be consolidated into

^{*} These sectors were in the 26th SAGE Division area which became operational on 1 January 1959 -- the first SAGE division.

the 35th when practicable. When the latter became operational under SAGE, the Bangor Sector was to be detached from the 26th NORAD Division and attached to the 35th. Although not explicitly stated, it was inferred in NORAD's plan that the Northern NORAD Region should be disbanded. The 35th Division (later to be a region) would incorporate the 1st, 2d, 3d and 64th Divisions and the Bangor Sector and take the place of the region. The 5th Division area was to be incorporated into the 25th Division.

NORAD asked in its plan for recommendations on the dates for disestablishment of the Eastern, Central and Western Region/Defense Forces. The components were told that, although the plan was not finally approved, they could go ahead with realignment of component boundaries consistent with the plan. NORAD told its field commanders about the plan on 21 August 1958.

All four component commands concurred with the plan. USAF ADC objected to a minor point, but this was resolved informally.* NAVFORCONAD recommended that the seaward element impact on the reorganization be determined and that the organization include use of contiguous surveillance data. ARADCOM said, at first, that it did not plan to realign its boundaries to coincide with the projected NORAD boundaries. However, on 14 November 1958, ARADCOM advised that it had changed its mind and had submitted a parallel seven-region plan to the Department of the Army. DA had approved. DA had also approved the collocation of ARADCOM Region Headquarters with NORAD Region Headquarters. RCAF ADC advised that the matter of disbanding the Northern Region would have to be referred to the Canadian Chiefs of Staff.

USAF ADC submitted a SAGE phasing plan to NORAD early in December. In effect, ADC's plan was an implementation of NORAD's basic plan. ADC laid out in detail the plan for inactivation of manual organizations, the expansion or realignment of boundaries, the establishment of temporary detachments to maintain integrity of operations, and the establishment of SAGE units. Included were

^{*} NORAD proposed to change control of the 30th Division from Eastern to Central Region. ADC objected; the plans for reconfiguration of the 30th under Eastern were well underway and the regions were to be phased out anyway. NORAD agreed that the 30th should remain with Eastern.

the dates for inactivation or redesignation of the defense forces. Eastern was to be inactivated on 1 January 1960, Central was to be redesignated the 33d Air Division (SAGE) on the same date, and Western was to be redesignated the 28th Air Division (SAGE) on 1 July 1960.

On the 27th of January 1959, NORAD replied that it approved the ADC plan for implementation.

U. S. ORGANIZATIONAL CHANGES - JULY - DECEMBER 1958

During this period, five manual divisions were eliminated, two SAGE divisions were established, boundaries were expanded and realigned, and four temporary detachments were established (see the table and map following).

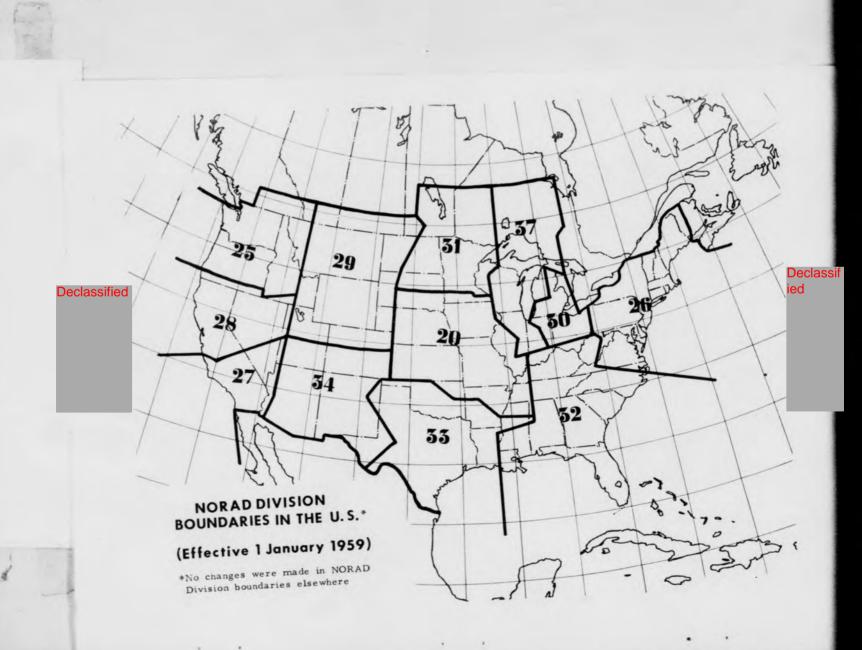
The manual divisions eliminated were the 9th, Geiger Field, Washington; 32d, Syracuse AFS, New York; 35th, Dobbins AFB, Georgia; 58th, Wright-Patterson AFB, Ohio; and 85th, Andrews AFB, Maryland. The SAGE divisions established were the 26th at Syracuse and the 32d at Dobbins. Because of the fact that the 32d was restablished as a SAGE division, the net reduction in number of NORAD divisions was four -- from 23 at mid-year to 19 at the end of the year.

Temporary detachments were set up to maintain continuity of operations until the new SAGE or enlarged manual divisions could assume responsibility for their areas. Detachment 1 of the 25th took over the Geiger control center when the 9th was inactivated. This detachment was inactivated on 6 October when the 25th was able to assume responsibility for the 9th's area. On the east coast, three detachments were needed. The 26th was moved out of Roslyn and established at Syracuse as a SAGE division on 1 September. But it did not become operational until 1 January 1959. Also on 1 September, the 85th at Andrews, which was in the 26th's area, was inactivated. Therefore, on 1 September three detachments were established: one for the control center at Roslyn, one for Syracuse, and one for the control center at Andrews.

TABLE 1
DIVISION ORGANIZATIONAL CHANGES

JULY-DECEMBER 1958

Number and Location of Unit	Air Div (Def) (USAF ADC)	Air Div (SAGE) (USAF ADC)	CONAD Div	NORAD Div	
9th. Geiger Fld.	Inactivated - 15 Aug		Disestablished - 1 Sep	Disestablished - 1 Sep	
Det 2, 25th, Geiger Fld.	Established - 1 Sep Disestablished - 15 Oct		Established - 1 Sep Disestablished - 6 Oct	Established - 1 Sep Disestablished - 6 Oct	
26th, Syracuse		Redesignated from 26th, Roslyn AFS - 8 Aug	Established at Syracuse on 1 Sep (originally at Roslyn)	Established at Syracuse on 1 Sep (originally at Roslyn)	
Det 1, 26th, Roslyn AFS		Established - 15 Aug	Established - 1 Sep	Established - 1 Sep	
Det 2, 26th, Syracuse AFS		Established - 15 Aug	Established - 1 Sep	Established - 1 Sep	
32d, Syracuse	Inactivated - 15 Aug		Disestablished - 1 Sep	Disestablished - 1 Sep	
32d, Dobbins		Redesignated from 35th Air Div (Def) - 15 Nov	Established - 15 Nov	Established - 15 Nov	
35th, Dobbins		Redesignated the 32d Air Div (SAGE) - 15 Nov	Disestablished - 15 Nov	Disestablished - 15 Nov	
58th, Wright- Patterson AFB	Reduced to 1 & 1 and ceased air def mission - 1 Sep 1958		Disestablished - 1 Sep	Disestablished - 1 Sep	
85th, Andrews	Inactivated - 1 Sep		Disestablished - 1 Sep	Disestablished - 1 Sep	
Det 3, 26th, Andrews AFB		Established - 1 Sep	Established - 1 Sep	Established - 1 Sep	



NORTHERN NORAD REGION AND DIVISIONS

In July 1958, RCAF ADC sent a proposed Northern Region Headquarters organization to NORAD. In general, it met NORAD requirements and the latter concurred. NORAD forwarded on 27 August 1958 the proposed organization to the Chief of the Air Staff, RCAF, as the Executive Agent for NORAD, for review and approval of the Canadian manning. The proposal was also submitted to the U. S. Joint Chiefs of Staff for review and approval of the U. S. manning.

NORAD then heard informally that the JCS was delaying consideration of the manpower requirement until a proposal for all NORAD subordinate units was submitted. NORAD wired the JCS that provision of U. S. personnel for the Northern Region staff was urgently required and that approval should not be delayed.

On 24 December 1958, the JCS concurred in NORAD's need for the U. S. manpower spaces (although they withheld approval of the overall proposal). Accordingly, the Army and Air Force were asked to provide the spaces.

On 25 February 1959, NORAD advised the CSC of the JCS action and urged early approval of the Canadian manpower space allocation and the formation of the Northern Region Headquarters. NORAD expressed its concept for joint U. S.-Canadian manning the following way. Those geographical areas lying wholly in one country and containing forces of only that country should have a commander and staff from that country; however, if forces of another country were to be employed over the area, the commander should have adequate staff assistance from the other country. In those geographical areas including territory and/or forces of both countries, the commander and his deputy should not normally be from the same country. The staff should be joint. And national representation in the NORAD organization should generally be based on the composition of forces and territory involved.

NORAD proposed the following commanders and deputy commanders of border divisions:

25th Division -- U. S. commander, Canadian deputy 29th Division -- U. S. commander, U. S. deputy

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30th Division -- U. S. commander, Canadian deputy 35th Division -- Canadian commander, U. S. deputy 26th Division -- U. S. commander, U. S. deputy

The 1st, 2d, 3d, and 5th NORAD Divisions had not been formed. On 14 October 1958, RCAF ADC asked for terms of reference and manning tables for these organizations as a start toward forming them. These documents would probably not be available for several months, NORAD replied. But this should not prevent formation of these divisions on an interim basis.

There were no great problems in responsibility, duties, or personnel as NORAD saw it. NORAD had been given operational control of Canadian air defense forces. The accomplishment of NORAD's mission in Canada had been delegated to the Northern Region. Its commander could further delegate responsibilities to the NORAD division commanders. The duties of the NORAD echelons would be much the same as those performed by the operational elements of the RCAF ADC. By the same token, the personnel of the RCAF ADC lst, 2d, and 3d Sectors, and 5th Division, that had been employed in operational duties, could be assigned to the NORAD organization.

These divisions were not formed, however. On 3 December, Air Vice Marshal W. R. MacBrien advised that in his dual capacity as Commander of ADC and Northern NORAD Region his authority was circumscribed by the executive agent in matters involving money, circumscribed, and matters having political overtones. For this men, materials, and matters having political overtones. For this reason, the implementation of many NORAD regulations and directives, such as formation of the Northern NORAD Region headquarters and the lst, 2d, 3d, and 5th Divisions, had to await instructions from the executive agent.

INTEGRATION OF THE 25TH AND 5TH DIVISIONS

On 21 November 1958, Western Region forwarded a joint proposal, which it approved, of the 5th and 25th Divisions for a shift in control of radar units. Their proposal was to place the 917th (C-19), 918th (C-20), 919th (C-21), and 825 (SM-153) ACW Squadrons under the command and operational control of the 25th Division. These were USAF manned and operated units in Canada, currently under the 5th Division. The plan was to have C-19, C-20, and C-21 report to SM-153, which would report to SM-151 at Spokane, Washington.

RCAF ADC/NNR concurred on 19 December 1958 and on 16 January 1959, NORAD approved the plan and directed implementation.

Following this, because of these changes and the later boundary realignment required to implement SAGE, both Northern and Western Regions recommended that the 5th be disbanded and its area of responsibility and control of forces be transferred to the 25th. NORAD concurred and requested formal approval from the CSC and JCS to accomplish the overall plan.

The change was planned in phases. It could not be accomplished all at once because of insufficient communications facilities. Western Region advised on 21 February 1959 that complete installation of needed circuitry would take six to eight weeks. However, operational control could be taken in steps. The first step would be to assume operational control of the four USAF-manned sites mentioned above, using existing circuitry and through close coordination of the 5th and 25th COC's. This step was planned for 2 March 1959.

ALASKAN NORAD REGION

Alaskan Command published, on 18 December 1958, an air defense annex (N) to its capabilities plan (ALCAP 1-58). This annex outlined the functions and responsibilities of CINCAL as commander of the Alaskan NORAD Region (ANR); the functions and responsibilities of the commanders of the Alaskan Air Command, U. S. Army Alaska, and Alaskan Sea Frontier in air defense; and policies and procedures for exercising operational control. Operational control was also covered by Alaskan Command Regulation 55-14, 29 December 1958.

Both Annex N and the regulation provided that CINCAL was responsible to CINCNORAD for all air defense activities in Alaska, that CINCAL would function as Commander, Alaskan NORAD Region, and that he would exercise operational control over all forces assigned or allocated for air defense of Alaska. However, operational control was to be exercised through the Commander, Alaskan Air Command. The latter was made responsible for conducting the active air defense of ANR. CG USARAL was to place forces under the operational control of CINCAL for exercise by Commander, Alaskan Air Command.

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CINCAL told NORAD that he planned to change this arrangement, however. In October 1958, CINCAL said that when the Joint Direction Centers became operational, he would exercise direct control. Joint Direction Centers were planned for Fire Island and trol. Joint Direction Centers were planned for Fire Island and trol. Joint Direction Centers were planned for Fire Island and trol. Fire Island was scheduled to become operational on 1 March 1959, Murphy Dome on 10 May 1959.

An Alaskan semi-automatic defense system was scheduled for operation in Alaska in January 1961 (for details, see Chapter Four). When implemented, Alaska was to be divided into two sectors, a Northern and Southern, each with two subsectors.

CHAPTER 111

SAGE Solid State Computer

DEVELOPMENT BY IBM

The SAGE system being installed in 1958 was expected to provide a significant improvement to the air defense system. But SAGE, along with all other elements of the air defense system, needed to be continually modernized to keep pace with the threat.

For this reason, back in 1956, the Air Force's Air Research and Development Command sponsored a computer development program with International Business Machines Corporation. By mid-1958, IBM had made important advances in such items as transistors, magnetic cores, drum systems, and computer circuitry and was able to propose a new type of SAGE computer. This new, transistorized computer, ADC told CONAD in June 1958, was estimated to have a computer capability of some seven times that of the current SAGE computer. IBM proposed that the Air Force support the design, construction and testing of an advanced prototype computer.

NORAD replied that this new computer appeared to be an important advancement and recommended that funds be provided for its further development. NORAD asked, however, that no program be started that would impede the currently scheduled SAGE operational dates.

ADC OPERATIONAL EMPLOYMENT PLAN

In August, the Air Force directed ADC to determine the best plan for putting in these new computers. ADC completed an operational employment plan on 5 November 1958.

Because of the advent of long range, high speed weapons, ADC concluded that the overriding consideration was to provide hardened data processing facilities capable of control over large geographical areas. It was also mandatory, ADC felt, that the ground

environment during the period covered by its plan (1960-1965) have greatly increased data processing capability, flexibility, and growth potential.

Two other important requirements had to be met by ADC planners. The first was the matter of timeliness. Obviously it was essential that the switch to the new computer should not significantly delay the SAGE operational dates beyond those currently scheduled. ADC's plan was to dovetail the new computers into SAGE Schedule 7 (Improved) in such a way as to cause the least interruption and delay. The other requirement was economy. The switch should not mean a vast outlay of money.

ADC felt that the solid state computer, termed AN/FSQ-7A, with accessory equipment, would provide the improvements needed. And ADC felt that its plan would meet the requirements of timeliness and reasonable cost. ADC planned to make maximum use of currently installed and planned SAGE facilities and to put in a minimum of solid state equipment. Money could also be saved by deleting some scheduled AN/FSQ-7's and AN/FSQ-8's. In all, the solid state computers would cost \$272 million more than the current SAGE program, according to ADC's plan.

The ADC plan established the following schedule:

- 1. Full direction center capability for the entire country by 1 January 1963, six months ahead of the current Schedule 7 (Improved).
- Full combat center capability by 1 April 1963, in accordance with Schedule 7 (Improved).
- 3. A complete hardened back-up capability by 1 April 1964 -- the scheduled operational end point -- about nine months later than Schedule 7 (Improved).

The AN/FSQ-7A was to be installed at 13 locations. Ten of these were to be in what ADC termed Super Combat Centers (SCC).

^{*} ADC's figures: Schedule 7 (Imp) - \$2,195,000,000
Proposed
Difference - \$2,467,000,000
\$ 272,000,000

The latter were to have hardened buildings, and hardened communications to a minimum of a 21 mile radius of the SCC. These ten SCC's were to be divisions.

Each SCC would function as a combat center in Mode I and would fulfill a back-up role, Mode II, to the unhardened SAGE direction centers by acting as a DC for any combination of sectors in the division not having a functioning DC.* Necessary radar and weapons connections would be made to the SCC in order that it could perform this back-up role. An automatic, separate Mode III system would not be necessary because of the effective Mode II capability and the physical invulnerability of the facilities.

In addition to the ten SCC's, ADC planned to install the AN/FSQ-7A at three unhardened direction centers in the Miami, Albuquerque, and Shreveport sectors. Hardening was not possible without delaying the overall schedule by at least six months.

As a result of these changes, the SAGE boundary map was redrawn. As noted above, there were to be ten SAGE divisions, two more than previously planned (nine in the U. S. and one in Canada versus the previous seven in the U. S. and one in Canada). The boundaries were redrawn in accordance with the criteria for the boundaries were redrawn in accordance with the criteria for the AN/FSQ-7A. These included a maximum of 20 long-range radar inputs and a maximum dimension of just over 1000 miles in both north-south and east-west directions. The sector boundaries also had to be followed.

The SCC's/Divisions in order of proposed operational dates

^{*} Modes were used to describe conditions of degradation of weapons control from full, centralized SAGE DC control to autonomous, local control by weapons systems or units. Mode I was the primary, normal operating condition, under which a SAGE DC had full responsibility and control of its sector. Mode II described a condition wherein a SAGE DC became inoperative and adjacent SAGE DC's took over its responsibilities. Mode III condition prevailed when a DC and the adjacent DC's were all out and responsibility had to be exercised by the division commander through the NORAD control center. Mode IV provided for autonomous operation when the SAGE DC, NORAD control center, and Manual DC could not be contacted by a weapons system or unit.

were: Ottawa, St. Louis, San Antonio, Raleigh, Syracuse, Chicago, Spokane, Minot, Portland, and Phoenix.

On 17 November, on the recommendation of the NORAD staff, CINCNORAD decided to request the solid state computer and hardened facilities. This was followed up on the 2d of December with a message to the JCS.

NORAD followed this with a letter to the Joint Chiefs on 16 December. In it, NORAD explained that the current SAGE system had three major limitations. These were that the system could not be expanded to absorb foreseen requirements, that the DC was vulnerable to enemy attack which necessitated back-up facilities, and that there was no provision for completely integrating Army-provided weapons with SAGE. For full integration of Army weapons, NORAD recommended digital data switching equipment for 23 non-Missile Master defenses and Fire Unit Integration Facilities for all Nike and Hawk batteries.

NORAD urged approval and funds for the solid state computer be provided without delay.

USAF objected to the cost. One large stumbling block was that five AN/FSQ-8's would be made surplus by the ADC plan. Accordingly, ADC modified its proposal. The main portion of this change was to hold up on establishment of combat centers at Minot and Phoenix. This would save buying two AN/FSQ-8's. Two others could possibly be used in the Air Force computer maintenance training program. NORAD agreed to the modified program and so advised the JCS early in January.

On 5 February 1959, USAF informed ADC that it approved the concept of employing the solid state computer in a hardened configuration. USAF said, however, that the degree of hardness had

^{*} NORAD approved the ADC plan formally, with certain excepttions pertaining mainly to requiring integration of Army equipment, in a letter to ADC on 20 December 1958.

^{**} NORAD later qualified its 16 December letter with a message asking that it be allowed to comment on any proposals to modify SAGE Schedule 7.

TABLE 2
SOLID STATE COMPUTER DEPLOYMENT SCHEDULE

OPERATIONAL DATES USAF-Established Dates - 5 Feb 1959 ADC Proposed Deployment Schedule - November 1958 1 Aug 62 Miami DC 1 Oct 62 (collocated Albuquerque DC 1 Sep 62 with FAA facilities) 1 Nov 62 Shreveport DC Ottawa SCC (DC 1 Aug 62 program only) 1 Jan 63 St. Louis SCC/ 1 Jun 63 1 Apr 63 DC 1 Jun 64 San Antonio SCC 1 May 63 1 May 63 15 May 63 Raleigh SCC 1 Jun 63 1 Jul 63 Syracuse SCC 1 Jul 63 Chicago SCC 1 Sep 63 1 Nov 63 1 Nov 63 Spokane SCC 1 Sep 63 1 Jan 64 Minot SCC 1 Jan 64 1 Mar 64 Portland SCC 1 Mar 64 1 Apr 64 Phoenix SCC

not been determined. USAF also set down a new schedule (see table preceding). This schedule was to be included in an entirely new SAGE schedule (Schedule A) to be prepared by the SAGE Project Office. The phasing was to be as follows. The last combat center, AN/FSQ-8. to be installed under SAGE Schedule 7 (Improved), was to be at McChord AFB (25th Air Division). Subsequent combat center facilities and equipment were to be cancelled with the exception of (1) one AN/FSQ-8 that was to be converted to an AN/FSQ-7, using FY 1959 funds, to be installed at the Sioux City DC, and (2) the combat center building at Minot.

The improved schedule seven dates were to be in effect for all items through Sioux City -- with the exception of the Minot and Phoenix combat centers. Facilities and equipment after Sioux City were to be cancelled or adjusted to coincide with the new program. The Albuquerque DC was to be designed to include the solid state computer and FAA facilities.

OTTAWA SECTOR

As shown above, a solid state computer in a hardened site was planned for the Ottawa sector. It was first to be a direction center only with an operational date of 1 August 1962. Later, it would become a super combat center also (i.e., the DC and SCC would be collocated) and its responsibility would encompass the Bangor sector. The location planned for the DC/SCC was North Bay, Ontario, Canada.

On 28 August 1958, RCAF Headquarters informed NORAD that cabinet approval had been received for the Ottawa SAGE sector and for other additions to the Canadian system.* RCAF said that certain

^{*} This joint Canada-U. S. program provided for seven heavy radars, forty-five gap fillers, two BOMARC squadrons, and the SAGE installation covered above. Two of the heavy radars and twelve of the gap fillers were to be the supporting radar environment for the SAGE and BOMARC in the Ottawa-North Bay area. The remaining five heavy radars and 33 gap fillers were to be added to the Pinetree Line. At the end of 1958, there were 33 operating prime radars in Canada and two more under construction, and six operating gap fillers. The approved program would bring the totals to 42 prime radars and 51 gap fillers. This would only partially satisfy NORAD's requirements which were for 61 prime radars and 93 gap fillers. For additional details, see Chapter Six.

locations had tentatively been picked out. RCAF suggested that a conference be held with USAF, NORAD and other interested agencies to determine the sites. A conference was held on 10 September 1958. It was agreed at this conference that there was a requirement for a combat center and a direction center and that they should be collocated. It was agreed that North Bay was a satisfactory location.

In a message dated 5 January 1959, USAF informed NORAD that the governments of Canada and the U. S. had agreed in principle to a cost sharing arrangement on joint air defense programs in Canada. Included was the Ottawa sector SAGE installation. For the entire program, Canada was to be responsible for construction and unit program, Canada was to be responsible for construction and unit (TORE) equipment. The breakdown of capital cost, the Air Force message said, was 2/3 U. S. and 1/3 Canada. The RCAF was to man and operate the SAGE units (in addition to the heavy radars and the BOMARC units).

FIRE DIRECTION AND CONTROL EQUIPMENT

NORAD asked USAF ADC and ARADCOM, in February 1958, to explore the feasibility of combining the requirements for an antiaircraft fire direction system (for areas without Missile Master) and a SAGE back-up (Mode III) control system for BOMARC. The following June, ADC recommended the AN/GPA-73 to CINCNORAD. The latter expressed dissatisfaction with it because of its impact on the SAGE system.

ARADCOM recommended two systems on 18 November 1958 based on a recommendation of the U. S. Army Signal Air Defense Agency. The latter recommended the Hughes Aircraft Company AN/GSG-3 for defenses having three or less batteries, and the Martin Company system for defenses of four or more batteries (not scheduled for Missile Master) and for those defenses where Mode III control of NORAD weapons was required.

In making its proposal, ARADCOM was well prepared: (1) the AN/GSG-3 was an adaptation of equipment already in production and could be available in six to twelve months; (2) Martin was ready to sign a contract with an assured operational date of 23 months after the contract was signed; and (3) if NORAD and JCS approved, DA was ready to reprogram limited FY 1959 funds for immediate implementation and would give full support with FY 1960 funds.

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A system for Mode III operations would not be needed, NORAD replied on 22 December, if timely and complete implementation of the solid state computer proposal was made. However, SAGE would not extend throughout all areas, so some additional weapon direction and control device would be required. The ARADCOM proposal, NORAD said, appeared to meet the requirements for non-SAGE areas. Therefore, NORAD asked ARADCOM to proceed with the development of a single prototype model of the Martin Company equipment (Missile Master, Jr.)

CHAPTER IV

Collocation of Army-Air Force Facilities

COLLOCATION OF MISSILE MASTER AND AN GPA-37

Background. In seeking to achieve centralized operational control of weapons systems, CONAD saw the necessity of integrating the Army's Missile Master, AN/FSG-1, into the SAGE system. However, the Missile Master would be available ahead of SAGE. Therefore, CONAD saw that the first problem was integration of Missile Master with the manual system. This would do two things: it would provide early integration of weapons systems and centralized control capability and it would provide experience that would be helpful in the later SAGE integration.

In September 1956, CONAD proposed to the JCS the collocation of the Missile Master and the Air Force's AN/GPA-37 in ten areas. The Office of the Secretary of Defense concurred on 30 October 1956. These ten areas, the sites eventually selected for location of the collocated facility, and the radars chosen for the NORAD Control Centers were as follows:*

^{*} For a complete historical account from early 1956 to June 1958, see CONAD Historical Summary, June 1957, CONAD/NORAD Historical Summary, December 1957, and NORAD/CONAD Historical Summary, June 1958. The NORAD Control Centers were referred to by such terms as Joint Fire Direction Centers and Joint Manual Direction Centers. In October 1958, NORAD asked that the term NORAD Control Center, be used for the collocated facility.

Defense Area	Facility Site	Radar
New York	Highlands, N. Y. (P-9)	FPS-7
Niagara-Buffalo	Lockport AFS, N. Y. (P-21)	FPS-7
Detroit	Selfridge AFB, Mich. (P-20)	FPS-20
Philadelphia	Gibbsboro-Pedrickstown, N. J. (split site) (RP-63)	FPS-20
Chicago	Arlington Hts, Ill. (RP-31)	
Washington-Baltimore	Ft. Meade, Md. (RP-54)	FPS-20
Boston	Ft. Heath, Mass. (MM-1)	ARSR-1A (CAA)
	Oakdale, Penn. (RP-62)	ARSR-1A (CAA)
Pittsburgh Seattle	Ft. Lawton, Wash. (RP-1)	ARSR-1A (CAA)
Los Angeles	Ft. MacArthur-San Pedro Hill (split site) (RP-39)	ARSR-1A (CAA)

The estimated operational dates provided to NORAD early in 1958 ranged from May 1960 for the first site (Highlands) to April 1961 for the last site (San Pedro-Ft. MacArthur). NORAD told USAF that operational requirements justified earlier availability of that operational recommended higher priority to the extent all ten sites. NORAD recommended higher priority to the extent that all ten would be operating by the end of calendar year 1960. USAF replied on 24 February 1958 that because of economic considerations, significant speed-up of the program was not possible.

However, by early 1959, new dates were forecast by the Joint Collocation Technical Steering Group that did show considerable improvement.* If these dates held true, Missile Master/AN/GPA-37 capability would be achieved at all ten NCC's by October 1960. These dates are discussed below under New Operational Dates. NORAD's part in this was mainly to urge faster action in every

^{*} The JCTSG was formed by the Army and Air Force in July 1957 to support implementation of collocation.

area by everyone concerned. A major problem was funding.

NORAD Control Center Funding. A main concern of nearly everyone involved with NORAD Control Centers during the last six months of 1958 was funding. The problem was in funding for the Air Force portion of the NCC's, especially for the one at Philadelphia.

Funding problems were brought up at a meeting of the Joint Collocation Technical Steering Group on 27 August 1958, which was attended by two NORAD representatives. They learned that for the Air Force, nine of the sites had been approved by Congress. The Philadelphia project had been submitted as a single site, despite the fact that a split site had been agreed to by Army and Air Force. Congress denied allocation of funds for Philadelphia, these NORAD observers reported, until the matter of a single or split site was settled.

For the Army, Congress had approved \$19,000,000 for the Missile Master. Contracts had been let for five of the ten sites. Letting of contracts for the others was being delayed on instructions from DOD, apparently because of a review of the overall missile program.

The NORAD representatives told the group that CINCNORAD was not satisfied with the currently-established operational dates. They recommended also that Fort Meade be made an operational NCC as soon as possible.

Following this meeting, on 18 September, CONAD asked the Air Force to have funds allocated without delay for the Philadelphia site. ARADCOM asked DA to determine whether the Air Force could reprogram FY 1959 funds from other sources to implement the Gibbsboro portion of the Philadelphia NCC. If the Air Force could not, ARADCOM wanted DA to install one AN/FPS-33 and two Army FPS-6's at Gibbsboro as an interim measure. The Air Force would then have to reprogram funds only for land at Gibbsboro. If the Air Force could not get the real estate, ARADCOM wanted DA to acquire land at the original Army site at Glassboro and proceed with installation there as an interim measure.

ARADCOM also wired DA in September on hurrying up real estate

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and construction directives for Los Angeles and Chicago in order to improve the operational dates. DA advised that these two NCC projects were under DOD freeze order.

Later in September, ADC, ARADCOM, and NORAD learned that the Air Force facilities at NCC's were placed in a category that would not receive funding in FY 1959. ADC protested to the Air Force on 22 September. ADC said that Air Force construction at the NCC's had to be funded in FY 1959 to prevent delay in both the NCC and SAGE sector operational dates.

ARADCOM told DA that further delay in the Missile Master program was intolerable and that it was prepared to submit a unilateral program for installation of Missile Master if the Air Force facilities were not funded in FY 1959.

NORAD backed the ADC message with one to the executive agency, concurring and urging Air Force action to get funds.

The Air Force Chief of Staff replied to CINCNORAD on 2 October that "You are assured of our support in providing the required FY 1959 and FY 1960 funds for this program."

On 21 October, NORAD asked JCS assistance in getting Department of Defense and Congressional approval for the acquisition of real estate and the allocation of funds for NCC's. NORAD said that it had been informed that (1) the NCC projects for Chicago, Los Angeles, Pittsburgh, Fort Meade, and Philadelphia were under DOD Angeles, (2) real estate planning reports for Los Angeles, Chicago, and Pittsburgh had not received DOD and Congressional approval, and (3) funds had not been allocated to USAF for the Philadelphia site and that a low priority was given by USAF to the other NCC's.

The JCS replied on 7 November that the Air Force was preparing an allocation request for twelve million dollars that would provide funding for all Air Force projects except Philadelphia. Funds for Philadelphia would be requested in the Air Force FY 1960 MCP. All Army projects had been cleared. Real estate planning reports for Los Angeles, Chicago, and Pittsburgh were cleared by DOD and sent to Congress on 31 October.

This information on a delay at Philadelphia caused ARADCOM to ask DA to go ahead with its (ARADCOM's) earlier proposal. This was to proceed unilaterally at Philadelphia. DA said that this would

be unnecessary. Informal information indicated that DOD was directing the Air Force to start construction on facilities at Gibbsboro in FY 1959. DOD had released Missile Master on 25 No-

At another meeting of the Joint Collocation Technical Steering Group held on 25 November, NORAD representatives learned that release of funds for all Air Force sites except Philadelphia was expected by 6 December. Funds for Philadelphia were expected by February 1959.

Funds for Philadelphia were not released, however. On the 25th of February, USAF notified NORAD that the request for Gibbs-boro funds had been refused by the House and Senate Appropriations Committee. The Air Force was asking a reconsideration.

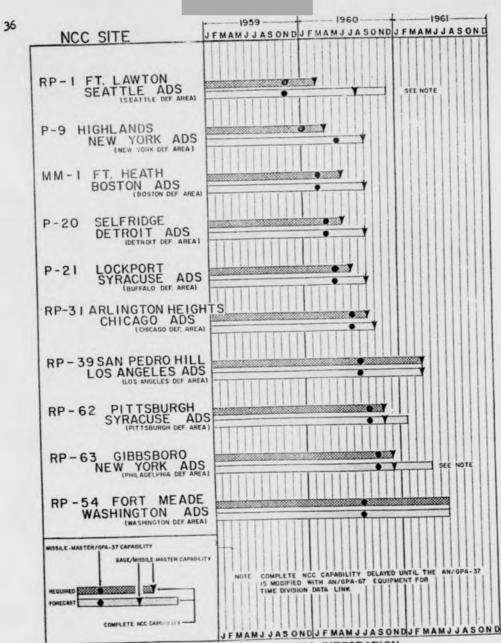
At this same meeting of the JCTSG, NORAD representatives learned that for the Army, contracts had been let for five of the ten sites. Release of funds for the remaining sites was expected by 6 December.

Among other matters discussed at this meeting that had an influence on operational dates was a delay in completion of Air Force operational buildings at Fort Meade, Seattle, and Los Angeles, It was also learned that there were only four sets of the digital data converter equipment available. The remaining sets were ordered in October and had an estimated 18 months delivery time. Digital data converters were mandatory for compatibility of SAGE and AN/FSG-1 systems.

On 10 December, NORAD asked ADC to investigate the possibility of advancing the availability of the buildings mentioned above. ADC said this was being done. On the digital data equipment, NORAD wired the SAGE Project office that delivery of the initial equipment should be October 1959 and the rest consistent with approved installation dates of the AN/FSG-1.

New Operational Dates. As a result of information gained at the 25 November meeting discussed above, the JCTSG decided to revise all of its implementation schedules. New schedules were presented to CINCNORAD on 30 January 1959; these are shown on the table following. The forecast dates for Missile Master/AN/GPA-37 capability ranged from November 1959 for Fort Lawton (Seattle) to October 1960 for Gibbahoro (Philadelphia).

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NORAD CONTROL CENTER INTEGRATION

MASTER SCHEDULE Declassified

DATE: 1-20-59
PREPARED FOR THE JOINT COLLOCATION
A TECHNICAL STEERING GROUP

SAGE-MISSILE MASTER INTEGRATION TESTS

Collocation of Missile Master and AN/GPA-37 was one problem, integration of Missile Master with the SAGE system was another. CONAD's September 1956 proposal for collocation of Missile Master and AN/GPA-37, discussed above, also contained a proposal for integration in the SAGE era. The OSD concurrence of 30 October 1956 to collocation also stated that a technical plan for integration of Missile Master into the air defense system, both manual and SAGE, was being prepared.

A Secretary of Defense memo to the Secretaries of the Army and Air Force, dated 28 January 1957, advised that this technical plan had been completed. In addition, the memo directed the Air Force to request CONAD to submit an overall test plan. The purpose of the test was to determine the feasibility and operational desirability for centralized control of AA weapons through economical implementation of SAGE and Missile Master, or some modification thereof, for the more effective use of AA units. CONAD was to monitor the studies, programs, and contract actions and tests outlined in the OSD technical plan. The memo was forwarded to CONAD by the Air Force on 11 March 1957.

A plan for testing SAGE-Missile Master integration was completed by CONAD on 5 September 1957 and sent to the executive agency. A letter from the C/S USAF, dated 24 February 1958, approved this plan subject to Army and Air Force comments. DOD approved the plan for implementation in a memo to the Army and Air Force dated 2 May 1958.

CONAD proposed that a special test group be set up to manage the tests. It was to be under the chairmanship of CONAD and to be composed of representatives of the services concerned. CONAD would convene the group as required and provide guidance as necessary.

The test group was formed by NORAD on 24 February 1958. Its membership consisted of a chairman and assistant chairman from NORAD, and one member each from ADC, ARADCOM, and CONARC. The first meeting of the group was held 24-28 February and the executive agent was informed of its establishment on 4 March 1958. Also on 4 March, CINCNORAD issued a letter of instructions to the

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group stating that it would undertake immediately the necessary implementing action for the SAGE/Missile Master test program. On 28 April, CINCNORAD amended these instructions with added responsibilities. These were to include the development and delineation of functional and operational procedures to ensure that the essential elements of the integrated SAGE/MM systems conformed to NORAD operational concepts.

It was decided at the first meeting of the test group that there would be four categories of tests:

- (1) Implementation Testing. This was to be a checkout of equipment and interconnections and, insofar as possible, an examination of operational procedures. This was planned for the Washington Air Defense Sector between the Ft. Lee SAGE DC and the Ft. Meade Missile Master for the period September 1958 to February 1959.
- (2) Experimental Testing. This was to prove out the revised SAGE computer program in relation to M/M with particular emphasis on the Automatic Target and Battery Evaluation (ATABE) portion of the revised program. This was planned for the Experimental SAGE Sector and the Ft. Heath M/M, beginning in September 1959.
- (3) Operational Testing. This test was to determine the optimum air defense doctrine, concepts, tactics and techniques for employment of SAGE/M/M. This test was planned for the Detroit sector, using the Ft. Custer SAGE DC and the Detroit and Pittsburgh M/M systems during the period July 1960 to July 1961.
- (4) <u>Live Fire Testing</u>. This would consist of the firing of Nike Missiles at drone targets under the control of SAGE/M/M.

First Phase - Implementation Testing. This test was held in the Washington Air Defense Sector, which was the first to include both Missile Master and SAGE. It was held during the installation period of this sector to determine the extent of any equipment implementation problems or incompatibilities.

The objectives established by NORAD on 29 July 1958 for this test were the following.

- Determine the ability of SAGE to transmit accurate and timely target track data to the Missile Master complex.
- (2) Determine the ability of Missile Master to receive and process reference track data received from SAGE.
- (3) Determine the ability of the fire unit to acquire assigned tracks based on track reference data received from SAGE.
- (4) Determine the ability of Missile Master to receive and process battery and track channel information for transmittal to SAGE.
- (5) Determine the ability of SAGE to receive and process data from Missile Master.

Each of the agencies involved in the test had specific responsibilities. It was the job of the NORAD Test Group to approve the overall test specifications, make the final evaluation, and prepare a report for CINCNORAD. Two test directors were appointed by and were directly responsible to the NORAD Test Group. One, provided by ADC, served at Fort Lee, the other, provided by ARADCOM, served at Fort Meade. It was the responsibility of these directors to coordinate the test specifications, direct the conduct of tests, and evaluate the data in coordination with ADES, USASADEA, and Lincoln Laboratory.

The latter agencies' responsibilities included assisting the test directors, preparing test specifications and methods, and collecting and reducing data.

The implementation tests got underway as scheduled during the first week of September (the first progress report was issued on 11 September). They were completed also as scheduled. On 6 February 1959, NORAD notified USAF and DA that the tests had been completed. Preliminary test results were expected to be ready by early March.

Second Phase - Experimental Testing. This test was originally scheduled for the Lincoln Experimental SAGE Sector and the Fort Heath Missile Master. However, it was found that the Fort Heath

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Missile Master would not be operational until about August 1960. NORAD then asked that an abbreviated Missile Master be made available elsewhere in the Boston area by 1 July 1959. DOD approved the request and directed the Departments to provide the funds.

The reason for the 1 July 1959 date was that this phase of testing was to verify the design of the ATABE function prior to its evaluation in an operational SAGE sector. The first operational ATABE function was scheduled for inclusion in a SAGE computer program to be finalized for production in October 1959. Therefore, to provide a four-month testing period, the tests had to start on 1 July.

The Fort Banks Missile Master site was chosen. Only a very abbreviated Missile Master could be provided by this date (seven of twelve pallets of equipment). However, the NORAD Test Group decided that use of this equipment was better than delaying the experimental tests and the operational date of the ATABE function. On 19 December 1958, NORAD directed that the experimental tests be carried out with the abbreviated Missile Master at Fort Banks.

NORAD was to again appoint two test directors -- one for Lincoln Laboratory and one for Fort Banks. And the NORAD Test Group was again to approve the overall test specifications and to make the final evaluation and report.

Integration of Testing Efforts. Wherever possible, the NORAD Test Group sought to integrate the SAGE-Missile Master testing with similar tests being carried out by other agencies so as to cut down on effort and money.

A case in point was the USAF ADC system operational tests and evaluation (Category III tests) of the SAGE system in the New York and Boston sectors. In August 1958, NORAD proposed an integration of test efforts. ADC would control the SAGE evaluation tests that involved solely Air Force equipment. The NORAD Test Group would assume responsibility for the combined efforts of Air Force and army testing agencies for the Phase Three operational evaluation where system components of ADC and ARADCOM were involved. ADC and ARADCOM concurred.

On 1 October 1958, NORAD explained the plan to Army, Air Force, and other interested agencies. NORAD pointed out the over-lap in ADC Category III testing and NORAD SAGE-Missile Master operational

testing. The scope of the latter, as approved by DOD, was sufficiently broad, NORAD said, in the light of the DOD and NORAD reorganization, to permit integration of these tests. Therefore, on 1 January 1959, CINCNORAD planned to assume responsibility for Category III testing of the integrated air defense system for which NORAD was responsible. In addition, new elements to the system, such as interceptors, missiles, and fire direction and control systems, would be tested as they were integrated.

CINCNORAD would establish an Air Defense Systems Test Group. The nucleus was to come from the NORAD Test Group. To conduct and evaluate the tests, the new group would form a Joint Test Force.

Air Force objected to the idea and recommended that NORAD hold off on assuming responsibility. Air Force wanted more information and asked for a conference to discuss the whole plan. In the USAF view, ADC should continue to function as the "using command" for all aspects of its Category I, II, and III testing. Air Force said it recognized the requirement for testing new systems for integration into the overall system. And close coordination and direct participation in this function by NORAD was desirable. But the testing responsibilities that NORAD was to assume on 1 January might overlap USAF responsibilities vested in ADC.

NORAD replied that under the Unified Command Plan, operational responsibility for air defense was shifted from the service components to NORAD on 1 January 1959. NORAD, thus, was the using command, not ADC, as Air Force had maintained.

NORAD said it felt that prior to the time a system element became operational, it was properly the concern of the responsible services. But when it was integrated into the active air defense, it became a NORAD responsibility. NORAD agreed to hold a meeting with Air Force.

COLLOCATION OF AADCP'S AND ADDC'S

Background. Besides collocating ADDC's with Missile Master, NORAD sought to collocate ADDC's with other AADCP's wherever possible. During 1957, surveys were made by the regions to determine which, if any, AADCP's and ADDC's should be collocated. Little resulted from this other than for NORAD to advise ADC and ARADCOM that it desired collocation of Geiger-Fairchild and that they should study the logistics feasibility.

In November 1957, NORAD completed an AADCP-ADDC collocation study which showed many advantages to collocation. Among these were timely and accurate transmission of evaluated air intelligence and better operational control for the NORAD Division Commander.

Farly in January 1958, NORAD met with ADC and ARADCOM to discuss this collocation.

The conferees agreed that collocation should be considered for only those areas that were not among the ten already approved Missile Master ADDC sites or that would not have SAGE operational within two years. The reason was that by the time funds were allocated for altering the communications networks, the work accomplicated, and operational procedures established, there would not be enough time left to warrant changing the system. In general, this policy was followed. However, NORAD recommended collocation at Seattle and Los Angeles -- both of which were to get collocated ADDC-Missile Master centers.

At this and subsequent meetings in January, fourteen areas were suggested as possibilities for collocation. These were: Travis AFB, San Francisco, Geiger, Hanford, Seattle, Ellsworth, Fort Meade, Savannah River, Sault Ste. Marie, St. Louis, Kansas City, Cincinnati, Dallas, and Minneapolis-St. Paul. Collocation in the Cincinnati area was decided against because of the great distance between the AADCP and the ADDC. Fort Meade was left to Missile Master-ADDC collocation.

Geiger Field. At an ADC, ARADCOM, NORAD meeting on 28 January 1958, agreement was reached that collocation at Geiger was feasible. Action to collocate the Fairchild-Geiger facilities was started soon thereafter, and on 15 May 1958, operations began. This was the first NORAD Control Center.

It was not officially recognized by general order until 1 September 1958. Effective this date, the Geiger center was established and assigned to the 25th NORAD Division.

Dallas, Kansas City, St. Louis, and Minneapolis. On 4 April 1958, ADC and ARADCOM jointly concurred, with certain conditions

^{*} These were new ARADCOM defenses.

attached, in collocating the AADCP's at the ADDC's shown below:

ARADCOM Defense

ADDC

Dallas-Fort Worth Kansas City St. Louis Minneapolis-St. Paul Duncanville AFS, Texas Olathe AFS, Kansas Belleville AFS, Illinois Osceola, Wisconsin

The conditions attached concerned locating the entire head-quarters battery at the ADDC. ARADCOM said that its concurrence was predicated on the assumption that if the entire headquarters battery could not be located at the ADDC site, it could be placed near enough so that personnel could commute without undue inconvenience. ARADCOM set, as a general guide, a distance that would not exceed ten minutes travel time by light military vehicle. ADC said it saw no requirement for the whole headquarters, but would not object if there was enough land and water, if the Army paid for all its own building, and if on-site location would obviate the necessity of buying additional land.

NORAD approved on 22 April and asked that it be brought any logistics problems for resolution. Collocation had not been accomplished by the end of 1958, but plans were being prepared for funding, construction, and other requirements necessary to achieve collocation.

Travis AFB, Savannah River, Sault Ste, Marie, and Seattle. On 14 February 1958, ARADCOM and ADC recommended against collocation of any of these sites. NORAD concurred except on Seattle. NORAD asked that Seattle be reconsidered. However, NORAD provided that if ARADCOM could get its Missile Master operating soon enough to permit the joint center to begin operations in early 1960, interim AADCP-ADDC collocation would not be attempted.

ARADCOM replied in April that it had information which indicated that it might be possible to greatly advance the operational date of the Missile Master. ARADCOM again recommended against collocation at Seattle. NORAD would not make a decision, however, until a firm date was set for operation of the whole NORAD Control Center.

Nothing further was done toward interim collocation until 9 October 1958. NORAD wrote ADC and ARADCOM that it had determined

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that it was feasible and desirable to collocate the Seattle AADCP with the McChord ADDC. NORAD said it would assist in getting funds for collocation and requested that a cost study be made.

ADC replied on 6 November 1958 that it had learned that the Missile Master would be installed within 12 to 17 months and that early realization of Missile Master prevented collocation at McChord.

A decision against interim collocation at Seattle was finally made at NORAD Headquarters. This was made early in December after NORAD learned that the Seattle Missile Master and the NCC operational dates had been moved up considerably.

San Francisco, Hanford, and Ellsworth. ADC forwarded, in June 1958, recommendations of ARADCOM against collocation in these areas. ADC concurred. The reason for not collocating was that there was not enough room in existing buildings and neither ADC nor ARADCOM had money for new construction. Both said that if they had to process requests for funds through their departments, it would take two to three years for collocation to become a reality.

Both felt that collocation was feasible if NORAD could get the funds.

NORAD wrote to ADC and ARADCOM on 9 October that it was feasible and desirable to collocate in these areas (and also at Seattle, as mentioned above). NORAD would request funds from the services and asked for a cost study. NORAD said that it had no requirement for the collocation of the administrative and logistic functions of the ACW squadrons and artillery units, just the operations portion of the AADCP and the ADDC.

New Nike Hercules Defenses. ARADCOM sent to NORAD in August a list of 52 new Hercules defenses, marking eleven of them as feasible for collocation. The eleven were in areas where the AADCP and ADDC were within 20 miles of each other.

NORAD then sent the complete list to ADC and ARADCOM asking them to report jointly on the feasibility in all areas. The mileage factor, by itself, NORAD said, was not sufficiently significant to warrant a recommendation for not collocating.

Both components replied on 4 September that they were planning

to send out survey teams from the defense forces and regions. ADC asked for concurrence on certain parameters to be used to establish firm guidelines for the studies:

- a. Collocation would be considered only with Master Direction Centers.
- b. Normally, only the operational function of the AADCP would be considered for collocation.
- c. Electronic means of collocation would be considered only when physical collocation was not feasible.

ARADCOM disagreed with a. and b., concurred with c., with modifications. Item a. should be rewritten to provide that collocation of the AADCP and the nearest ADDC would be considered. Collocated sites would then become NCC's. On b., ARADCOM said that it wanted the entire headquarters battery to be accommodated at the site, if possible. If not, it had to be close enough so that personnel would be within ten minutes travel time by light motor vehicle. In regard to point c., ARADCOM said that physical collocation should be considered only when the ADDC was approximately on or within the ring of missile batteries comprising the defense. Electronic collocation would be considered when physical collocation was not feasible (apparently according to this criterion).

NORAD agreed with ADC. The parameters expressed by NORAD were as follows:

- a. Collocated facilities would be master direction centers in all cases.
- b. Collocation of the operational functions only was required by NORAD, but there was no objection to collocating the administrative and logistic functions if it would save land and money.
- c. Electronic collocation would be considered only when physical collocation was not feasible. The mileage factor, by itself, was not considered sufficiently significant to warrant recommendation for not physically collocating the AADCP with the ADDC.

This did not settle the matter. On 19 December, ADC wrote that a joint report could not be submitted because ARADCOM did not concur with separation of the Army Defense Commander from the battalion headquarters by more than ten minutes travel time in light vehicle. NORAD answered on 9 January that it did not accept ARADCOM's non-concurrence for this reason and this was not an acceptable parameter for the feasibility study. NORAD directed that the parameters it laid down (above) be used.

AADCP-ADDC TELEVISION LINK

Test Results. CONAD and the component commands decided to test the use of television to exchange data between AADCP's and ADDC's where physical collocation was impractical. The Norfolk-Cape Charles area was selected for the television test. The latter was completed on 23 June 1958.

The test showed the following:

- a. Exchange of data between the AADCP and the ADDC is technically feasible.
- b. Correlation of tracks generated by the Army AN/FPS-36 radars and the Air Force prime radars is greatly improved by utilizing a closed circuit TV loop.
- c. TV gives the NORAD air defense commander a complete picture of the air defense situation.
- d. Exchange of data between the ADDC and the AADCP can be accomplished with TV and microwave equipment that is presently in stock.
- e. The TV equipment can be operated by the personnel normally on duty in the AADCP and the ADDC.
- f. TV equipment should be serviced by technically qualified military or civilian maintenance men normally not found on duty at the AADCP's and ADDC's.
- g. There is no saving in personnel by employing TV for the exchange of data between the AADCP and the ADDC over the present system used.

h. The cost of military owned and operated closed circuit TV link would be approximately \$250,000 (estimated).

Proposal for Los Angeles. Following the test, the only proposal made was in regard to Los Angeles. NORAD's primary aim was physical collocation everywhere possible. Television or some other similar means was only to be used as a last resort. A collocated NORAD Control Center was planned for the Los Angeles area at Fort MacArthur/San Pedro Hill. This was one of the ten Missile Master-ADDC sites. Collocation here would be for the period prior to operation of the NCC.

On 25 September 1958, NORAD asked ADC and ARADCOM to jointly report on the feasibility of collocating the functions of the AADCP and the ADDC in the Los Angeles area. If this was not feasible, link by television or other means was to be considered.

ARADCOM and ADC passed NORAD's request along to their units in the area, the Sixth Region and WADF. Both of the latter replied in December recommending against physical collocation on the grounds of excessive cost and time. Both also felt that television was too costly and would require too long a lead time. Both felt that the Iconorama, developed by the Fenske, Fedrick and Miller Company, would cost much less and should be considered. ARADCOM concurred with the 6th Region and recommended Iconorama. ADC agreed that Iconorama was the most suitable, but stated that because of the apparent long lead time no collocation prior to that at the NCC was economically feasible.

COLLOCATION AT THULE

Background. CONAD directed USAF ADC and ARADCOM, on 2 August 1957, to report on the feasibility of collocating the Thule AADCP and ADDC. ADC recommended collocation in a new facility to be built near Thule AFB, with the radar data remoted from Pinguassuit Mountain. ARADCOM agreed that this was feasible. On 8 October, CONAD approved the ADC recommendation and directed implementation.

The 64th Air Division submitted two plans to ADC, which were forwarded to CONAD on 21 April 1958. The 64th's Plan "A" provided simply for a collocated AADCP-ADDC. Plan "B" provided for a collocated AADCP-ADDC, a joint command post which would include the

SAC commander, and operational and administrative space for the SAC wing.

CONAD approved Plan B on 30 June 1958 and directed ADC and ARADCOM to implement it.

Change in Plans. On 22 August 1958, ADC told CONAD that SAC, as host command at Thule, had done nothing toward construction of housing required in the collocation project. CONAD then found that SAC had received no information on the project. Following this discovery, ADC forwarded both Plans A and B to SAC. On 1 October, SAC answered, disagreeing with Plan B. The cost was too high considering a planned reduction in SAC activities at Thule. SAC considered available facilities adequate for its mission. SAC thought Plan A was suitable and would include the items in the FY 1960 MCP.

CONAD went along, directing on 6 November that ADC and ARAD-COM implement Plan A.

On 7 January 1959, USAF informed SAC that the Thule collocation project, in competition with other high priority Air Force requirements, was not approved for inclusion in the FY 1960 MCP.

CONAD sent a strong reclama to the JCS on 24 February 1959. The USAF decision would seriously impair the operational efficiency of the air defenses in the Thule area, CONAD said.

ALASKAN JOINT DIRECTION CENTERS

Background. The Alaskan Command Air Defense Requirements Plan, 1957-1966, submitted in March 1957, stated a requirement for Air Force BADGE (Base Air Defense Ground Environment) equipment and two AN/MSG-4 Army antiaircraft fire direction systems. There was no mention, however, of collocating the two.

CONAD then stated a requirement for such to ALCOM, and in June 1957 to the JCS, for collocation of BADGE and MSG-4 at two locations: one in the 11th Division in the Fairbanks area, and one in the 10th Division in the Anchorage area.

In response to this requirement, ALCOM recommended Murphy Dome for the 11th Division, Fairbanks area, and Fire Island for the 10th

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Division, Anchorage area. NORAD approved and recommended both to the JCS. The executive agency informed NORAD on 29 November 1957 that both sites had been approved.

Operational Dates. CINCAL advised in October 1957 that three stages of operation were planned, progressing from a manual mode to a semi-automatic mode with all equipment installed. Also, CINCAL said that it had learned that possibly the BADGE equipment and the AN/MSG-4 could not be used together. NORAD forwarded CINCAL's letter to the executive agency. On 5 December 1957, the latter replied that an Interservice Coordinating Group had been formed to evaluate the BADGE and MSG-4.

NORAD heard nothing more. On 14 May 1958, NORAD asked USAF for information on what this group had found and when the joint centers would begin operating. USAF answered on 6 June that no conclusions had been reached by this group (see ALSADS below). The joint centers, using BADGE/MSG-4 equipment, were scheduled for operation during the third quarter of FY 1961.

NORAD asked ALCOM if it could recommend any means of getting capability earlier than 1961. ALCOM answered that it could suggest none -- January 1961 would be the earliest.

However, ALCOM stated, joint direction centers operating in the manual mode were to be operational by January 1959. Six months later, both centers were scheduled to reach operation in the semiautomatic mode using AN/MSQ-18 BOC equipment.

The operational date for the joint manual direction centers was later changed. On 30 October 1958, ALCOM advised CAA and USARAL that the dates were changed to 1 March 1959 for Fire Island and 10 May 1959 for Murphy Dome. The reason was a change in operational dates for Nike Hercules. The first battery was scheduled for Elmendorf defenses on 1 March 1959, and for Eielson defenses on 10 May 1959. ALCOM stated that theater communications facilities would not permit effective operation of the centers before the Nike Hercules units became operational.

Alaskan Air Command's Semi-Automatic Defense System (ALSADS). The BADGE equipment, mentioned above, scheduled for Alaska was to be the AN/GPA-73. On 19 August 1958, USAF advised AAC and NORAD that the Office of the Secretary of Defense had approved the AN/GPA-73 system for Alaska.

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AAC completed an operational plan for its system on 5 September 1958, which was approved by USAF on 22 December 1958. AAC planned to employ the AN/GPA-73 components to form the ALSADS in four subsectors: Fire Island, King Salmon, Murphy Dome, and Campion.

There were to be two sectors. The Northern Sector, the 11th NORAD Division, was to be divided into two subsectors. One would be controlled by the joint direction center at Murphy Dome and the other by the air defense direction center at Campion. The Southern Sector, the 10th NORAD Division, would also be divided into two subsectors. One would be under the joint direction center at Fire Island, the other under the ADDC at King Salmon. The NORAD Division control centers were to be eventually at the joint direction centers. AAC set January 1961 as the target date for implementation of the complete AISADS.

AN/MSQ-18 Fire Direction System. On 5 August 1958, Department of the Army informed USARAL that two AN/MSQ-18 systems were to be delivered in the second quarter FY 1960.

USARAL told DA in October that these systems would have to be modified for integration into the joint direction centers. This included dismounting the systems to fit into the centers and modifying them to accept either AN/MPS-20 or AN/FPS-36 radar data.

At the end of December, DA was still considering the proposal. DA had replied that the proposal was feasible, but that other problems, such as funds, availability of equipment as scheduled, and training of personnel, had yet to be solved.

CHAPTER Y

Status of Radar: U.S. System

GENERAL STATUS

On 31 December 1958, USAF ADC had 187 operational land-based radar stations, 68 of which were gap fillers. Also, USAF DC had two operational Texas Towers and seven ARM&C stations in the contiguous system. The U. S. Navy was maintaining one AEW station and ten picket ship stations. The table below gives a breakdown of these figures and a comparison of the June 1958 status with that of December 1958.

TABLE 4

		TABL		_		
PROCRAM	PROGRAMMED Jun 58 Dec 58		OPERATIONAL Jun 58 Dec 58		OPERATIONAL PRIME SEARCH	
	Jun 30	Dec 70			Equip (December 195	No 8)
Permanent	75	74*	75	74	CPS-6B/FPS-10 MPS-7/FPS-3 FPS-20	25 15 34
(P-sites) 1st Phase Mobile	31	31**	27	29**	MPS-11/FPS-8 MPS-7/FPS-3 FPS-20	12
(M-sites) 2nd Phase Mobile (SM-sites)	20	20**	13	13	MPS-11/FPS-8 MPS-7/FPS-3 FPS-20	5

^{*} P-site No. 8 was deleted from Permanent Program 9 December 1958.

^{**} Two M-sites were in Canada, one operational. One SM-site was in Canada.

PROGRAM	PROGRAMMED Jun 58 Dec 58		OPERATIONAL Jun 58 Dec 58		OPERATIONAL PRIME SEARCH	
	Jun 30	Dec)o			Equip (December	No 1958)
3rd Phase Mobile	21	21	2	3	FPS-3 FPS-20	1
(TM-sites) ZI Cap Fillers	237	235*	54	68	FPS-14 FPS-18	56
Texas Towers	3	3	1	2	FPS-20	2
East Coast	5	5	14	3		
AEW&Con Stations West Coast	5	5	5	4	-	
AEW Station East Coast	1	1	1	1		
East Coast	5	5	5	5		
Picket Ship Sta West Coast	5	5	5	5		

RELOCATION AND INTEGRATION OF AN/FPS-36 RADARS

Background. Back in October 1957, ARADCOM said that it needed to relocate its AN/FPS-36 radars to get better coverage against low and very low approaching targets. ARADCOM's requirement stemmed from three causes: (1) USAF ADC surveillance radar program had not been fully implemented, (2) radars in the existing surveillance system did not in all cases provide the radar coverage required for Nike defense systems, and (3) existing problems in data handling from the existing surveillance system to the Nike defenses.

General Partridge told the ARADCOM Commander that he desired that these radars be used in places recommended by the Army, but also that they be placed where they would contribute to the overall surveillance system. It was subsequently found that each new planned location would have to be coordinated and analyzed carefully. Some of the same locations were to get USAF ADC or CAA radar.

^{*} Sites RP-1B and P-46B were deleted from program.

NORAD agreed to let ADC examine each ARADCOM proposal before it came to NORAD.

ARADCOM furnished the proposed site locations for the 5th Army Air Defense Command Region to ADC in December 1957. ADC recommended that seven of 15 sites be eliminated and suggested that two others could be deleted with certain changes in siting.

At this time, NORAD saw a need for issuing firm policy guidance on surveillance. This was issued on 20 March 1958. NORAD stated that the siting of all radars used for surveillance purposes, regardless of the agency furnishing the radars, was to be carried out in such a manner as to provide the best possible overall surveillance system. USAF ADC was assigned primary responsibility for furnishing surveillance radars in the U. S. But NORAD provided that although ADC had this responsibility, other agencies might be required to furnish surveillance radars. Ordinarily, this would be on an interim basis. ADC was also made the coordinating agency responsible to NORAD for the U. S. portion of the surveillance system.

Following issuance of this policy, NORAD overrode ADC on ARADCOM's 5th Region AN/FPS-36 relocation proposal. On 21 March 1958, NORAD approved ARADCOM's proposal. NORAD told ADC that if it could not provide surveillance to agencies having a need on a timely basis, NORAD reserved the right to authorize interim radar installation by any NORAD agency. NORAD told ARADCOM, however, that it could deploy and operate interim installations of FPS-36 radars to provide required coverage until ADC radars could provide the coverage (amplified by NORAD policy guidance - see item d, below).

Integration of AN/FPS-36 Radars. On 5 June 1958, NORAD laid down policy guidance on the location and integration of FPS-36's into the NORAD surveillance system.

a. FPS-36 sites required to fill gaps in coverage and chosen to augment the surveillance system, will be provided with the communications and equipment required to function as interim surveillance radars. When a USAF ADC radar is placed in operation to cover the gap for which the FPS-36 was sited, the latter will be withdrawn. Proposed sites will be submitted to ADC for coordination and selection of sites that can be used to augment the system.

- b. Wherever it is necessary to site an FPS-36 that does not augment the system, it is assumed that the USAF ADC surveillance system cannot provide the coverage required for Nike defenses.
- c. Wherever an FPS-36 is sited, a potential back up for an existing or programmed USAF ADC surveillance radar exists. In order to use this potential, provisions shall be made for cross telling FPS-36 surveillance information to an appropriate Direction Center.
- d. The completion of the programmed surveillance system in those areas where Nike defense exists, the correction of possible technical deficiencies in radar coverage, and the provision of appropriate data handling means will eliminate the requirement for the FPS-36 in the air defense system. However, existing FPS-36's will give a Nike defense the capability of autonomous operation (Mode IV). Unless otherwise directed by NORAD, this standby capability may be kept, if feasible, within the resources allotted to USARADCOM.

In response to this letter, ARADCOM furnished ADC with the locations (actual or planned) of 82 AN/FPS-36 radars. ADC found that 14 of these locations were suitable for integrating the radars into the NORAD surveillance system. ADC recommended that 29 other locations be changed so as to increase overall coverage and minimize electromagnetic interference and that 39 locations not be used for AN/FPS-36 radars. The radars in the latter areas, ADC felt, would duplicate coverage and aggravate the interference problem.

ARADCOM's Lieutenant General Hart pointed out to General Partridge that of the 29 locations that ADC recommended be changed, eight were in permanent type installations that cost several hundred thousand dollars. General Hart wondered whether the benehundred thousand dollars. General Hart wondered whether the benehundred thousand system that could be gained by moving them would be worth the cost. He also pointed out that several of the 39 locations, at which ADC recommended no FPS-36 radars be operated, had been in operation for enough time to determine that no interference existed. Finally, he reminded General Partridge that the primary mission of the AN/FPS-36 was to extend the low altitude acquisition capabilities of the Nike Defenses. This, thought General Hart, had

not been considered by ADC when it recommended against FPS-36's at these locations.

On 24 November 1958, NORAD advised ARADCOM that it approved integration of the FPS-36's into the NORAD system at 14 locations. Six of these were in the 5th Region and already properly located. These could be immediately integrated.

Site	Location
CM-1 CM-2 CM-5 CM-8 CM-9 CM-10	Argyle, Wisc. Dixon, Ill. Bunker Hill, Ind. Tisch Mills, Wisc. Ludington, Mich. Princeton, Wisc.

The other eight were to be relocated.

Site	Location
L-4 NB-6 NB-1 CL-2 E-1 E-2 LA-1 H-3	Grand Falls, New Brunswick Hamilton, Ontario Barker, New York Widowville, Ohio Terry Peak, So. Dakota Parker Peak, So. Dakota Indio, California Okanogan, Washington

NORAD also requested that ARADCOM evaluate the ADC proposal to change the locations of 29 other sites.

On 24 December, ARADCOM requested that DA approve the relocation of the radar sites approved by NORAD for integration.

In the meantime, NORAD determined that little effective use was being made by the Direction Centers of the data available from the AN/FPS-36's. For this reason, on 14 August, NORAD cited its 5 June integration policy letter and directed each region and division to determine how maximum benefit could be obtained from the coverage afforded by Army radars. Those radars that were to fill gaps in existing coverage or to augment the system, would be provided with communications and equipment to function on a full-time

basis as interim surveillance radars. Other FPS-36's were to be tied to the ADDC by means of bridging or patch circuits. When an AN/FPS-36 picked up a target, NORAD directed, that was not being carried by an Air Force radar, the FPS-36 would report the target position directly to the plotters at the ADDC and the AADCP via the bridged circuits.

Each region was asked to submit quarterly reports on their progress on effectively employing AN/FPS-36 radars. Also, following NORAD's approval of 14 locations on 24 November 1958, each region was asked to state additional requirements for the integration of FPS-36 radars in their next quarterly reports.

Northern NORAD Region replied to the August letter that there were no radars operated by the Canadian Army which could be beneficially employed in the manner suggested. As noted above, ARAD-COM's relocation plan included the deployment of two AN/FPS-36's in Canada. NORAD approved these two sites for integration, but stipulated that DA had to take action to get approval for this deployment. ARADCOM requested DA on 24 December 1958 to take action on this matter.

In Alaska, USARAL was directed by ALCOM to site two AN/FPS-36's in accordance with NORAD's directives. USARAL recommended Site "JIG" in the Fairbanks complex and Site "Bay" in the Anchorage complex. On 4 December, ALCOM approved the "JIG" installation, but turned down the "Bay" site as not being in consonance with NORAD's siting policy. ALCOM said that a radar coverage study showed that the coverage from Bay, Site Point and Site Summit in the Anchorage area was for all practical purposes identical with that provided by the air defense radar at Fire Island. Permission could not be given to install an AN/FPS-36 at any of the existing Nike sites in the Anchorage area.

ECCM MODIFICATIONS TO US AF ADC RADARS

In September 1957, the JCS asked CINCONAD to outline his needs in the ECCM field. A list of five fields that needed strengthening was submitted on 20 January 1958. The fields and their priorities are shown below:

^{*} For more detailed information see: CONAD/NORAD Historical Summary July-December 1957, pp 87-89.

PRIORITY

FIELD

	mandalar and Facilities
I	ECCM Operator Training and Facilities ECCM Improvements for Ground Environment
III	ECCM Improvements to Weapons Systems
IV	Communications Defensive ECM and Passive Defense

NORAD issued a policy statement on electronic warfare in regulation 101-2 on 6 January 1958. This regulation, as well as the 20 January letter to the JCS, stressed a need for a retrofit program to provide all possible antijamming devices for existing weapons and ground environment equipment. Retrofit of the radar network had been left in the hands of ADC and USAF.

ADC advised that every effort over a 15 months period to obtain FY-1959 funding for ECCM modifications had proven fruitless. USAF had made no FY 1959 funding commitments in its buying program for modification of the FPS-20's, FPS-6's, or FPS-7's.

On 27 May 1958, General Partridge wrote the Executive Agent, emphasizing the need for ECCM modifications to current radars. He pointed out that the Weapons System Evaluation Group (WSEG) tests had shown that modified radars could counter the ECM threat. And with the possible delay in the Frequency Diversity (FD) Radar Program, it was essential that all programmed FPS-20's, one FPS-6 height finder at each site, and all FPS-7's be ECCM modified. He stated that if it were not possible to divert funds to accomplish immediate modification, a phased funding program through the FY-1959 and FY-1960 buying programs should be accomplished. "I feel," he said, "that the ECM threat to the air defense system is such that any further postponements of the procurement of ECCM modifications for the current radars incurs a risk out of proportion to the cost."

A reply was received in June. It pointed out that USAF planned to provide all FPS-7's, and those FPS-6 and FPS-20 radars that were to remain in operation, with a capability to combat the enemy ECM threat. The FY-1959 radar modification program had been completed in May and included ECCM modifications for the FPS-6's and FPS-20's.

^{*} ECCM modifications included: for the FPS-6 (1) adjustable Antenna Nod-Angle, and (2) Adaptor for Tunable Magnetron; for the FPS-20, (1) Dual Frequency Simultaneous Transmission (Duplexing), (2) Azimuth versus Amplitude, (3) Video Integration, (4) Dickie Fix, (5) Cross-Gating, and (6) Wave Guide Switching.

Other new ECCM techniques for these radars were programmed for service testing in FY-1959 and were to be included in the FY-1960 modification program. Any new techniques that could not be included during production would be considered in future retrofit programs.*

CONAD was still not satisfied. In July, it wrote that if the FPS-6, FPS-7, and FPS-20 radars were to be effectively employed in the 1960-61 time period, additional funding was needed. CONAD also stated that the modifications proposed by USAF for the FPS-20 fell short of that expected. An anti-jam console for each set was needed concurrently with the other modifications to make the FPS-20 an effective ECCM radar. The FPS-6 height finder radars needed an improved antenna if the programmed tunable magnetron was to be of value.

Proposed Class V ECCM modifications, that USAF ADC and CONAD felt were necessary to get an effective ECCM environment, were submitted with the July letter. ** CONAD stated that it was equally important to provide funds to Air Materiel Command to test the proposed modifications. Without FY-1959 test funds, it would be impossible to place the modifications in the FY-1959 and FY-1960 buying programs.

^{*} The Executive Agent told CONAD also that a new device that would passively track enemy bombers using their own jamming signals -- the AN/TLQ-8 Jammer Tracker -- was being developed. It was to be tested in FY-1959 and production models would be included in the FY-1960 budget.

^{**} Modifications for the FPS-6 included: Controllable Nod
Angle Including Azmiuth Control; Improved Antenna; Tunable Magnetron; Video Integration; Dickie Fix; Logarithmic Receiver with Fast
Time Constant Circuit; Monopulse; PRF Jitter; Pulse Compression;
and an A.J. Control Box. For the FPS-7, CONAD wanted: Improved A-J
Console, Simultaneous Dial transmission and Duplexing, matched filters, Angular Power Adjustment, Pulse-to-pulse Frequency Shift. For
the FPS-20: Tunable Duplexing, including Multiple Pre-amplifiers,
Cross-gating and Wave-Guide Switching; A-J Console; Improved Video
Integration; Side Lobe Cancellation, including Amplitude Versus Azimuth; Velocity Filters; Dickie Fix; PRF Jitter; Pulse Interference
Separation and Blanking; MTI Constant False Alarm Rate; Improved Antenna; and Pulse-to-Pulse Frequency Shift.

On 27 August, the Executive Agency replied that it was in general agreement with the Class V modifications requested by ADC. The proposals were being processed through the Air Research and Development and Air Materiel Commands. Once these commands submitted their recommendations and cost estimates, a firm ECCM modification program could be approved. Until then, the adequacy of FY-59 funding could not be determined. The modification of ADC radars to combat ECM was considered an essential program, USAF stated, and several ECCM techniques and devices were being evaluated. Once completed and the most desirable configuration of each modification program determined, the programs would be funded on a priority basis.

As of October 1958, it appeared that the joint NORAD-ADC efforts were getting favorable action by USAF. RADC advised that USAF had approved and funded a total of \$3,121,000 for five ECCM modifications on 61 FPS-20's. And funds for an additional twenty FPS-20's had been requested by RADC.

THE FREQUENCY DIVERSITY (FD) RADAR PROGRAM

NORAD's concern about getting ECCM modifications for the existing radars was heightened by what appeared to be certain delay in the FD Program. As of 31 December 1958, the FD program was fairly unstable due to budget reductions and technical production problems.

The FD program was designed to provide the surveillance system with a "family" of radars having improved capability in search, height, and ECCM functions. Radars included in the FD program were the FPS-7, FPS-20, FPS-24, FPS-26, FPS-27, FPS-28, FPS-35, and FPS-53.* These radars would provide a maximum ECCM capability consistent with the "state-of-the-art." They were to operate at widely separate frequencies between 200 and 5600 megacycles with the capability of switching operating frequencies within a few seconds.

A preliminary operational plan for the FD radar program was sent to USAF by ADC in 1957. It was approved on 10 January 1958. Then on 1 June 1958, ADC published a final operations plan approved by both NORAD and USAF. The plan provided that the FD radars would be deployed within the U. S., Canada, and the 64th Air Division.

^{*} The FPS-53 was a combined FPS-24 and FPS-35.

First priority installation would be directed toward establishing an FD capability in the ADC combat zone of the U. S. The FD radars would replace most of the existing radars. Exceptions to the replacement policy were that one FPS-6 would be retained at each prime site and ten FPS-20's would be kept in the active network. Phasing in of the new ZI radars -- at 175 sites -- was to take place in the 1959-1964 time period.

When the plan was written, no official governmental agreement to deploy FD radars in Canada had been reached, so no priorities for Canada or the 64th Air Division were established. However, it was noted that priorities for these areas were not to be lower than for sites in the ZI.

On the basis of the approved FD plan, ADC submitted its FD Communications Electronics Implementation Plan (CEIP) to USAF in July 1958. It was September before USAF replied that portions of the plan had been approved. The ZI program was approved in its entirety. The Canadian program, USAF stated, had been deleted and would have to be re-submitted. The approved CEIP provided for installation of radars at 144 sites.

On 16 and 17 October, representatives of USAF ADC, RCAF ADC, 64th Air Division, and NORAD met in Colorado Springs to reexamine the FD program for Canada. A new program was drawn up and submitted to NORAD for approval. It provided for installation of FD radars at 52 sites between FY-1961 and FY-1963. NORAD approved the proposed deployment in December, but pointed out that the projected operational dates did not meet those set forth in the North American Air Defense Objectives Plan 1959-1963 (NADOP 59-63). It directed that every effort be made to meet these dates.

Meanwhile, in November, representatives of USAF ADC and RCAF ADC met again to examine the program for Canada. It was concluded

^{*} The CEIP was returned on 17 November 1958.

^{**} The program was for 33 FPS-26 and FPS-27's; 34 FPS-26 and FPS-28's; 22 FPS-26 and FPS-35's; 15 FPS-26 and FPS-24's; and 41 FPS-26's. At 18 of the latter sites, towers were to be constructed for FPS-7's.

that operational dates for the FD radars would have to be advanced approximately two years from those listed in the USAF ADC FD operations plan to meet NORAD's requirements. After the conference, a new CEIP was handcarried to USAF. It had not been approved as of 31 December 1958.

In December, Headquarters USAF provided bad news on the U. S. FD program. It told ADC that some \$29,000,000 had been dropped from the FY-1960 buying program which would reduce the radar procurements for FY-1960 by five FPS-7's and 24 FPS-26's.

ADC immediately protested. In a message, coordinated with NORAD, ADC pointed out that deferring the equipment in FY-1960 was acceptable only if the monies and radars were picked up in subsequent budgets. The reduction, the message continued, could not be accepted if it extended completion of the FD environment past calendar year 1964.

USAF's reply was not encouraging. It stated that changes extending implementation of the FD program were undesirable, but unavoidable. Although ADC wanted complete implementation of the program by 1964, this was apparently not possible before 1965.

THE CONTIGUOUS SYSTEM

AEW&C Status. On 31 December 1958, USAF ADC's Airborne Early Warning and Control force totalled 70 RC-121D's and seven RC-121C's with 32 operationally ready. Available to man this fleet on this same date were 67 crews, of which 64 were combat ready. The AEW&C force was composed of six tactical squadrons -- three at Otis AFB, Massachusetts, and three at McClellan AFB, California. The squadrons at McClellan were assigned to WADF's 552nd AEW&C Wing, those at Otis to EADF's 551st Wing. The two wings were manning a total of seven stations -- three on the East Coast and four on the West Coast -- on 31 December 1958. Propeller failures, lack of flying hours, and a shortage of operations and maintenance personnel were the reasons for the wings' failure to man the ten stations (five on each coast) required by NORAD.

On the East Coast, the 551st was manning stations 6, 4 and 2, 24 hours a day. Stations 8 and 10 were to be manned when Intelligence indicated it was necessary. In addition to these stations outboard of the picket line, the Navy's Airship Airborne Early Warning Squadron One (ZW-1) manned the only inboard station on the Warning Squadron 16 -- every odd day of the month. The 552nd Wing on the West Coast was manning stations 13, 17, and 19, 24 hours a day, station 15 for eight hours during darkness, and station 11 when Intelligence dictated.

Replacement for the RC-121. One of the main concerns of NORAD in 1958 was that of getting an aircraft to replace the RC-121. Both General Partridge and General Atkinson took a strong stand in supporting a replacement program in the first six months of 1958, but they had been unable to get follow-on aircraft funding included in the Air Force FY-1959 budget.

In July 1958, General Partridge asked the NORAD Deputy Chief of Staff for Plans and Operations to see if single service support of the entire contiguous program might not be better than dual service support. In the current program, the Air Force was responsible for providing a portion (AEW&C - Texas Towers), and the Navy a portion (picket ships - blimps). He also requested that the component commanders comment on the proposal.

ADC felt that the concept in being was best. It pointed out that neither the Navy nor Air Force had a new AEW&C system under development. The Air Force had agreed that the AEW&C program would be a first-priority program. ADC said it realized that no funds had been allocated in the FY-1959 budget for a follow-on AEW&C system; however, USAF had stated that it would fund development of long lead time components during FY-1959. A meeting with representatives of Lockheed Aircraft Corporation and members of the ADC and NAVFORCONAD staff had been held to determine a priority listing of mutually needed components. And this list was to be presented to the respective service departments at an early date. Also, USAF had already approved and funded several modifications to the RC-121. The improvements would provide more reliable communications capable of a higher data rate and greatly improved detection capability with a search radar specifically designed for the mission. Completion of these modifications was set for the end of calendar year

In August, General Partridge approached General Atkinson with another proposal. He pointed out that the stumbling block to getting

a follow-on aircraft seemed to be the fact that a complete new system had to be produced. It might be possible to use a Canadian airframe and engine with American communications and electronic components. He asked General Atkinson to study the new CL-44 being produced by CANADAIR in Montreal. This was done by ARDC at ADC's request.

In October 1958, a presentation was made to the Air Defense Panel and the USAF Aircraft and Weapons Board. As a result of this meeting, it was decided to set up a source selection board to pick an aircraft. This board was established in November by USAF, composed of representatives from ADC, AMC and ARDC. The board and a committee of evaluators from the same three commands met at Headquarters ARDC from 9 through 17 December 1958.

Picket Ship Status. On 31 December 1958, the number of manned picket ship stations remained unchanged from the number on 30 June. Ten picket stations (five on each coast) were being manned around-the-clock. Seven stations (four of them on the East Coast) were being manned by YAGR's, the remaining three by DER's.

In January 1958, the CNO had proposed reducing the contiguous system to eight stations so as to provide adequate forces for the DEW barrier operation. NORAD had protested and by May a compromise had been worked out. It was decided that only one station would be dropped from the contiguous program leaving a total of nine -- five on the West Coast and four on the East Coast. Later, however, the CNO decided that the barriers could be adequately manned and ten picket stations still kept for the contiguous system (five on each coast).

After the decision to keep all ten picket stations, NORAD began a study on how to best use the forces allocated. It was tentatively decided to use four stations for East Coast operations and six for the West Coast. ENR immediately protested. ENR stated

^{*} The composition of the West Coast fleet was such that manning of the five stations varied. Sometimes three stations were manned by YAGR's and two by DER's. At other times, the ratio of DER's and YAGR's was reversed.

that any reduction in the number of picket forces would reduce the number of coastal targets that could be adequately defended.

NAVFORCONAD was asked to comment on the proposed re-allocation of ships also. It replied that the deployment of the picket ships off the East Coast was considered wasteful. Ample medium and high altitude coverage could be furnished with four stations. West Coast operations would require six stations. Naval Forces also stated that the proposed re-allocation would result in a higher degree of use of picket ship capabilities in the air defense system.

The matter was still being studied as of 31 December 1958.

Contiguous System Operations. During the first six months of 1958, there had been much dissatisfaction with the contiguous program. Both Eastern and Western Regions and NAVFORCONAD felt that the concept of operations in CONAD Operations Plan 9-57 was less than adequate. Each had different reasons for feeling as it did.

ENR felt that the CONAD plan did not allow for maximum use of interceptor capability. It wanted to move the AEW&C (Sentinel*) aircraft from positions inboard the picket vessels to ones outside. This would, ENR reasoned, extend the medium and high altitude control capability sufficiently to permit employment of interceptors to the extent of their combat radii. WNR wanted to delete control from the AEW&C functions. Also, it too wanted to test various defrom the AEW&C functions. NAVFORCONAD felt that the system did not ployment configurations. NAVFORCONAD felt that the system did not meet minimum air defense requirements for warning or intercept of potentially hostile aircraft. It submitted an alternate plan for consideration.

NORAD allowed the regions to test their proposed deployment plans and asked ADC and NAVFORCONAD to write a new operations plan. By 30 June 1958, two of the deployment proposals had been tested

^{*} In April 1958, General Partridge stated that the name "Airborne Early Warning and Control" and its abbreviation AEW&C were awkward to use. He directed the staff to find a new name. The name Sentinel was suggested. On 15 May, NORAD asked ADC to consider adopting the new name. It was rejected, however. The decision was then made by General Partridge that NORAD would use the name. Both names appear in the text.

in the regions with only fair results and inconclusive evidence with which to support a new operations procedure. The regions, however, were still on test locations, attempting to obtain test data that would prove their concepts. NORAD, ADC, and NAVFORCONAD were attempting to prepare a new operations plan that would satisfy everyone.

By July, a new operations plan (3-58) had been written and submitted to the regions, ADC and NAVFORCONAD for review. The concept of operations in the plan was based on the following assumptions: NORAD would receive tactical early warning from CINC-EUR, CINCPAC and the Atlantic and Pacific Barriers; and contiguous air defense had to be based on equidistant defense in depth of specific target areas.

The locations of the seaward elements were to be based on providing the following: (1) providing equidistant coverage from vital coastal bomb release lines to the periphery of surveillance capabilities; (2) continuous tracking of hostile aircraft at both high and low altitudes; (3) destruction of hostile aircraft by interceptors about 150-180 miles from the beach; (4) stationing aircraft and airships between the shore-based radars or Texas Towers and the picket ships to fill in the low altitude radar gaps from the surface to 20,000 feet; and (5) stationing picket ships to get the maximum use of their high altitude capabilities.

NORAD pointed out to the recipients that the proposed plan did not provide full coverage of the Atlantic and Pacific coasts. Calculated risks had to be taken on some isolated targets. NORAD stated also that the plan did not attempt to correct all deficiencies in the contiguous system. Means of correcting many of these deficiencies were still being searched for.

The plan never reached the printing presses. Only ADC was in favor of it. Western Region said it believed further testing of

^{*} The operations plan was written by NORAD. Although USAF ADC and NAVFORCONAD had been asked to write a plan, it was never completed. The two commands reached an impasse in developing a concept of operations and did not meet the deadline set by NORAD for submission of the plan. NORAD then took over preparation of a plan on its own.

equipment was needed before knowledgeable positioning of the seaward elements was possible. WNR pointed out also that it considerward elements was possible. WNR pointed out also that it considered continuous manning of the system mandatory. Lastly, Western Region still wanted the control function deleted from the AEW&C mission.

Eastern Region said it felt that placing the AEW&C aircraft outboard of the picket ships was the best deployment during a normal preparedness condition even though this meant limited defense capability against a low level attack. AEW&C aircraft could always be scrambled inboard of the picket ships when a condition of Air Defense Readiness or higher condition existed.

NAVFORCONAD stated that the draft 3-58 was almost identical to 9-57 and the new ideas in the plan could be issued as a change to 9-57. "The proposed plan," it wrote, "is merely a compromise document based upon meager information...and is not the result of a reasonable attempt to produce a good workable plan." It recommended that a staff section or committee be appointed to work out a better plan.

Because of the opposition, NORAD decided not to publish its plan. Instead, in September, a seaward extension conference was called at NORAD Headquarters in an attempt to find a solution to the extension problems. The conferees differences of opinion were too great. ENR maintained its stand for Sentinel stations outboard of the picket vessels. WNR wanted additional testing before it prepared a final deployment plan.

The issue was settled on 8 September when General Partridge told the region commanders that the contiguous forces could be deployed as they saw fit.

ENR returned to the concept of operations in its Operations Plan 9-58 (manning Sentinel stations seaward of the picket ships); WNR returned to the picket ship extension pattern of deployment (manning Sentinel stations that extended the picket line).

On 10 October, WNR issued an interim mission directive for the contiguous forces using the new authority. The new mission was as follows: (1) provide airborne early warning in the seaward extension for WNR; (2) search for medium and high altitude air targets; (3) report air surveillance information in accordance with existing directives and operations orders; and (4) perform such other missions as directed by the WADF commander.

Shortly thereafter, NORAD wired the regions that although CINCNORAD had authorized the region commanders to deploy the seaward elements as they felt best, it was still necessary to achieve a maximum amount of contiguous coverage at all altitudes. NORAD directed the regions to continue to explore all possible tactics and techniques to achieve a satisfactory low altitude and control capability at the earliest possible date. It also directed them to submit operations plans so that NORAD could keep abreast of their operational concepts.

ENR replied first. It stated that its operations plan then in use -- 9-58 -- needed revising before it could be submitted. Although no changes were anticipated in the overall concept of operations, some revisions were needed to bring the plan into line with the increased capability expected from conversion of the YAGR's to SPS-17 radars, the expected operations of Texas Towers Three and Four, and the use of M-120 -- a land based radar station that had recently become operational -- in the contiguous network. Such revisions would include realigning reporting responsibilities, changing communications requirements, and minor readjustments of the seaward extension stations. NORAD approved the changes on 20 October 1958.

In the meantime, WADF wrote ADC and NORAD that it was still concerned with the control function assigned the 552nd Wing. Limitations of the APS-45 height finder and APS-20 search radars, it felt, were such that control capability in the Sentinel aircraft were virtually non-existent. WADF requested that the control portion of the AEW&C mission be deleted permanently. NORAD advised ADC that it did not approve permanent deletion of the control function. However, since CINCNORAD had authorized the region commanders to modify operations as they felt necessary, and pending receipt of improved radar equipment for the wing, approval was granted for dropping the control function temporarily. On 5 December 1958, WADF informed NORAD that it had removed the control portion from the mission of the 552d AEW&C Wing for an interim period.

Meanwhile, in November, WADF submitted its concept of operations to ADC and NORAD for approval. The seaward elements were to be deployed to provide maximum early warning, surveillance, and control. Deployment had to be "fluid," WADF wrote, and as the enemy threat might vary from month to month, so would the deployment configuration. The radar coverage required for low (500 feet), medium (25,000 feet), and high (40,000 plus feet) altitude would

partially govern deployment. The extension of control capability required for the IM-99 (BOMARC), the F-101, and the F-89J would also affect the placing of the seaward elements.

The deployment planned by WADF would provide defense in depth, early warning detection in ranges of 700 miles, and a control capability seaward to 400 miles. Picket ships were to use a synchronized patrol along the axis of their barrier to shift any gaps in coverage. However, a fixed patrol would be used when necessary. The sentinels were to patrol an aerial barrier either inboard or outboard of the ships as directed by the WNR commander. When deployed inboard, the aircraft would normally fill the low and medium altitude gaps between the shore-based radars and the ships; deployed outboard, the primary mission would be to furnish tactical early warning to the picket ships and DC's.

On 9 December, NORAD told ADC that WADF's concept of operations was approved, except that the seaward elements had to be deployed to counter the enemy threat as stated in the NORAD Intelligence Estimate (the estimate did not indicate that the enemy threat might vary from month to month). Until improved radar equipment was available, or until a change in the enemy threat was issued, NORAD continued, deployment was to be based on <u>fixed</u> locations rather than on <u>shifting</u> locations.

Following NORAD's disapproval of shifting locations, WNR approved a deployment which placed the Sentinel aircraft outside the picket line. The picket ship line was established approximately 240-260 Nautical Miles (NM) off-shore, primary Sentinel stations 470-510 NM off-shore, and secondary Sentinel stations 300-330 NM off-shore.

^{*} On 1 December, WADF submitted a communications plan to USAF ADC to support the operations concept. It asked that the plan be approved and made an appendix to NORAD Operations Plan 3-58. USAF ADC forwarded the plan to NORAD for review. NORAD approved the plan on 22 January 1959 and returned it to USAF ADC for implementation. It was later pointed out that the WADF plan would have to be an appendix to 9-57 since this plan was still being used. Once 3-58 was published, the WADF plan would become an annex to it.

The 552nd Wing had been manning the primary stations but a short time when the Sentinels began experiencing propeller and/or engine failures. A preliminary investigation of the problem indicated that the RC-121's had faulty propellers. Until a more thorough study could be made, WRAMA restricted the aircraft to a takeoff weight of 135,400 pounds. Because of this restriction, the WNR commander decided to redeploy the Sentinels to their secondary stations rather than risk loss of the planes. This placed the aircraft approximately 50-90 NM from the picket line and reduced the amount of medium and high altitude coverage provided. Because the two lines were so close, the radar coverage of the two elements overlapped resulting in lack of coverage for some areas and wasted coverage in others. In January 1959, the WNR commander was considering moving the stations once again to correct the situation.

On the east coast, the weight restriction had little effect. For one thing, ENR's primary Sentinel stations were closer than those of WNR. ENR planes took off right from the coast at Otis whereas WNR had a 100 mile over-land flight from McClellan. This cut down the time that could be spent on station and the distance that could be traveled to and from a station to make manning profitable. ENR also had an advantage in that an alternate base equipped to stage the RC-121's from was available at Kindley AFB, Bermada. No such base was available to WNR. As of 31 December 1958, ENR was manning its primary Sentinel stations outboard of the picket line.

Improving Contiguous Communications. On 7 July 1958, NORAD told ADC that HF radio communications between the seaward extension elements and the shore sites were operationally unsatisfactory. Conversion to single-sideband (SSB) communication should be accomplished as soon as possible. NORAD also directed ADC to tell COMNAVFORCONAD when the conversion would be completed so that the Navy might have adequate time to provide SSB equipment for the picket ships. ADC replied that it hoped to have the AEW&C aircraft and the shore stations converted to SSB by June 1959. The equipment in the existing shore facilities would be modified to operate SSB. The stations would also maintain the existing capability of amplitude modulation, Frequency Shift Keying (FSK) teletype, and Dualex tone teletype modes of operation. ADC went on to state that the East Coast shore stations were being equipped to operate FSK teletype in their operations with the airships. Dualex equipment was being installed in the AEW&C aircraft and was to be placed in

operation in August 1958 on the East Coast, and October 1958 on the West Coast.

The request for modifying the RC-121 and installing SSB radio equipment had been sent to AMC on 23 July. ADC requested installation of a SSB set AN/ARC-58 or an alternate Collins 18Z-3 or 18Z-4.

In the meantime, NAVFORCONAD requested the Navy Department to install suitable SSB radio equipment in its picket ships to meet the operational date of June 1959. It had planned to install at least three separate equipments in the YAGR's (these included an AN/WRT-2 transmitter, AN/URC-32 transceiver, and an AN/WRT-1 low frequency transmitter). However, in August, it was discovered that of the equipments requested, only the URC-32 would be available for installation in FY-1959. So in September, NAVFORCONAD asked that the Bureau of Ships insure programming of one URC-32 transceiver aboard each ship in the contiguous system by June 1959. Installation would be accomplished by forces on board the ships. It further requested that a second URC-32 set be installed as early as possible.

By December 1958, the Navy conversion to SSB operation was in full stride; that of ADC had fallen behind. The Department of Navy had programmed and funded for the equipment. It was anticipated that in addition to one voice SSB, the ships would have the following equipment by June 1959; two FSK RATT circuits; two AM voice; and two 100 watt voice AM or FSK standby, or one 500 watt voice AM or FSK RTT standby.

The ADC improvement program had been held up in USAF. Lack of specific plans for detailed improvement had prevented USAF from including the equipment in the FY-1959 budget. To correct this situation, ADC proposed that Wilcox equipment, then in use, be modified for SSB operation. USAF agreed and by 3 February 1959 had included funds to modify the Wilcox equipment (the 99c and T158) in the FY-1959 budget. It was anticipated that the conversion of the shore stations on both coasts would be completed by October 1959.

This change (use of modified equipment) would provide SSB service to the picket ships only. Equipment for airborne SSB operation was still under study. The Sacramento Air Materiel Area (SAAMA) was studying two pieces of equipment -- the AN/ARC-72 and the AN/ARC-58. It was expected that procurement of one of the two sets would be made from FY-1960 funds. Based on this, ADC estimated that SSB operations with the RC-121D's would not be available until the spring of 1961.

CHAPTER VI

Status of Radar: Canada - Alaska - Greenland

ALASKA

Status. On 30 June 1958, 17 heavy radar stations were operational in Alaska and two more were programmed. By 31 December 1958, 18 stations were operating. The nineteenth station had been changed to a gap filler radar. This was scheduled for operation in 1960 at Gulkana. In addition, CINCAL had programmed a gap filler radar for Mulgraves Hill to become operational in 1960.

Radar Improvement Program. In the Alaskan system there were 13 AN/FPS-3's, 2 AN/CPS-6B's, and 3 AN/FPS-8's. Each of the 18 stations were to be converted to AN/FPS-20 (either by modification of existing radar or by installation of an AN/FPS-20). One program called for converting nine of the 13 AN/FPS-3's in the network to AN/FPS-20's by adding the AN/CPA-27. On 31 December 1958, the six stations at Sparrevohn, Indian Mountain, King Salmon, Campion, Tatalina, and Lisburne had been converted and were operating the

FPS-20. Only the stations at Cape Newenham, Cape Romanzof, and Wales remained to be converted. It was anticipated that this program would be completed in the third quarter of FY-1959.

A second program had originally provided for replacing the two AN/CPS-6B's (one at Fire Island, F-1, and one at Murphy Dome, F-2) with AN/FPS-7's in FY-1958. This program was changed, however, when USAF advised



that it would be unable to complete the AN/FPS-7 program until FY-1962. In its place was substituted a program for moving two AN/MPS-7's from the ZI to Alaska and converting them to AN/FPS-20's by adding an AN/GPA-58 to each. These radars were expected to become operational in the second quarter of FY-1959.

On 31 January 1959, the AN/FPS-20 at Fire Island was 95 per cent operational, that at Murphy Dome was 100 per cent operational. Meanwhile, the AN/FPS-7's were removed from further consideration in the improvement program. AAC wrote USAF that the AN/FPS-20's would satisfy the high-altitude detection and control requirements in the Alaskan theater. Any additional operational capability that might be obtained from using the AN/FPS-7's was outweighed by the cost of construction for them. AAC asked that both sets be removed from its radar program. USAF deleted both in November 1958.

Getting two search radars for F-1 and F-2 had been but part of the problem at mid-1958. AAC also wanted two height finder (AN/FPS-6) sets at each site by FY-1960. USAF had told AAC that only one AN/FPS-6 for each site would be available by the desired date and it would be the third quarter of FY-1961 before the second set could be furnished.

AAC asked CINCAL to help, stating that unless dual height-finding facilities were available for the simultaneous control of manned interceptors and ground-to-air missiles, the two Joint Direction Centers could not operate properly. CINCAL appealed to NORAD and proposed that USAF be asked to make the equipment available by the second quarter of FY-1960.

In July 1958, NORAD asked USAF for a second height finder for F-1 and F-2 even if it meant reprogramming equipment allocated for low priority ZI sites. USAF replied that with the proposed cut in fighter deployment in the Alaskan theater, sufficient AC&W equipment was available to AAC to accomplish its mission. However, USAF would consider a proposal from AAC to reprogram the allocated AN/FPS-6's to get two sets each at F-1 and F-2. NORAD agreed with USAF's views and forwarded the comments to CINCAL.

On 31 January 1959, 18 AN/FPS-6's were listed in the AAC radar program. F-1 and F-2 were programmed to receive two sets each. Neither of the two sets at F-1 was operational, but both were being installed; at F-2, one AN/FPS-6 was operating, the second was programmed to become operational in the second quarter of FY-1960.

CANADA

Status. On 31 December 1958, there were a total of 33 operational heavy radar stations and six gap filler radars in Canada (not including the Mid-Canada and DEW Lines). Thirty-two of the heavy radars were those jointly built and financed by the United States and Canada and known as the Pinetree Line. Ten of these heavy radars and the six gap fillers were deployed along the East Coast in the 64th CONAD/NORAD Division area. The other 22 ran in a line from Nova Scotia to Vancouver Island. The remaining operational heavy radar was one of three heavy radars being built on Canadian soil under the USAF ADC Mobile Program. The operational radar was M-119, located at Lowther AS, Ontario. The other two were being constructed at Barrington AS, Nova Scotia (M-102), and Kamloops AS, British Columbia (SM-153).

USAF ADC manned nine of the heavy radars and the six gap fillers in the 64th Division area, and nine of the remaining 23 heavy radars (including the Mobile station); Canada manned the other 15 radars which included one in the 64th's area.

The Radar Improvement Program. On 30 June 1958, the thirty-three stations in Canada had a combination of American and Canadian search and height finder radars. The network was composed of the American AN/CPS-6B and AN/FPS-3 and the Canadian FPS-502 and TPS-501. At all but one site new equipment was programmed.

The AN/FPS-3's at 15 sites were to be converted to AN/FPS-20's by having AN/GPA-27's added. The AN/CPS-6B's at six sites were to be replaced with AN/FPS-20's. Ten sites (including M-119) were to get Frequency Diversity radars. Of the two remaining sites, one, C-30 on Resolution Island, was to convert to an FPS-3, the other, C-35 at Comox, was to be phased out and would not change radar. Also, under this portion of the Canadian improvement program, a total of 52 AN/FPS-6 height finders were to be installed in Canada (some sites were to receive two height finders).

As of 31 December 1958, only one of the sites had an operational FPS-20. The station at Pagwa River, Ontario (C-14), had its AN/FPS-3 modified by a GPA-27 in July. On this same date, six of the AN/FPS-6's scheduled for the system had become operational.

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A second program was for additional radars in the Canadian network to extend the combat zone northward. This program was first proposed by USAF ADC in 1955. It became known as the Fourth Phase Radar Program or Operation PILLOW. It had not received the approval of the Canadian or American governments by 1958, however.

In the first six months of 1958, NORAD re-emphasized to USAF the need for an extension program. The best USAF could offer was that seven heavy radars would be approved for funding in FY-1960, with an operational date of FY-1963.

In August, NORAD advised ADC that it had reexamined the extension program and concluded that to provide effective coverage for the northern U. S. and southern Canada, approximately 114 new radars were needed. This total included 26 heavy radars (18 along the Pinetree Line and eight along the Mid-Canada Line) and 88 gap fillers.

Also in August, the RCAF proposed a conference at Headquarters NORAD to examine the air defense programs in Canada. RCAF also asked that USAF be invited so that joint U. S.-Canadian programs could be discussed. NORAD agreed and the conference was scheduled for September.

Prior to the conference, the JCS asked NORAD to comment on a proposal submitted by the Secretary of the Air Force to the Secretary of Defense on Canadian air defense. This proposal was for installation of two BOMARC squadrons, a SAGE DC/CC, and two heavy and 12 gap filler radars in the Ottawa-North Bay area, and installation of five heavy and 33 gap filler radars in the Pinetree system.

On 10 September, members of the RCAF, RCAF ADC, USAF, USAF ADC, and NORAD staffs met to discuss the radar, SAGE, and BOMARC programs for Canada. It was concluded that the U. S. and Canada should go ahead and build seven heavy and 45 gap filler radars as previously planned by RCAF and USAF. The NORAD representatives concurred, but planned that the seven heavy radars and the 45 gap fillers represented only the highest priority installations in its larger requirement.

NORAD also told the JCS that it concurred with this proposal, but pointed out that its overall requirements for Canada were 61 heavy radars (the 35 planned and/or existing plus 26 in the extension) and 94 gap fillers (the six in existence plus 88 in the extension). The gap filler requirement was later reduced to 93.

On 5 January 1959, it was learned that the U. S. and Canadian governments had agreed in principle to a cost sharing arrangement for joint air defense programs. Included in this arrangement were the seven heavy and 45 gap filler radars. Two of the heavy radar sites were to be in the southern James Bay area at Lake Mistissini and Moosanee, the other five in western Canada. The 45 gap filler sites (six to be provided by RCAF and 39 by USAF) were to be built in eastern and western Canada. Canada was to be responsible for all construction and unit (TO&E) equipment; the U. S. for all technical equipment. The breakdown of cost was tentatively set at about two-thirds U. S., one-third Canada. Canada was to man and operate the seven heavy radars.

THE DISTANT EARLY WARNING LINE

On 31 December 1958, the Distant Early Warning (DEW) Line (Cape Dyer, Baffin Island, to Cape Lisburne, Alaska) had been "fully" operational for a little over a year's time. This line was not, however, operating as well as desired. There were several reasons for this which will be discussed below.

Employment and Suitability Test (ES&T) Part II. When the DEW Line was built, USAF had provided that a two-phase test would be made to determine how effectively the line operated. It was to be made by the Air Proving Ground Center (APGC) of the Air Research and Development Command. Part I of the test had been held in 1957.

Part II of the ES&T, nicknamed Project RED SEA, was conducted between 1 May and 2 September 1958. The purpose of the test was to determine the operational capability of the DEW Line to effectively detect, identify, and report surveillance information to the Combat Operations Centers at NORAD, RCAF ADC, AAC and the 64th Air Division,

^{*} The five radars were to be located at: Carberry, Man.; Yorktown, Sask; Alsask, Sask.; Dada, Sask,; and Olds, Alt.

and the adequacy of communications and electronics maintenance.

The test was held in that portion of the DEW Line extending from Hall Lake (FOX) to Cambridge Bay (CAM). This section included 13 DEW Line stations -- the Main stations at FOX and CAM and all auxiliary and intermediate stations between the two. A total of 121 aircraft (KC-97 and B-52) participated in the penetration tests in 73 flights of single and multiple formations.

The test report issued by APGC concluded that: "The present operational capability of the DEW Line is acceptable; however, it meets effectively only the detection requirements of the early warning mission." APGC said that all of the penetrations had been detected by the search radars. But it was felt that this detection capability resulted from the amount of overlapping search coverage on the line rather than from operator efficiency. Rearward communications were "satisfactory." The surveillance reports from the line arrived at the various COC's in a matter of 14-17 minutes after detection. However, the information in the messages was incorrect about one-third of the time. This was attributed to poor supervision and improper techniques used by the surveillance operators.

Among the important conclusions reached by APGC were the following: (1) the potential of the DEW Line equipment for detecting and reporting penetrating aircraft was excellent and the current capability of the line was acceptable; (2) equipment performance was excellent (excepting the AN/FPS-23) but low personnel efficiency reduced system capability; (3) the major factors contributing to reduced DEW system efficiency were -- lack of supervision at all operating levels, inadequate formal and on-the-job training programs, inadequate and/or lack of standing operating and management procedures, use of the AN/FPS-19 Radalarm system as a means of detection, and restrictive identification procedures; and (4) the design and operation of the AN/FPS-23 equipment was unsatisfactory.

USAF ADC was aware of many of the problem areas and had started corrective action before the APGC report was published. In other problem areas, actions to correct the deficiencies noted in the report were underway by the end of 1958.

USAF ADC had already been working on the AN/FPS-23 problem. One fault was that the graphic presentation gave so many false alarms that it was difficult to tell whether the alarm was caused by an aircraft or by the equipment itself. Bell Laboratories had

discovered that a reason for the false alarms was that the sensitive receivers of the set picked up too much of the signal from adjacent transmitters. By May 1958, Western Electric personnel were on the line and offsetting the antennae of the sets to reduce the signal received.

A second deficiency of the AN/FPS-23 equipment was the graphic presentation display. The equipment presented pen recordings on electrographic paper. The presentation was almost impossible to read, however. To correct this, Bell Laboratories developed a new device called a Doppler Spectrum Analyser (DSA) to fit on the console. The presentation of the DSA was in the form of a continuous track which could be used to follow the aircraft through the doppler beams. The DSA had been accepted for use on the line by USAF ADC and a target date for installation set for 1 April 1959. However, on 10 December 1958, Rome Air Materiel Depot told USAF ADC that it did not know just when the DSA could be installed and operating in the system.

The APGC report had also recommended against use of the AN/FPS-19 radalarm equipment for detection purposes. The radalarm had been installed on the AN/FPS-19 to operate as a warning to the console operator that a detection had been made. Then the console operator could monitor the scope more closely. But because of the sensitivity of the radalarm and the numerous false alarms (of 9,750 alarms evaluated, some 86 per cent were false), the console operators were ignoring the alarm, or taping down the alarm control so it could not ring. In November 1958, USAF ADC asked FECO to change its contract to provide for 24-hour scope surveillance. A reply in January 1959 informed ADC that the scopes were being monitored around-the-clock.

Installation of a message composer which APGC recommended for the data centers was still under study. By December, however, a FECO radician had developed a composer for rearward reports which appeared satisfactory in every respect. And USAF ADC was reviewing the equipment to see if it could be installed in all sector data centers.

With respect to personnel problems, USAF ADC had to depend more or less on FECO. As contractor for the line, it was FECO's responsibility to see that adequate supervisory and managerial techniques were used. ADC did direct the 460lst Support Group (DEW) to monitor these functions more closely. As to training, it

was recognized by both FECO and ADC that the operations personnel on the line were not adequately schooled in air defense operations. However, FECO told USAF ADC in January 1959 that it was revising its radician training program to include air defense concepts.

Proposed DEW Operations Plan. By 31 December 1958, NORAD was writing a new operations plan for the DEW Line. It felt that the existing plan of 1 June 1956 had been made obsolete by the passage of time and changing command relationships. NORAD also wanted to assign operational control of the line to Northern and Alaskan Regions since they were closer to operations and could better superious. A new plan would help standardize operations, clarify nebulous command relationships for the Components, Regions and Divisions, and allow NORAD to delegate its responsibilities to the regions if so desired.

On 29 January 1959, NORAD submitted to the JCS its proposed operations plan. The NORAD plan delegated to the Commanders, Northern and Alaskan NORAD Regions, operational control of those portions of the DEW Line within their areas of responsibilities. The plan would not, NORAD wrote, affect USAF ADC's responsibilities for contract administration, logistic support, and operation of the Cape Lisburne-Cape Dyer system. The region commanders responsibilities would include insuring, by inspection and monitoring actions, that DEW Line operations were carried out in accordance with the NORAD plan; coordinating directly with USAF ADC in resolving problem areas which did not require action by NORAD; and acting as coordinating agencies between the DEW sectors and other commands which might need the support of the DEW system for special air operations.

Manning the DEW Line. In October 1958, NORAD learned informally that Canada's Minister of National Defense, Mr. George Pearkes, had visited the DEW Line and had returned with the proposal that his country assume a major share of military manning responsibility for the line. This was followed in December by an official request from the Canadian government through the Canadian Joint Staff in Washington, D. C. The Canadian Joint Staff pointed out that the government agreement of May 1955 provided that Canada would have the right to assume operation and manning of any DEW station located in Canada after notifying the U. S. And it asked for USAF's agreement in principle to changing the manning concept.

The DEW Line was manned by personnel of USAF, RCAF, and Federal Electric Corporation. The latter was responsible for manning

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with civilian personnel all operating positions on the line except the data centers at the DEW Main stations. At each of the six data centers, there were six military positions. USAF manned five, the RCAF one.

USAF had approached NORAD and USAF ADC on an informal basis even before the formal Canadian request arrived. NORAD had approved the change; USAF ADC opposed any change at that time. The proposal was studied by the Air Staff at USAF and they decided in favor of the Canadian proposal. On 31 December 1958, USAF wrote the Canadian Joint Staff that it agreed in principle with the Canadian proposal.

Manning details were to be worked out by RCAF ADC and USAF ADC. The broad policy outline laid down by USAF was that additional RCAF officers would be assigned to the line to the extent that they would be predominate among the military personnel at each Canadian Main station (i.e., PIN, CAM, FOX, and DYE). The senior RCAF officer would be designated "Officer-in-Charge." The latter would be responsible for all non-contractual functions to be performed in accordance with the guidelines established by NORAD. USAF would continue to administer the contract with FECO and would assign officers to accomplish these duties. Additional cost to the RCAF would be limited to that necessary for supporting the RCAF personnel.

On 19 January 1959, representatives of RCAF, USAF, RCAF ADC, USAF ADC, and NORAD met to work out the details for the new manning concept. It was agreed that there would be seven officers at each Canadian Main station -- five from the RCAF and two from USAF. The RCAF contingent was to be headed by a Squadron Leader who would be designated DEW Sector Commander. USAF would provide two officers, one to serve as liaison officer between FECO and the 460lst Support Group (DEW), and the other, an officer qualified in air defense operations, to serve as a director. The concept had not received official approval as of 24 February 1959.

DEW System Radar Improvement Program. In addition to the actions taken by USAF ADC to improve the existing radar system on the DEW Line to combat the current threat, it was also looking forward to the post-1960 threat. In June 1958, ADC proposed to USAF that it replace alternate AN/FPS-19 radars on the line with AN/FPS-30 radars. USAF replied that it was taking programming action to replace all DEW Line radars with AN/FPS-30's.

	TABLE 5	STATUS OF RADAR: ALASKA-CANAL		OPERATIONAL	COMMENTS	
	Pinetree (USAF Funded) 30 June 1958 31 December 1958	(SEE COMMENTS) 23 23	CONSTRUCTION	23 23	Includes G-32, Thule Includes G-32, Thule	
	Pinetree (RCAF Funded) 30 June 1958 31 December 1958	10 10		10 10	Does not incl 3 USAF ADC Mobile sites	
	Pinetree Gap Fillers(64th ADiv) 30 June 1958 31 December 1958	6		6		
Declassifi ed	4th Phase Heavies (Canada) 30 June 1958 31 December 1958	23 7			Program awaiting approval 7 sites approved	
	4th Phase Cap Fillers(Canada) 30 June 1958 31 December 1958	51 45			Program awaiting approval 45 sites approved	
	DEW Line 30 June 1958 31 December 1958	57 57		57 57		
	Alaska 30 June 1958 31 December 1958	19 20	1 0	17 18		
	Aleutian DEW Extension 30 June 1958 31 December 1958	6 6	6	0		
	Eastern DEW Extension 30 June 1958 31 December 1958	14 14	2	Vestela Vestel	and Midway Island	
	Pacific Barrier (31 December 1958) 4 DER's and 4 AEW aircraft operating between Kodiak and Midway Island Atlantic Barrier (31 December 1958) 4 DER's and 4 AEW aircraft operating between Argentia and the Azores					

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On 24 October 1958, ADC followed up its initial request with a CEIP for the DEW Radar Improvement Program. The CEIP noted that the Aleutian Segment and the Main DEW Line needed radars capable of providing coverage from 200 feet over land (from surface over water) to 100,000 feet, with a detection range of 250 nautical miles against a cruise missile target. To attain this capability, ADC proposed to replace 14 existing AN/FPS-19's on the Main DEW Line and three FPS-19's on the Aleutian Segment with AN/FPS-30's. In addition to the FPS-30's, USAF ADC also wanted 17 modified AN/FPS-26 FD radars installed, one set at each FPS-30 location to act as ECCM "burn-through" radars.

USAF approved part of the CEIP on 3 December 1958. The AN/FPS-26's were deleted from the plan. USAF stated that these radars were not suitable for raid assessment. ADC protested on 16 December. But USAF replied that it would program AN/FPS-58's for the line since they were better raid assessment radars.

The program for the DEW Improvement with AN/FPS-30's as of 31 December 1958 was as follows (the AN/FPS-58's had not been programmed by this time):

TABLE 6

DEW IMPROVEMENT PROGRAM - AN/FPS-30's
31 December 1958

SITE DESIGNATION	LOCATION	OPERATIONS DATE FY
COC-1	Nikolski, Aleutian Chain, Alaska	1/63
COB	Cold Bay, Aleutian Chain, Alaska	1/63
COB-5	Port Heiden, Aleutian Chain, Alaska	1/63
LIZ-2	Point Lay, Alaska	2/62

^{*} There were a total of 29 FPS-19's on the Main DEW Segment.
USAF ADC was proposing replacement of 14 of them. Six FPS-19's
were on the Aleutian Segment, ADC proposed replacing three of them.

SITE DESIGNATION	LOCATION	OPERATIONS DATE FY
POW	Point Barrow, Alaska	3/62
POW-2	Oliktok, Alaska	3/62
	Barter Island, Alaska	3/62
BAR	Tuktuk, NWT, Canada	3/62
BAR-3	Cape Parry, NWT, Canada	3/62
PIN	Young Point, NWT, Canada	4/62
PIN-2	Cambridge Bay, Victoria Island, Canada	4/62
CAM		4/62
CAM-2	King William Island, Canada	4/62
CAM-4	Parke Peak, NWT, Canada	4/62
FOX	Hall Lake, NWT, Canada	4/62
FOX-2	Piling Lake, Baffin Island, Canada	
FOX-4	Cape Hooper, Baffin Island, Canada	1/63
DYE	Cape Dyer, Baffin Island, Canada	1/63

THE MID-CANADA LINE

On 1 January 1958, the Mid-Canada Line (MCL) had been declared fully operational. Identification became a problem, however. The number of "Unknowns" reported was so numerous that MCL information was being disregarded at the NORAD COC.

The principal means of identifying air traffic at the MCL was by flight plan correlation. This required filing a flight plan by each aircraft prior to take-off from a base and the transmission of this plan to an ARTC unit or a MIDIZ station. Radio contact was established with the MIDIZ by the plane prior to penetration.

Traffic over the MCL was normally divided into three types -bush aircraft, commercial aircraft, and military aircraft. The
bush aircraft were small planes operating from improvised bases
remote from ordinary means of communications. This type plane
crossed the MCL in the greatest numbers. The commercial and military aircraft operated from permanent bases with excellent communications facilities. These types could comply with the regulations
governing identification. The bush aircraft could not. As a result, almost every crossing by bush aircraft resulted in an "Unknown" classification. The MCL was able to identify only 48 per
cent of the southbound traffic in Canada, and approximately 90 per
cent of the "Unknowns" were bush aircraft.

Some provision had been made in planning the line to handle the bush traffic problem. Land clearance airdromes were set up where the aircraft could land and file flight plans. Arrangements were made also for some visual identification at the MCL stations (this was made obsolete when the RCAF ADC began unattended operations at the doppler stations). These measures were not nearly enough, however. Some other means of identifying the traffic had to be found.

The Operations Research Branch of the RCAF ADC set out to find this means. The research personnel figured that if they could find some way of determining which planes were small, slow, and low-flying, they could be classified "Friendly" without flight plan correlation. A means was found right in the Doppler equipment.

The Doppler Detection equipment displayed a crossing of an aircraft in the form of a pen tracing known as a "signature." The original purpose of this pen tracing was to discriminate between aircraft crossings and other signals and for counting aircraft crossing the MCL. It was found that by carefully studying the signatures, the approximate size and speed of crossing traffic could be determined. The analysts then made charts from the tracings, showing how each aircraft type would look as it crossed the doppler equipment. The charts would allow the MCL operators to separate flights into two categories -- "small and slow" and "large and fast."

The new system was tested from 28 July to 3 August 1958. So successful were the tests that on 18 August the new procedure was adopted for use all along the line. Then on 5 September, RCAF ADC

forwarded to NORAD the new procedures that it wished to adopt for operations in the MIDIZ. It asked that NORAD concur in the new procedures so that the MIDIZ Air Navigation Orders could be amended. The regulations governing the movement of large aircraft (i. e., aircraft with a fuselage length or wingspan of 65 feet or more) were not changed. Small aircraft (i.e., fuselage length or wingspan of less than 65 feet) could now "airfile" flight plans. NORAD concurred in the proposed amendment on 23 September 1958.

The improvement was tremendous. As noted above, the MCL had been identifying less than half of the southbound traffic. By December, the MCL was identifying 90.5 per cent of all flights.

Other features added to the MCL system to aid identification were new HF transmission frequencies at each Section Control Station (SCS) which provided an additional air/ground facility. Newer techniques were under study to enable the operators to determine the approximate speed and track data on penetrating traffic. Tests were being set up to see if the Doppler Spectrum Analyser (DSA) might be used on the MCL. More sensitive receivers were being programmed for installation in the James Bay area of the line and an automatic alarm adjuster was being considered for installation throughout the system.

WESTERN EXTENSION AND THE PACIFIC BARRIER

As originally planned, early warning coverage in the Pacific was to be extended with land-based radars along the Aleutian Chain from Naknek to Ummak and with a sea barrier of WV-2 aircraft and DER's from Ummak to Midway Island.

On 1 July 1958, the sea barrier had begun operating with four DER's and four AFW aircraft. The force was not, however, operating between Midway and Ummak. The Aleutian land-based radars would not become operational before March 1959. CINCNORAD had asked the CNO to adjust the sea barrier to cover the exposed area until the Aleutian segment became operational. After the land-based segment became operational, the sea barrier could then be shifted to the Midway-Ummak line.

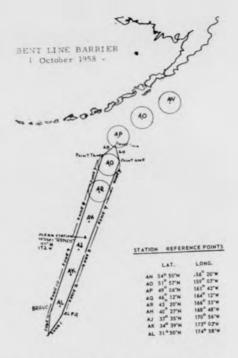
The temporary line set up on 1 July ran between Kodiak Island and Midway. The four DER stations were on a line rumning SSW toward Midway Island from a point some 200 nautical miles off Kodiak

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Island, with approximately 200 nautical miles between each station. The WV-2's were operating out of Midway, flying out some 1250 nautical miles and then back in a racetrack pattern. The WV-2 pattern overlapped the DER line some 400 miles.

The sea barrier had been in operation but a short time when the NORAD and BARPAC staffs met to discuss a new deployment plan which they called the "Bent Line Barrier." Instead of operating directly between Midway and Kodiak, AEW aircraft would operate from Midway to a point just south of Umnak and picket ships would operate southeast of and generally parallel to the Aleutian Chain from Kodiak over to the AEW line. The



over to the AEW line. The BARPAC staff felt that this line would provide better coverage of the Aleutian Chain and allow better AEW operations.

The reasoning behind this proposal was as follows. As the barrier forces were then operating, the picket ships were located some distance from the Aleutians. An enemy could, BARPAC felt, fly over the Aleutians, then drop to a low level and fly undetected between the picket ships. The Aleutian mountain peaks kept aircraft from flying at low level while crossing the Aleutians. Only after crossing could they drop to low level. Thus if the ships were moved closer to the Aleutian Chain, they could sweep the top of the mountains with their radar and catch an enemy aircraft before it had time to drop to low level. Also the operational radars in Alaska at Cape Newenham and King Salmon could cover part of the chain and increase the low level radar coverage.

NORAD and CINCPAC approved the idea. After a brief delay caused by the necessity of BARPAC providing ships for submarine patrol temporarily, the bent line barrier was placed in operation on 1 October 1958.

By January 1959, the COB sector, as the Aleutian segment was known, had begun limited operations. CINCNORAD told the Alaskan NORAD Region commander that there was some question as to the need for retaining the Bent Line Barrier. He stated that there were two courses open: (1) have CINCPACFLT abandon the Bent Line barrier and implement the permanent Umnak-Midway barrier, or (2) maintain the barrier until the COB sector was fully operational on 31 March 1959. CINCAL recommended leaving the Bent Line barrier until the Air Force personnel, who were then in a training status, could become familiar with the segment equipment and facilities.

NORAD informed CINCPACFLT of CINCAL's decision and requested that the barrier be left in operation until 31 March 1959 when the Aleutian Segment would become fully operational.

The Aleutian land-based extension of the DEW Line provided for a total of six AN/FPS-19 radar stations between Nikolski on the west and King Salmon on the east. This project, codenamed STRETCHOUT, called for the construction on one Main station at Cold Bay and five lateral auxiliary stations (Driftwood Bay, Sarichef, Nikolski, Port Moller, and Port Heiden).

Western Electric Corporation, prime contractor for the work, planned to test and align the communications and electronic equipment through December 1958.* Then from 1 January until 31 March 1959, the contractor planned to man and operate the six stations around-the-clock for further testing and evaluation. During this period, Air Force personnel would be phased into the stations from the joint Air Training Command/Alaskan Air Command training program. The first station to receive personnel was to be the main station at Cold Bay. Enough personnel to man the remaining stations

^{*} Support facilities were accepted by the Air Force between 23 July and 30 October 1958. C&E equipment was installed and tested at all stations except Driftwood Bay before 31 December 1958. The latter facility was to be tested by 6 January 1959.

were not expected to become available before the third quarter of FY-1959.

By January 1959, the Aleutian segment was in a limited operational status, but was still under contract control. The Air Force personnel were in a training status, familiarizing themselves with equipment and facilities on the line.

EASTERN EXTENSION AND ATLANTIC BARRIER

In the Atlantic, the Navy ran a sea barrier between Argentia, Newfoundland, and the Azores. This barrier had begun operations in July 1957 with four DER's and four AEW aircraft. The AEW force was temporarily reduced in August 1957 to two aircraft due to a shortage of operating funds. It was increased to three planes on 17 January 1958 and to four aircraft on 30 April 1958. The picket force remained at four ships throughout 1958 except for very brief periods in November and December. On 31 December 1958, the barrier was at full strength -- four ships and four aircraft.

To improve operations on the Atlantic sea barrier, Admiral Jerauld Wright, CINCIANT, wanted a heavy radar installed on Flores Island in the Azores. He felt that such an installation would offer numerous benefits, such as reducing the AEW flights from Newfoundland by two hours; allowing the AEW planes to decrease their take-off loads to within "safety" limits; allowing closer spacing of the DER's; and increasing surveillance for submarine air search (SAR) purposes and for defense of the Azores. On 15 August,

^{*} Except for a period between 19 July and 20 August when the line was shifted to provide coverage of the Denmark Straits, the line was as stated.

^{**} On 19 November, the line was temporarily reduced to two ships because of material breakdowns; on the 21st it was back up to three ships, and on the 22nd of November it was at full strength. The force was lowered to three ships on 8 December when one ship was used to deliver a patient with appendicitis; it was back at full strength on 10 December.

CINCIANT sent a letter to the JCS through CINCNORAD asking for installation of the radar. NORAD forwarded the letter on 17 September with its concurrence. By October, NORAD had heard informally that the JCS felt that it would be 1963 before the radar could be in operation and that this was considered too late, for the Atlantic extension (G-I-UK) would be operating by then.

The Second Atlantic DEW Extension was a jointly sponsored one that was to run from Cape Dyer, Baffin Island, across Greenland, to Iceland, then by water to the Faeroes, and then once again by water to Scotland. USAF was building the land-based portion of the line from Cape Dyer across Greenland to Iceland. The Navy was to extend the line from Iceland to the U. K. This line was often referred to as the G-I-UK extension.

Construction had begun in July 1958 on two stations of the four radar station complex known as the DEW Greenland Extension (DEW East) being built by USAF.* The two stations being built were DYE 1 and 4 located on the east and west coasts of Greenland. Work on the remaining stations (DYE 2 and 3) was to begin during the summer of 1959. All four sites were to receive the AN/FPS-30 radar and were to operate as eastern auxiliary stations of the DEW Cape Dyer sector. The locations and designations of the Greenland sites were as follows.

TABLE 7

	TABLE 7	
	GEOGRAPHICAL NAME	LOCATION
STATION	GEOGRAP HICKE 1412	66°37'N, 52°45'W
DYE 1	Qaqatoqaq	00.21 >=
DIE 1	#-	66°30'N, 46°30'W
DYE 2	Ice Cape Site #1	
	110	65°45'N, 43°25'W
DYE 3	Ice Cape Site #2	
		65°31'N, 37°10'W
DYE 4	Kulusuk Island	

A draft operations plan for DEW East was completed by USAF ADC during November 1958. The plan was submitted to the EWOWG in this

^{*} Construction on DYE 1 had begun on 19 July, on DYE 4 on 3 August 1958.

same month for review and approval. The latter agreed that the communications system should provide a minimum of 36 voice channels between the DYE Main station and DYE 1; a minimum of 12 channels between DYE 1 and the support base at Sondrestrom; and a minimum of 24 channels between DYE 1 and 2, DYE 2 and 3, and DYE 3 and 4.

During the EWOWG meeting, the Danish representatives stated that their government would have to make the final decision on the link and type of communications connecting Kulusuk Island (DYE 4) with the Icelandic site at Keflavik (H-1). The plan provided for a 36 voice channel submarine cable. They felt that no problems would arise if the proper coordination was made before the link was installed. All air/ground radio frequencies to be used at the new sites in Greenland and Iceland had to be fully coordinated also. The Danish members wanted authority to operate the sites at DYE 1 and 4 if and when the Danish Government so desired and wanted a draft plan coordinated with their government before final publication.

The EWOWG decided that the plan should be redrafted by USAF ADC incorporating the suggestions made at the meeting and it should be coordinated with the Danish Government and other agencies prior to submission to USAF. They also decided that NORAD should be requested to contact the DOT of Canada to get approval to relay flight plan data to the Greenland Segment from the Goose AMIS.

By 31 December 1958, the plan was being rewritten. The operations date set for the system was 30 June 1961.

Proposal to Abandon the Sea Barriers. In September 1958, the JCS asked CINCONAD to comment on a proposal for abandoning the seaward extensions of the DEW Line and using the resources to build up the contiguous system.

conad replied on 26 November that it was in favor of redeploying the barrier forces to augment the contiguous system. It pointed out that distant early warning against the manned bomber became less important when the ballistic missile threat became equal to or greater than that of the manned bomber. When this occurred, the or greater than that of the manned bomber. When this occurred, the or greater than that of the manned bomber. When this occurred, the or greater than that of the manned bomber. At that time the ing within 15 minutes warning provided by BMEWS. At that time the resources of the sea extensions could be best employed in the contiguous system.

The contiguous system had to be expanded, CONAD continued, to get better tactical warning and improved weapons control capability. Means to control BOMARC and interceptors off shore to the limit of their effectiveness were essential to prevent the coastal approaches from "becoming unduly attractive to the enemy." CONAD recommended redeploying the Atlantic and Pacific barrier resources and expanding the contiguous cover as the threat changed, expanding the quality and quantity of contiguous cover as proposed in the NORAD Objectives Plan 1959-1963, and studying the feasibility of using a tethered helicopter-YAGR combination in the contiguous system.

The redeployment set forth in the NADOP 59-63 was as follows.

		-
TA	-	 ۵

	TABLE O										
SYSTEM	FY 59	FY 60	YEARS FY 61	FY 62	FY 63						
Atlantic Sea Barrier AEW Stations Picket Ship Stations	5	5 4	5 4	0	0						
Pacific Sea Barrier AEW Stations Picket Ship Stations	6	6 4	6 4	0	0						
Contiguous System Picket Ship Stations AEW&C Stations	10 10	10 10	18	22 22	22						

CHAPTER VII

Status of Combat Weapons

REGULAR FIGHTER INTERCEPTOR FORCES

General Status. As of 31 December 1958, there were a total of 70 fighter-interceptor squadrons and one fighter detachment in the North American air defense system. These squadrons were owned by three commands: USAF Air Defense Command had 59 squadrons and the detachment (of which three squadrons were in the 64th Air Division area), RCAF Air Defence Command had nine squadrons, and Alaskan Air Command had two squadrons. Two of the USAF ADC squadrons had no aircraft or crews. This left a total of 68 operational squadrons and one detachment in the NORAD system.

On 30 June 1958, there had been 73 regular interceptor squadrons, of which three had no aircraft or crews. This left a total of 70 operational squadrons at mid-1958, or two more than on 31 December.

The 68 operational squadrons and one detachment were equipped with the following aircraft on 29 December 1958.

TABLE 9

TYPE AIRCRAFT NUMBER SQDNS OWNING COMMAND

F/TF-102A 27 USAF ADC (includes 2 in 64th ADiv)

F-86L 13 USAF ADC USAF ADC (includes 1 in 64th ADiv)

F-89J 11 USAF ADC (includes 1 in 64th ADiv)

AAC USAF ADC (includes 1 in 64th ADiv)

AAC USAF ADC

^{*} USAF ADC actually owned 60 squadrons on 31 December 1958; however, one squadron, less a detachment, had deployed to Formosa temporarily and was under the operational control of PACAF.

	,	
TYPE AIRCRAFT	NUMBER SQUADRONS	OWNING COMMAND
F-89H F-94C F-86L/F-104A/B CF-100 Mk 5	2 1 1 9 68 & 1 Det	USAF ADC USAF ADC USAF ADC RCAF ADC

Total strength of the force on 31 December 1958 is shown below.

TABLE 10

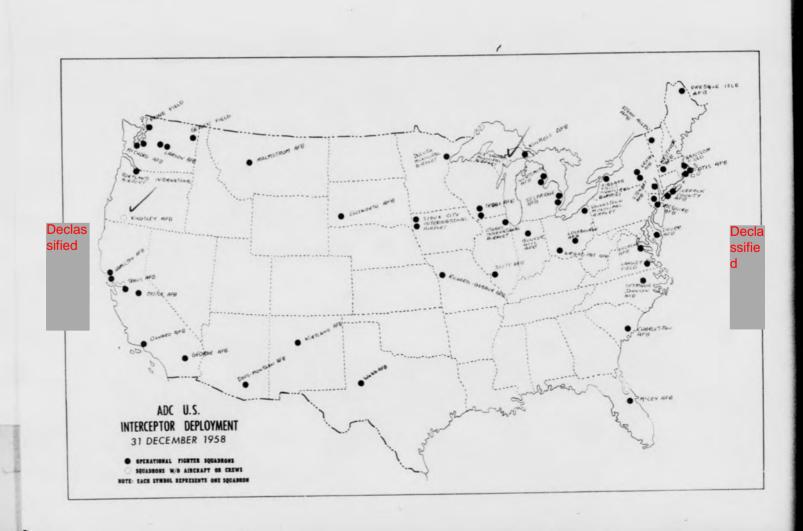
		TMITTED	RCEPTORS	CB	EWS	
COMMAND	DATE		OPNLY RDY	ASGD OPNLY RDY		
	30 June 1958	1,292	812	1,657	757	
USAF ADC	31 Dec 1958	1,415	905	1,676	803	
64th Air	30 June 1958	60	44	64	57	
	31 Dec 1958	64	43	78	70	
	30 June 1958	80	41	86	81	
Alaskan Air Command	31 Dec 1958	62	39	71	71	
	30 June 1958	162	162	225	225	
RCAF ADC	31 Dec 1958	172	90	242	226	
	30 June 1958	1,594	1,059	2,032	1,120	
TOTALS	31 Dec 1958	1,713	1,077	2,067	1,170	

USAF ADC Interceptor Force. As of 30 June 1958, ADC had 61 squadrons. During the last six months of the year, ADC lost one (the 46th at Dover was inactivated). Thus, it owned 60 squadrons as of 31 December 1958. However, one squadron less a detachment was on temporary duty in Formosa. And two squadrons had no aircraft or crews. This left ADC with 57 squadrons and one detachment operational.

The loss of part of a squadron came about as a result of the crisis on Formosa. USAF directed ADC to deploy 12 F-104's to Formosa

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1 1 6 3



1 3 5 4

to operate under PACAF. This was accomplished by sending the 83rd Fighter-Interceptor Squadron less a detachment from Hamilton AFB. The squadron arrived in Formosa in September and remained until December.

Meanwhile, USAF directed ADC to maintain a combat capability on Formosa with the F-104 for an indefinite period. Since personnel had been sent on temporary duty status, their tour had to be less than 180 days. ADC was forced to replace the 83d personnel with crews from another squadron. The only combat ready F-104 aircraft and crews left in the ZI were in the 337th Fighter-Interceptor Squadron at Westover AFB.

As directed by an operations order published on 6 November, crews of the 83d and 337th exchanged places in Formosa in December. The 337th moved 18 of its F-104A aircraft to Hamilton and left ten F-104 aircraft and crews at Westover as a detachment to be used in scheduled SAGE tests in the Boston Air Defense Sector. Personnel of the 83rd Squadron returned to Hamilton.

In the meantime, General Thomas White, USAF Chief of Staff, asked for General Partridge's views on permanently transferring 20 F-104's to the Chinese Nationalists. NORAD replied that the Nationalists should have F-104's provided that this did not interfere with F-104 programming for ADC. NORAD pointed out that at that time only enough engines were being made available for four hours flying time per month in the ZI. Transfer of 20 aircraft would reduce the flying time available to practically nothing for at least six months.

On 17 February 1959, the JCS informed CINCPAC that operational control of the F-104 unit on Formosa would revert to CINCNORAD on 1 March 1959 and the unit would be returned to the United States.

In other changes in the ADC interceptor force, the 327th Fighter-Interceptor Squadron was moved from George AFB, California, to Thule, Greenland, and the 331st Fighter-Interceptor Squadron was moved from Stewart AFB, New York, to Webb AFB in Texas.

64th Air Division. On 30 June 1958, the 64th Air Division interceptor force was temporarily down to a strength of two squadrons: the 59th at Goose Bay, equipped with F-89J's, and the 323rd at Harmon, equipped with F-102A's. However, in July 1958 the 327th Fighter-Interceptor Squadron arrived from George to take the place of the deactivated 74th Squadron.

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On 31 December 1958, the 64th Air Division fighter forces included: two squadrons of F-102A's (323rd and 327th) located at Harmon and Thule, and one squadron of F-89J's at Goose Bay. The latter was scheduled to receive F-101B's in the first quarter of FY-1961.

RCAF Air Defence Command. On 31 December 1958, as at mid1958, interceptor operations in Canada (excluding the 64th Air Division area) were carried out by nine all-weather interceptor
squadrons, each equipped with 20 aircraft, from five bases. Two
of the aircraft at each unit were CF-100 Mk3D's, used for training.
The other 18 were CF-100 Mk 5 aircraft, used for air defense operations. Four of the RCAF stations -- Uplands, St. Hubert, Bagotville, and North Bay -- had two squadrons each, while Comox had a
single squadron.

Until late 1958, the RCAF had been planning to replace the CF-100's with an aircraft then in development -- the CF-105 "Arrow." Canada had started development of this aircraft in 1953. It was programmed to enter the active aircraft inventory in the 1960's. On 23 September 1958, Canada's Prime Minister, John Diefenbaker, announced that Canada would not put the CF-105 into production. It would continue the development program until March 1959, at which time the program would be reviewed again. He stated that a thorough study had been made and it was found that the manned interceptor would not be as effective to meet the post-1960 threat as had been previously thought. Canada would plan on introducing the BOMARC guided missile instead. The nine squadrons then in existence would continue using the CF-100 pending replacement by the BOMARC or newer type aircraft.

Alaskan Air Command. As of 31 December 1958, AAC had two squadrons (one less than at mid-1958). One squadron, the 31st (equipped with F-102A's), had been inactivated in October 1958. Of the remaining two squadrons, one -- the 449th -- was equipped with the normal complement of F-89J's and operated from Ladd AFB; the other, the 317th, was an "augmented" F-102A squadron located at Elmendorf.

The UE complement for the 317th was set by USAF, effective 1 October 1958, at 30 F-102A's and three TF-102's. Except for one TF-102, the 317th had this strength at that time. The additional TF-102 was to be assigned about the first quarter of FY-1960. The 317th's extra aircraft came from the inactivated 31st.

AAC had wanted more. AAC had proposed augmenting the 449th and the 317th with 18 F-102A's from the 31st. CINCAL and NORAD approved this proposal (the latter on 15 August). But USAF would agree to no more than the UE set on 1 October.

The reason for augmenting the 317th was that ALCOM and AAC did not feel that the F-89J in the 449th was capable of performing adequately the identification function. They wanted more F-102A's for the job and also to keep up on training.

Alaskan Program. In the first six months of 1958, USAF's fighter program for the Alaskan theater provided for the following. One F-102A squadron (31st) was to be inactivated and one F-102A squadron was to be left. The F-89J squadron (449th) was to get F-101B's in FY-1962. This would leave the theater with two squadrons -- one equipped with F-102A's and one with F-101B's.

CINCAL did not care for the program. He proposed to USAF through NORAD that both squadrons in Alaska be re-equipped with F-106A aircraft in calendar year 1960. By having one type of aircraft, support and training would be simplified. NORAD supported CINCAL's proposal and in April informed USAF that it concurred.

USAF did not agree, however. It stated that its original program was sound. On 11 June 1958, NORAD again wrote to USAF asking it to reconsider. USAF replied that it would keep CINCAL's proposal under consideration and would advise NORAD of any future changes.

By July 1958, AAC had received the latest USAF programming document (PX-60-1B-1, June 1958) and noted that the F-106A program had been reduced Air Force-wide from 26 squadrons to nine. The program also advanced the phasing in of the F-101B's to replace the F-89J's in Alaska from the first quarter of FY-1962 to the fourth quarter of FY-1961.

On the basis of the revised program, CINCAL sent USAF, through NORAD, a new proposal. He pointed out that his main concern was obtaining two squadrons of the same type aircraft (each with a UE strength of 33 aircraft) having an atomic capability at the earliest possible date. This requirement could not be met by the current interceptors. The F-89J had neither the speed nor the altitude capability to adequately perform the identification function against the type threat facing Alaska, and the F-102A had no atomic

capability. The fact that both squadrons had different type air-craft complicated Alaska's air defense mission since it would not permit mutual air division support, standard control and intercept training and techniques, and recovery and turn-around of the air-craft at other than the home base.

His original choice of the F-106A over the F-101B, CINCAL continued, had been based on what he considered superior performance and the comparative availability of both types of aircraft. However, the availability date of the F-101B had been improved and the F-106A program reduced. Because of these changes, he now asked USAF to consider replacing the F-89J squadron with an F-101B squadron during the fourth quarter of FY-1959, or as soon thereafter as possible, and converting the F-102A squadron to F-101B's the following quarter. "In the event that F-101B aircraft cannot be made available to Alaska prior to...the F-106A..., then the preference for the F-106A aircraft is restated," he concluded.

NORAD forwarded the new proposal to USAF on 5 November with its concurrence. The Air Force answer was not encouraging. It stated that a squadron of F-101B's would not arrive until the first quarter of FY-1961 and that the UE strength would be only 18 air-craft. This was all that could be spared. A second squadron of F-101B's to replace the F-102A squadron could not be provided. However, USAF said it was planning to provide the F-102A squadron with a GAR-11 atomic capability by the fourth quarter of FY-1961.

AUGMENTATION FORCES

TABLE 11 AUGMENTATION AIRCRAFT TOTALS REPORTED

	USAF	U.S. Navy	ANG	RCAF ADC	RCN
30 June 1958 31 December 1958	1,530 1,900*	965 933	1,091 930	Equiv of two sqdns UE of 101 acft	Acft as avail
* Approxima	te streng	th			

USAF Augmentation Forces. The USAF augmentation force was provided by Tactical Air Command (TAC) and Air Training Command

Declassified

Declassi fied ified FIGHTER-INTERCEPT OR DEPLOYMENT ALASKA-CANADA-GREENLAND 31 December 1958 ★ Alaskan Squadrons
• RCAF/ADC Squadrons
• 64th Air Div Squadrons NOTE: Each symbol represents one squadron

1 7 5 9

(ATC). TAC's force was composed of tactical fighter wings and tactical combat crew training wings; ATC's force was composed of all-weather combat crew training wings.

The tactical fighter force had nine F-100C/D/F fighter wings, or a total of 36 squadrons with a UE of 18 aircraft each. Theoretically, some 648 aircraft from this force could possibly augment the regular interceptor force. However, many of the squadrons were scheduled to deploy overseas during an emergency and would not be available for air defense operations. The tactical combat crew training wings were located at the three bases that TAC had acquired from ATC on 1 July 1958 -- Nellis, Luke, and Williams. From these bases some 400-500 F-84F, F-86F, and F-100A/D/F aircraft could be used in an emergency.

As noted above, ATC lost much of its augmentation force when TAC assumed control of three ATC training bases and their personnel. On 31 December, ATC's all-weather combat crew training wings were operating from two bases -- Perrin and Moody. These two bases were reporting between 250 and 300 aircraft assigned. An increase in strength was expected on 1 January 1959 when F-89D's would become operational at a third base, Connally Air Force Base.

Air National Guard. On 30 June 1958, 55 Air National Guard squadrons had a mobilization assignment to ADC as augmentation forces. This total was divided into 42 all-weather and 13 day-fighter squadrons. Another 12 day-fighter squadrons had a mobilization assignment to TAC. USAF had proposed assigning all 25 day-fighter squadrons to TAC. NORAD, USAF ADC, and TAC had agreed.

On 1 October the transfer was made. ADC was left with a mobilization force of 42 all-weather squadrons. These squadrons each had a UE of 25 aircraft, or a total of 1,050 aircraft, that could possibly have been used in air defense.

U. S. Navy. On 31 December 1958, the Navy reported a total of 933 Marine and Navy fighter aircraft available for use as augmentation forces. These 933 aircraft were grouped into the following categories: 500 Fleet aircraft, 217 Training aircraft, and 216 Reserve Training aircraft.

^{*} One squadron was located in Puerto Rico.

Canadian Augmentation Forces. The forces available to augment the RCAF ADC regular fighter force in December 1958 included the ADC training stations at Chatham and Cold Lake and the Royal Canadian Navy. The Operational Training Unit at Chatham had a Unit Establishment strength of 56 Mk 5 Sabre aircraft and an average of 36 experienced crews. The Cold Lake Training station had 45 CF-100 Mk 4A aircraft and an average of 20 experienced crews. Both base commanders were to bring the maximum number of aircraft to a combat ready state, man them with experienced staff crews or the most experienced crews available, and await orders from the AOC ADC when an emergency arose. The aircraft at Chatham were to operate from their home base, those at Cold Lake were to deploy upon orders from the AOC ADC.

The RCN forces consisted of Banshee aircraft from the Atlantic Coast. These aircraft were to be provided on a "when available" basis for combat operations in the 2nd Sector under the operational control of the sector commander.

ARMY AIR DEFENSE WEAPONS

General Status. As of 31 December 1958, the number of Army air defense missile and gun battalions totalled 64. ARADCOM had 62 (60 in the U. S. and two in Thule) and U. S. Army, Alaska, had two. Of the battalions in the U. S., 58 were Nike (equivalent in fire power to 61) and two were Skysweeper. At Thule there was one Hercules battalion (of which one battery was operational) and one gun battalion.

TABLE 12

			MISSILE-GUN S	STATUS	
			UNITED ST	ATES	
	NIKE BTF		1958 SKY BTRYS	DECEME NIKE BTRYS	SKY BTRYS
AVG NO	Ajax Hercules	242	6	Ajax 236 Hercules 8	6
AVG NO		242	6	Ajax 236 Hercules 8	6

Declassified

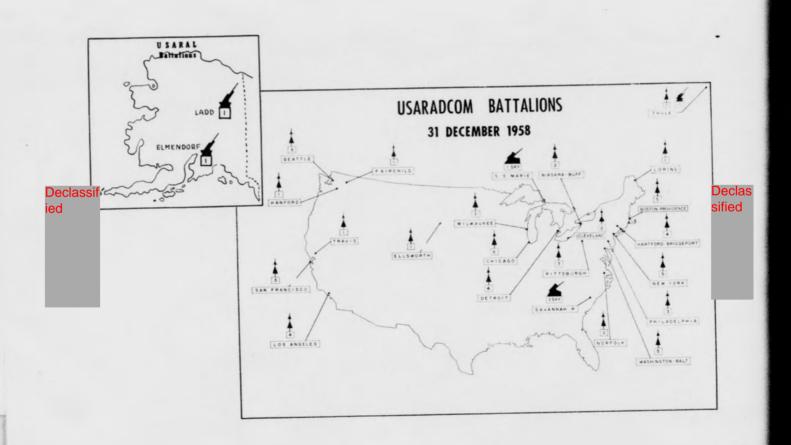
1 3 /

_		ALASKA AND T	HULE	
AREA	JUNE 195	8 WEAPON	DECEMBER I	UEAPON
Thule	UNIT 549th Bn	90mm	4th Missile Bn (Nike-Hercules) 55th Arty	90mm & 1 Btry Hercules (opn1)
Alaska	96th Bn Ft. Richardson 502nd Bn less one battery	120mm 120mm	96th Bn* 502nd Bn	120mm*

USARADCOM. At mid-1958, ARADCOM's Nike program called for 70 battalions by the end of FY-1959. The 70 battalions would include 43 Nike Ajax and 27 Nike Hercules. Of the 27 Hercules battalions, 18 battalion equivalents (72 fire units) were to be formed by converting existing Ajax sites, the remaining nine were to be activated in new defense areas (including one battalion in Greenland).

This program was changed on 15 December 1958. A shortage of construction funds, construction problems encountered at various sites, and a stretchout in equipment procurement caused a revision. The new program provided for 67 on-site battalions at the end of FY-1959 (three battalions formerly scheduled for operations at six SAC bases had been deferred). This program included 43 Ajax battalions (36 to be manned and operated by Regular Army units, seven to be manned and operated by National Guard units) and 24 Hercules battalions. Of the 24 Hercules battalions, it was still planned to form 18 battalion equivalents (72 fire units) by converting existing Ajax sites. The remaining six would be activated in new defense areas (including the Greenland battalion). Only one of the six Hercules battalions for the new defense areas was expected to become operational by the end of FY-1959, however.

On 1 July 1958, ARADCOM had 58 Nike battalions on-site (244 fire units), which in fire power was considered by ARADCOM the equivalent of 61 battalions. By 31 December 1958, ARADCOM had 59 battalions on site (in fire power the equivalent of 62 battalions), 58 in the U. S., one at Thule. The equivalent of 56 battalions (236 fire units) were Nike Ajax, the remaining three (12 batteries)



1 7 / 3

were Nike Hercules. Eight of the 12 batteries were converted Nike Ajax batteries. These eight were located in the U. S. as follows: one each in the Detroit, Philadelphia, Chicago, and Los Angeles areas; two each in the New York and Washington-Baltimore defense. The remaining four batteries were newly activated at Thule, Greenland. Only one of the four had become operational by 31 December 1958.

On 31 December 1958, ARADCOM's active U. S. gun program consisted of two operational Skysweeper units, the same level as at mid-1958. These two units were the 4th Gun Battalion (Skysweeper), 71st Artillery, located at Savannah River, and the 2nd Gun Battalion (Skysweeper), 68th Artillery, at Sault Ste. Marie. ARADCOM was also operating the four 90mm gun batteries in Thule which were augmenting the new 4th Missile Battalion (Nike Hercules), 55th Artillery, during the transition from guns to missiles.

Nike Hercules Improvement Program. In 1956, Bell Telephone Laboratories (BTL) proposed to DA that it proceed on an advanced design Nike Hercules. On 18 April 1956, DA asked the BTL to initiate studies to determine the feasibility of improving the Hercules capability against small, high-speed targets in an ECM environment. The study was completed in 1957 and several improvements were presented to the Army staff for consideration.

By 1958, the Army had agreed to certain improvements to the basic Hercules system rather than to an entirely new system. These improvements were: (1) a new, long-range, high-powered, L-band acquisition radar (HIPAR); (2) a new Ku-band, range only radar; (3) an improved target tracking radar to give increased range against small targets; and (4) minor changes in the operating consoles.

The improvements were expected to provide the Hercules system with a capability against small, high-speed targets of the Rascal and Hound Dog type and to enable the Hercules to work in a "heavy" ECM environment. The improvements were to be provided in so-called "retrofit improvement kits."

In September 1958, DA asked ARADCOM for its recommendations as to the minimum number of improvement kits needed for the current Hercules program. ARADCOM replied that it wanted 79 complete retrofit kits, 17 kits less the HIPAR, and sufficient communications equipment for the latter 17 so that they could receive HIPAR data.

ARADCOM told DA that it had been unable to obtain NORAD's approval of its stated requirements. NORAD would not concur in the requirements because it felt that the cost of the improvement program would affect the overall air defense budget and, in particular, would affect the overall air defense budget and, in particular, the Frequency Diversity radar program. NORAD also felt that there was no need for the new target ranging radars (Ku) at every Hercules fire unit and the use of the new HIPAR in the defenses was unless fire unit and the use of the new HIPAR in the defenses was unless fire unit and the use of the new HIPAR in the defenses was unless fire unit and the use of the new HIPAR in the defenses was unless fire unit and the use of the new HIPAR in the defenses was unless and the use of the new HIPAR in the defenses was unless than the use of the new HIPAR in the defenses and the HIPAR in the defense was unless than the use of the new HIPAR in the defense was unl

Shortly thereafter, USAF asked ADC and CINCNORAD if the Army program had been presented for coordination. USAF said that DOD and the Bureau of the Budget had reviewed the proposed Army and Air force budgets and that DOD recommended cutting the USAF FD program if the Army HIPAR improvement program were funded. This would eliminate any duplication in funding for the U. S. surveillance eliminate any duplication in funding for the U. S. surveillance system. DA felt that the performance characteristics of the HIPAR plus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvements to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the improvement to the Hercuplus the technical compatibility of the i

conad then outlined its stand to the JCS. ARADCOM had contacted it, CONAD said, to obtain coordination, but the program had not been presented in sufficient detail to permit evaluation of the impact on the overall surveillance program. So the improvement the impact on the overall surveillance program, that if DA program had not been approved. CONAD stated further that if DA proposed to program the improved Hercules equipments, the proposal had to have CONAD's approval.

On 5 December, DA wrote ARADCOM that the JCS had sent CINCONAD's message to it for action. It stated that two CONAD staff members had visited DOD and had agreed that CINCONAD considered that improvement of the Hercules a definite requirement. The problem to be solved, DA concluded, was the number and type of radars required. DA directed ARADCOM to expedite coordination with radars required. DA directed ARADCOM to expedite coordination the cinconad and upon receipt of NORAD's approved requirements send the information so that the budget could be completed.

Almost immediately CONAD restated its position to the Army.

It stated that CINCONAD was in favor of improving the Hercules, but that he was convinced that much of the improvement could be met within the approved FD program. In examining the Army and the USAF

FD programs, it was found that there was considerable duplication of heavy radars. CONAD stated that where possible the Hercules requirements should be met by the FD program. Any requirement for Army HIPAR radars should be determined only after a site-by-site survey. This would show just where the FD program could not meet the Hercules surveillance requirements. Before CONAD supported the Hercules surveillance requirements. "...CINCONAD must be assured that it will not cause interference to the planned surveillance system and that it will not duplicate that system in each individual Hercules area."

DA replied on 31 December. It stated that it felt that the duplication and interference problems were over-emphasized and that, in general, Army radars in the Hercules improvement program were essential. Army agreed to the need for a detailed site survey, however. And it stated that ARADCOM had been told that a team would visit Colorado Springs to discuss the program further.

Army National Guard. In the first half of 1958, DA approved reorganization by the National Guard Bureau of 28 ARMG 90mm gum battalions as Nike Ajax units. These units were to be placed in a training status from which DA expected that 22 battalion equivalents (88 batteries) would emerge by FY-1960 as Nike Ajax units. Upon completion of their training, the units would take their place in the ARADCOM force structure manning the Ajax sites. Initially, ARADCOM's FY-1959-60 Nike Ajax program called for a total of 43 battalions, seven of which would be ARNG units in FY-1959. In FY-1960, another 15 ARNG units were to be added, making a total of 22.

The ARADCOM Nike Ajax program was changed in the last six months of 1958. DA decided to slow down the transition from Regular Army to National Guard operation of the Ajax. The revised program did not affect the FY-1959 schedule and seven National Guard units were expected to become Ajax units by 30 June 1959. One unit -- the 720th -- assumed its role in the active defense one unit -- the 720th -- assumed its role in the active defense. The FY-1960 program was reduced from 15 battalions to seven and one-half. This meant that the end FY-1960 force structure would provide for 14 and one-half battalion equivalents (58 batteries), rather than the 22 battalion equivalents formerly programmed.

Back in November 1957, ARADCOM had recommended to DA the elimination of the M-Day program (a total of 84 battalions at that time). ARADCOM felt that since its own gun program had been cut

out, there would be very little reason to keep a force whose mission was to augment or replace active Army gun units. Retention of the National Guard gun program would not, ARADCOM stated, contribute sufficiently to the air defense effort to warrant the money and manpower needed to support it. ARADCOM concluded that unless the ARNG forces could be used in the on-site missile program they should be dropped.

DA approved the ARADCOM recommendation and so notified the National Guard Bureau. On 19 December 1958, the National Guard Bureau told ARADCOM that effective 1 January 1959, 52 of the M-Day battalions would be eliminated. The remaining 32 would be reorganized as missile units and would enter the ARNG on-site missile program. This meant that four more gun units would be reorganized as missile units. Twenty-eight of these 32 were discussed above.

The trend toward using National Guard units rather than Regular units to man the first line air defense weapons was a matter of some concern to CINCNORAD. In December 1958, CINCNORAD pointed this out to the Chairman of the JCS. DA was already starting to man the Nike Ajax with National Guard personnel. Also, in parts of the NORAD system, the only available fighter-interceptor capability was provided by the Air National Guard. And it had been learned informally that Army and Air Force were considering using National Guard personnel to man BOMARC, Hercules, and Hawk units.

CINCNORAD stated that both the ADC and the ARADCOM commanders were opposed to any plan that would turn first line, untried weapons over to National Guard units. Both commanders had written their departments objecting to these plans. CINCNORAD indorsed those objections, "To my way of thinking, our current and historical concept of maintaining the Regular military establishment as a front line, ready force, equipped with the newest weapons, was designed to be responsive to the needs, control, and direction of National, not State, defense." Only by retaining Federal control could the full capability, mcbility, and flexibility of the military forces be maintained for defending North America. He urged that immediate action be taken to establish a policy that the equipping, manning, and operation of North American air defense units needed on a full-time basis be made a responsibility of the Regular military establishment, and that National Guard units be used as augmentation forces only.

Alaskan Program. At mid-1958, Department of the Army plans for the Alaskan theater provided for the conversion of both of its gun battalions to Nike Hercules in FY-1959. The first Nike units

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were to arrive in September 1958, the second in October 1958. Nine batteries were programmed -- five for Eielson and four for Elmendorf. The units, with the exception of the fifth battery for Eielson, were expected to become operational by Fehruary 1959. The remaining battery at Eielson was expected to become operational early in FY-1961.

In August, the plans were changed, however. In this month, DA informed USARAL that the unit scheduled to arrive in Alaska in September had been diverted and was to be used in Formosa. A new unit would be programmed as soon as possible. CINCAL protested to CINC-NORAD. He stated that the reduction in fighter strength had, in part, been based on the fact that an operational Nike Hercules unit would be in place at Eielson. Further, there would be serious logistical and personnel problems if this unit were not quickly replaced. He recommended that NORAD request DA to replace the diverted unit no later than January 1959. CONAD, in turn, asked the Executive Agent when a new unit for Alaska could be expected.

By September 1958, DA announced that it had revised its overseas Nike plans and that Alaska would receive a replacement in February 1959. To prepare for the arrival of the Nike unit, USARAL (with the concurrence of CINCAL) relieved one battery of the 96th Gun Battalion (120mm) from its active air defense mission on 30 September 1958. The battery was to be used in preparing the Nike sites in the Elmendorf area.

In October 1958, the Nike plans were changed again. In this month, DA told CINCAL that the two Nike packages would arrive in Alaska in January and April 1959. On the basis of these revised dates, CINCAL told USARAL that the first battery for the Elmendorf defense should be operational on 1 March 1959, the first battery for Eielson on 10 May 1959, and the remaining batteries as soon as practicable. By 31 December 1958, it was anticipated that all but one battery in the theater would be in operation by June 1959. The fifth battery planned for Eielson would not be ready before November 1959.

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CHAPTER VIII

Operational Requirements and Procedures

NORAD REGULATION 55-3

General. Since establishment in September 1957, NORAD had been operating with a multitude of directives covering conditions of readiness, states of alert, and alert requirements. These directives included RCAF ADC Air Staff Instruction (ASI) 2/13, "Air Defence Readiness"; ASI 2/1h, "Air Defence Warnings"; CONAD Regulation 55-3, "Increased Intelligence Watch, States of Preparedness, Air Defense Emergency, and Air Defense Warnings"; CONAD Regulation 55-8, "Alert Requirements for Air Defense Units During Normal Preparedness"; and CONAD Regulation 55-1h, "Definitions of States of Alert for Air Defense Weapons."* In addition to the above, there were a number of operations plans in the 64th CONAD Division, Alaska, and the RCAF ADC covering these subjects.

The NORAD staff worked for over a year to standardize and consolidate procedures in these important fields. Finally, on 3 November 1958, NORAD Regulation 55-3, "Conditions of Readiness, States of Alert, and Alert Requirements" was issued. This regulation provided all echelons of command under the operational control of CINCNORAD** with instructions and procedures to place the air defense units in a condition of preparedness to meet any emergency and prescribed the states of alert and minimum alert requirements to be maintained under each condition of readiness.

^{**} Although CINCNORAD's Terms of Reference did not include responsibility for Greenland, the 64th CONAD/NORAD Division was to be governed by the regulation so that separate instructions would not be required for this one area.



^{*} Not included in the above are amendments 55-3A, 55-3B, 55-8A and 55-1LA.

It also provided guidance to other commands and agencies having an air defense responsibility to CINCNORAD.

The regulation stated that all air defense forces assigned, attached, or otherwise made available to CINCNORAD would at all times be maintained at a state of preparedness compatible with the real or apparent imminence of attack. During normal peacetime conditions, the emphasis was to be placed on training. The minimum number of weapons necessary to perform an identification function and to defend against a small sneak attack were to be maintained at the prescribed degree of operational readiness. During periods of international tension or war, the NORAD system would maintain higher levels of preparedness as set forth in the regulation.

Conditions of Readiness. Three conditions of readiness were established by the regulation -- Normal Readiness, Increased Readiness, and Maximum Readiness. Normal Readiness was defined as "a state of preparedness related to peacetime operations and training wherein the minimum number of air defense weapons systems required for identification and/or immediate reaction to a small scale surprise attack are maintained at a high state of alert." This condition would be declared and terminated by CINCNCRAD, Deputy CINCNCRAD, or his designated NCRAD representative.

Increased Readiness was that condition requiring "...a progressive build-up of preparedness established by specifically prescribed conditions whereby the air defense system ... was readied for situations above 'Normal' but not demanding 'Maximum' readiness." Under this condition, four different degrees (Conditions 1, 2, 3, and 4) of readiness were set up with the minimum alert requirements necessary to carry out actions for a progressive build-up of "Increased Readiness."

These steps would obviate the necessity of sending messages to each commander telling him exactly what alert level was needed to improve the air defense capability. Increased Readiness was to be declared and/or terminated by CINCNORAD, Deputy CINCNORAD, or his appointed representative. Provision was made for a region or division commander to declare Increased Readiness for his own forces under unusual circumstances peculiar to his area. However, when such condition was established by NORAD subordinate commanders, it was subject to confirmation by CINCNORAD, Deputy CINCNORAD, or a designated NORAD representative.

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Maximum Readiness, the last condition, was "... the highest state of preparedness that ... /could/ be continually sustained whereby all military and civilian air defense measures ... /were/ readied for implementation and ... /were/ prepared for the declaration which establishe/d/ the transition of the air defense system from peace to war."

A declaration of Maximum Readiness was to be accompanied by either a declaration of Air Defense Readiness or Air Defense Emergency. A condition of Maximum Readiness (Air Defense Readiness) was "the highest state of preparedness by the military forces whereby all air defense weapons systems were readied for combat employment." It could be declared or terminated by CINCNORAD, Deputy CINCNORAD, or a designated representative.

Maximum Readiness (Air Defense Emergency) was "the highest state of preparedness by the military forces and civilian agencies whereby all air defense measures /were/readied for implementation." And Maximum Readiness (Air Defense Emergency) could be declared or terminated only by CINCNORAD or Deputy CINCNORAD. Declaration of the latter condition initiated the transition of the air defense system from peace to war, and was the authority to implement approved military and civilian plans and agreements for defense of the U.S., Canada, and Alaska. After declaration of this condition, the imminence of attack was to be specified by air defense warnings.

The three degrees of warning established by the regulation were: Air Defense Warning Red (attack by hostile aircraft/missiles imminent or taking place); Air Defense Warning Yellow (attack by hostile aircraft/missiles probable); and Air Defense Warning White (attack by hostile aircraft/missiles not considered immediately probable or imminent).

Air Defense Warning Red or Yellow was to be declared and/or terminated by CINCNORAD or the Deputy CINCNORAD. Such a declaration applied to all echelons of command under CINCNORAD's operational control. Normally, warning Red or Yellow would be declared after the declaration of Maximum Readiness (Air Defense Emergency). However, should an attack occur without warning, Red could be declared by any NORAD Division commander in whose area the actual attack occurred, and the entire NORAD system would automatically assume a state of Maximum Readiness (Air Defense Emergency) pending formal declaration by CINCNORAD or Deputy CINCNORAD. Any

change to a lesser condition of readiness or warning would be made only by CINCNORAD or Deputy CINCNORAD. Air Defense Warning White might be declared after Maximum Readiness (Air Defense Emergency) to permit reduction of the air defense alert commitment from a maximum state of alert to a lesser state should the tactical situation permit. Declaration of Warning White did not, however, cancel Maximum Readiness (Air Defense Emergency). The White warning was to be accompanied normally by an announcement of a minimum alert requirement as determined by CINCNORAD or Deputy CINCNORAD.

Alert Requirements. The alert requirements set up by the new NORAD 55-3 established a requirement for two interceptors on five-minute alert at all bases. This increase was considered fundamental to maintaining a better alert posture for carrying out the primary mission. This improved interceptor status can be noted in the following: under the CONAD regulation, some 97 interceptors were on five-minute alert; using the NORAD regulation, some 140 interceptors were expected to comprise the five-minute alert force.

Other changes included setting up a standard alert pattern for the U.S. and Canada and providing alert requirements for all elements of the NORAD system (to include picket ships, Sentinel aircraft and AEW squadrons) for the first time. The old CONAD regulation on alert requirements specified alert requirements for a Normal Preparedness condition only. NORAD had found that this was unsatisfactory from its experience in the Middle East crisis. At that time, if it wanted an increase in alert, messages had to be sent to each commander outlining the desired increase by number and location. With the new regulation, an automatic alert standard was provided for every readiness condition and a declaration of a condition of readiness by CINCNCRAD to the subordinate commanders was all that would be needed.

The alert requirements for Normal Readiness and Increased Readiness are shown in Tables 13 and 11. Additional provisions laid down in the new regulation provided that the NORAD Region commanders could, as necessary, levy, waive, or adjust alert requirements for their units when equipment conversion, training and test requirements, special commitments, or such other activities were imposed. Region commanders could also prescribe alert requirements for all augmentation aircraft when they came under CINCNORAD's operational control.

STATES OF ALERT AND MINIMUM ALERT REQUIREMENTS FOR NORMAL READINESS

=		5 MINUTE ALERT	15 MIN	30 MIN	1 HOUR	3 HOUR	REMARKS	-
	Interceptor (non-nuclear)	2 a/c per base (this status is considered synonymous with RCAF 10 min capability)			2 a/c for an 18 a/c sqdn 4 a/c for a 25 a/c sqdn	Remaining a/c that can be operationally ready in 3 hours	Aircraft maintained on a "1- hour" alert status may be flown, subject to diversion to air de- fense operations or recall.	_
eclas	Interceptor (muclear capable)	2 a/c per base (not armed with nuclear weapons)		2 a/c per base (equipped with nuclear weapons)			Alert a/c will not be scrambled with muclear weapons during "Normal Readiness. Maximum number of nuclear weapons will be maintained in an operational ready status at all times.	Dec sifie
leu	Surface-to-air		25%			75%		
	Weapons Fire Unit						When on station, operation in accordance with current NORAD Operation Plan for Seaward Extension Elements, or as specifically approved by CINCNORAD.	
			-	-	-		As for Picket Ships	
	Sentinel Aircraft (AEW&C)				-	-	24-hour day operation to pro-	-
	ACW Squadrons						vide continuous surveillance and control capability, except for periods of authorized, scheduled maintenance.	
	DEW Line-Mid		-				24-hour day operation to pro- vide continuous surveillance	
	ACW Squadrons (Limited Oper- ational Status)						Surveillance for a 4-hour period beginning 2 hours before sunrise, and a 4-hour period beginning 2 hours before sunset, for early warning raid recognition purposes.	-

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TABLE 14	STATES	finate	e Alex	rt	1	5 Mi	mute		30	M	inu	e		T III	···	_		
	1	Condi	tions		C	ondi	tion	s	002		tion		-		ions	-	REMARKS	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
Interceptor (non-nuclear)	a/c per	per	4 a/c per base	a/c per base							a/c per sq						*Percentage figures represent the % of remaining operation- ally ready aircraft (a/c)	
Interceptor (muclear equipped)	a/c	_	a/c	a/c	a/c	a/c	a/c	a/c			2/c	4 st	30%	40%	50%	60%	Nuclear equipped aircraft will not be scrambled during Increased Readiness, except in Alaska. Muclear capable a/c will not be armed with nuclear weapons, except in Alaska. (Other All-weather aircraft may be substituted for the 5-min alert rqmt).	
Surface-to-air Weapons fire unit					25%	25%	25%	50%	25	25	59	256				259	Remaining operational fire units in a 3-hour status. Percentage figures represent % of operationally ready fire units.	
Picket Ships	+			1	-					1							Continue normal station manning & operation on both Atlantic & Pacific coasts.	
Sentinel Aircraft (AEW&C)	+	+	-	1	1	1	1	1	T	1	1	1	1		T	х	Continue normal manning & operation. (Minimum of an additional 3 a/c & 3 crews).	
ACW Squadrons	24-hour d	24-hour day operation to provide continuous surveillance & control capability.																
DEW Line-Mid Canada	+	+	+	+	+	+	+	1	+	+	+	1	1	T	T	T	24-hour day operations to pr vide continuous surveillance	
Line ACW Squadrons (Limite Operational Status	d	+	+	-	+	+	+	+	+	1	1	1					As directed by NORAD Divisio	

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* With these requirements went special instructions to the NORAD Region Commanders -- see NORADR 55-3, 3 November 1958

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As noted elsewhere, the regulation was dated 3 November 1958. However, it was 12 December before the RCAF ADC notified its units that the ASI's were to be superseded* and the NORAD regulation promulgated. On this same date, RCAF ADC told the Canadian units that effective 13 December 1958 they would begin standing alert, except for the five-minute requirement, in accordance with NCRADR 55-3. Instead of the five-minute alert, the Canadian squadrons were to maintain a ten-minute alert at each base. The requirements for the 64th CONAD/NCRAD Division were to be those in 55-3.

Alaskan Requirements. In the case of Alaska, CINCAL modified the regulation and tailored it to fit the needs of the Alaskan theater. The requirements established by CINCAL, issued in ALCOM Regulation 55-11, dated 17 December 1958, were as shown on Table 15.

Change in 75mm Alert Requirements. NCRADR 55-3 had been in effect but a short time when ARADCOM asked NCRAD to revise the Normal Readiness alert requirements for Skysweeper (75mm) units. ARADCOM pointed out that these units were to maintain 25 per cent of their weapons on 15-minute status and 75 per cent on three-hour alert. It stated that the 15-minute alert requirement was unrealistic. Settling rounds had to be fired from the guns and a subsequent recheck of orientation and synchronization made in order to deliver accurate fire. Further, the maximum engagement range of the 75mm guns was limited to 7,200 yards. The limited range of the weapons, ARADCOM continued, afforded the unit more time to get ready for engagement after detection of a hostile than was available to longer range weapons. Thus, it recommended that the requirement be changed to have the 75mm units maintain 33 per cent of their fire units on 30-minute status and the remainder on a three-hour alert.

NORAD approved the ARADCOM recommendation on 31 December and notified ENR, the region responsible for the guns. On 7 January

^{*} RCAF ADC advised its units that ASI 2/13 with the exception of paragraph 11 (declaring Simulated Air Defence Readiness) and ASI 2/14 excepting paragraphs 15-16 (pertaining to simulated Air Defence Warnings) were superseded.

TABLE 15

=			MINUT	ES		HOURS				
	WEAPON/UNIT	CONDITION	5	15	30	1	3			
-	Interceptors	Normal Readiness	2 a/c per base of oper- ations	2 a/c per main base		Sufficient no. of a/c to bring alert total of 6 a/c	Remaining operationally ready a/c			
eclass ied 		Increased Readiness (all conditions)	4 a/c	4 a/c		Remaining oper- ationally ready	E			
		Maximum Readiness (all conditions)	Maintain interceptors on such states of alert as will permit maximum availability of operationally ready a/c and crews in the event of an attack.							
	ACW Squadrons	Normal Readiness	24-hour operation to provide continuous surveillance and control capability, except for periods of authorized, scheduled maintenance.							
т		Any condition higher than normal	24-hour operation to provide continuous surveillance and control capability							
	Surface-to-air	Normal Readiness		25%		25%	50%			
		Increased Readiness (all conditions)		50%	25%	25%				
		Maximum Readiness	Maintain the highest number of fire units on the highest state of alert that the units can sustain.							

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1959, ENR notified the ARADCOM regions of the new requirements and made them effective upon receipt of its message.

AUGMENTATION ALERT FORCE

General. The CONAD regulation governing alert requirements had made no provision for establishing alert requirements for augmentation units. And for the most part, such schedules as were set up in the U.S were arranged by USAF ADC, those in Canada by the RCAF ADC. The schedules established were concurred in by NORAD Headquarters and the region commanders, however. The new NORAD regulation provided that alert requirements for all augmentation units coming under CINCNORAD's operational control would be prescribed by the region commanders.

U.S. Augmentation Aircraft. On 30 June 1958, there were a total of 17 Air National Guard (ANG) fighter-interceptor squadrons standing alert in the U.S. Sixteen of the squadrons were maintaining two planes on five-minute alert 11 hours a day. The normal schedule was one hour before sunrise to one hour after sunset. If this schedule went over 11 hours, an alternate was to be followed which stipulated that the aircraft were to begin one hour before sunrise and continue to 11 hours later.

The other squadron was standing a 24-hour alert. This requirement had been started to increase the ADC identification capability and augment the regular interceptors. Selected units of the ANC were to provide two aircraft and aircrews for five minute-readiness, 24-hours per day, 7 days a week. In addition, two aircraft and aircrews were to be designated for one-hour back-up.

On 31 December 1958, the total number of ANG units on alert was 19 -- six were standing 2h-hour alert, the remaining thirteen, 1h-hour alert.

Two additional units standing alert on 31 December, as at mid-1958, were a Navy unit at San Diego and an ATC unit at Perrin AFB, Texas. Both kept two aircraft on five-minute alert around-theclock.

Canadian Augmentation Aircraft. The Canadian augmentation aircraft came from two sources: RCAF ADC training stations and

the RCN. NNR required the training base at Chatham to keep four Sabre aircraft on one-hour readiness from dawn to dusk. A second training station -- Cold Lake -- was to maintain six CF-100 aircraft at three-hour readiness. The RCN was to maintain a daylight alert with Navy Banshee aircraft as available at Shearwater, a station located just outside of Halifax.

On 31 December 1958, the NORAD weapons alert force was as shown below.

TABLE 16

	ALERT REQUIREMENTS										
FORCE	5-Minute	15-Minute		1-Hour 3-Hour							
Interceptors	133	9 (MB-1)	20	186/4	649/55	977/59					
Missiles		59		3	159	221					
Guns*	1	33	10	27	109	180					
* Includes N	avy										

RULES OF ENGAGEMENT

Until 3 November 1958, there were no NORAD regulations on rules of engagement. The engagement rules were contained in four separate directives: (1) CONAD Regulation 55-6, issued on 13 May 1957; (2) ALCOM Supplement No. 1 to CONADR 55-6, issued on 27 February 1958; (3) RCAF ADC ASI 2/5, dated 15 June 1957; and (4) Provisional Thule Rules of Engagement, dated 22 March 1957.

NORAD considered this situation unsatisfactory. And the same reasons that prompted it to issue 55-3 were instrumental in getting a new engagement directive. A new regulation -- NORADE 55-6, dated 3 November 1958 -- replaced the four other directives.

^{*} RCAF ADC informed its forces on 12 December that ASI 2/5 was superseded except for paragraphs 10-11 pertaining to identification by interceptors.

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NCRADR 55-6 provided instructions for determining when an object was hostile and for engaging such objects. The directive was applicable to all U.S. and Canadian military forces assigned, attached, or otherwise made available to CINCNORAD for the performance of his mission. The Commander, 64th CONAD/NORAD Division was also to be governed by the regulation in exercising operational control of the air defense forces in Greenland. And other commands and agencies having an air defense responsibility to CINCNORAD were to use the regulation for guidance.

Surface-to-Air Weapons Employment. One change in the NORAD regulation from the CONAD regulation was that all reference to engagement procedures for surface-to-air weapons was removed. NORAD felt that these procedures were sufficiently covered by other directives from NORAD/CONAD headquarters. The CONAD regulation had provided for four states of fire as follows: "Weapons Tight," only targets identified or declared hostile, or those targets committing hostile acts could be fired at; "Weapons Free," any target not identified as friendly could be fired upon; "Hold Fire-Do Not Open Fire-Cease Fire,"; and "Discreet Fire."

In July 1958, CONAD told the regions that ARADCOM had recently issued an operations plan for the Nike Hercules which contained policies for employment of surface-to-air atomic weapons. CONAD stated that it considered the document to be in consonance with the plans, concept, and atomic employment policy of CONAD and that planning and training should proceed in accordance with this document. It went on to point out that a CONAD atomic employment plan was being considered by the U.S. JCS. And until approval was received, no engagements were to be undertaken with atomic surface-to-air weapons unless Air Defense Emergency had been declared by CINCNORAD. After such declaration, the weapons were to be employed using the ARADCOM procedures. CONAD emphasized that the ARADCOM plan was an "interim" measure and would only be used until the CONAD plan received JCS approval.

CANADA'S PLANS FOR CONELRAD AND SCATER

On 17 June 1958, the Chairman of the Canadian Chiefs of Staff Committee (COSC), General Charles Foulkes, forwarded to NCRAD for information and review, a revised 1957 study on control of radio transmissions in war. He pointed out that the COSC had been

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studying the CONEIRAD problem and wanted to revise the CONEIRAD policy in MCC 300/9 to bring it up to date. The COSC had already contacted Washington, he stated, and they had replied that this appeared to be a good project for the MCC. Washington also suggested that NORAD's comments and views be obtained before the MCC was asked to revise the policy. General Foulkes stated further that it might be appropriate if representatives from NORAD and the Canadian military staff met and discussed the problem before any recommendation was made to the MCC.

Again in October, the COSC chairman wrote NORAD. He stated that a special Canadian government inter-departmental committee had been established to prepare an interim Canadian CONEIRAD (CANCONEIRAD) plan.

NORAD replied that it seemed appropriate that exploratory talks be held on such subjects as SCATER, CONEIRAD, and CONILLUM. NORAD pointed out that the need for coordinating Canadian-U.S. plans on these subjects had been apparent for some time.

Meanwhile, in August 1958, while attempting to revise the U.S. SCATER plan to reflect air movement priorities for air traffic, NORAD had written to Air Marshal Hugh Campbell, RCAF Chief of the Air Staff, about its negotiations and asked him to consider establishing similar priorities for essential air traffic in Canada, Air Marshal Campbell replied that a new Emergency Security Control of Air Traffic Plan (ESCAT) had been prepared and that DOT/RCAF agencies were developing implementing actions. General Partridge stated that he would appreciate receiving copies of the ESCAT plan. He pointed out that it seemed that control of air traffic throughout the North American air defense system was a single, indivisible problem that could not be solved on a unilateral, national basis, nor should it be coordinated by persons other than the air defense commanders concerned with conducting the air battle. General Partridge also stated that he felt that this was true also of CONEIRAD and CONILIUM plans. He then brought up the subject of an exploratory conference as he had with General Foulkes, and forwarded a copy of the letter written to General Foulkes.

In January 1959, a copy of the ESCAT plan was forwarded to NORAD. The following month, Air Marshal Campbell wrote that he shared General Partridge's views that unilateral development of plans was inappropriate because of the formation of NORAD. "In

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this respect I favour an early meeting at the planning level of the agencies concerned to determine the confines of the task, and to recommend a procedure which will effect the prompt, harmonious, integration of the Canadian and American plans for ESCAT, Conelrad and Conillum.

POSITIVE CONTROL/NOAH'S ARK PROCEDURES

The latest directive concerning the NCRAD-SAC procedures to pass information to the SAC strike force was issued as NCRAD Regulation 55-21, dated 23 December 1958. This directive superseded NCRADR 55-21, dated 30 April 1958, and NCRAD 55-21A, dated 10 October 1958. The procedures set up were as follows. In case of an emergency and SAC decided to launch the alert force before receiving an execution order from the JCS, Headquarters SAC was to provide the SAC aircraft with instructions to take off but to check for further instructions at designated check points on the way to the targets. At the control points, if the aircraft did not receive so-called Positive Control/Noah's Ark instructions they were to abort the mission. If instructions were received, they were to continue on to their targets.

SAC was responsible for providing the Noah's Ark code messages to the NCRAD CCC. The NCRAD CCC would, in turn, transmit the information to AAC, RCAF ADC, 64th NCRAD/CONAD Division, and the 5th Air Division (RCAF). The AAC and 64th CCC controllers would send the information to the DEW Line Main stations and to those stations within their areas having a VHF/UHF ground-to-air communications capability. The DEW Main stations would relay the messages to the auxiliary stations within their sectors. RCAF ADC CCC controller would relay the messages to the Mid-Canada Line stations and the 5th Air Division CCC controller would send the messages to Canadian stations C-21, C-20, and C-19.

All stations would then await contact from the SAC aircraft (under no circumstances were the stations to call the aircraft first). When the aircraft checked in, the stations would transmit the Noah's Ark messages and authenticate, or reply that they had rothing for the force.

NORAD made it clear that it was not responsible for the successful receipt of the messages, but only to insure that broadcasts

were made within a unit's capability and without jeopardizing the NCRAD air defense mission.

NORAD/FCC MEMORANDUM OF UNDERSTANDING

FCC/NORAD Agreement was issued as NORAD Regulation 55-7 on 29 September 1958, setting forth the responsibilities, functions, and working relations between NORAD and the FCC. The regulation superseded CONADR 55-7, dated 11 September 1957.

NORAD was responsible for coordinating with appropriate U.S. and Canadian agencies in the development of policy and broad plans for the security control of air traffic, the control of electromagnetic radiations and the control of illuminations and, when appropriate, for initiating implementing actions for the above; coordinating with appropriate National civil defense agencies on matters directly related to air defense; manning COMEIRAD operating positions at ADCC's; and initiating and disseminating the CONEIRAD radio alert and, subsequently, the CONEIRAD all clear.

The FCC was responsible for preparing and implementing CONEIRAD plans for radio stations (except those belonging to and operated by any department or agency of the U.S. Government) and the preparation of CONEIRAD plans for the Department of Defense for radio stations belonging to and operated by departments and agencies of the U.S. Government. It provided liaison personnel at NORAD Regions and Divisions to advise on non-government radio services with respect to participation in air defense and on FCC policies and procedures on non-government CONEIRAD plans.

NORAD/CAA MEMORANDUM OF UNDERSTANDING

On 29 September 1958, NORAD also issued a NORAD/CAA "Memorandum of Understanding" as a NORAD regulation. The new directive -NORADR 55-18 -- superseded CONADR 55-18, dated 8 August 1957. It outlined mutually agreed arrangements on responsibility, functions, and working relationships of CAA and NORAD to insure that the air defense mission was accomplished within existing laws and directives. The regulation applied to all NORAD echelons and military agencies under the operational control of CINCNORAD except the 64th NORAD Division and the air defense elements of ALCOM, and was for the

guidance of other commands having collateral responsibilities in the conduct of air defense.

AIR DEFENSE ALERTING SYSTEM FOR THE NORTH AMERICAN CONTINENT

Procedures for announcing alert conditions in the North American Continent were issued in NCRAD Regulation 55-12, dated 29 December 1958. The procedures were to be used by all NORAD commands, by the Commander of the 6hth CONAD/NORAD Division in exercising operational control of the air defense forces in Greenland, and were for the guidance of other commands and agencies having an air defense responsibility to CINCNORAD. The responsibility for determining and announcing conditions of air defense readiness and air defense warnings had been assigned CINCNORAD by the U.S. JCS and the Canadian COSC in the 10 June 1958 "Terms of Reference." NORAD's responsibility for alerting fell within two broad categories:

(1) notifying the NORAD operational forces and (2) notifying other civil and military agencies in the continent.

The alert system established and maintained by NORAD was designed to carry out these two functions. To prevent the alerting responsibility from obstructing operational duties, the regulation stated that warnings and readiness conditions were to be passed initially to a limited number of key points and they, in turn, would be responsible for further dissemination of the information.

The alerting system had four components. These were: Alert #1 -- a full-period, multi-point teletypewriter network that connected Headquarters NORAD with the NORAD Regions, Divisions, Sectors, and key points of other U.S. and Canadian agencies; the NORAD Division Warning Network -- a combination of full-period, multi-point teletypewriters, and long-distance or tactical telephone circuits used by the NORAD Divisions to pass warnings to other military agencies; the OCDM National Warning System (NAWAS) which was established and operated by the Office of Civil and Defense Mobilization; and the Alaskan and Northern NORAD Regions. The commanders of these regions were responsible for passing warnings and readiness conditions throughout the Alaskan Command and Canada.

The network was to be controlled from Headquarters NCRAD and/or the ALCOP and would pass the initial readiness and warning conditions

to its subscribers.* The NORAD Division Warning Network would pick up the information and pass it to such key points as military flight service centers, Army Headquarters, and Navy and Coast Guard Districts.** The Key points were responsible for passing the warnings to personnel of their own areas (NORAD forces under division control were to receive warnings and readiness conditions in accordance with NORAD operational procedures and were not considered Division Warning network subscribers). The division commanders were responsible for establishing primary and alternate communications for the division network and for establishing procedures for operating the network. The OCDM Attack Warning Officers located at each NORAD region would pass the warnings to the civilian population in accordance with OCDM procedures.

Subscribers to either the Alert #1 or Division Warning networks had to receive the approval of CINCNCRAD. In the case of the division network, the criteria to be used in determining which organizations would be on the network were: subscribers had to provide continuous monitoring of the division network stations; they had to have a justifiable need for priority warning; and subscribers were to be kept to a minimum. Upon transition to SAGE, SAGE Sector Warning Networks were to be established in lieu of the Division network. SAGE CC's and DC's, when operational, were to be subscribers to Alert #1.

INTERCEPTOR COMMITMENT POLICY

On 30 July 1958, NORAD directed ENR and NNR to prepare a joint policy for tactically employing the RCAF-USAF interceptor forces against southbound raids penetrating through Eastern Canada. NORAD stressed the fact that the employment policy developed by ENR and NNR should consider the MB-1 equipped F-89J's as the primary weapon to meet the threat whenever possible. Upon receipt of the recommendations, NORAD stated it planned to develop and issue its own policy for all region commanders.

^{*} Alert #1 SOP and subscribers may be found in Annexes A & C to NORADR 55-12.

^{**} For a list of subscribers to the division network on 29 December, see Annex B to NORADR 55-12.

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Representatives from NNR and ENR met on 22 September to discuss methods to be used in employing the interceptor forces. By late October, the regions forwarded their joint policy to NORAD. The conferees had agreed their interceptor policy had to be based on the type of warning that might be received before an attack. The regions stated that if warning were received before the raid reached the Mid-Canada Line (MCL), the F-89J should be the first weapon used. It would be followed by successive attacks with the F-102's, CF-100's, and other rocket bearing aircraft. If the raid reached the MCL before warning was received, it was decided that F-102's either based at, staged from, or recovered at RCAF bases and CF-100's should be committed first. The F-89J's would be committed to the air battle as soon as they arrived.

To make the commitment policy work, the regions recommended that: authority be obtained to base, stage and/or turn-around MB-1 equipped aircraft at designated Canadian air bases before declaration of Air Defense Warnings Yellow or Red; facilities of the Canadian bases at Armstrong, Kapuskasing, Casey, Val D'Or, and Seven Islands be improved for fighter recovery or turn-around; the Pinetree sites control capability at Ramore and Moisie be increased to five control scopes, those at Senneterre and Parent to eight; and top priority be established for acquiring the newest radar equipment for the northernmost Pinetree sites to enable them to furnish control for the maximum use of the weapons.

On 18 December, NCRAD told RCAF ADC of the recommendations and of its approval. NCRAD pointed out that negotiations were already in progress to get a long-term agreement to permit overflight of all of Canada with atomic weapons during Maximum Readiness (Air Defense Readiness) and that the U.S. State Department and the Canadian Department of External Affairs were negotiating for storing and using nuclear weapons at Goose Bay. NCRAD said further that USAF ADC had initiated action with USAF for construction at Armstrong and Kapuskasing and had begun a program to increase the control scopes at Ramore to six and at Moisie to five.

NORAD asked RCAF ADC to replace the existing radars in Sectors 1 and 3 with higher performance radars and to increase the control capability at Senneterre and Parent to eight scopes. Also ADC was to improve turn-around and recovery facilities at Canadian bases in the following order of priority: (1) Val D'Or, (2) Seven Islands, and (3) Casey. Then on 28 December, NORAD informed ENR and

NNR that their recommendations and commitment policy had been approved and outlined the actions taken on each recommendation.

In January 1959, NCRAD told CNR and WNR of the interceptor policy developed by ENR and NNR. NCRAD stated that since the air battle would involve many USAF-RCAF interceptor squadrons and since coordination was needed among region commanders, similar recommendations were needed from CNR and WNR. NCRAD directed the regions to coordinate with NNR and submit their recommendations for committing the interceptor forces against southbound raids penetrating through Canada.

AIR DEFENSE AND AIR TRAFFIC CONTROL INTEGRATION

An agreement was reached between the Secretary of Commerce and the Secretary of Defense in January 1958 on joint use of certain facilities in the performance of common functions in air traffic control and air defense. This agreement was formalized in a White House document dated 9 January 1958.

The stated objective of the agreement was avoidance of duplicating facilities, equipment, and overlapping functions; increased capability of each function; and an air traffic control system functionally compatible with the nation's defense facilities in peace and war. It was mutually agreed that each department would make its respective surveillance, data processing, situation display, communications, and identification processes and facilities mutually and fully available for the early attainment of this objective.

The agreement provided that the Airways Modernization Board would conduct a program to determine how integration could be accomplished. On 22 July 1958, the Air Defense Systems Integration Division was designated as the Air Force agency to work with AMB. On 29 July, the ADSID was further designated as the Department of Defense agency on this program.

On 15 August 1958, the ADSID advised NCRAD of the foregoing and stated that an extensive research and development program would be carried out to explore regions of potential air traffic control/air defense functional integration.

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NORAD said that these studies should stress the vital requirement for CINCNCRAD to have positive control of the air traffic within his area of responsibility during active hostilities after an Air Defense Emergency had been implemented. ADSID support and acceptance of this concept was asked. ADSID replied on 7 October that it would fully support this requirement. Said ADSID, "Integration of the Air Defense and Air Traffic Control systems will have as a primary objective the development of this capability. We will insure that the requirements expressed in your letter are completely fulfilled."

On 16 December 1958, an interim report was issued by the Air Defense - Air Traffic Control Boundary Alignment Working Group. The report included an AD/ATC coincident boundary proposal for air defense divisions and high altitude control areas. Each of the areas proposed would have a solid state computer to accomplish air defense functions and high altitude air traffic control functions.

NORAD felt that a number of considerations had yet to be taken into accourt. Among these were the affect of the solid state computer, AN/FSQ-7A, and the inclusion of air traffic control in Canada. On 16 January 1959, NORAD told ADSID that CINCNORAD wholeheartedly supported the concept of coincident air traffic control and air desense boundaries and collocation of facilities, provided this did not degrade CINCNORAD's capability. But, said NORAD, because of these other matters, agreement, at that time, could not be given to the proposal or any firm guidance provided as to what the boundaries should be.

NORAD had proposed to the JCS on 16 October 1958 that the studies on integration of functional activities common to air traffic control and air defense be expanded to include Canadian considerations and participation. The JCS agreed in January 1959 and recommended to the Secretary of Defense that an invitation be extended to the Government of Canada to participate in these studies.

CHAPTER IX

Exercises

EXERCISE TOP HAND

In September 1958, NORAD and SAC conducted a large-scale air defense exercise named TOP HAND. This was the first joint, large-scale exercise since December 1955 when CRACKER JACK (a joint minimum warning exercise) had been run. TOP HAND also was the second in a series of annual exercises programmed by USAF back in 1954.

In July 1954, the air defense forces had participated in a continent-wide air defense exercise with SAC. This exercise, named CHECK POINT, had been designed to provide maximum training for the air defense and SAC forces. Following this exercise, ADC had proposed to USAF (with CONAD concurrence) that an exercise be conducted with SAC annually. ADC stated that CONAD wanted two types of joint exercises, minimum warning (no-notice) and maximum training. The former was to be designed to evaluate and analyze the effectiveness of the air defense system defending against realistic attacks by SAC forces. CONAD also wanted the exercise schedule arranged so that the two types of exercises would be alternated -- minimum warning, one fiscal year, maximum training, the next. ADC stated further that the exercises should be run on a scale comparable to CHECK POINT to allow maximum participation of all defense elements (approximately 400 strike aircraft per exercise).

USAF approved the policy. A tentative exercise schedule was set up by USAF through FY-1960 as follows:

^{*} CONAD wanted the exercises to start in FY-1956. It also asked for one small-scale exercise per division (defense) per year.

	EXERCISE NAME	DATE TO BE CONDUCTED	TYPE EXERCISE
1.	CHECK POINT	July 1954	Maximum Training
2.	CRACKER JACK	December 1955	Minimum Warning
3.	NO NAME ASGD	May 1957	Maximum Training
4.	NO NAME ASGD	Oct-Dec 1957	Minimum Warning
5.	NO NAME ASGD	Jul-Sep 1958	Maximum Training
6.	NO NAME ASGD	Oct-Dec 1959	Minimum Warning

After CRACKER JACK had been run, dissatisfaction with the large-scale missions arose at various command levels. The commanders complained that the exercise objectives were not being achieved and the exercise schedule, in so far as time phasing was concerned, was poorly suited for their purposes. They differed in opinion as to the value of each type of exercise.

In September 1956, CONAD asked the component and regional commanders for their recommendations on the type exercises desired. The answers received from the commanders varied greatly. However, without exception, they stated that they had not liked CRACKER JACK with respect to conduct, scale, analysis systems, and delays in the critiques and submission of the final report.

The question of what type exercise to hold in FY-1957 and FY-1958 needed no answer as it turned out because SAC later cancelled both. One exercise was cancelled because of the Suez crisis, the second because of the Middle East crisis.

The issue of a joint, large-scale exercise was raised again in May 1957. CONAD informed SAC that it wanted an exercise on the order of CHECK POINT as had been scheduled by USAF for the first quarter of FY-1959. The period 12-18 September had tentatively been selected for the exercise. SAC approved planning for the exercise. Then in November 1957, NORAD informed the region and component commanders of the pending exercise and directed them to submit recommendations.

On 12 March 1958, a conference was held at Headquarters NORAD with the component and regional commanders. The conference was

called to determine requirements for all air defense elements for the annual large scale exercise. The conferees were informed that SAC could provide approximately 360 bombers for the strike force. And SAC favored a "no-notice" type exercise to test its EWP penetration tactics. It wanted the exercise conducted in two major strike efforts, one containing approximately two-thirds of the strike force, the other, the remaining aircraft. SAC felt that the exercise should last approximately 30 hours.

The commanders still differed in their opinions as to what the goal of the exercise should be. Eastern and Central Regions favored training as the primary aim, the other regions and the components considered the exercise as a test of air defense effectiveness. Finally, however, a concept and design for the exercise was reached that satisfied both requirements.

The exercise would be conducted in two phases. The principal phase would be a no-notice type mission using the main SAC force as the strike force. This would satisfy SAC's desire to test its EWP penetration tactics and NORAD's wish to test the overall system. The second phase would be a maximum training type mission using the remaining SAC aircraft.

It was further agreed that the broad aims of the two phases would be as follows. The minimum warning phase would have as its objectives (1) testing the detection and reporting capability of the DEW Line, MCL, and Ocean barriers, (2) testing SAC's EWP tactics, and (3) determining and evaluating the overall air defense effectiveness against SAC forces. It was felt that training of the forces would be a by-product of this phase. The maximum training phase would be used for providing training to all regularly assigned and augmentation units.

The name chosen for the exercise -- TOP HAND.

The NORAD position was discussed with SAC on 18 March at a planning conference held at Headquarters SAC. Both commands were in general agreement that the exercise as envisioned by NORAD was suitable. The two command staffs and representatives from the CONAD Regions and RCAF ADC met again on 25 March for detailed

^{*} CINCNORAD also favored a no-notice type of exercise.

planning. Few changes were made in the concept as had been agreed upon in the NORAD conference of 12 March. The strike forces were to make maximum use of ECM, communications jamming, and evasive tactics during both phases.

NORAD's Operation Order (OPS ORDER 5-58) was sent to the forces on 9 September. At that time, NORAD told the defense units that participation was expected by all forces made available for air defense, excepting active air defense alert forces. The forces were directed to defend the North American Continent against the SAC penetrations and to expect the strike force between 15 September and 15 October 1958.

The exercise began at 0700Z on 20 September. The first phase strike force, consisting of 183 SAC aircraft, simultaneously penetrated the ocean barriers and the DEW line and then swept southward through the continent hitting critical target areas.

Following the first strike, there was a lull of some four and one-half hours before the second phase began. The strike force for the second phase was composed of 76 planes hitting the interior of the continent. The entire exercise lasted from 0700Z to 2240Z, a little over 15 and one-half hours.

As a whole, the exercise met its stated objectives. SAC provided sufficient forces to adequately test and train the defense forces (262 aircraft were scheduled, 259 flew the mission). NORAD was able to place nearly all operational procedures and plans into effect and to study the weaknesses and strong points of each. The no-notice aspect of the exercise had been compromised in many instances, but this apparently did not detract from the overall results and the training received was considered excellent.

As noted above, the primary NORAD objective of the exercise was to test the capability of the warning lines and the MCL to detect, identify, and report the strike forces to the NORAD COC.

NORAD's Operations Analysts were responsible for the analysis of this portion of the exercise.

Two questions were posed and answered by the analysts. Did the early warning lines have the capability to recognize a raid and transmit the reports of such raids to the NORAD COC in time to provide warning before the strike penetrated the land-based contiguous radar coverage? Could the early warning lines do a good enough job of counting aircraft and of estimating their speeds and altitudes to permit decisions to commit interceptors before the bombers reached contiguous cover? The first question was answered in the affirmative, the second had a qualified answer.

The analysis pointed out that 25 of 26 aircraft cells (102 planes) penetrating the DEW, MCL, and Ocean barriers were detected and that 19 (76%) were reported to and plotted at the NORAD COC. The average delay from detection to plotting of the tracks at the COC was about 17 minutes. The following table shows the cells detected and plotted.

TABLE 17

		TADLE I			
		EW LIN	E		
	ATLANTIC BARRIER	PACIFIC BARRIER	DEW	MCL	ALL LINES
No. of cells	3	3	6	14*	26
No. detected	3	2	6	14	25
No. plotted in NORAD COC	3	1	5	10	19

* Actually, there were only 11 SAC cells penetrating the MCL, but because of the way two cells split, 14 groups of aircraft were formed that the MCL would be expected to detect as distinct groups.

The report stated that the overall capability of the early warning lines to detect was high, but the aircraft were in groups of from three to six aircraft and were at favorable altitudes for detection (between 26 and 48 thousand feet). The analysts concluded that the EW lines were capable of providing early warning of the type attack conducted in TOP HAND.

The raid assessment by the individual lines was considered less adequate. It was felt doubtful by the Operations Analysts that raid assessment by the individual lines was good enough to justify committing the interceptor forces on the basis of their information. Estimates of numbers of aircraft by the Atlantic Barrier formation to the per cent high, by the Pacific Barrier 50 per cent low; by the DEW Line 19 per cent low, and by the MCL 45 per cent low.

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The analysts stated that as a whole, the assessment of numbers of aircraft was not too bad, but that assessment by individual portions of the EW system was rather poor. They pointed out that in attempting to plan interceptor commitment prior to penetration of the land-based contiguous cover, the ability to estimate correctly what was coming in terms of numbers, speeds and altitudes, and from various directions was important and that the early warning lines did not provide such estimates accurately.

NORAD felt that it learned much from TOP HAND. Many weaknesses were shown, but there were also many improvements noted since CRACKER JACK. For one thing, the mere fact that the DEW Line, MCL and Ocean barriers were operating provided a major improvement. The EW system initially detected the strike forces over 1,000 miles further out than could be done in 1955. Also, by using the EW lines data, NORAD felt that it had proven that positioning interceptors at the forward bases to meet the attack was a sound tactic. This tactic allowed the interceptor force to meet an attack well outside critical target areas.

NORAD also felt that the air defense operational capability had been improved since CRACKER JACK by the establishment of NORAD. This allowed much better coordination of defense efforts than when air defense was dependent upon disjointed efforts by ALCOM, RCAF ADC, NEAC, and CONAD.

There were certain areas needing improvement, however. The fact that atomic weapons were in the weapons inventory and could not be prepositioned in or used over Canada before the declaration of an Air Defense Emergency (Warning Yellow or Red) was one such area. This automatically restricted early prepositioning and use of these weapons at Canadian bases. The fact that an operational atomic capability existed also emphasized the need for mature judgement in declaring an Air Defense Emergency. Steps were being taken to change the rules for employing atomic weapons (see Chapter VIII).

Another weak area was the use of non-standard alert procedures for the Canadian-U. S. forces. This was expected to be corrected by NORADR 55-3 (see Chapter VIII).

The fact that NORAD delegated the responsibility for local tactical actions and decisions during the air battle to subordinate joint NORAD headquarters pointed up the need for jointly manned and staffed NORAD subordinate headquarters.

It was found that fighter-interceptor and missile deployments had not kept pace with SAC base construction and dispersal in the midwestern U. S. and at SAC refueling bases in Canada. The TOP HAND attacks demonstrated the vulnerability of these areas.

SAC ECM activity highlighted the ECCM weaknesses of the air defense system (in some cases, divisions lost 95 per cent of their effectiveness) and emphasized the need for providing the radar system with ECCM fixes, training of NORAD personnel to combat ECM, and getting the FD radar program completed. Proof of these needs was shown by the fact that in the 37th Air Division area where radar and ECCM improvements had been made for the WEX-VAL tests, the radars were not seriously affected by ECM.

Other features of the air defense system that were found deficient during TOP HAND were: communications, forward and lateral telling procedures, provision of DEW Line and Barrier data to Alaskan and Northern NORAD regions, tactical employment of the augmentation forces, a flexible all-weather augmentation force, coordination between NORAD Headquarters and the regions, non-standard procedures in the NORAD system, and operations in the COC. Some of these deficiencies were already known, other were new. Almost all had received attention before the end of 1958.

EXERCISE DESK TOP

Less than a month after TOP HAND, NORAD held a simulated large scale exercise. This was a realistic Command Post Exercise (CPX), named DESK TOP. The exercise simulated actual conditions of an attack against the North American Continent, yet it involved no actual offensive or defensive missiles or aircraft. Tracks of attacking and friendly aircraft and missiles were artificially injected into the air defense system. This was accomplished by using prepared scripts at some defense units, and at those units where proper facilities were available, filmed simulated radar targets (the System Training Program (STP) technique).

Representatives of ADC and the Systems Development Corporation (SDC) had approached the NORAD staff in 1957 with an informal proposal for holding an ADC-wide STP exercise. ADC pointed out that the ADC-SDC training program had been developed to a point where it was considered both possible and desirable to conduct such an exercise. It was not practical to do so, however, unless NORAD Head-quarters participated. NORAD, in the meantime, had been searching

for a method to use in conducting a NORAD-wide CPX. The ADC STP program appeared to be the answer. After several meetings, it was decided that an STP problem would satisfy both needs.

The responsibility for planning and executing DESK TOP was assigned to a special committee created specifically for the task in January 1958. This committee was composed of members of the major staffs of NORAD Headquarters and the component commands. The NORAD CPX Committee worked closely with personnel of SDC and prepared a problem design and the specifications for the participation of all the NORAD defense elements. It was decided that the primary objective of the STP problem would be to exercise NORAD/CONAD operational control procedures at each echelon of control. A secondary aim was to develop a problem large enough for the NORADwide exercise and one that could be adapted for later use in region exercises.

By May 1958, the exercise concept had been developed to a point where it could be disseminated to the field for planning purposes. The concept was as follows. At an unannounced time and date (but probably between October and December 1958), an exercise simulating actual conditions of an attack against the North American Continent would be held. The exercise would last approximately 15 hours. It would consist of a surprise attack of three to four hours duration, a lull of a few hours, and then a mass attack.

Problem inputs were to come from the following: (1) the surprise and mass attack phases would be on STP film; (2) battle damage would be injected into the problem at the DC and AADCP levels from scripts; (3) early warning for the mass raid would come by prepared messages from the DEW Line, the ocean barriers, the picket ships, the MCL, and the Pinetree Line; and (4) communications from parallel and higher echelons to NORAD were to be introduced by teams in the NORAD COC.

The exercise would begin with the sneak attack when filmed enemy tracks were suddenly introduced. From that point, the various defensive elements were to play their roles as if an actual attack were underway.

By late September, everything was in readiness. The NORAD Commanders were alerted and a liability period of 1-10 October was set for the execution of the mission. The system was triggered shortly after 0700 on 8 October when an attack force of 70 manned jet bombers and four air-breathing sub-launched missiles began a penetration of the NORAD system. The attack, aimed at 35 SAC bases and 4 Naval bases, achieved complete surprise. No strategic or tactical warning had reached NORAD Headquarters. Air traffic over the continent was normal and the system was on normal readiness. This phase continued until 1000Z. By this time, the surviving bombers had either withdrawn or were withdrawing.

The sneak attack was followed by a lull of seven hours (1000-1700). During this period, the defense reorganized its forces and prepared for a large-scale attack that was building up in the northern reaches of the continent. Reports from the DEW Line, the barriers, the MCL, Alaskan Region, and Iceland told of numerous enemy penetrations and warned of an approaching mass attack. The interim phase ended when a relatively large force of hostile aircraft penetrated the radar network.

At 1700Z, the mass attack began with 193 jet bombers and 16 missiles. The attackers entered the system in fairly large flights that later split into small segments to strike various targets within the continent. The third phase of the problem lasted until 2000Z when the filmed inputs ended. Shortly after 2000Z, CINCNORAD declared "Fade-Out," ending the exercise.

DESK TOP actually went far beyond the scope of what was normally considered a CPX. In one respect it was an experiment in training battle staffs through the medium of synthetic air defense problems. It provided even more, however, by giving battle staffs at all command levels, as well as many other personnel, a realistic air defense problem.

Six basic objectives had guided the planning and execution of DESK TOP. These were:

- (1) to train the NORAD operational control elements;
- (2) to test procedures for alerting the NORAD staff;
- (3) to test procedures for alerting subordinate NORAD headquarters;

- (4) to test NORAD communications facilities (to include activation of Engineered Military Cirquits):
- (5) to provide a controlled problem for subsequent review of procedures, tactical decisions and actions at NORAD region, division, and direction center levels; and
- (6) to determine the training value of this type exercise.

NORAD's Directorate of Operational Evaluation and NORAD's operations analysts evaluated the exercise. In their final report, the major conclusions made of the air defense system as it operated during DESK TOP were as follows.

The NORAD policy of delegating responsibilities for tactical actions and decisions to lower echelons of command was found sound. Tracking and weapons control capability of the NORAD system became excessively burdened as a result of the tendency to classify all doubtful tracks either Invader (Hostile) or Unknown. Discrepancies in radar tracking caused an additional burden by duplicating radar tracks. Times to activate engineered circuits were so great that many of these would not become available in the event of a surprise attack. Valid tests of alerting procedures could not be provided in a situation where operating personnel knew that an exercise was in progress even before the decisions to declare warnings or states of preparedness were made. Battle summary reports were excessively delayed in reaching the COC.

Based on these conclusions, a series of recommendations were made. It was recommended that a study be made of surveillance and tactical information required by the battle staff personnel to eliminate the reporting of excessive data. Procedures for submitting special reports should be exercised more frequently. Further testing of battle staff call-up procedures should be conducted. Study should be made of tactical voice communications systems between NORAD and region headquarters to reduce or redistribute the traffic load and determine the number of circuits for the maximum expected loads. System-wide exercises, such as DESK TOP, should be conducted periodically. Participation of elements outside of USAF ADC should be expanded and made more realistic. Efforts should be made to increase the realism of simulated air defense functions and

analysis objectives of future exercises provide detailed knowledge of specific air defense functions rather than a general knowledge of a large number of functions.

To improve tactical reporting and the operation of a display in the NORAD COC, a number of steps had been taken. The NORAD staff had studied a new display system, the Iconorama, developed by Fenske, Federick and Miller Company, and found it suitable for COC needs. ADC was asked to procure the equipment. In addition, a new manual summary reporting method, an interim measure until new display equipment was installed, was being tested. Also a system for creating a display from information already forwarded through the surveillance network was being studied.

A method to improve late and incomplete reporting of weapons status was also being reviewed. A test of reporting weapons status by means of voice had been conducted between 1 November and 15 December and the recommendations and comments of the regions were being analyzed. A second reporting procedure was being tested between WNR and the NORAD COC. This test began in October and consisted of reporting weapons status via the surveillance net using pre-arranged coding. Equipment difficulties in the NORAD COC left NORAD with inconclusive evidence with which to evaluate the test results. WNR, however, liked the new method and recommended adopting it on a NORAD-wide basis.

NORAD/SAC ECM-ECCM EXERCISES

NORAD's ECM-ECCM training program was largely dependent upon daily and monthly training missions provided by SAC, and by USAF ADC radar evaluation flights. The missions did not completely meet NORAD's requirements in quality or quantity, however. SAC missions did not meet NORAD's requirements because they were able to test only portions of the system. Another reason that SAC could not provide needed training was that it had to keep many of its aircraft in their EWO ECM configuration and they could not be used in testing. The ADC radar evaluation flights could not provide adequate training because they were using outdated aircraft.

NORAD had appealed to USAF to correct the latter situation by providing modern multi-engine aircraft with the newest ECM equipment. NORAD pointed out that the training provided by SAC could never reach the point where it would fully satisfy NORAD's training

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requirements. Unless newer aircraft and equipment were provided ADC, the radar evaluation flights would become less and less useful in providing ECM training. Little progress was made in obtaining the new aircraft, however.

In February 1958, a severe blow was dealt the SAC-NORAD ECM training program. In this month, the monthly ECM exercises were stopped completely following a collision between a SAC B-47 and an ADC F-86. SAC refused to allow further fighter attacks against its aircraft. This made it impossible to continue further ECM exercise activity of a realistic nature which included fighter-bomber affiliation. NORAD had tried to lift the restriction but had not succeeded. USAF asked SAC, ADC, and NORAD to mutually resolve the problem by 30 June 1958. SAC redrafted its training regulation (51-6) and asked for an extension of the USAF deadline so that it could test the new procedures. USAF then extended the deadline to 31 July.

NORAD, however, would not accept the SAC regulation as a solution to the exercise training problem. The revised regulation contained too many restrictive provisions. NORAD felt that exercises and training carried out accordingly would be of negligible value.

Then in June 1958, USAF dealt a second blow to ECM training when it informed ADC that it did not plan to build up the ECM force. USAF stated that it felt the ADC-SAC ECM training program was beneficial to both commands. SAC had the capability to provide realistic training, USAF said. And it could not afford to duplicate this capability in ADC. USAF directed ADC to join SAC to find a way by which the requirements of both commands could be satisfied. A deadline for submission of this study was set for 1 August.

After receiving USAF's letter, ADC approached NORAD with a proposal to set up a central coordinating agency in ADC for SAC-air defense training. NORAD turned down ADC's proposal. NORAD said that it had already told SAC that NORAD would handle coordinating activities and that it had designated the Exercise Branch in NORAD to be the central coordinating agency. It stated further that a FY-1959 exercise planning schedule had been set up with the exception of ADC's requirements. Upon receipt of the latter, it would have a complete exercise schedule to forward to SAC.

ADC then submitted its exercise and training requirements. ADC stated that its primary requirement was for SAC to provide realistic

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penetrations similiar to those that could be expected from an enemy. This meant, ADC continued, that selection of strike routes, altitudes, speeds, and ECM procedures would have to be approved by NORAD or itself since SAC's concept for conducting USCM's and rotation missions to provide training was not compatible with ADC's requirements.

Shortly thereafter, ADC furnished NORAD copies of the USAF correspondence directing it to coordinate directly with SAC. ADC stated that since NORAD was acting as coordinating agency, NORAD should take appropriate action. It went on to point out that a joint conference with SAC had been held on 8 and 9 July where it had been agreed that each air division would be assigned specific had been agreed that each air division would be assigned specific SAC wings for flying support. The SAC aircraft were to fly special multiple aircraft missions and would be equipped with the proper ECM equipment to exercise all components of the divisions. In addition, SAC had agreed to continue the BIG PHOTO missions. This would, ADC continued, satisfy USAF's request to work out mutual ECM-ECCM training requirements with SAC, but it still left unanswered the problem of providing the necessary support for Tactical Evaluations and ORI's, monthly division exercises, and radar evaluations.

ADC said that it had hoped to use the SAC USCM's for supporting TAC EVAL-ORI requirements. However, SAC informed ADC that it could not provide sufficient sorties to support this program. This fact plus the lack of "L" band equipment on the EWO-configured aircraft made such missions incompatible with the TAC EVAL-ORI needs. SAC further felt that it should not be required to support ADC's radar evaluation requirements because such training would not benefit SAC crews.

On 23 and 24 July, NORAD met with SAC to discuss the flying training restrictions. And on 30 July, it met with ADC, SAC, and USAF at Headquarters USAF to discuss the ECM-ECCM training problems. During this conference, it was found that SAC would compromise a During this conference, it was found that SAC would compromise a little. It agreed that training would be provided, if intercept missions were properly scheduled and coordinated by NORAD-SAC agencies; if NORAD provided a permanent liaison officer at SAC Headquarters; if attacks against SAC aircraft were not conducted within 30 nautical miles of any RBS site; and if fighters would delay lock-on in radar attacks to six-eight nautical miles from the target.

SAC also said it would not allow fighter attacks against SAC aircraft carrying atomic weapons. NORAD felt that accepting this

restriction would negate the use of any large scale SAC missions for exercises, evaluations, or training since SAC's policy was to schedule atomic weapons on these missions. In order for NORAD to resume the use of large scale SAC missions, as enjoyed prior to 4 February, two alternatives were open. Either SAC had to unload their weapons on selected USCM's, or the restriction against fighter attacks on weapons carrying aircraft had to be lifted. SAC remained adament.

However, some progress was made in the July meetings. On 14 August, NORAD told the regions and components that it had reached an agreement with SAC to set up a mutual ECM-ECCM training facilities program between individual NORAD divisions, RCAF sectors and SAC bomb wings. The program was to work as follows. The SAC bomb wings would be paired with the air defense divisions/sectors. A team composed of Army, Navy, USAF and RCAF elements of a NORAD division/sector and the attached SAC wings would draw up the training routes to be flown by SAC so that maximum training would be provided every element in the system. The training missions, codenamed BIG BLAST, were to be designed to complete one penetration leg of at least one and one-half hours duration employing maximum ECM. All missions were to be planned primarily as NORAD component ECCM training missions and were to receive maximum support from all SAC and NORAD units.

The minimum missions that would be run each month were:

TACTICAL WINGS	MISSIONS	"L" Band Transmitters to be installed in each aircraft	No. of A/C per mission
B-47	1	2	5
B-52 (3 sqdns) (2 sqdns) (1 sqdn)	2 2 1	2 2 2	3 3 3

The program was scheduled to begin on 1 September with the first mission flown in October 1958.

On 23 August, USAF wrote NORAD that the program set up would satisfy day-to-day needs of air defense units and both SAC and ADC

had been directed to implement the program as soon as possible. USAF stated that it realized no provision had been made for ORI's and monthly air defense division exercises, but it believed that the arrangements agreed upon would later prove to be a basis for accomplishing significant portions of even these requirements. USAF questioned the fact that NORAD should be coordinating agent and said that ADC had been instructed to include NORAD requirements for ECCM training in negotiations with SAC.

NORAD replied that no provision had been made for SAC to support the 64th Air Division training requirements, nor were there any set up for satisfying ORI's and exercise requirements. As to ADC being the coordinating agency with SAC, NORAD stated: "we are convinced that it is to the best interests of SAC and to the NORAD components that Headquarters NORAD continue as the coordinator... rather than have the SAC headquarters negotiating with the several components on a competitive unilateral basis for the limited SAC mission capabilities." At this time, NORAD also told USAF that if the SAC forces could not provide sufficient training support for all of NORAD's needs that it would become necessary to again recommend that the obsolete TB-29's in ADC be replaced with modern multi-jet aircraft so that NORAD could support it own program.

An answer from USAF was not long in coming. It stated that the ECCM training that would be received from the new program would far surpass the quantity and quality of that experienced before. The new program would not solve all problems, USAF continued, but additional ways of providing ECCM training were being examined. USAF pointed out that ADC and SAC had already established a well integrated ECCM training program at command, force, and wing/air division level (BIG BLAST).

Meanwhile, NORAD and SAC had continued meeting in an effort to get their regulations (SACR 51-6 and NORADR 51-1) in agreement. These efforts finally met success. In September 1958, SAC reversed its policy of carrying weapons on all USCM's and the monthly ECM exercises could begin once again.* On 9 September 1958, NORAD

^{*} This is not to infer that the restriction against attacking SAC aircraft carrying weapons had been rescinded. It was still applicable.

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issued its flying training regulation 51-1. It outlined the procedures to be used by the NORAD forces when conducting joint training with SAC.

NORAD listed as objectives:

- (1) air defense systems training;
- (2) fighter-interceptor training to include attacking airborne targets, ECCM for AI radar equipped interceptors, and training in operational procedures;
- (3) AC&W and AEW&C (including aircraft and airships), Texas Tower, and Picket Ship training to include training in air surveillance, development of tactics and techniques for controlling fighter-interceptors against airborne targets, ECCM training, and training in operational procedures;
- (4) Air Defense Artillery Unit training in detection, acquisition, and tracking of airborne targets, and training in operational procedures and ECCM.

The first joint exercise with SAC was TOP HAND discussed above. This mission was followed by BIG JUMP (a region exercise in October), GRAND SLAM (a NORAD directed exercise in November), and FULL FORCE (an ENR and NNR coordinated exercise run in December 1958).

Meanwhile, the BIG BLAST daily systems training missions had begun in October 1958 as scheduled. By the end of 1958, the main weakness of the BIG BLAST program appeared to be the fact that the missions did not provide training for the 64th Air Division or Alaska. Also there were certain technical training problems or that had to be resolved. The SAC-NORAD Big Blast Sub-Committee, of the Joint Exercise Planning Committee, had been formed to iron these problems out.

CHAPTER X

NADO, NADOP, and Ballistic Missile Defense

NADO AND NADOP

In December 1958, NORAD submitted to the Canadian CSC and the U. S. JCS a two-volume objectives plan: North American Air Defense Objectives 1959-1969 (NADO 59-69) and North American Air Defense Objectives Flan 1959-1963 (NADOP 59-63). This two-volume plan was a successor to CONAD's 1956-1966 Objectives Plan (CADOP 56-66). The latter, the first over-all U. S. air defense plan ever prepared, was, according to NORAD planners, basically a compilation of existing and projected service programs supplemented by CONAD inputs to fill out the ten year period. The CONAD plan, the Commander's foreword to NADOP stated, demonstrated "conclusively that uncoordinated uni-service programs in the field of air defense had become too duplicatory and too expensive to merit Joint Chiefs of Staff sanction in their entirety."

CADOP was returned in May 1958. The JCS approved the concepts and philosophies, but not the force structures. They estimated that implementation of this plan would cost over ten billion dollars annually, according to NADOP. The JCS said that an average expenditure of around five and one-half billions yearly should be used as the basis for planning for U. S. forces.

Another problem was long-term projection. CADOP attempted projections farther into the future than there were agreed intelligence estimates against which to measure the proposed forces. NORAD, therefore, divided its objectives plan into two volumes. NADO 59-69 stated the concepts, philosophies, and qualitative objectives for a ten-year period. NADOP 59-63 set forth the qualitative and quantitative force structures for a five-year period (half that of CADOP).

Besides the matter of cost and length of projections, these plans differed from CADOP in another important respect. CADOP had stated only a very general requirement for a ballistic missile defense system, covering no specific equipment, deployment, cost,

etc. Now a detailed, firm requirement was set forth for a BMDS. ICEM defense, in fact, was the heart of the NADO and NADOP.

In the preface to NADO (the plan covering concepts and philosophies), NCRAD stated that a ballistic missile defense was a requirement of the highest priority. The ballistic missile threat would build up throughout the period under consideration, becoming serious by 1961 and reaching alarming proportions by 1963. However, there also had to continue to be a defense against the manned bomber threat, for there was no assurance that the enemy would inactivate his bomber force. And he would surely use this force if there were no defense against it.

NORAD stressed these two points in NADO:

a. Regardless of cost, if we are to prevent war, we must acquire an effective AICEM as a matter of the highest priority.

b. We must maintain a strong defense against the air-supported threat despite the serious and immiment introduction of Soviet ICEM's.

The cost of providing an ICBM defense made it impossible, NORAD said in NADOP (the quantitative plan), to stay under the six billion dollar ceiling set by the JCS. Sufficient forces could not be provided to insure an air defense system capable of achieving the military objectives of Canada and the United States. The average annual cost of forces recommended by NADOP, to be provided by Canada and the U.S., was under eight billion dollars. But, NORAD said, within this total there was set aside, for 1961, 1962, and 1963, contingency funds of around one billion dollars yearly over the cost of the accelerated Nike Zeus program.

The reason for the latter: NORAD felt that even though the highest priority was given to Zeus, the level of protection provided to targets in Canada and the U.S. would be too low in the 1963 time period. Therefore, contingency funds were provided in the hope that the Zeus program could be accelerated or another anti-missile defense system adopted to augment Zeus.

How should funds be applied against the various service programs related to air defense? In NADOP, NORAD laid down these priorities:

- a. It is felt that first priority should be given to the establishment of a system to provide early warning of an attack by either air-breathing vehicles or ballistic missiles.
- b. In second priority, all the funds which can be profitably employed in the development and installation of an active defense against the ICHM and IRHM should be provided.
- c. Thirdly, the development of an integrated control system for the effective employment of all weapons should be funded.
- d. Lastly, to the extent appropriations are available, there should be a qualitative improvement of weapons systems designed to counteract the air-breathing threat.

NORAD stressed that its priorities did not mean that funds should be applied to those categories high on the list to the exclusion of those further down. Continuation and improvement of defenses against the air-breathing threat was mandatory as was the need for bringing into being a BMDS. Systems to meet both threats, NORAD said, had to remain in operation for the foreseeable future "and certainly far past 1969."

TABLE 18

SUMMARY OF

NADOP RECOMMENDED FORCE STRUCTURES* FI 63 FY 62 FY 61 FY 60 FI 59 TYPE UNIT 59 61 71 Ftr-Inteptor Sqs. BOMARC Sites/ 6/224 6/224 Launchers 4/168 0 36/2772 IM-99A IM-99B

* Totals unless otherwise indicated.

TYPE UNIT	FY 59	FY 60	FY 61	FY 62	FY 63
NIKE Fire Units Hercules New Construction	12	77	109	109	109
Hercules Conversions	60	72	97	97	97
Ajax	184	172	1)48	28	0
HAWK Batteries	0	8	70	70	70
ZEUS Locations* United States Canada Basic Units (3TTR, 10MTR, 50 missiles)	0 0 0	0 0 0	0 0	15 1 29	40 14 120
Prime Radars	189	191	204	237	237
Gap Fillers	133	171	289	410	1416
Texas Towers	3	3	3	3	3
Off-Shore Picket Ship Stations	. 10	10	18	22	22
Off-Shore AEW&C Stations	10	10	10	22	2:

^{*} The proposed ZEUS deployment was for SAC bases and population centers or, where possible, at a combination of both. The deployment represented that desired for the so-called accelerated ZEUS program. The accelerated program provided defense for his locations in 1963.

NADOP stated that this was an inadequate defense and that the limitations were assumed to be technical, not monetary. According to NADOP, if technical difficulties were overcome and additional weapons were produced within the time period of the plan, one billion dollars in 1961, 1962, and 1963 were set aside to accomplish this requirement.

TYPE UNIT	FY 59	FY 60	FY 61	FY 62	FY 63
Land Based DEW Line	-		C7	57	57
Northern	57	57	57	2	6
Aleutian	57 6 0 4	57 6 0 4	6 4	57 6 4	57 6 4
Greenland	0	0	1 4	1.	l i
Iceland	4	4	4	-	-
Sea Barrier DEW Line					
Atlantic	-	-	-	0	0
AEW&C Stations	5 4	5 4	5 4	0	0
Picket Ship Stn	8 4	4	4		
Pacific			6	0	0
AEW&C Stations	6 4	6 4	14	0	0
Picket Ship Stn	8 4	4	-	-	-
Mid-Canada Line Stns	98	98	98	98	98
SAGE				25	30
Direction Centers	5	12	19	25	1 id
Combat Centers	1	3	4	0	-
NORAD Control	3	3	10	10	10
Centers - U.S.	1	-	+		+
BADGE II (GPA-73)					
Alaska NORAD		0	2	2	
Control Centers	0	0	l i	2	
Alaska GPA-73	0	1	-	1	
Goose Bay NORAD	0	0	0	1	
Control Centers	0				
Harmon NORAD	0	0	0	1	
Control Centers					
Goose & Harmon	0	0	0	2	
GPA-73	-	-	-	-	-
BMEWS		1	1	1	
Greenland (Thule) 0		i	ī	
Alaska (Clear)	0	0	0	1	
British Isles	0	0	1	-	
BMEWS Computer	0	1	1	1	
Central	0	1		_	

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TYPE UNIT	FY 59	FY 60	FY 61	FY 62	FT 63
NIKE ZEUS Local Defense Centers/Local Acquisition Radars United States Canada	0 0	0	0	12	33 2
NIKE ZEUS Forward Acquisition Radars United States Canada	0 0	0 0	0 0	2 3	14 5

BALLISTIC MISSILE DEFENSE AS COVERED IN NADO 59-69

The concept for defense against ballistic missiles, the plan stated, was essentially the same as for defense against the airsupported threat. The active defense should (1) be composed of a variety of weapons so as to give the enemy many tactical and technical problems and (2) place the major portion of the air battle in regions remote from principal targets.

According to the plan, the initial early warning system (i.e., the three-station EMEMS) would provide for detection and reporting of only the first generation ICEM attack from the north. This system would detect and identify ICEM's with elevation angles of 15 to 65 degrees approaching from the north. It would detect missiles 15 to 25 minutes prior to impact.

As for the initial active defense system, NCRAD said that apparently the only weapons system to defend against the ballistic missile that could be made available in reasonable numbers by 1964 was the Nike Zeus. This system involved the use of forward and local acquisition radars and anti-missile missiles with atomic warheads. The radars would, where practicable, be integrated into the basic NCRAD surveillance system to provide data to SAGE and the AICEM control centers. The effective intercept capability of each fire unit in the initial system was expected to be 75 nautical miles slant range and up to 300,000 feet altitude. As currently planned, initial fire units would have three target tracking radars, ten missile tracking radars, and fifty missiles (this would give a unit the capability of engaging three targets simultaneously with up to three missiles each).

NORAD declared that, using the numbers of target tracking and missile tracking radars provided initial fire units, the tracking rate and rate of engagement per battery were too low for defense of important areas, considering the enemy's ability to saturate defense by simultaneous salvos or hard decoys. The intercept rate could be increased somewhat by adding target tracking and missile tracking radars and missiles. Great effort had to be made to solve the decoy discrimination problem.

In conclusion, NCRAD said that to keep an adequate defense, improved weapons had to be introduced to start the air battle at much greater distance than was possible with Zeus and to reduce vulnerability resulting from dependence on one type of weapon. BMEWS would also have to be improved with additional stations to provide coverage to the east, west, and south. Ultimately, equipment would be required to provide continuous surveillance of all objects within or without the sensible atmosphere.

RESTUDY OF NADOP

The requirements in the CONAD Objectives Plan 1956-1966 (CADOP 56-66) had been too high to get approval. The JCS, as noted earlier, had estimated a cost of ten billions annually to implement the plan. On returning the plan unapproved, the JCS had stated that an average annual expenditure of 5.5 to six billion dollars was to be used as the basis for planning for U. S. forces.

NADOP was scaled down from what CADOP asked. But the cost of recommended forces to be provided by Canada and the U. S. would total something under eight billions yearly, NCRAD estimated. However, this total included, for the years 1961, 1962, and 1963, contingency funds of around one billion dollars annually over and above the cost of the accelerated Nike Zeus program.

In January 1959, NORAD told ADC, ARADCOM, and NAVFORCONAD that considerations in Washington indicated that the forces, manpower, and fissionable material required by NADOP might not be approved and that a lesser program would be directed. If so, a complete review of the NORAD force structure would be required to prevent imbalances in the system through lack of a coordinated plan. NORAD did not have enough people for this and, therefore, the components were asked to provide personnel to an ad hoc planning committee.

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The terms of reference for this group stated that they were to determine a five to six billion dollar yearly Canadian-U. S. air defense system beginning FY 1960. Among the planning factors listed for accomplishing this objective were the following:

- (1) NADOP should be analyzed to ascertain its compatibility with service programs existing or planned.
- (2) A procedure should be developed for costing the service elements that make up the NCRAD force structure.
- (3) Determine priority steps to accomplish the objectives of NADO.
- (h) Determine the priority of areas to be defended and means of providing defense on an adjustable basis.
- (5) Evaluate and establish the role of the national guard and augmentation forces.
- (6) Reduce by forty per cent fissionable material requirement for warheads.

PROPOSED UNIFIED AIR DEFENSE ENGINEERING AGENCY

A primary requirement upon NCRAD was to assure the integration of many, complicated current and future air defense systems and equipment into a smoothly-working machine, fully responsive to NCRAD's needs. NCRAD's efforts in this respect were shown in nearly every undertaking, but can be seen and were expressed especially in such activities as the collocation and testing of SAGE-Missile Master, attempts to assure BMEWS-Zeus and Zeus-SAGE compatibility, and NCRAD's CCC single contractor idea (see this chapter).

In September 1958, NORAD wrote to the JCS that it did not have the technical staff to insure this integration and responsiveness. NORAD had been forced in the past to amalgamate service implemented programs after the fact. What was needed was a unified technical organization to assist NORAD.

Both the Air Force and the Army had organizations engaged in air defense systems evaluation, research and integration, and program

management and coordination. The U. S. Army Signal Air Defense Engineering Agency (USASADEA) was an activity of the Chief Signal Officer. The Air Force had established in March 1958 at Hanscom AFB, Massachusetts, the Air Defense Systems Integration Division. It represented three commands: ARDC, AMC, and ADC.

NORAD recommended to the JCS that the unilateral efforts of the services be consolidated in the air defense field into a unified, centrally-directed, organization. The USASADEA and ADSID and appropriate Canadian and Navy representatives should be consolidated, NORAD recommended, into a Unified Air Defense Engineering Agency. This agency should be subordinate to either CINCNORAD, the Secretary of Defense, or the JCS, in that order of desirability.

The JCS replied in February 1959 that they agreed with CINC-NCRAD's need for more technical assistance. They were studying the responsibilities of the services and the unified commands in regard to weapon systems integration in the light of the Defense Reorganization Act and implementing instructions. In the meantime, NCRAD could provide additional technical capability on its staff (in the course of its reorganization) and provide NCRAD technical liaison to the USASADEA and ADSID. When the JCS study was completed, further consideration was to be given to the recommendation for a Unified Air Defense Engineering Agency.

INTEGRATION OF ZEUS LOCAL ACQUISITION RADARS WITH SAGE

Investigation by NCRAD of the effect of Zeus on the air defense system revealed that there would be great duplication of high altitude coverage by the Zeus local acquisition radars and the USAF ADC frequency diversity radars. If optimum coverage were achieved, NCRAD discovered, exactly the same geographical locations would be involved in many cases.

Because of this situation, NCRAD recommended to the Air Force Chief of Staff, as Executive Agent, on 5 June 1958, that the Defense Department initiate a study to determine the feasibility and desirability of integrating the local acquisition radars with the SAGE system. NCRAD explained that:

Based on tentative Zeus deployment plans, it appears that approximately 75 per cent of the Zeus Local

Acquisition Radars could be located at the sites of existing USAF ADC prime radars and serve the requirements of air defense against both the air-supported and ballistic missile threat. If the marriage of the IAR program of the Zeus anti-missile system to the SAGE surveillance network is technically feasible, so doing will prove most beneficial to the electronics ground environment through the air defense system.

NORAD sent a copy of this letter to the Army Chief of Staff. And NORAD asked that DA (1) support integration of the Zeus LAR's with SAGE and (2) insure that the LAR's were compatible with the data input system of SAGE insofar as surveillance against the air breathing threat was concerned.

The Army replied on 11 August 1958. DA said that action had been started to assure the feasibility of data transfer from the Zeus system to SAGE and other elements of the NCRAD control system. The proposed method for doing this would be sent when completed. DA also said that it had recommended to the Air Force that the problem be referred to the JCS with a view toward initiating the Department of Defense study NCRAD had recommended.

In the meantime, the Air Force advised that an executive agency reply to NCRAD's letter would be forthcoming as soon as the Army coordinated on it. Three more similar interim replies were received from the Air Force. In September, NCRAD wrote directly to the JCS that the interim replies from the Air Force indicated that no progress was being made on the matter. NCRAD pointed out that much work and time would be necessary for any such integration and that a decision should not be delayed.

The JCS replied that (1) they did not consider a special DCD study on integrating the Zeus IAR with SAGE to be required and (2) it was not intended that the IAR supersede the Frequency Diversity program radar. A study was not required because a Zeus production and procurement program had not yet been approved and the Secretary of Defense had directed the services to assure compatibility between the IAR and the data transmission requirements of SAGE. If a production and procurement program was approved and funding provided in FY 1960 and later years, the first IAR's could be provided by the end of FY 1963. Then, these radars, compatible with their deployment for their primary AICEM role, could fulfill the functions

of a limited number of prime radars and thus constitute components of the overall FD posture.

BMEWS-ZEUS COMPATIBILITY

NORAD was concerned that the BMEWS programs were proceeding independently and not being meshed into a total system. In February 1958, NORAD told USAF that, "It is imperative that the BMEWS detection and tracking system be designed and built to be capable of feeding processed data to the Zeus system and that this system be capable of accepting such data for acquisition and launching the anti-ICHM missile."

USAF replied in March that EMEWS had to be compatible with any active system (although designed to go with the active portion of the WIZARD system) to be employed. The Secretary of Defense was expected to make a decision soon that would clearly delineate the responsibilities of the Army and Air Force in the entire program. In the meantime, every action possible would be taken to insure compatibility.

On 7 July 1958, NORAD wrote to both the Army and the Air Force Chiefs of Staff that it had not been kept informed of the coordination being effected between the Zeus and the BMEMS programs. Informal information had indicated, however, that certain technical parameters were already independently at the decision stage without regard to mutual compatibility. NORAD stressed that it had learned from experience that complicated systems that were expected to work together had to be designed to do so right from the start.

General Curtis E. LeMay, Air Force Vice Chief of Staff, signed the Air Force reply, dated 1 August 1958. General LeMay said that there had been no decision on the overall requirements of an operational active system. Army and Air Force coordination, therefore, had been limited to the mutual exchange of technical reports on Zeus and Wizard. However, Air Force Headquarters had maintained close coordination with the BMEWS Project Office, ADC, and interested Army agencies on the BMEWS program. This close coordination would continue, he said, when the parameters of the active system had been clearly defined.

In regard to NCRAD's complaint of lack of information, General LeMay said that Air Force Headquarters agreed that development actions had to be "fully responsive to your operational requirements and that accordingly, you must be kept informed of progress." Air Force would correct any inadequacies found in the flow of information to NORAD.

The Army replied on 5 September that it concurred with NORAD's view that complicated equipment that was to work together had to be designed to do so from the beginning. DA said that it was arranging a meeting of representatives of DOD, Air Force, NORAD, and the contractors to discuss compatibility.

This meeting was held on 22 September at Bell Telephone Laboratories in New Jersey. According to a DA memorandum to the Air Force, the discussions indicated that Zeus and BMEWS could be made technically compatible. Various problems were to be studied and the Air Force advised. NORAD representatives at the meeting felt that in general the meeting produced a better understanding of the need for BMEWS and Zeus representatives to work more closely together.

LOCATION OF NORAD HEADQUARTERS COMPLEX

The requirement for a EMEWS display facility brought consideration early in 1958 on a long-standing need for a new CCC. In response to a USAF query on location of the EMEWS display, NORAD said in February 1958 that it preferred integration with an underground CCC in the Colorado Springs area. The headquarters of NORAD and component commands had to be nearby, NORAD told the JCS in March, for rapid assembly of the battle staff and for joint planning functions. NORAD reported to the JCS in April that RAND studies had shown that the CCC in a granite mountain in the Colorado Springs area offered the best solution at the most reasonable cost.

On 30 June 1958, the JCS asked for formal recommendations and justifications for a new headquarters location. Criteria were provided, which were not intended to be restrictive, the JCS said. These criteria were:

- (1) The location of the headquarters should be determined by the optimum location for the hardened CCC.
- (2) The CCC, wherever located, will be a prime target. Consequently, the site should be selected, as

far as practicable, remote from other key facilities so, if attacked, a minimum "bonus effect" to the enemy would result.

- (3) The structure should be designed for an overpressure of not more than 200 pounds per square inch.
- (4) The conventional administrative headquarters should be located convenient to the COC site.

NORAD replied on 31 July that studies had shown that the NORAD Headquarters complex should be located in the Colorado Springs area with convenient access to its COC located in a self-supporting granite formation nearby. The two most attractive locations were Blodgett's Peak adjacent to the Air Force Academy and Cheyenne Mountain two miles west of Fort Carson (south of Colorado Springs). Detailed site surveys and determination of supporting facilities had to be made before a location could be selected. NORAD recommended these surveys be made without delay.

In September, NCRAD learned informally that a working group of the JCS joint staff had recommended that the CCC be placed at Ent Air Force Base with only the basement and sub-basement construction for hardening. Because of this, NCRAD wired the JCS that construction in a granite mountain near Colorado Springs would permit unlimited hardening and expansion at no greater cost than soft above-ground construction typical of SAGE installations. NCRAD again urged that site surveys be made without delay.

The JCS answered that USAF had been directed to make detailed site surveys and develop estimates for the sites under consideration.

In its instructions to the Corps of Engineers, USAF said that the criteria for the COC involved hardening to 200 PSI, that capability for future expansion had to be assured, and that the COC siting should lend itself to locating the administrative headquarters above ground in close vicinity at some future date. USAF asked immediate action on preliminary cost estimates and site selection so that instructions could be issued for design. The Corps of Engineers, USAF said, would be asked to prosecute the design so that all facilities would be completely designed and ready to advertise by 1 August 1959.

In March 1959, NORAD was informed that the Corps of Engineers had recommended a site on Cheyenne Mountain. The JCS approved, on

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18 March, the Cheyenne Mountain site as the location for the NORAD COC.

COC SINGLE-AGENCY DEVELOPMENT CONCEPT

NORAD wrote to the JCS in October 1958 that it believed one technically competent agency should assume responsibility for the development and production management of the entire new electronic COC complex. This would result in a properly integrated system.

NORAD said that it was particularly concerned about having a properly integrated ballistic missile defense system. Unless the design criteria for the BMEWS 2I complex was clearly established with the integrated BMDS in mind, NORAD said, "we will onte again produce separate defense systems which will not work together and will require expensive modification to properly serve NORAD's needs."

NORAD felt that the best way to get an integrated BMDS was to have the NORAD computation and display complex treated as a separate development and procurement project. This project should be concerned with all facilities required for the central ZI complex. These included the integrated ICBM/IRBM situation display, automatic air-breathing (SAGE) situation display, satellite prediction computers, master computer and data handling facilities, etc.

NORAD suggested two courses of action to achieve this objective. The first was to amend the current BMEWS contract to include the all-inclusive requirements. The second was to initiate an immediate separate all-inclusive contract for the new COC facility.

In this connection, NCRAD told ADC that SAGE plans should be amended. They should provide for modification of the AN/FSQ-8 computer program and input and output circuitry to provide automatic processing of data to and from the NCRAD automatic SAGE display and for funding of the COC SAGE display, if not provided separately as recommended earlier.

Two agencies considering systems and building design for the

new COC were Dunlap and Associates and the MITRE Corporation.*

Dunlap completed a functional requirements study in October which recommended a multi-level construction. MITRE, on the other hand, recommended a single-level construction with a smaller display.

At first, in October, CONAD recommended the Dunlap report to USAF as a point of departure for developing a COC GOR for Air Research and Development Command guidance in equipment design. After further study of the report, however, NCRAD decided that the Dunlap recommendations in span size, space, arrangement for display areas and the master display technique could not be considered final. NCRAD recommended instead that a complete investigation of these areas was necessary before the design was made final. Another question to be solved was that of one versus multiple level construction.

USAF replied on 19 January 1959 that a GOR was being drafted, but could not be published until joint staff action had been completed and a decision made on the single service manager idea.
USAF concurred on the need for a complete study of requirements.

INTERIM BALEWS DISPLAY FACILITY

The Thule BMEWS site would reach limited capability by September 1960, the Clear site a year later. The new COC facility would probably not be ready until late 1961 or early 1962.

In response to a query from ADC on this subject, CONAD said that if a decision was made in FI 1959 on location of the COC and FI 1959 or FI 1960 funds were appropriated for construction, approximately two and one-half to three years should be allowed for

^{*} The MITRE Corporation was sponsored by Massachusetts Institute of Technology and worked with and assisted the USAF Air Defense Systems Integration Division (ADSID). MITRE was incorporated on 18 July 1958. Its president was Mr. C. W. Halligan who maintained offices at Hanscom AFB, Bedford, Massachusetts, in the ADSID buildings. ADSID was a tri-command unit formed in the spring of 1958 at Hanscom by the Air Force. Major General Kenneth P. Bergquist was commander.

the implementing phases. It appeared, said NORAD, that the earliest a new COC building could be available would be 1 July 1962.

Because of this, NCRAD continued, the BMEWS central computer should be planned for installation on an interim basis at a leased facility in the Colorado Springs area or a loaned facility at Fort Carson. Accordingly, ADC should arrange for the required housing, floor space, and such other items as power, air conditioning, and communications.

A conference on the interim display was held with ADC, RCA, and ARDC in October. Among the conclusions reached were the following. The BMEWS equipment, except for satellite prediction computer, would be ready for installation by May 1960. The satellite computer would be ready for installation in May 1961. The most optimistic estimate for completion of a new COC building was 1961. In order to get the earliest value from BMEWS, the tactical display should be located in the present COC for at least a year and probably much longer.

The total space requirement for the ZI RMEWS equipment, less the tactical display and satellite prediction computer, was 6,000 square feet. Several possibilities were examined for locating this equipment. These included putting part of it in a nearby rented building and part on the base, putting it in a prefabricated building next to the CCC, and putting it in the basement of a nearby building on the base. The latter was recommended by the conference.

ALTERNATE ICBM DETECTION PROPOSALS

There were a number of proposals for ICBM detection systems under consideration that would add to the BMEWS capability. One of the most important of these (insofar as progress toward adoption was concerned) was the Lockheed Missiles Systems Division project WS-117L. This would contain an infrared detection system that appeared promising for air defense uses.

NORAD recommended to the executive agent in April 1958 that development of such a system be accelerated and that when it proved practical and effective, it be brought into production. NORAD's view was that the EMEMS was an urgent requirement, but, being based

on radar, it was vulnerable to countermeasures. It had other weaknesses also resulting from developments in protective coatings, reduction of the cross-sectional area of nose cones, the problem of sorting to eliminate decoys and other space objects, surveillance restrictions imposed by site selections, and ground based line of sight equipment.

The WS-117L might, NCRAD suggested, be a solution to the problem. The Air Force answered on 21 May that an infrared subsystem of WS-117L was being developed to detect the launching of an ICEM.

In the next few months, a number of discussions were held with ARPA, the Air Force, and other agencies. From these discussions it appeared that development of the WS-117L infrared system was feasible and practical. Because of this, on 16 December 1958, WCRAD recommended that development of this system be treated as a matter of the highest urgency.

Another proposal under consideration was for a system that had the name Project David.* The Project David proposal was for equipment that had a passive detection system and an ECM active system. The passive detection system could detect the vertical motion of missiles and the guidance system signals, and decipher the missile guidance codes. The active system could jam the guidance system or it could insert false steering instructions.

In June 1958, NCRAD recommended to the executive agent that this system be evaluated. The JCS gave the project to the Weapons Systems Evaluation Group for evaluation.

In the meantime, NCRAD had received enough further information to be able to prepare a specific proposal. This was submitted to the JCS on 16 October 1958, also for evaluation by WSEG.

NCRAD said that it had been assured that the David system could be produced, deployed and operationally capable of detecting missiles before any other early warning system currently under

^{*} This term was applied by the agency proposing the system, the Electronic Defense Laboratory, an Army-Sylvania Electric Products Corporation agency.

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development. NORAD felt that this system should supplement RMEWS and be of continuing support as a complementary system in the BMEMS era. Its cost was reasonable, which, together with the early employment date, made it an attractive proposition. NORAD said that the David system could provide:

a. Early warning against ICEM's;

b. ECM weapon against ICEM radio-inertial guidance

c. Rough determination of the trajectory path; d. ELINT (electronic intelligence) on Soviet ICBM

development; e. ELINT on satellite launching and operation.

NCRAD proposed six locations for David equipment, which would comprise a weapons complex: St. Lawrence Island; on two ships in waters north of Scandinavia; Samsun, Turkey; Mombetsu, Hokkaido, Japan; Peshawar, Pakistan; and Frankfurt (or Berlin), Germany. The St. Lawrence Island and shipboard installations would be responsive to requirements in support of defense of the North American continent. The other sites would augment defense and ELIMT requirements for U. S. and overseas commands.

SATELLITE DETECTION AND TRACKING SYSTEM

In July 1958, NORAD learned that ARPA was trying to determine what organization should manage a soon-to-be established interim satellite detection and tracking system. The Air Force recommended that NORAD be given operational control of the interim, as well as the ultimate, system.

The Air Force position (as expressed in a July memorandum from the Air Force to ARPA) was that the detection and identification of the nature of all satellites was of overriding importance, and that the interim system was an operational consideration. The interim system was just another subsystem of the overall air defense system and, as such, should be integrated from its inception under NCRAD. The advantages of NORAD control were as follows.

a. The interim system would be technically compatible with the air defense network; b. Duplication would be avoided by fully integrating all existing communications;

c. Other agencies, besides the research and development and the intelligence communities, that needed the information, would receive it on an expedited basis;

d. Research and development agencies of all services would receive timely and necessary information regarding the advanced and future detection and tracking systems.

ADC advised NCRAD in October that it had learned that a decision might be made soon in DOD on management of the system. ADC recommended that NCRAD back up USAF's position with a letter to the JCS.

NORAD did this on 26 November. NORAD wrote that the ultimate space track system had to be as inherently a part of the NORAD organization as the conventional radar network in the current system. If the ultimate system was to be developed responsive to NORAD's requirements and properly integrated, there appeared to be no alternative to placing the whole project under NORAD control in the immediate future. Its letter was, therefore, "a declaration of strong support for the USAF recommendation for the assignment of the interim, as well as the ultimate, Satellite Detection and Tracking System to NORAD for operational control."

However, NCRAD pointed out that while it could establish the military requirements and operate the system, it did not have the scientific and engineering staff to develop the ultimate system or improve the interim system. Another agency would have to handle this in much the same way that the SAGE system had been developed.

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