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Billie H. Hix

BILLIE H. HIX
Chief, Technical Systems Branch
The Albert F. Simpson Historical
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RETURN TO
RESEARCH STUDIES
INSTITUTE
U.S.A.F.
DIVISION
BRANCH
K410.01-5
vol. 2
July - Dec 1954

CONTINENTAL AIR DEFENSE

AND

AIR DEFENSE COMMAND

History

July - December 1954

VOLUME I
SUPPORTING DOCUMENTS
Nos. 1-61

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DOCUMENT NO. 1

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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AIR FORCE REGULATION
NO. 55–101

DEPARTMENT OF THE AIR FORCE
WASHINGTON, *9 OCTOBER 1953*

OPERATIONS

AC&W Operational Status Report—RCS: AF–Z20

	Paragraph
Purpose and Scope	1
Responsibility	2
Preparation	3
Entries—RCS: AF–Z20	4
Transmission	5
Classification	6

(Effective 10 December 1953)

1. Purpose and Scope:

a. *Purpose.* This Regulation prescribes standard instructions for the preparation and submission of reports on AC&W sites.

(1) These reports are: a quarterly report entitled "AC&W Operational Status Report"; and a change report entitled "AC&W Status Change Report"

(2) The reports will reflect the latest status of all AC&W sites, and point out areas limiting the operational status of AC&W sites.

b. *Scope.* For reporting purposes this Regulation applies to all major air commands having units assigned to radar sites (including sites used for tactical training) and control centers.

2. Responsibility. The commanders of the applicable major air commands will insure accurate preparation and timely submission of the reports required herein.

3. Preparation. The "AC&W Operational Status Report" will be prepared as of 2400, local time, the 10th day of March, June, September, and December each year. AC&W Status Change Reports will be submitted immediately in the event of:

a. The establishment of a new site.

b. The discontinuance of a site.

c. Receipt of new equipment for a site.

d. Change in site designation (site number, site type, or unit operating the site).

e. Change in operational status. Temporary changes (10 days or less) will not be reported.

f. A change of 20 percent or more for any of the items listed in paragraph 4a (10) through (17).

NOTE: Sample formats are shown in attachment 2.

4. Entries—RCS: AF–Z20:

a. *AC&W Operational Status Report.* Entries will be made for each site on a single numbered line. Sites will be grouped under the group or air division having operational control of the squadron assigned to the site. (See sample format.)

(1) Column (1)—If more than one site is operated by one squadron, enter the letter or the numerical designation of the detachment operating the site. Otherwise leave blank.

(2) Column (2)—Enter the numerical designation of the squadron operating the site.

(3) Column (3)—Enter the designation of the installation or the nearest geographical landmark where the equipment is physically located. If the location of the site is classified "TOP SECRET" the word "CLASSIFIED" will be entered.

(4) Column (4)—Enter the function of the site, that is, EW, EW/GCI, ADCC, ACC, CRC, TDP. When codes other than those listed are used, the appropriate command code will be entered. Footnotes at the end of the report will explain such codes.

(5) Column (5)—Enter the type/model of primary search radar assigned.

(6) Column (6)—Enter the type/model

*Effective 10 December 1953, this Regulation supersedes AFR 55–101, 28 May 1952.

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of primary height finder radar assigned.

(7) Column (7)—Enter the type/model of standby search radar assigned.

(8) Column (8)—Enter the type/model of standby height finder radar assigned.

(9) Column (9)—Enter the appropriate overall code which consists of two parts: (1) a letter denoting the operational status of the site (see attachment 1) and (2) a number denoting the major limiting factor. This numerical suffix will be determined in accordance with the following:

(a) Show "1" if construction is major reason for current status. A "1" will not be used in connection with any symbol other than symbol X.

(b) Show "2" if lack of personnel or insufficient training is major reason for current status. A "2" will not be used in connection with symbols F and CF.

(c) Show "3" if lack of equipment is major reason for current status. A "3" will not be used in connection with symbols F and CF.

(d) Subject to limitations shown above, "1," "2," and/or "3" may be used in any combination provided it is considered that the factors indicated are equally and materially responsible for the site's current status.

(10) Column (10)—Enter the percent of completion of construction program.

(11) Column (11)—Enter the percent of completion of primary search radar installed.

(12) Column (12)—Enter the percent of completion of primary height finder radar installed.

(13) Column (13)—Enter the percent of completion of standby search radar installed.

(14) Column (14)—Enter the percent of completion of standby height finder radar installed.

(15) Column (15)—Enter the percent of completion of radio communication equipment installed.

(16) Column (16)—Enter the percent of completion of *inside plant* telephone facilities.

(17) Column (17)—Enter the percent of completion of *outside plant* telephone facilities.

(18) Column (18)—Enter a forecast of the site's operational status as of 10th of each of the three months immediately following the "as of" date of the report. Use codes listed in (9) above and separate with slants.

b. *Remarks.* Add remarks to the end of the report and carry the same line number as the site to which they apply. Show remarks for the following:

(1) Changes subsequent to 10 December 1953 in the geographical reference coordinates of a site and the use being made of a site "O" if operational or "T" if training.

(2) Sites utilizing lash-up equipment.

(3) Where a major air command has additional sites programmed, a comment will be made, giving the estimated date of site survey.

Remarks may also be used to explain data entered in columns (1) through (18) or to spell out more fully conditions affecting the status of a particular site.

c. *AC&W Status Change Report.* Entries will show, for units affected, all items required by a(1) through (17) above. (See sample change report.) Remarks need not be added unless considered necessary.

5. Transmission:

a. The AC&W Operational Status reports will be airmailed by the major air commands and will be due in Headquarters USAF, not later than 15 days after the "as of" date. Address as follows:

Director of Statistical Services
Headquarters, USAF
ATTENTION: Operations Statistics Division
Washington 25, D. C.

b. "AC&W Status Change" reports will be submitted by the major air commands electrically and will be due in as soon as possible after a change takes place. Address as follows:

COFS USAF
WASH DC

6. Classification. Reports will be classified in accordance with AFR 205–1.

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BY ORDER OF THE SECRETARY OF THE AIR FORCE:

N. F. TWINING
Chief of Staff, United States Air Force

OFFICIAL:

K. E. THIEBAUD
Colonel, USAF
Air Adjutant General

2 Attachments:
1. Code for operational status
2. Sample formats

DISTRIBUTION:
X:

Headquarters USAF	1100
Alaskan Air Command	50
Air Defense Command	100
Tactical Air Command	50
Far East Air Force	50
Northeast Air Command	50
U. S. Air Forces in Europe	50
Military Air Transport Service	50

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CODE FOR COLUMN 9, OPERATIONAL STATUS

Inoperative (Symbol X)—For any reason the site cannot be placed in operation in less than 10 days.

Limited Operational (Symbol L)—The site is integrated into an air defense or tactical control system but due to shortages of personnel and/or equipment cannot be operated continuously. The site can operate for a minimum of 24 hours on an emergency basis.

Sustained Operational (Symbol S)—The site is integrated into an air defense or tactical control system, minimum personnel and equipment are on hand to allow continuous operation.

Fully Operational (Symbol F)—The site is integrated into an air defense or tactical control system, complete coverage of the site is known (for radar sites only) either by calibration or operational experience, sufficient equipment is on hand to allow continuous operation, adequate trained personnel are on hand to maintain the equipment, adequate trained personnel are on hand to operate the site in accordance with approved SOP's.

Capable of Limited Operations (Symbol CL)—No requirement exists for the site to operate in an air defense or tactical control system. The site could be integrated into an air defense or tactical control system within 48 hours and would be capable of limited operations in the system.

Capable of Sustained Operations (Symbol CS)—No requirement exists for the site to operate in an air defense or tactical control system. The site could be integrated into an air defense or tactical control system within 48 hours and would be capable of sustained operations.

Capable of Full Operations (Symbol CF)—No requirement exists for the site to operate in an air defense or tactical control system. The site could be integrated into an air defense or tactical control system within 48 hours and would be capable of full operations.

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SAMPLE AC&W OPERATIONAL STATUS REPORT

RCS:

COMMAND.....As of 2400, 10 Dec 53

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
540 AC&W Gp																		
1	A	124	Durham, N. C.	EW/GCI	FPS–3	FPS–5	FPS–8	FPS–4	S	100	70	80	70	80	100	80	70	F/F/F
2	B	124	Shaw AFB, N. C.	EW/GCI	CPS–1	CPS–4	TPS–1D	TPS–10D	S–2	100	80	80	80	80	90	70	70	S–2/F/F
3	A	125	Langley AFB, Va.	EW	TPS–1D	TPS–10D	—	—	X–1	30	30	30	—	—	30	30	30	X–1/X–1/L
4	B	125	Louisville, Ky.	CRC	MPS–7	MPS–14	—	—	L–3	70	60	70	—	—	60	70	70	L–3/S–3/S–3

REMARKS

2. Site will become fully operational with scheduled assignment of 5 additional controllers and 4 radar mechanics February.
4. Status due to critical shortage of spare parts and test equipment.

SAMPLE AC&W STATUS CHANGE REPORT

FROM:
TO:
NR.

Follows AF.....As of 15 February 1954

B/124/Shaw AFB, N.C/EW/GCI/CPS–1/CPS–4/TPS–1D/TPS–10D/F/100/90/90/90/90/90/100/100

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AFDRQ-AD/C

SUBJECT: Procurement of Radar Set AN/FPS-3A

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

1. The Air Materiel Command has been directed by P. D. 54-[illegible]-12, dated 15 Jan 1954, to initiate procurement of twenty additional AN/FPS-3A radars with linear feed and "low-noise receiver".

2. The system as called for by the Procurement Directive will have the following parameters:

a. A single 0.5 MW transmitter using a 5J26 magnetron.

b. An antenna system, utilizing a linear feed, having a gain of 34 db as compared to the present antenna system which has a gain of 36.3 db.

c. A receiver system employing an R.F. amplifier having an overall noise figure of 9.5 to 10 db.

d. An improved MTI if provin feasible so as not to delay delivery.

(In the event the features outlined above are not available for these 20 sets, the AN/FPS-3A will contain the present two .5 megawatt transmitters, dual-beam MTI and the new [illegible], AN-[illegible]A/FPS-3).

3. Retrofit kits for presently installed AN/FPS-3 radars to incorporate linear feed and the receiver and RF amplifier can be procured; however, Air Research and Development Command has recommended that such kits be ordered only for those sites where high altitude coverage is a primary requirement and spacing is sufficiently close (approximately 140 miles) to provide adequate overlap. Air Research and Development Command has estimated that such a kit would cost $11,500 per unit.

4. Air Research and Development Command has pointed out that an additional feature can be made a part of the new procurement mentioned in paragraph 3 above. This is a facility for standby operation as described in Inclosure No. 1 attached hereto. In the case of the retrofit kits, this feature will increase the cost per unit by an estimated $8,500 for a total of $20,000 per kit.

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AFDRQ-AD/C, Ltr to Gen, ADC, subj: Procurement of Radar Set AN/FPS-3A (Incl) Contd.

3. Coverage diagrams of the linear feed versus four horn feed with the old and new duplexer are inclosed. The R.F. amplifier will have practically the same noise figure as the new duplexer; however, it will offer much better crystal protection and therefore should maintain this figure better under field conditions.

4. The two megawatt klystron equipped single transmitter is expected to become available in FY 58-2, months.

5. Request your comments concerning the desirability of retrofitting present AN/FPS-3 with two-linear feed before the 2 megawatt transmitter is available.

FOR THE CHIEF OF STAFF:

JOSEPH L. LAUCHLI
Colonel, USAF
Chief, Air Defense Division
Directorate of Requirements, DCS/D

3 Incls
1. Standby Proposal
2. Coverage Chart AN/FPS-3
3. Coverage Chart AN/FPS-3

1-73-2

2

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	Comdr
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	Comd Stf JA
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	Bud
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	Mil Pers
	Amn Div
	Off Div
	GS
	Pers Sv
	PP
	WAF
	Tng
	DCS/I
	C&D
	R&E
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	DCS/O
	Asst Prog
	CCA
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	Ops
	O&T
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	Elect
	Gn Sup & Svs
	Instl
	Log Plans
	HQ COMDT

Record Evaluation
Permanent------
Temporary Incls w/d
Until-------
Will Be Confirmed
in Std Publication
Form Under par 3a,
ADCSM 5-3
pored by-----
Phone-------
[illegible] 10 Jul 54

V-72,-3X

ADC HQ Form 11
Revised 15 Aug 53

MIN 1 RADA

Hq USAF, AFDRQ-AD/S, Subject: Procurement of Radar Set AN/FPS-3A

ADOCR-E (7 June 1954) 1st End

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

TO: Director of Requirements, Headquarters USAF, ATTN: AD/S, Washington, D. C.

1. Information at this headquarters indicates procurement of these AN/FPS-3A radars has been cancelled by USAF in view of the fact that a two-magnatt klystron-operated AN/FPS-3B or 3C using "linear feed" and a low-noise receiver will be available in a comparatively short time after these modified FPS-3A's could be obtained.

2. The advantages to be gained from the two-magnatt klystron-operated sets would be:

a. Higher resolution.

b. Improved higher-altitude coverage and longer range.

c. The transmitter, modulating unit and power supply will be located in the operations building rather than mounted on the antenna such as on FPS-3's at the present time. The transmitter pulse will be mounted from the transmitter unit through a wave-guide and rotating joint on the antenna pedestal. This would make possible a standby transmitter unit that could be put on the air in the matter of a few seconds by automatic switching arrangement, then the other transmitter could be repaired without stopping the antenna, which is necessary with present FPS-3 sets.

3. It is the opinion of this headquarters that it would be an advantage to wait for this klystron-operated set rather than procure modification kits, as presently contemplated.

FOR THE COMMANDER:

CE 20/7/54

Glenn B. Myers

This correspondence is classified 3 in accordance with Par_____, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

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DISPOSITION FORM

SECURITY CLASSIFICATION (If any)

FILE NUMBER 227

FILE NO.	SUBJECT
	Magnetron QK 338

TO	FROM	DATE	COMMENT NO. 1
D/C&E O&T P&R DCS/M —(In A0)	ADMEL	4 Nov 54	

1. Information received from General Electric representatives indicates that the magnetron QK 338 manufactured by Raytheon Corporation for use as a 5 MW oscillator in the AN/FPS-6 will not meet the 5 MW peak power output that this equipment was designed for. General Electric has met all specifications in regards to the power output of the AN/FPS-6. However, since Raytheon cannot meet the 5 MW peak power requirement with the QK 338 magnetron, a change of contract notice has authorized reduction in power output to 4.5 MW. At the present time, total Air Force assets of QK 338 magnetrons are approximately 6,000, which at the cost of approximately $2,000 each, represents an investment of approximately $12,000,000. Tests conducted by General Electric on the AN/FPS-6 using subject magnetron indicate that from 8 to 12 in number must be tested in the AN/FPS-6 before one can be found that will operate at the 4.5 MW level.

2. Request your comments on the above from the aspects of operational capability and, particularly, whether any serious degradation in radar information will result from operation at the 4.5 MW level.

3. This directorate is currently querying Rome Air Force Depot Maintenance Engineering as to any action being taken by them to correct the above deficiencies, especially from the aspects of short magnetron tube life when used with the AN/FPS-6. The operational life of the magnetrons used to date varies from zero to 200 hours.

H. W. DeWALD
Major, USAF
Chief Programs Div
Ext 2503 - 2509

RITCHIE A. TURNBULL
Lt Colonel, USAF
Dir of Elect S&M
Ext 2512 - 2596

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5-1

20 NOV 1954

NDOCK-X

SUBJECT: (Unclassified) Requirement for Additional Height Finders

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

1. Your attention is invited to the following reference:

a. Letter this headquarters, DMSL-3, Subject: (Confidential) Request for Replacement of FPS-5 Radar Sets, 15 Jul 54 and 1st Indorsement your headquarters, ADOC-3, 2 Nov 54.

2. The original programming, whereby I-6 was not scheduled to receive an additional height finder radar, was based on the premise that the site was not a perimeter site in the Double Perimeter Concept. Recent informal information from your headquarters indicates that the perimeter now extends along the United States - Canadian border across to I-44, Nash Bay, Washington. If this information is correct, I-6 has now become a perimeter station and will require an additional height finder radar.

3. Request that programming action be taken to authorize the installation of an AN/FPS-6 arctic type radar set at radar site I-6, Curlew, Washington, at the earliest possible date.

4. The AN/FPS-5 height finders installed at and programmed to remain at ADC sites I-6, I-40, I-57, and I-60 will serve as interim backup equipment only. The set is designed to track B-29 type aircraft to a distance of 70 miles and fighter aircraft to a distance of 45 miles. These performance figures are seldom reached. Therefore, little benefit is gained from the equipment.

5. Request that this headquarters be authorized to change the TC document to indicate this equipment as interim and program AN/FPS-4 equipment for permanent installation.

FOR THE COMMANDER:

K-5774-2x

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SECRET

FILE NUMBER 213.1
207.4

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	Comdr
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	Comd Stf JA
	Comd Chap
	Comd IG
	Insp Svs
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	PIO
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	Bud
	Fin
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	Stat
	DCS/P
	Civ Pers
	Mil Pers
	Asgn Asgmt
	Off Asgmt
	Cols & Rcds
	Spec Actions
	GS
	Pers Sv
	PPR
	WAF
	Trng
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	R & E
	S & T
	DCS/O
	C C A
	C & E
	M & O
	O C D
	Ops Anlys
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	Wea O
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	Elect
	Gn Sup & Svs
	Instl
	Log Plans
	Hq Sq Sec
	FCDA
	CAA

Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3 (No)

Prepared by Lt Col J.Nichols/hb

Telephone 717

Date 1 Jun 55

V-579-1

ADC HQ Form 11
5 Feb 54 Revised

Hq WADF WDOCE-S, Subj: (Unel) Requirement for Additional Height Finders

ADOCE-SG (20 Nov 54) 1st Ind

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Western Air Defense Force, Hamilton AFB, California

1. There has been no change in the perimeter status of P-6. Present plans call for the perimeter in this area to extend along the line P-60, SM-153, C-36.

2. Action is now being taken to program AN/FPS-6 height finders for all sites. Headquarters USAF has given general approval of such a program, and additional AN/FPS-6's are being made available in increments. It is planned that a height finder of this type for P-6 will be placed in the PC document within the next six months, with the operational date being scheduled for first quarter FY-57.

3. The necessary changes in the PC document will be submitted by this headquarters. Further information on the AN/FPS-6 program will be forwarded as it becomes available.

BY ORDER OF THE COMMANDER:

APT

FOR RECORD: A project has been initiated by the C&E Directorate to place FPS-6 height finders at all sites. This action is directly associated with SAGE requirements and, in general, is being phased with SAGE implementation schedule. The necessary changes in the PC document are being prepared by the C&E Directorate and will be either in the next or succeeding revision to the PC.

H-6937
C42
1-1

Comeback cy req'd for COEX file.

F. F. [illegible], Lt Col USAF

2

This correspondence is classified _____ in accordance with Par _____, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

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CONFIDENTIAL

6²

HEADQUARTERS
25TH AIR DIVISION (DEFENSE)
McChord Air Force Base, Washington

25OCE-5

SUBJECT: Radar Height Finding Equipment

FILE NUMBER 213.1 AV

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

1. As a result of the reorganization of the 25th Air Division, this command has only one (1) AN/FPS-5 Height Finding Radar Set (P-57) and no others programmed.

2. Logistical problems of this command would be simplified if the AN/FPS-5 was replaced with either an AN/FPS-4 or AN/FPS-6 equipment. In all probability less difficulty would be experienced obtaining an AN/FPS-4 or its mobile equivalent.

3. Besides the advantages which would accrue from elimination of "one more type" of radar equipment, it is believed this command would benefit in numerous other ways, including:

a. Factory or technical representatives are available on both the AN/FPS-4 and the AN/FPS-6, but this is not the case for the AN/FPS-5.

b. Additional range and height capability for coastal locations is desirable.

4. Your assistance and recommendations on this matter are requested.

FOR THE COMMANDER:

V-519-1

CONFIDENTIAL

AC-0027

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CONFIDENTIAL

Hq 25th Air Div (Def) 250CE-5, Subject: Radar Height Finding Equipment

WDMEL-2 (20 Nov 54) 1st Ind 7 DEC 1954

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

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

1. Your attention is invited to letter, this headquarters, WDCCE-E, subject, Request for Additional Height Finders, recently forwarded to your headquarters. Subject letter recommended that F-C Documents be changed to reflect AN/FPS-5 radar sets as interim equipment and replacement made with FPS-4 types.

2. It is felt that the facts outlined in basic letter are accurate and the reasons given for the deletion of the AN/FPS-5 are sound and practicable.

3. Request, therefore, that in view of this correspondence and in view of this headquarters' desires in letter outlined in paragraph 1 above, consideration be given to eliminating the FPS-5 radar as recommended.

FOR THE COMMANDER:

cc: Comdr, 25th ADiv (Def)

2

K-519-2

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CONFIDENTIAL

...Air Div (Def) 25DCE-5, Subject: Radar Height Finding Equipment

...-20 (20 Nov 54) 2d Ind

23 DEC 1954

...AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

...Commander, Western Air Defense Force, Hamilton AFB, California

1. A program has been initiated to replace the AN/FPS-4 and ...Height Finders by the AN/FPS-6 as rapidly as possible. ADCE E-2 ...er (unclassified), "ADC Revised Radar and Radar Power Requirements," ...November 1954, outlines the action already accomplished.

2. The changes being made in the height-finder program are ...tely related to a proposed SAGE requirement for two AN/FPS-6's ...each heavy radar site. Headquarters USAF, with Headquarters ADC ...ance, plans to insert additional AN/FPS-6's into the ADC program ...-phase with SAGE implementation schedules. As SAGE sub-sectors ...through 19 in your area have high priority, program changes for most ...the stations in WADF can be expected in the near future.

3. Separate action to replace the AN/FPS-5 with the AN/FPS-4 ...not considered necessary. Redesignation of both of these sets as ...ation equipment and/or elimination of these height finders will be ...plished as the plan mentioned in paragraph 2 is placed into ...ect.

BY ORDER OF THE COMMANDER:

JAMES S. PURDUM
Major, USAF

MEMO FOR RECORD: Reprogramming of height finders is now being accomplished by P&P Division, this directorate, and action has been initiated for sites located within WADF. The date at which the FPS-6's will be placed into the program for these sites will be determined by Hq USAF [redacted] within the next 90 days.

COMEBACK COPY
Not Furnished
Furnished 23/12/54 (Date)

Will be Confirmed in Std Publication Form
Under par 3a, ADCM 5-3 No.

Prepared by Lt Col FKNichols/hb
Teleph 2717
17 Dec 54

4-4431/0247

V-519-3X

DC HQ Form 17
Feb 54 Revised

This correspondence is classified _____ in accordance with Par 24b(12), AFR 205-1, 24 Jul 53, or for the reason (s) stated. FREDERICK K. NICHOLS, Lt Col
SIGNATURE

0323

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SPACE ABOVE FOR COMMUNICATIONS CENTER ONLY

FROM: (Originator)

COMDR ADC ENT AFB COLO SPRGS COLO

TO: COFS USAF WASHDC

INFO:

FILE NUMBER 2/3.1

DATE-TIME GROUP

CONFIDENTIAL

PRECEDENCE FOR: ACTION AIR MAIL INFORMATION

☐ BOOK MESSAGE ☐ GENERAL MESSAGE

☐ MULTIPLE ADDRESS CRYPTOPRECAUTION ☐ YES ☐ NO

REFERS TO MESSAGE:

IDENTIFICATION AFOAC 45364

CLASSIFICATION UNCL

(CONFIDENTIAL) ADOCE-A 3097. For AFOAC-E/A. Reference unclassified message AFOAC 45364, 14 Dec 54.

The present ADC requirement for AN/FPS-6 height finders is as follows:

1st qtr FY57	17
2nd qtr	9
3rd qtr	26
4th qtr	17
1st qtr FY58	4
2nd qtr	13
3rd qtr	6
4th qtr	15
1st qtr FY59	9
2nd qtr	11
3rd qtr	9
4th qtr	13
1st qtr FY60	9
2nd qtr	14
3rd qtr	9
4th qtr	11
1st qtr FY61	3

CONFIDENTIAL

DRAFTED BY (and signature, when required)

OFFICE TELEPHONE

AUTHENTICATING OFFICER

C. F. [illegible], Lt. Col, USAF

DD FORM 173

Will be confirmed in Standard Publication Form under paragraph [illegible]

Lt Col Lafrens

Telephone 2411

Date 17 Dec 54

V-505-1X

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22

WDMEL-3

SUBJECT: Request for Replacement of FPS-5 Radar Sets
(Confidential)

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

1. This command is now operating four FPS-5 type radar sets (height finder), all of which are in the 25th Air Division area. These equipments are not entirely satisfactory from both an operations and maintenance standpoint. In the recent past considerable difficulty has been experienced in the procurement of parts and in one or two isolated instances an individual set has been off the air in an ROCP condition for as long as two weeks because the needed spare was not immediately available. In addition, the design, range limitation, and other factors do not make this piece of equipment a desirable set for long range height finding when operating in conjunction with the FPS-3 search type.

2. Information at this headquarters indicates the existence of seven MPS-8 type radar sets in a storage condition at Fairchild Air Force Base, Spokane, Washington. These sets are marked for certain "M" and "SM" sites, some of which have been deleted from the ADC program. Serial numbers 13, 14, and 15 on AFSD 75140 are on hand at that station marked for SM 152, which has been completely eliminated. Serial numbers 16 and 17 are on hand marked for site SM 153. The ADC Programming Document indicates one only MPS-8 type radar for that station.

3. It is requested, therefore, that your headquarters consider the release to this command of MPS-8 radar sets, serial numbers 13, 14, 15 and 16, so that these sets may be shipped to and installed at sites P-60, P-6, P-40 and P-57 to replace the FPS-5's existing. The FPS-5's will then be returned to the appropriate air materiel area.

CONFIDENTIAL

V-84-2

0325

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Hq WADF WDMEL-3, Subject: Req for Repl of FPS-5 Radar Sets (Confidential)

4. It has been determined that the presently installed FPS-5 tower will, with some minor modification, accept the MPS-8 radar set and it is estimated that an individual changeover when fully coordinated with the appropriate air materiel area will take approximately ten days.

5. Since the RCA company has technical representatives in the areas concerned and since the spare part and test equipment situation for this type radar set is steadily improving, support of these equipments is in a comparatively good condition. The capability of the MPS-8 (FPS-4) radar over the FPS-5 type will very definitely increase the overall AC&W capability of this command.

6. If your headquarters favorably considers the above plan, request that necessary ground radar directives be obtained and that this headquarters be notified so that planning can be started with the appropriate air materiel area.

FOR THE COMMANDER:

J. P. CRIM
Major, USAF
Adjutant

V84-3X

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Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3 No

Prepar[illegible] Lt Col FKNichols/hb

[illegible]ephone 2717

Date 22 Oct 54

ADC HQ Form 11
5 Feb 54 Revised

MTN / RR

21

Hq WADF WDMEL-3, Subj: (Confidential) Request for Replacement of FPS-5 Radar Sets

ADOCE-E (15 Jul 54) 1st Ind

713.2

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Western Air Defense Force, Hamilton AFB, California

1. The depot markings indicated in paragraph 2, basic letter, are not in agreement with the equipment programming of this headquarters. Separate action will be taken to correct this discrepancy.

2. The ADS requirement for height-finder radars continues to be in excess of the equipment programmed in the PC. Until all first-priority stations within the over-all ACSW Program are equipped, reallocation of radars cannot be made. Your request, therefore, cannot be favorably considered at this time.

3. With reference to the supply of AN/FPS-5 spares, this headquarters should be provided full details of unsatisfactory action in accordance with ADCR 67-4.

BY ORDER OF THE COMMANDER:

MEMO FOR RECORD:

The 1st Ind serves as a reply to the basic letter and WADF message WDMEL-2 17430. The basic letter was indorsed from this headquarters in August but, prior to its dispatch, it was misplaced in distribution within this headquarters. Upon receipt of the WADF message, a search was made and the basic letter and initial indorsement were located. The 1st Ind was reaccomplished and was jointly prepared by ADOCE and ADMEL.

F. K. NICHOLS, Lt Col USAF

Comeback cy req'd for COMM file.

F. K. NICHOLS, Lt Col USAF

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.....Not

.....Furnished (Date) (Initials)

E-4601

3

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F. K. NICHOLS, Lt Col
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DOCUMENT NO. 9

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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SECRET

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CINCD ADC

C OF S
HQ USAF
WASH 25, D. C.

ROUTINE

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CINCD ADC
BALTIMORE, MD.

(SECRET) ADOPR 1777 Per DCS/D requirements. Ref improvements ltr this Hqs ADOPR 19 Aug 1954 to ADC Info USAF and ADC 54-60 requirements plan. Continuing experience and results of LOCK ON and WOLF PACK as well as other exercises indicates radar height finding accuracy of plus or minus 1,000 feet is a firm requirement of this Command and is desired ASAP. Height equipment must be capable of being improved to provide range coverage out to 250 NM and altitude coverage up to 90 to 100,000 feet with no decrease in accuracy in 1960-61 time period. This degree of range, altitude and accuracy is required for targets with radar reflecting area of one-quarter square meter and larger.

1 1

Will be Confirmed in
Std Publication Form B-1-9
Under par 3a, ADCSM
5-3
Prep by Maj PF Crispen/bt
Telephone 252
Da 24 Sep 54

0823517 ADC 8/10/54

Maj PF Crispen/bt

V-24-1x

ADOPR

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified SECRET in accordance with Par 23 b, AFR 205-1, 28 Jul 53, or for the reason (s) stated. 15 Dec

SIGNATURE

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	ROUTINE	ROUTINE
CONDR ADC		
CONDR CADF GRANDVIEW AFB MO	XX	
CONDR EADF STEWART AFB NEWBURGH NY	X	X
CONDR WADF HAMILTON AFB CALIF		
COFS USAF WASHDC		
CONDR NAFD GRIFFISS AFB NY		

(CONFIDENTIAL) ADUCE-A_____. For AFOOP-OP-D at USAF.

FOLG 1st and 2nd phase radar sites now OPNL with interim EQP will, EFF IMMED, carry the lashup DSG "L":

L-1, 686th ACW SQ, Walker AFB, NMEX.

L-2, 684th ACW SQ, Davis-Monthan AFB, ARIZ.

L-3, 687th ACW SQ, Kirtland AFB, NMEX.

L-4, DET 1, 666th ACW SQ, Fort Ord, CALIF.

L-5, 740th ACW SQ, Ellsworth AFB, SDAK.

L-6, 689th ACW SQ, Portland, OREG.

L-7, 801st ACW SQ, Great Falls AFB, MONT.

The "M" DSG will not be used in connection with L sites. Lashup sites N/B DELT when programmed radar EQP becomes operational at the M site.

Maj Ralph J. Streemer/id

1 1

V-13-1x

This correspondence is classified [illegible] in accordance with

William R. Lawlor, Lt Col, U.S.

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CONFIDENTIAL

FILE NUMBER 205

From: COMMANDER, ADC

19 Jan 1955

To: CHIEF OF STAFF, HQ USAF, WASHINGTON DC

(CONFIDENTIAL) ADOCE-EC 0151. URMSG AFOAC 32205, dated 10 Jan 55. This message in 3 parts. Part 1. NR WWII radars in possession of ADC to be retained during part of FY-56 and beyond as FOL:

Search Radar		Height Finder	
AN/CPS-1	0	AN/CPS-4	2
AN/MPS-5	0		
AN/CPS-5(C), (D)	8		
AN/TPS-1C	0		

Part II. NR required during above time PD to be utilized for interim back-up in ADD to those presently in the FLD, as FOL:

Search Radar		Height Finder	
AN/CPS-5(D)	6	AN/CPS-4	1

Part III. ADD INFO in regard to above SUBJ W/B FURN upon REQ.

MEMO FOR RECORD: Over

Comeback cy req'd for COMM file.

JAMES S. PURDUM
Major, USAF
Asst Command Adj

CONFIDENTIAL

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COM ADC ENT AFB COLO SPGS COLO

PRIORITY

X

COM R&C AF DEPOT CHRISTUS AFB ROME N Y

MTW Radar

(CONFIDENTIAL) ADWSIL-4-[redacted]. Ref ADWSIL-4-2175 dtd 28 Dec 54.

Consideration is being given to the util of an add 5 AN/CPS-5's as interim eqp in add to those presently in opr for an ext pd. In view of the problems presently being experienced in supp this eqp req info as to fol:

(a) avbl of 5 add AN/CPS-5's for use by ADC as interim eqp.

(b) whether or not ruf spares are on hand or can be procured to properly rpt properly sup 5 add AN/CPS-5's and rpt and the AN/CPS-5's presently in the ADC sys.

B-1-30

30 00212

21 Jan 55

1 1

Will be Confirmed in Std Publication Form Under par 3a, ADCSM G-3

Prepared by 29 Dec 54 Capt. M. McKee, Jr /ba

Telephone

Date ADWSIL-4

MEMO FOR RECORD: Not required.

2093

1 Jan 55

DC HQ Form 11 This correspondence is classified _____ in accordance with AFR 205-1, 24 Jul 53, on the reason (a) stated.

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CONFIDENTIAL

WDOCE-E

16 DEC

SUBJECT: (Unclassified) Change of Radar Equipment at "SM" Sites

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

1. Request that consideration be given to the replacement of the AN/TPS-1D radar sets, programmed at "SM" sites, by a more efficient, higher powered set.

2. Those sites presently programmed the AN/TPS-1D radars are to perform the function of a low altitude gap-filler radar. The AN/TPS-1D will not provide the coverage required due to the type of radiated pattern inherent with that set and the lack of a stable MTI system. A study of the horizon profile charts for the sites concerned, indicates that high angle masking is very prevalent, which will retard target detection at low altitudes unless a good MTI system is incorporated. Although the range of the TPS-1D provides overlap coverage with adjacent sites, it is not to the extent that would be possible with a higher powered radar. The increase in overlap coverage will directly effect the target pickup and tracking efficiency of the air defense system.

3. It is realized that a change in the program of equipment may effect the operational date of those sites concerned. Therefore, it is requested that the AN/TPS-1D radar sets be programmed as interim, to be replaced at a later date by an AN/CPS-5D or suitable substitute.

FOR THE COMMANDER:

MARVIN L. CRAM
Capt. USAF
Asst Adj

CONFIDENTIAL

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Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No
Prepared by Lt Col FKNichols/nb
Telephone 2717
Date 3 Jan 55

V-578-1

ADC HQ Form 11
5 Feb 54 Revised

Hq WADF ADOCE-E, Subj: (Uncl) Change of Radar Equipment at "SM" Sites

ADOCE-EC (16 Dec 54) 1st Ind

Hq AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Western Air Defense Force, Hamilton AFB, Calif.

1. Consideration is being given to the replacement of all AN/TPS-1D's programmed in the air defense system. These sets will be deleted from the program and/or designated as interim equipment when acceptable radars of other types are available.

2. A definite plan has been formulated to replace all AN/TPS-1D's which function as low-altitude gap fillers by AN/FPS-14's. AN/TPS-1D's scheduled for installation at Direction Centers will be replaced wherever possible by AN/FPS-8 or similar radars. A program for these changes cannot be finalized at the present time, however, due to the limited number of heavy radars now available.

3. You will be continuously advised of the progress of this replacement program. Further information regarding the specific changes to be made for surveillance stations should be available within the next thirty days.

BY ORDER OF THE COMMANDER:

MEMO FOR RECORD: Two conferences have been held within this headquarters within the past month on the replacement of the TPS-1D radars at all surveillance stations. Definite decisions have been reached for those sites at which gap-filler radars, FPS-14's, can be provided, but complete official correspondence covering the changes to be made has not been forwarded. The replacement of TPS-1D's by heavy radars will be a phased process, as HQ USAF will not approve the procurement of additional heavy radars at this time. It is expected that certain heavy radars will become available from the presently approved programs, and they will be inserted as replacements for the TPS-1D's as they become available. In effect, then, a policy has been established to replace all TPS-1D's, but the only definite action which can be taken at this time is that for gap-filler type installations.

Comeback cy rec'd for DOCC file.

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SIGNATURE

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15 34

ADOCE-E

SUBJECT: (Unclassified) Mobile Radar for Emergency Use at AC&W Sites

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

1. Reference is made to your letter ADOCE-E, 15 November 195[illegible], Subject: (Unclassified) Mobile Emergency Backup Radar Equipment at Air Division Headquarters.

2. This headquarters is of the opinion that an emergency mobilized radar set is still a requirement at each air division to support the present and proposed radar sites, and to provide this command a resource from which a degree of operational capacity may be continued during periods of duress.

3. The installation of backup radar equipment at perimeter stations does not insure continuous operation in the event of severe storm damages, sabotage, or war damage.

4. The availability of a mobilized emergency radar set for use at "M" and "SM" sites, while permanent equipment is being installed, will save 30 to 60 days in the operational date of the site. While every effort is being made to allow the Air Material Area to phase their installation work in consonance with construction progress, in certain cases this will not be prior to the Beneficial Occupancy Date, due to unforeseen delays experienced by the construction agency.

5. The need for emergency radar equipment at "M" and "SM" sites during periods of overhaul and extensive emergency maintenance periods will be apparent in the near future. With the exception of SM 162, no inner perimeter sites are programmed backup search equipment.

6. In view of the above considerations, it is requested that your headquarters concur in this requirement and take necessary action to

V-609-2

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By [redacted], [redacted], Subject: (Unclassified) Mobile Radar for Emergency Use at [redacted]

[redacted] [redacted] additional AN/CPS-5 radar sets and vehicles for use at the [redacted], 27th and 9th Air Divisions (Defense).

[redacted] [redacted]:

P. E. HAUPT
CWO USAR
ASST ADJUTANT

V-609-R

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FILE NUMBER 206.4

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Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
S-3 No
Prep by Maj CBMyers/mb
Te ne 2717
Date 3 Nov 54

ADC HQ Form 11
5 Feb 54 Revised

ADOCS-E

SUBJECT: (Unclassified) Mobile Emergency Backup Radar Equipment at Air Division Headquarters

MTW / Radar

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
California

1. Reference: your letter WDMEL-2, subject: "Requirements for Additional Mobile Search Radar Sets," dated 21 October 1954. A staff study has been completed at this headquarters in regard to the above subject and it has been determined that no mobile emergency backup radars will be planned for air division headquarters at the present time.

2. This headquarters is in the process of reprograming equipment whereby the outer perimeter stations will have first priority on all available emergency backup radar equipment.

3. This headquarters will take action to delete the mobile emergency backup equipment for air divisions already programmed in PC document.

4. It has been agreed to continue the project at Sacramento Air Depot, where the CPS-5D is being mobilized for the 28th Air Division, to be used while converting temperate towers to arctic towers. Request this headquarters be kept advised of the progress on this set and also advised of the suitability of this unit after reaching the field, with special emphasis on supply problems, mobility, and adaptability after reaching a site.

BY ORDER OF THE COMMANDER:

H. 4431/0240

15 Nov 54

Comeback cy req'd for COMM file.

C. B. MYERS, Maj USAF

See back for Memo for Record.

This correspondence is classified _____ in accordance with Par 24b(12) AFR 205-1, 24 Jul 53, or for the reason (s) stated. C. B. MYERS, Maj USAF
SIGNATURE

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HEADQUARTERS WESTERN AIR DEFENSE FORCE
HAMILTON AIR FORCE BASE
HAMILTON, CALIFORNIA

16

In Reply Refer To:

CONFIDENTIAL

WDMEL-2

21 OCT 1954

SUBJECT: Requirement for Additional Mobile Search Radar Sets

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

1. A review of the overall capability of search radar installed within this command from a standpoint of hours available versus hours of actual operation has resulted in a requirement for additional equipment. This requirement is based on the following distinct and important factors:

a. Three AC&W "P" sites in Western Air Defense Force will not receive back-up search gear according to the ADC Programming Document (classified), dated 1 July 1954. These sites are P-6, P-32, and P-74.

b. Approximately 2500 hours of non-operational time due to annual overhaul and radome painting was consumed during the past 12 months on 14 of the FPS-3 radars installed. In addition, approximately 1070 hours was consumed as non-operational time on six CPS-6B radars while accomplishing those same functions. This total of 3500 hours, which does not include hours lost due to factory modifications, command authorized modifications and occasional breakdowns, had a definite adverse effect on the ground radar capability of this defense force. It is anticipated that the slippage, which has occurred in the programmed installation of secondary search sets at all but the three squadrons mentioned above, will result in a comparable loss of operational hours during the next 12 months.

c. This command has operated mobile type radar search sets (TPS-1C, TPS-1D, and CPS-5D) for the past two years. This type of equipment, supported by geographical AMA's, has proven versatile and satisfactory for utilization as emergency back-up gear or gap filler equipment. The operation of this equipment has proven beyond a doubt, that its value to the command offsets the cost of engineering, construc-

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Hq WAIF WHEEL-2, Subject: Requirement for Additional Mobile Search Radar Sets

tion, and maintenance. The possession of a mobile radar set which can be quickly transported to any location where power is available, and be in operation within a short period of time is a valuable asset to the operating unit.

2. Informal information available to this headquarters indicates the existence of some 25 CPS-5 type radar sets in the ZI that have been allocated to the Air Defense Command. There are suitable vehicles available for issue at Sacramento Air Materiel Area to mobilize three each CPS-5 radar sets. The Maintenance Engineering Section at SMAMA is in a position to accomplish the engineering and construction of the mobile mounts.

3. This headquarters has received informal information to the effect that Headquarters USAF has concurred in the need and utilization of mobile type radar sets as outlined herein. It is further understood informally that Headquarters USAF is desirous of shipping to this command from SMAMA certain mobile radar sets of the CPS-1 (MPS-5) type. In this regard your attention is invited to the following information which was obtained as a result of a visit by representatives of this headquarters to SMAMA on 15 October 1954.

a. There are only two CPS-1 mobile radar sets available at SMAMA. (AFSN 1800-M/1-68001).

b. The CPS-1 mobile radar sets (two), as they now exist, consist of 21 vehicles. The minimum amount of vehicles required to make the CPS-1 operational, based on this command's requirements, would be one operations trailer, one maintenance trailer, one antenna trailer, and one antenna reflector truck. This would require three truck tractors and four drivers.

c. Extensive changes would be necessary to adapt the set from a 21 vehicle arrangement to a four vehicle operation. This adaptation would cause 17 Air Force vehicles that had been extensively modified to be rendered surplus unless they were reverted to their original function. It is felt that the cost of reverting these vehicles would be higher than the cost of engineering and installation of three CPS-5 type radars.

d. It should be pointed out that the CPS-1 type radars in question are not equipped with moving target indicators.

e. To move, connect, and set up a CPS-1 radar utilizing the four necessary vehicles would require the crew of eight men whereas a crew of four men could have accomplished the same task with a CPS-5 type. In addition, the time necessary to get the CPS-1 in operation after arrival at the operating site would be on the order of a 4 to 1 ratio to the CPS-5.

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V-81-3

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Hq WADF WDMEL-2, Subject: Requirement for Additional Mobile Search Radar Sets

4. Attached herewith for your information and perusal are three photographs of the CPS-1 set at SMAMA as it exists. The overall view of part of the mobile CPS-1 indicates its bulk and consequently its inability to traverse a typical AC&W site access road. The operations van side view gives the viewer an idea of the extensive modifications that have already been performed on the vehicles. The photograph showing the components and plotting board indicates the size of the operation and the fact that two Air Force vans were joined together to make up the operations room. In summation, it should be pointed out that the CPS-1 (MPS-5) set was intended to be a complete radar station and not an emergency search set in the strict sense of the word.

5. It is requested that your headquarters take necessary action to secure release of three each CPS-5D radar sets equipped with GPX-13 (IFF) and the authority to draw from SMAMA depot stock, three each truck trailers and three each Air Force vans of the K-55 type. Detailed information as to the nomenclature and "W" numbers of the vehicles needed will be furnished on request.

6. A project to mobilize a CPS-5D for the 28th Air Division (Defense) is underway at present. The additional three sets requested above will be assigned to the 9th, 25th and 27th Air Divisions (Defense). Maintenance and care of the radar and associated vehicles should pose no problem since the equipment will be located (when not being utilized as emergency search gear) at air division headquarters.

FOR THE COMMANDER:

P. E. Haupt

P. E. HAUPT
CWO, USAF
ASST ADJUTANT

3 Incls:
1. Mobile CPS-1
2. Opr Van
3. Opr Van

0-81-4x

Sp Hist WADF

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HEADQUARTERS
CENTRAL AIR DEFENSE FORCE
GRANDVIEW AIR FORCE BASE
GRANDVIEW, MISSOURI

17

C&E MR

SUBJECT: (Unclassified) Radar Coverage Deficiencies Within 34th Air Division (Defense)

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

1. It has been a matter of common knowledge for some time that the radar coverages of the "P" sites within 34th Air Division (Defense) were not satisfactory according to the potential capabilities of the equipments. This condition is primarily a result of siting the radars at locations where they encounter relatively high angles of close-in screening.

2. The unsubstantiated story as to the reasons for the selection of sites behind high screening is that the sites were originally selected for low clutter and permanent echo returns for non-MTI radars; and that if the radar antennae were removed a short distance in each case, lower screening would result.

3. It is difficult to get a true measure of the loss of effectiveness of a radar site because of high screening; however, the following might serve to illustrate the loss if one considers the limitations of the illustration.

4. Figure one shows an idealized cross section of the lobe pattern of an AN/FPS-3 radar with zero screening for a B-29 type aircraft. It is assumed for purposes of the illustration that the slant range of detection is 200 nautical miles and the vertical dimension of the lobe covers 7 nautical miles. A section of a cylinder inscribed according to these dimensions will enclose much of the volume of air under surveillance by the radar, and can be found by the following formula:

$$V_1 = \pi r^2 H \qquad (1)$$

where V_1 is the volume of air within the hypothetical cylinder, r is the radius (slant range) of maximum coverage in nautical miles, and H is the height of coverage in nautical miles.

$$V_1 = 3.14 (200)^2 (7)$$

$$= 878{,}000 \text{ cubic nautical miles}$$

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C&E MR
SUBJECT: (Uncl) Radar Coverage Deficiencies Within 34th Air Division (Def)

5. If, however, the average screening around the radar site is plus one degree, as it is for one site in 34th Air Division (reference Radar Calibration Report for P-8, 3 July 1953) the volume of air under surveillance is altered as illustrated in figure two. In this case the volume can be found by the following:

$$V_2 = \pi \frac{r^2 (3H - 2r \tan \phi)}{3} \qquad (2)$$

where V_2 is the inscribed volume of the altered cylinder V_1, r is the radius (slant range) of maximum coverage in nautical miles, H is the height of coverage with zero degrees screening in nautical miles, and ϕ is the average positive screening in degrees.

$$V_2 = \frac{3.14(200)^2 \; 3(200) - 2(200) \tan \phi}{3}$$

$$= 587{,}000 \text{ cubic nautical miles}$$

6. The loss in volume of air under surveillance in the example is 291,000 cubic nautical miles, or roughly 1/3 the theoretical maximum. Thus it can be deduced that poor siting, judging from high screening, seriously affects the potential of the radar.

7. Since more efficient utilization of the existing radar potential is desired, consideration is being given to the possibility of relocating or extending the antenna towers and associated equipment for the P-sites within 34th Air Division to improve the average screening figures, and remoting the video and other electrical information to the present operations location by coaxial cable or microwave radio. It is requested that this headquarters be furnished any available data on remoting facilities such as equipment nomenclatures and technical descriptions, operating characteristics, availability, costs, etc. so that preliminary studies can be made on remoting the radars. If such data are not available within your headquarters, it is requested that Rome Air Development Center be contacted for their assistance.

FOR THE COMMANDER:

MILTON A. HENDERSON
Capt, USAF
Asst Adjutant

1 Inel
Illustration --
Figures 1 and 2

V-256-3A

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Will be Confirmed by
Std Publication Form
Under par 3a, ADCSM 5-3 No
Prepared by L/Col FKNichols/fc
Telephone 2717
1 Nov 54 1 Encl n/c
V-256-1

ADC HQ Form 11
5 Feb 54 Revised

SECRET

FILE NUMBER 206.8 AW 17

8 DEC 1954

Hq CADF CAZ MR, Subject: (Unclassified) Radar Coverage Deficiencies Within 34th Air Division (Defense)

ADCOM-E (15 Oct 54) 1st Ind

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

Commander, Central Air Defense Force, Grandview AFB, Missouri

1. Concur with your comments pertaining to the coverage deficiencies in the 34th Air Division area. It is agreed that this particular problem should be given immediate study. It is believed, however, that the cost and availability of equipment need not be given major consideration until a complete study of operational requirements is made.

2. There is no equipment "package" for remote operation. Experience has proved that each site has requirements peculiar to its location, especially from the cost standpoint. Standard radar components, in connection with microwave equipment or video cable, are considered technically acceptable for remote operation. Engineering and availability of these facilities appear to offer no unusual problem.

3. It is recommended that the preliminary study mentioned in paragraph 7, basic letter, be conducted, with operational requirements being the basic consideration. It is also recommended that the 4077th Radar Evaluation (RCM) Flight conduct an evaluation of the existing deficiencies in this area and submit recommendations on how these deficiencies can be alleviated. The particular factors of prime interest to this headquarters which should be included in the study are:

a. Number of radars and tower extensions (and height of extension) required.

b. Additional buildings and roads required.

c. Distances involved if coaxial cable or microwave is to be used.

d. Coverage to be gained from the relocation or raising of radar antennas.

4. Upon receipt of the above information, this headquarters will take the necessary steps to have engineering feasibility and cost studies accomplished.

BY ORDER OF THE COMMANDER:

M-9862/0586 1407

F.K.Nichols

C&E 8/12/54

Incl not req'd for AG file.
Comeback cy req'd for COMM file.

F.K.NICHOLS, Lt Col USAF

MEMO FOR RECORD: The deficiencies outlined in the basic ltr have been known by this headquarters for some time. The study suggested by CADF had recently been proposed by this hq. This

This correspondence is classified _____ in accordance with Par _____, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____ (over)

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Elect
Gn Sup & Svs
Instl
Log Plans
HQ COMDT
Record Evaluation
Permanent
Temporary
Until
Will Be Confirmed
in Std Publication
Under par 3a,
AFM 5-3
Prepared by
Telephone
Date
ADC HQ Form 1
Revised 15 Aug 533

FILE NUMBER 230
1

11 FEB 1954

SUBJECT: Comparison of RAND Problem Reproducer Equipment and 3kD Surveillance Trainer

FILED TNGGEN

Before removing this document from file, or destroying it, mark cross references accordingly.

Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. The following comparison is made between the RAND Problem Reproducer Equipment (PRE) and the 3kD Surveillance Trainer for clarification of training device requirements established by this command.

a. Descriptions:

(1) The RAND PRE is an electronic device designed to place realistic targets on search and height radar scopes. It consists of three flying spot scanners. One flying spot scanner is devoted to the reproduction of surveillance data and the other two to the reproduction of height data. Utilizing 70mm film, the PRE can accurately place up to 200 separate blips on radar scopes.

(2) The 3kD Surveillance Trainer is a kit which consists of a set of tape recordings, a procedure booklet, procedure cards, a small self trainer which simulates a radar scope, and a tape recorder.

b. Utilization:

(1) The RAND PRE is designed to be used for the exercise of a team. The entire RAND system training program is based on the team as the smallest unit to be trained in the system.

(2) The 3kD Surveillance Trainer is designed for the training of the individual. It is designed to train the individual to a point where he can participate in the team training.

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	Ops Anlys
	Cmbt
	P&R
	Weap O
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	Acft
	Elect
	Gn Sup & Svs
	Instl
	Log Plans
	HQ COMDT

CC... 19

ADOOT-6, Comparison of RAND Problem Reproducer Equipment and 3&D Surveillance Trainer (Cont'd)

e. Cost Comparison:

(1) The RAND PRE to be used in the test of the system training program will cost approximately $54,000. Production models will drop to approximately $20,000 each.

(2) The 3&D Surveillance Trainer will cost approximately $250 and the recorder an additional $250.

FOR THE COMMANDER:

JOSEPH D. HORNSBY
Lt Col, USAF
Asst' Command Adj

Record Evaluation
Permanent------
Temporary
Until-5 Jan 54
Will Be Confirmed
in Std Publication
Form ... per par 3a
AF -3------
Prepared by-----Maj Taylor/esp
Telephone-----2801
Date---- ----5 Feb 54

M/R: Not required

ADC HQ Form 1
Revised 15 Aug 53

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FILE NO.

SUBJECT: Monthly Report of the System Training Program for the Period 18 November - 18 December 1954

TO: ~~DCS/O~~ ~~DCS/M~~ ~~Budget~~ ~~ADC~~ COC (IN TURN)

FROM: O&T-C

DATE: 20 Dec 54

COMMENT NO. 1

Lt Col Schindler/2601/irb

FILE NUMBER 230 B

4 pp

1. The following is a monthly report of the System Training Program for the period 18 November - 18 December 1954.

a. The program is proceeding as scheduled with the exception of the air traffic surveys. These surveys will be finished in July 1955 rather than June 1955. This slippage has a negligible effect on the overall picture. As viewed now, the system will be installed ADC-wide by June 1956 as planned.

b. The following progress is reported for the period of this report:

(1) Equipment:

(a) Suggested changes by ADC, WADC and APGC for the problem reproducer are presently being worked on. This is being done now in order that the fifty (50) tentative standard models will have these modifications.

(b) The RAND electronic engineers have determined that the problem reproducer will not require a position on the radar data switch being developed at RADC. This is directly opposed to former thinking, therefore the requirement was dropped.

(2) Exercises conducted:

(a) During the month of November, the AC&W sites of the 27th Air Division (Defense) were scheduled for sixteen (16) exercises. Some of these exercises were cancelled due to live exercises taking precedence. Number of exercises conducted was as follows:

Mt. Laguna	12
San Clemente	10
Santa Rosa	11
Boron	12

(3) Funds:

(a) The $942,705 budget shortage for the period February -

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FILE NO.

SUBJECT Monthly Report of the System Training Program for the Period 18 November - 18 December 1954

TO

FROM

DATE

COMMENT NO. 1
Cont'd

June 1955 has been made up by this command. AMC will be informed of the availability of funds in order that RAND may contract for operations up until 30 June 1955.

(b) Now that RAND has the funds, the following new facilities will be available on the dates indicated:

1. Occupation of new building, 1 March.

2. New direction center laboratory, 1 May.

3. 701 computer installed, 1 July.

c. Lt Colonel Schindler visited the 27th Air Division (Defense) and Boron on the 1st and 2nd of November for the demonstration of the Protlen Reproducer Equipment to Major General Timberlake, AFCC. General Timberlake was pleased with the progress of the OST of the equipment as reported by Captain Porter, project officer, AFCC.

d. Lt Colonel Schindler, (Task Group); Major F. Brownfield, (ADES Group); Mr. Mel Kappler, Dr. [illegible] C. Biel and Mr. J. Oxtoby, (MIT/L), visited the Lincoln Laboratories 13, 14 and 15 December. Purpose of visit was to discuss the compatibility of the System Training Program with the SAGE System. Conclusions drawn were:

(1) The equipment used in the System Training Program (AN/CIC-T2) can be used in the SAGE System at the prime and height finder radars. The value of using it at this time in a sector system exercise is questionable. The value of using the equipment at the prime radar sites for cross-training purposes so that the crew may be used for back-up is very high. These cross-training exercises would, of course, be station-centered exercises.

(2) Through the use of an adapter unit [illegible] 701 computer at MIT/L, FSQ-7 (SAGE) computer tapes can be prepared. This makes it possible for the MTI personnel to prepare their own sector exercises; thus, the vast air traffic information and [illegible] training experience acquired by the MTI program can be made use of.

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FILE NO. | SUBJECT Monthly Report of the System Training Program for the Period 16 November - 15 December 1954

TO | FROM | DATE | COMMENT NO. 1

(3) Mr. Valley, (Lincoln Laboratories), extended an invitation to the WADD training specialists to study the system training problems involved in the SAGE System and to present their findings for consideration. No commitment was made at the moment due to pressing CTP schedule now going on. The training specialists are very much interested in this problem and if at all possible, future meetings will be arranged to investigate the subject.

e. Lt Colonel Schindler and Mr. Mel Kappler visited Major C. Pratt, AFPTR, at Headquarters USAF on 16 December, to discuss requirements for The Newton Company target radar simulator. Also present were Mr. Clark of The Newton Company. Results of the meeting indicated that USAF will return ADC's Qualitative Operational Requirements letter for the fifty (50) target generator for further justification. A conference will be held at WADD during the week of January 17th with representatives of The Newton Company, WADD and ADC, to discuss additional proposals as requirements for the target generator. A new QOR letter will be submitted in agreement with the recommendations of Major Pratt.

f. A short evaluation of the System Training Program by the 27th Air Division (Defense) for the period August - November, resulted in the following conclusions:

(1) Interpretation of the results is difficult due to the fact that the period August - October was an installation and familiarization phase rather than a training phase. Also, some of the problems used were OCT problems which were designed for the equipment efficiency rather than progressive training.

(2) In spite of this, actual unknowns for the division decreased 44% in November in comparison to October. (Of course, other factors may also be responsible for the reduction).

(3) The percentage of hostile aircraft splashed in the problems has increased.

(4) It has been shown in the problems that the division encounters considerable difficulty in detecting, identifying and intercepting tracks penetrating along a line dividing the area of responsibility of two adjacent stations.

(5) Time delays in displaying action at the CCC has decreased.

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FILE NO.

SUBJECT Monthly Report of the System Training Program for the Period 18 November - 15 December 1954

TO

FROM

DATE

COMMENT NO. 1
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(6) Problem experience has also shown that if unknown aircraft penetrate from Mexico and are allowed to reach the ADIZ before scramble action is taken, the aircraft will get to their targets and bomb.

g. The 27th Air Division (Defense) has also used the high-load exercises of STP to test their new tactical action board at the CCC. Results indicate that the board has eliminated delays in forward selling tactical action to the NADF CCC.

Victor Miller Jr

VICTOR MILLER, JR.
Lt Colonel, USAF
Chf, Sys Tng & Opns Div
Ext 2813/2729

Joseph C. [illegible]
Colonel, USAF
Director, STP
Ext 2813/2729

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AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

OFFICE OF THE COMMANDER 19 Jul 1954

SUBJECT: Qualitative Operational Requirement, ADC-RAND System Training Program

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. Pursuant to the provisions of AFR 57-3, a qualitative operational requirement on the equipment for the ADC System Training Program is submitted.

2. The capacity and efficiency of the air defense net is measured by its ability to collect, process, display and disseminate air situation information and to perform threat evaluation, weapon assignment, weapon direction, and target destruction. This capacity has long been considered of a low order due to the necessity for manual operation involved in many of these functions. Increased capacity and effectiveness is considered mandatory to combat the increasing threat. Automatic data processing systems, like the Lincoln Transition System, while providing potential increases, will not be available for several years. Increased individual personnel training through schooling and the use of training aids, while helpful, is not adequate to provide increased effectiveness in the over-all system. The present manually operated data processing, threat evaluation, weapon assignment, and control portion of the air defense system must be substantially improved immediately to provide a more nearly adequate defense during the next few years.

3. It is believed that the ADC System Training Program will provide the greatest improvement of any interim measure being considered for the correction of these deficiencies.

4. The time scale, Inclosure 7, has been established for the implementation of the System Training Program. This time scale is based on a realistic survey made by ADC and RAND personnel of the time required to produce the equipments and the parallel time required to prepare the training material for operation in the field. Any delay will be reflected as a delay in the attainment of a higher air defense capability.

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Hq ADC, Ent AFB, Colo. Subj: Qualitative Operational Requirements, ADC-RAND System Training Program

5. The objective to be obtained by the proposed implementation of the System Training Program is an improvement factor of three or four in the functions outlined in paragraph 2 above. The Problem Reproducer Equipment is an integral part of the program which allows for the training of the air defense team in their home station by electronically displaying the situation on the station radar scopes.

6. The performance characteristics, operational qualities, and design features of the Problem Reproducer Equipment are set forth in Inclosure 6.

7. An immediate requirement exists for Problem Reproducer Equipments for use in the System Training Program in all permanent radar sites, first and second phase semi-mobile sites, a total of 152 equipments.

8. The suggested method of meeting the requirement is to make a sole source procurement of the required 152 units of the Problem Reproducer Equipments from Radio Corporation of America. Radio Corporation of America has had unique experience in the combination of radar and flying spot scanner techniques which are incorporated in this device and have produced six production prote-type equipments. For these reasons they are able to produce the production equipments in the time period in which they are required as outlined in Inclosure 7. It is estimated that any other contractor would require six to twelve additional months for familiarization in order to produce these units.

9. In view of the urgency of obtaining the increased air defense capability and combat efficiency of the air defense system which is offered by the implementation of this program, it is recommended that a priority of 1A, reference paragraph 4.a.(1), AFR 80-11, be assigned to equipment for this program, in order that this training may begin in the field as early as possible, as outlined in the time schedule in Inclosure 7.

/s/t/ FREDERIC H. SMITH, JR.
Major General, USAF
Vice Commander

7 Incls:

1 - Ltr Hq ADC, ADOPR 319.1, 6 Jun 53
2 - Ltr Hq USAF, AFOOP-OP-D 353, 13 Jul 53

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Basic letter from Hq ADC, dtd 19 Jul 54, subj: Qualitative Operational Requirement, ADC-Rand System Training Program

AFDRQ-AD/C 1st Ind.

Department of the Air Force, Hq USAF, Washington 25, D. C. 16 Aug 1954

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

1. In letter to your headquarters, subj: (Uncl) Air Defense System Training Program, dated 13 July 1953, this headquarters concurred in your urgent requirement for equipment and training facilities which would increase the capability ofthe air defense system to handle high density air situations. Authorization was granted and funds made available to implement the Systems Training Program in the 27th Air Division with further extension of the program to be considered by this headquarters after completion of field tests in the 27th Air Division. It is understood that sufficient testing will have been completed by Mid-September 1954 to provide information as to the desirability of extending the STP throughout ADC.

2. The determination to procure on a sole source basis is a responsibility of Hq AMC. Information contained in par 8, basic letter, will be forwarded to Hq AMC when procurement is directed by this headquarters.

3. This headquarters recognizes the urgency of obtaining the increased air defense capability and therefore has assigned a priority of 1A to this equipment ir accordance with par 5d, AFR, 80-11.

BY ORDER OF THE CHIEF OF STAFF:

/s/t/ GILBERT L. MEYERS
Colonel, USAF
Deputy Director of Requirements
Deputy Chief of Staff, Development

7 Incls
w/d

AFDRQ 2589/54

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Hq ADC, Ent AFB, Colo. Subj: Qualitative Operational Requirements, ADC-RAND System Training Program

3 - Ltr Hq ADC, ADOPR 319.1, 29 Jul 53
4 - Ltr Hq USAF, AFOOP-OP-D, 10 Aug 53
5 - Ltr Hq ADC, ADOOT-C, 24 May 54
6 - RAND Rsch Memo, 1157-AD
7 - Time Schedule

Info Cys to:

Comdr, ARDC
Comdr, WADC
Comdr, APGC

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TIME SCALE FOR SYSTEM TRAINING PROGRAM

PHASE I
Under Contract

PHASE II

Fiscal Year 1955
Funds Budgeted

Fiscal Year 1956
Funds to be Budgeted

1953 Sep | 1954 Aug Sep Oct Nov Dec Jan | 1955 Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec | 1956 Jan Feb Mar Apr May Jun

6 Prototype P.R.E.s ready

Designate P.R.E. as tentative standard

Approval by Hq USAF of Phase II

Production contract let (Sole source)

Production lead time

First production P.R.E.

152 P.R.E.s produced

Operational Suitability Test

P.R.E. designated as standard

Training and experience in 27th Air Division

Program installed in 152 stations as P.R.E.s are produced

Nation-wide Traffic Survey and begin track computation

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ADOCT-C

SUBJECT: (UNCL) Classification of Problem Reproducer Equipment Used in the RAND Systems Training Program

TO: Commander
Air Research and Development Command
ATTENTION: RDDQ
Post Office Box 1395
Baltimore 3, Maryland

1. The development and installation of the RAND Systems Training Program in the Air Defense Command will be accomplished in two phases, reference letters, subject: "Air Defense Systems Training Program", File ADOPR 319.1, Headquarters Air Defense Command, dated 6 June 1953; same subject, File AFOOP 384, Headquarters USAF, dated 13 July 1953; same subject, File ADOPR 319.1, Headquarters Air Defense Command, dated 29 July 1953; and same subject, File AFOOP 1198, Headquarters USAF, dated 18 August 1953.

2. Four problem reproducers will be produced and installed in one air division by September 1954 in Phase I. These equipments are described in the attached RAND Research Memorandum RM 1157-AD, entitled "The System Training Program for the Air Defense Command", dated 3 November 1953, classified "Confidential", and RAND Specification E-101, Problem Reproducer Equipment, with Amendments I and II.

3. Phase II of the program requires that 150 of these equipments be produced and installed in the remaining ten air divisions during the period November 1954 to November 1955. In order to meet this established time schedule, the following action is requested.

a. That the problem reproducer equipment be classified as a tentative standard item prior to 1 November 1954, and that the operational suitability testing be waived in accordance with paragraph 4c of AFR 80-6, dated 1 April 1954. Procurement data will be available and adequate for procurement action at the time the item is classified, in compliance with paragraph 4c, AFR 80-6.

b. That the equipment be recommended as an item to be administered as a category "B" item (ref. paragraph 5b(1), AFR 80-6).

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM 5-3
Prepared by Lt.Col.Schmiler/bb
Telephone 2102

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ADC HQ Form 11
5 Feb 54 Revised

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ADCOT-C, Subject: (Unel) Classification of Problem Reproducer Equipment Used in the RAND Systems Training Program (Contd) 21

c. That the technical results obtained by the RAND Corporation during the August through October 1954 test period, if satisfactory, be accepted as test phases I through IV of par graph 3e, AFR 80-114, dated 11 September 1951 (ref. paragraph 5b(3)).

FOR THE COMMANDER:

6 Incls:
1. ADOPR 319.1, 6 Jun 53.
2. AFOOP 384, 13 Jul 53.
3. ADOPR 319.1, 29 Jul 53.
4. AFOOP 1198, 18 Aug 53.
5. E-101 Prob Reproducer Equip w/ Amnds I and II.
6. RAND Rsch Memo 1157-AD.

2

Form 11 Revised

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RAND

21 September 1954 L-15166

Subject: Contract AF 33(600)-26134
Schedule of Phase II of System Training Program

To: Commander
Headquarters, Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado

Reference: (a) Letter, Director of Operations and Training, dated 7 January 1954
(b) Schedule, Chart 6, RAND Research Memoranda 1157-AD

Attention: Director of Operations and Training

1. In answer to the request in Paragraph 2 of Reference (a), informal estimates for a 150 station Phase II of the System Training Program have been given verbally from time to time. Now that successful operation of the System Training Program in the 27th Air Division is being carried on, firm estimates are possible. In the light of our operational experience, it is believed that all units of the system should be included in the training insofar as possible. As installation proceeds in one division after another, all stations which are operational at that time should participate in the training.

2. The schedule, Reference (b), which anticipated installation in only 100 stations, will have to be extended to 30 June 1956 in order to accomplish the installation of 150 stations. Because of the increased number of stations and because of other factors which have been revealed by our field experience, an upward revision of the costs is necessary. The new cost schedule is contained in Attachment 1. A large fraction of these additional costs is brought about by the additional stations; however, some other factors are now more accurately known. Intense study of the computation process has provided a much firmer estimate of these costs. Experience with the Cogwheel run has indicated that a run of this type for each division to be installed is required with its attendant costs.

3. The cost schedule, Attachment 1, anticipates an organization of approximately 165 people occupying a building space of approximately 30,000 square feet. The building modifications provide for installation

TO: CC
FILE:
ACTION: NAP
SIGNATURE: Capt Swain

Request this material be assigned to C&T-C files.

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of the computing equipment, working space for personnel, and a simulated operations center for indoctrination runs similar to Cogwheel.

4. The rate of expansion required to accomplish installation in 150 stations by 30 June 1956 is considered to be maximum, and any additional stations would have to be installed after that date. Installation of 150 stations by that date is also possible only in sites located in the United States or contiguous areas.

THE RAND CORPORATION

J. R. Goldstein
Associate Director

JRG:bg
Attach.
1. Cost Schedule

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ATTACHMENT 1

SYSTEM TRAINING PROGRAM PHASE II COST SCHEDULE

TOTAL SALARIES AND OVERHEAD	$2,751,200
TRAVEL (Moving, Changes of Station, and Field Travel)	520,000
COMPUTING (Rental of Equipment)	1,000,000
COMPUTING AND OTHER SUPPLIES	423,800
BUILDING MODIFICATIONS (Operations Center for Indoctrination, Computer Installation, Working Space)	200,000
RAND FEE	293,700
TOTAL	$5,188,700

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FILE NUMBER 230

ADOOT-C

24 SEP 1954

SUBJECT: (U) Air Defense System Training Program

TO: Director of Operations
Headquarters, USAF
Attn: AFOOP-OPB
Washington 25, D. C.

PTT.ED THUG XUC

1. Reference is made to your letter AFOOP-OPB, Subject: Air Defense System Training Program, dated 10 August 1953.

2. In accordance with paragraph 3 of the above-referenced letter, the Air Defense System Training Program has been installed and is now operating in the 27th Air Division (Defense). Consideration for further extension of this program throughout Air Defense Command is requested. This extension has been designated Phase II of the program.

3. Original planning estimated the cost of all of Phase II as $4,800,000. Due to changes in plans, procedures, policies, and an increase in the cost of equipment, this has been revised to $8,498,700. Comparison of the two estimates is as follows:

Original Estimate Phase II

Salaries and Overhead	$ 563,850
Facilities and Equipment at RAND	57,800
Photo Equipment	30,000
Library and Programming of Problems	99,000
Problem Computation	468,325
Problem Input Preparation	468,325
Total	$1,686,300
RAND 6% Fee	101,200
Total	$1,800,000
150 Problem Reproducers	3,000,000
Grand Total	$4,800,000

Lt. Col. Schindler

C-8126

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AF-ADC-COLO SPRINGS, COLO

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SUBJECT: (U) Air Defense System Training Program

Present Estimate Phase II

Salaries and Overhead	$2,800,000
Travel	520,000
Computing Costs	1,000,000
Computing Supplies and Other Supplies .	375,000
Building Modifications	200,000
Total	$4,895,000
RAND 6% Fee	293,700
Total	$5,188,700
150 Problem Reproducers	1,450,000
Grand Total	$6,638,700

a. For planning and budget purposes, Phase II has been further designated as Phase IIA (October 54 through June 55), and Phase IIB (July 55 through June 56). As a result of a conference at Headquarters, USAF, on 27 May 1954, $900,000 of FY 55, 458 funds, and $1,150,000 of 252 funds were requested for Phase IIA. This was based on the following estimations:

Salaries and Overhead	$ 426,000
Travel	140,000
Computing Costs	100,000
Computing Supplies and Other Supplies .	153,566
Photographic Supplies	30,000
Total	$ 849,566
RAND 6% Fee	50,434
Total	$ 900,000
50 Problem Reproducers	1,150,000
Grand Total	$2,050,000

b. Revision of Phase IIA (October 54 to June 55) under the new criteria results in the following estimates:

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SUBJECT: (U) Air Defense System Training Program

Present Estimate Phase IIA

Salaries and Overhead	$ 805,000
Travel	220,000
Computing Costs	300,000
Computing Supplies and Other Supplies	175,000
Building Modification	200,000
Total	$1,700,000
RAND 6% Fee	102,000
Total	$1,802,000
50 Problem Reproducers	$1,150,000
Grand Total	$2,952,000

c. Phase IIB (July 55 to June 56) is estimated at the following costs:

Salaries and Overhead	$1,995,000
Travel	300,000
Computing Costs	700,000
Computing Supplies and Other Supplies	200,000
Total	$3,195,000
RAND 6% Fee	191,700
Total	$3,386,700
100 Problem Reproducers	2,300,000
Grand Total	$5,686,700

4. In reviewing the above estimates, it is quite apparent that the present estimates are approximately double the previous estimates. Factors influencing these changes were:

a. First estimates of Phase II for 150 stations were verbal and estimated to the best cost figures at the time given. Now, as a result of field experience, in order to have 150 stations installed in the time phase desired, it is necessary that:

(1) The original number of RAND personnel (professional, technical, and clerical) working on the program be doubled. Office space for these people will have to be provided in an additional building.

(2) A separate 701 computer for the System Training Pro-

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Prepared by Lt Col Schindler/irb
Telephone 2601
Date 23 Sept 54

SUBJECT: (U) Air Defense System Training Program

gram be rented and installed in the additional building. Present computer cannot handle the additional load.

(3) A System Training Indoctrination Laboratory be established to carry on the fifteen (15) two-week indoctrination courses for field supervisory personnal as the present laboratory is inadequate. The original concept was that only three (3) indoctrination sessions would be held. As a result of field experience this requirement was raised. Laboratory will be installed in the additional building. A building of 30,000 square feet area will satisfy the above three requirements.

b. Procedures in problem computations were not firm, consequently computing costs fluctuated.

c. Original estimate of equipment (Problem Reproducers) cost $3,000 below present estimate.

5. In view of the foregoing estimated budget changes, it is requested that an additional $902,000 of FY 55, 458 funds be provided for Phase IIA, and $3,386,700 of FY 56, 458 funds be provided for Phase IIB. In view of the fact that $1,150,000 of FY 55, 252 funds are available for fifty (50) Problem Reproducers, it is requested that $2,300,000 of FY 56, 252 funds be provided for one hundred (100) Problem Reproducers in Phase IIB.

FREDERIC M. SMITH, JR.
Major General, USAF
Vice Commander

M/R: Not nec.

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5 Feb 54 Revised

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AF - ADC - COLO. SPRINGS, COLO

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epared by Lt Col Schindler/irb
lephone 2601
27 Oct 54

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Mr. M. C. Kappler
RAND Corporation
1700 Main Street
Santa Monica, California

Dear Mr. Kappler:

Headquarters USAF has approved Phase II of the System Training Program by a letter, subject: (Unclassified) Air Defense System Training Program, dated 15 October 1954. Air Defense Command's budget authorization under Maintenance and Operations Project 458 has been increased in the amount of $900,000 as of the same date. Also included in the letter were the facts that USAF had taken the necessary action to procure fifty (50) Problem Reproducers (AN/UPS-22) for FY-55, and that one hundred (100) of these devices were included in the FY-56 Budget Program.

The additional $942,705 required for the accomplishment of Phase II up to June 1955 will have to be absorbed within funds available to this command. This shortage has been included in Air Defense Command's revised financial plan which will be submitted to USAF in November for reconsideration. If, on return of the revised plan, there are not sufficient funds for absorption of the shortage, the problem will be presented to the Air Defense Command Budget Council for a decision. The council will decide what programs must be cut in order that the high priority projects may be completed.

The System Training Program has always held a very high priority as an important defense project of the Air Defense Command and will be presented as such before the Budget Council.

Sincerely,

JOHN C. MEYER
Colonel, USAF
Director, Operations & Training

M/R: This letter is official notice to the RAND Corporation that USAF has approved Phase II of the System Training Program. It also indicates action being taken to make up the shortage in RAND's estimated budget for Phase II up to 30 June 1955.

HQ Form 11
eb 54 Revised

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AFOOP-OP-D

15 OCT 1954

SUBJECT: (Unal) Air Defense System Training Program

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

1. Reference your letter dated 24 September 1954, subject as above.

2. This Headquarters approves the extension of the Air Defense System Training Program throughout your Command.

3. Funds in the amount of $900,000 have been retained in this Headquarters for Phase II of this program. Your budget authorization under Maintenance and Operations Project 458 is being increased in this amount. The additional $902,000 indicated requirement for the accomplishment of Phase IIA will have to be absorbed within funds currently available to your Command. No additional allocation of funds for this project is possible at this time.

4. This Headquarters has taken the necessary action to procure fifty (50) Problem Reproducers (AN/GPS-T2) in FY-55 and the remaining one hundred (100) devices required by your Command have been included in the FY-56 Budget Program.

5. In view of the SAGE system being installed in your Command, the compatability of the AN/GPS-T2 and associated training system with SAGE should be determined by your Headquarters. Will the AN/FSQ-7 at Direction Center and Combat Center levels require a separate training device and a new systems training program? Or is the AN/FSQ-7 being so designed that a training device capability will be incorporated in the production model?

6. Assuming that this program is implemented by end FY-56, as indicated in your time phasing schedule, what are your plans for continuing this program past FY-56? Will it be more economical for the Air Force to continue this program under contract with the Rand Corporation or to absorb this program as a function of Operations and Training in your Headquarters?

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Ltr to ADC, Subj: "(U) Air Defense System Training Program" (Cont)

7. It is desired that the problems posed in paragraphs 5 and 6 above be studied by your Headquarters and this Headquarters furnished your comments and/or recommendations.

BY ORDER OF THE CHIEF OF STAFF:

[illegible]
[illegible], Operations

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5-3

Prepared by Lt Col Schindler/irb

Telephone 2601

Date 27 Oct 54

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FILE NUMBER 23
X 105.5

1st Ind to Hq USAF, AFOOP-OP-B, Subject: (Unal) Air Defense System Training Program

ADDCT-C (15 Oct 54) 29 OCT 1954

HEADQUARTERS AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Director of Operations, Headquarters USAF, Washington 25, D. C.

Reference paragraphs 5 and 6, basic letter. The ADC Task Group and Mr. Mal Kappler of RAND visited the Lincoln Laboratories on 1 October 1954 for the purpose of obtaining information concerning the compatibility of the SAGE System with the AN/GPS-T2 and associated training system. The complexities of the problems involved dictated that another conference be arranged. The future meeting will be held during the week of the 6th of December 1954. The co-directors of the System Training Program of RAND and a number of the ADC Task Group will attend this meeting. The results of this conference should determine the compatibility of the two systems and will influence the decision on continuance of the program beyond FY-56. These results will be forwarded as soon as possible.

FOR THE COMMANDER:

M/R: Not nec.

Not requested by ADC HQ

Furnished as per HQ USAF (Date) (Initials)

RH

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ADC HQ Form 11
5 Feb 54 Revised

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2

DEPARTMENT OF THE AIR FORCE
Headquarters United States Air Force
Washington 25, D.C.

AFPTR-D

17 March 54

SUBJECT: (Uncl) The 34D Surveillance Trainer

TO: Commander
Air Defense Command
Ent AFB
Colorado Springs, Colo.

1. Reference is made to the following correspondence from your headquarters:

a. Letter, subject as above, dated 12 December 53.

b. Letter, subject: "Comparison of RAND Problem Reproducer Equipment and 34D Surveillance Trainer," dated 11 Feb. 54.

2. The following additional information is requested in connection with the above correspondence:

a. Introductory Tape Recordings. Information is requested as to whether a satisfactory recording could be produced locally in lieu of procuring the proposed elaborate recording commercially

b. Procedures Booklet, Procedure Cards and Lesson Sheets. These publications will be subject to the provisions of AFR 6-1. Information is requested as to whether you have a preference of printing these items locally or having them printed by the Government Printing Office.

c. 34D Surveillance Trainer. Action has been taken to request ARDC to prepare procurement specifications. Information is requested as to your views on whether any other major air command may have a requirement for this trainer. Information is also requested as to the number of trainers that have been or are being constructed locally.

3. Many Air Force activities are authorized a tape type recorderpreproducer in T/A 1-1. It is recommended that your headquarters initiate action IAW AFR 5-25 to include the requirements of your command. In this connection, it is requested that full consideration be given to the recorder-reproducer to be included in the RAND PRE.

BY ORDER OF THE CHIEF OF STAFF?

R. O. MOSHER
Lt Col USAF
Dep Ch, Special Trng Devices Div

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B/L fr Dept of the AF, Hq USAF, Wash 25, D.C. AFPTR-D, Subj: (Uncld) The 34D Surveillance Trainer

ADOOT-C (17 Mar 54) 1st Ind 9 Apr 54

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colo.

TO: Director Personnel Procurement & Training, Hq USAF
Washington 25, D.C.

1. The following information is submitted as requested.

a. The introductory tapes include considerable sound effects which would make them difficult to reproduce locally. The set of master tapes is attached as Incl 1. These tapes could be duplicated at a relatively low cost.

b. This headquarters has no preference as to the printing of the booklets, cards, or lesson sheets. The Government Printing Office is acceptable. A folder coering the printing specifications and illustration dummies is attached as Incl 2.

c. The Far East Air Forces has indicated a requirement. This headquarters has informed them that our requirement has been submitted. NEAC, USAFE and Alaskan Air Command would probably be interested, if approached. If the trainer were procured for other commands the introductory tapes would require revision to comply with their regulations The trainer built by CADS and available at this headquarters is the only one known to have been constructed. Engineering drawings of this unit are attached as Incl 3.

2. This headquarters prefers that the subject training aid be issued as a package. The separation of the recorder from the package may mean that either the training aids or the recorder could be idle for lack of the other. This could occur at time or original issue of in the case of unit transfer.

FOR THE COMMANDER:

3 Incls
1. Master Tapes
2. Printing Spec & I lus
3. Engr Drawings

JOSEPH D. HORNSBY
Lt Col USAF
Asst Comd Adj

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B/L to ADC, Ent AFB, Colo. Subj: (Uncld) The 34D Surveillance Trainer, dtd 17 Mar 54

AFPTR-D 2d Ind

Dept of the Air Force, Hq USAF, Washington 25, D.C.

TO: Commander, Air Defense Command, Ent Air Force Base, Colo.

The requirements for subject trainer and allied equipment are considered valid. However, since the tape recordings, procedure booklets, procedure cards and lesson sheets may be subject to change and vary among commands, they should be locally produced by the using commands. As indicated in the basic letter ARDC has been requested to prepare procurement specifications for the trainer. These specifications will be completed by 1 July 54. The AMC will include this trainer in their FY 55 buying program. Your requirements for procurement, distribution and authorization should be forwarded to AMC for necessary action. It is requested that a suitable recorder be selected from presently standard stock listed recorders, and included in appropriate authorization tables if existing authorization tables if existing authorization tables or the recorder included with the RAND PRE are inadequate.

BY ORDER OF THE CHIEF OF STAFF:

R. O. MOSHER
Lt Col USAF
Dep Ch, Special Trng Devices Div
D/Personnel Procurement & Trng

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Hq USAF AFPTR-D Subj: (Uncld) The 34D Surveillance Trainer

ADMEL-4 (17 Mar 54) 3d Ind 14 Jul 54

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado

TO: Commander, Air Materiel Command, Wright Patterson AFB, O.

1. Reference 2d Ind and basic correspondence. This command has a requirement for 170 each 34D Surveillance Trainers and 170 each Recorder-Reproducers, SN 1790-612900468.

2. Due to the time involved before delivery can be expected on the 34D Trainer, no distribution instructions are being furnished at this time. These instructions will be furnished upon request.

3. It is requested that authorization for the 34D Surveillance Trainer and the Recorder-Reproducer be included in the applicable authorization documents for one (1) each per AEW Sq, one (1) each per AC&W Sq (Permanent and Mobile), and one (1) each per Air Div (Def) Control Center. Until such time as the appropriate authorization documents can be modified, it is further requested that interim authorization be granted to the above units for the two items of equipment.

4. This request has been approved by the Air Defense Command Equipment Review Board.

FOR THE COMMANDER:

3 Incls
w/d

JOSEPH D. HORNSBY
Lt Col USAF
Asst Comd Adj

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Bsc ltr fr Hq USAF, AFPTR-D, 17 Mar 54, (Uncld) The 34D Surveillance Trainer.

MCSEB/ML/mvs
30 Jul 54

4th Ind

Hq, AIR MATERIAL COMMAND, Wright Patterson AFB, Ohio

TO: Commander, Air Defense Command, Ent AFB, Colorado Spring Colo.

1. The requirements mentioned in the second indorsement as well as those of other commands, have been noted and included in the FY55 buying program.

2. It is requested that your recommended allowances be made more definitive as to the following: T/O numbers, peace and war versions, and specific parts, if applicable: MEAL columns, particularly as to UEE, BSE, and FSE; T/A numbers, if intended for T/D units, and identity of the types of units or activities for which intended; and any other qualifications restrictions, or remarks to be applied to each allowance.

FOR THE COMMANDER:

J. M. McCAMPBELL
Col USAF
Ch, Equip Auth Div
Dir of Sup & Svs

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2. [redacted], AFPIR-3, Subj: (Unsl) The 318 Surveillance Squadron

[redacted] (17 Nov 54) 3rd Ind 14 JUL 1954

[redacted], Ent Air Force Base, Colorado Springs, Colorado

Commander, Air Materiel Command, Wright-Patterson Air Force Base, Ohio

1. Reference 3rd Indorsement and basic correspondence. This squadron [redacted] Reconnaissance Squadron, [redacted].

2. Due to the time involved before delivery can be expected on [redacted] Division, no distribution instructions are being furnished at this time. These instructions will be furnished upon request.

3. It is requested that authorization for the 318 Surveillance [redacted] and the Mission Equipment be included in the [redacted] Action [redacted] one (1) each for Armament Laboratory, Eglin [redacted] one (1) each for Aircraft Control and Warning Equipment [redacted] and Holloman, and one (2) each for Air Research [redacted] Should such item of the appropriate [redacted] be established, it is further requested that [redacted] be granted to the above units for the two items of equipment.

4. This request has been approved by the Air Defense Command Equipment Review Board.

FOR THE COMMANDER:

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

1st Ind DOC 9 Sept 54

EQUIPMENT REVIEW BOARD,

COMEBACK COPY

Not requested, not furnished

Furnished 14/7/54 (Date) (Initials)

Record Evaluation
Permanent
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Will Be Confirmed
in Std Publication
Form Under par 3a,
TSM 5-3
Prepared by LT COL H. B. GAMPER/WHW/vw ADMEL-4 Memo for record not required.
Telephone 2508
Date 12 Jul 54

E-15102

ADC HQ Form 11
Revised 15 Aug 53

This correspondence is classified CONFIDENTIAL in accordance with Par [redacted], AFR 205-1, 24 Jul 53, [redacted] for the reason (s) stated.

IN ACCORD W/BL

John L Sumner Capt
SIGNATURE
M17-6

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03/4

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RCAF	2
ADC (RCAF)	2
AFCRC	4
RADC	4
SMAMA (McCLELLAN)	4
OTIS AFB	4
8TH AIR DIV (AEW&C)	10
NAVY SPECIAL DEVICES CTR	2
IG, NORTON AFB	2

HQ ADC

CG	1
VC	1
CofS	1
DCS/O	1
DCS/M	4
DCS/P	4
DCS/C	1
DCS/I	1
P&R	4
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OPERATIONAL PLAN
Extensions to Seaward of Contiguous Radar Coverage
10 March 1954

I. MISSION:

1. The primary mission of an AEW&C Division is the extension of land or sea-based radar surveillance and to increase the fighter-intercept zone.

II. TACTICS:

1. Four AEW&C stations will be maintained on the west coast, and five on the east coast. These stations will be seaward extensions of the picket vessel coverage, if available, or the land based radar when no picket vessels are deployed. Each AEW&C station will be equipped with an RC-121C or D aircraft containing the latest electronic equipment, including search radar, height finder radar, ECM equipment, and radar relay transmitters.

2. Each aircraft on station will be spaced approximately 200 nautical miles apart. This extension will be approximately 800-1000 miles long and maintained 24 hours per day. (Initial station coordinates are contained in Section VIII, Deployment Location.)

3. Each aircraft will fly an established one hour square pattern (15 minute legs) around its assigned station with all aircraft maintaining the same juxtaposition. Legs of the pattern will be adjusted time-wise to compensate for drift, thereby maintaining the square. The pattern may be modified as dictated by operational experience.

4. The method of operation will be identical off the east and west coasts of the U. S. Until the problem of sea clutter is eliminated or

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sufficient operational experience is gained to indicate otherwise, the RC-121 aircraft will be operated at approximately 2,500 ft.

5. A 20% increase in actual on-station flight time shall be allowed to provide for aborted missions. An operational mission will average from 11 to 13 flight hours with eight hours on station. The schedule will, therefore, be in eight hour increments with five aircraft readied and in-commission for each eight hour period. One of these aircraft will be a stand-by, requiring a total of 15 aircraft in-commission daily for the west coast and 18 per day for the east coast. The average yearly flight time is 2,065 hours per aircraft.

6. The ECM operator will continuously monitor, visually and aurally, all anticipated frequencies within which the enemy's navigational radar is capable of operating. Radar pulses may be detected by ECM equipment at approximately line of sight from the radar originating the pulse. Azimuth information can be determined by a single ECM station; however, two or more stations must take radial cuts on the same transmission to obtain range. ECM equipment may be employed as a secondary navigational check.

7. All data gathered by the AEW&C aircraft (radar, ECM, and visual) will be reported to a central communications point in the appropriate air defense force sector. Cross-telling of this information, as required, will then become the responsibility of the sector in which the aircraft is operating. Control of fighter intercept aircraft will be accomplished by UHF radio. Passing of control will be accomplished in the same manner as employed by land-based air defense direction centers.

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8. The AEW&C Division will possess additional operating capabilitis for limited time periods on an emergency basis if intelligence information indicates its desirability. Such use of these aircraft is presently under study in Hq, ADC. The squadron will gear its ground activities to provide a 45 minute reservice time for the aircraft executing successive missions.

9. Initially, the identification function will be accomplished by the Air Defense Direction Center in whose subsector the AEW&C station is located. Later, if operational experience indicates increased efficiency, the identification could be transferred to the AEW&C station.

10. The employment of AEW&C aircraft under this plan is for the calendar year 1954-56 time period. The capabilities and limitations of the electronic equipment on the RC-121C&D aircraft dictate this plan of operation encompass manual Air Defense operations only.

11. An agreement has been reached between Air Defense Command and Air Proving Ground Command whereby APGC will supply technical advisors and observers to conduct the OST Program which will be run concurrently with initial Air Defense Command operations. All items which are normally proper subjects for such a test will be included in this joint operation.

12. Summary of flight data for a 24-hour operation period per base:

		McClellan	Otis	Seymour-Johnson
a.	Airplanes	30	30	10
b.	Missions per day	12	12	3
c.	Airplanes required per day	15	15	5
d.	Actual flight hours	141.23	111.23	35.31
e.	20% allowance for abort	28.24	28.24	7.6
f.	Total flight hours per day	169.47	169.47	42.91
g.	Total flight hours per year	61,956.00	61,956.00	15,662.00
h.	Average flight hrs per yr per acft	2,065.00	2,065.00	1,566.00
i.	Average utilization per day per acft - total hrs/day divided by airplanes	5.65	5.65	4.29
j.	Fuel used per day (gals)	48,789.00	48,789.00	16,263.00
k.	Miles flown per day	25,591.00	25,591.00	8,530.00

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III. UNIT ORGANIZATION.

1. An AEW&C Division will be activated; to be assigned to Air Defense Command or Defense Force as desired. Two AEW&C Wings will be formed, the 551st at Otis AFB and the 552nd at McClellan AFB. Each Wing will consist of three operational squadrons of ten RC-121 aircraft each, a Periodic Maintenance Squadron and an Electronic Maintenance Squadron. A seventh squadron (the 966th) has been authorized and will be based at Seymour-Johnson AFB. Initially, it will provide coverage for the southern extension of the east coast. It will have the capability of operating one station on a 24 hour basis and a second on an emergency or alert basis. Detailed plans for employing additional AEW&C Squadrons in ADC will be published at a later date.

2. The AEW&C aircraft delivery schedule extends over a period of three years, which necessitates the activation of the first two AEW&Con squadrons on a Table of Distribution. During this period of personnel build-up, operations will be limited as follows:

a. 100 hours per month per aircraft.

b. Crew of 12 members.

c. Crew to aircraft ratio, 1.2 to 1

3. The personnel requirements for each AEW&C Wing are based on the following factors:

a. 30 RC-121C or D aircraft (10 per tactical squadron).

b. 24-hour operation.

c. Crew of 18 and a ratio of 2.5 per aircraft.

d. Each aircraft to operate 172 hours per month.

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4. The breakdown of required personnel is listed below:

ACTIVITY (ONE BASE)	STRENGTH OFFICERS	W/O	AIRMEN
Division Hq	27		52
Wing Hq	28	1	124
AEW&C Tactical Sq	182		292
AEW&C Tactical Sq	182		292
AEW&C Tactical Sq	182		292
Periodic Maintenance Sq	12	5	598
Electronic Maintenance Sq	9	3	270
	622	9	1920
SUPPORT AUGMENTATION			
T/DA (estimated as tenant unit and includes 5 officers and 221 airmen increase for field maintenance squadron, plus 5 officers and 72 airmen for a quality control section to be in field maintenance squadron or division hq, depending upon location of unit.	13	1	470
	635	10	2390
Total military aggregate	3035		
Total military aggregate for two bases	6070		

After the present units become operational and actual experience is obtained, changes will be made as required.

5. The crew on an RC-121 C or D aircraft will consist of seven (7) officers and eleven (11) airmen, composed of the following type personnel:

AFSC	NO	JOB TITLE
1044B	2	Pilot Transport
1534A	1	Aircraft Observer, Navigator
43271C	1	Flight Engineer Technician
29353	1	Airborne Radio Operator
1644	3	Intercept Controllers
27351	6	Airborne Radar Observer
29373	2	Airborne Radio & ECM Operator Technician
30173	2	Airborne Early Warning Radar Technician

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6. The AEW&C Wing will be responsible for maintenance in the three tactical squadrons as follows:

a. Aircraft maintenance, pre-flight, post-flight and periodic inspections will be accomplished by the Periodic Maintenance Squadron.

b. Communications and electronics maintenance to include pre-flight, post flight and periodic inspections will be accomplished by the Electronics Maintenance Squadron.

7. Field Maintenance on aircraft and engines will be accomplished by the host base. Field maintenance on communications and electronic equipment will be accomplished by the Electronic Maintenance Squadron.

8. The facilities required to accomplish the organization and field maintenance workload are estimated as follows:

a. Hangar and shop space to accommodate 50% of the aircraft assigned.

b. An engine build-up shop.

c. A special electronics maintenance shop.

9. Depot maintenance of the aircraft and associated equipment will be required and provided by AMC. The high aircraft utilization will require that IRAN and other maintenance be accomplished with minimum aircraft out-of-service time.

IV & V. TRAINING REQUIREMENTS AND TRAINING DATES.

1. The initial training of aircrew and aircraft maintenance personnel is being conducted at the Lockheed Factory School. The 4701st AEW&C has been overmanned to make a sufficient number of personnel available to train for the 4701st requirement and to man the 4712th AEW&C Squadron with trained personnel. The training schedule at Lockheed is as follows:

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a. Pilots (Ground School Course)

Class Enter	Class Graduate	No. Quotas Allocated
12 Oct 53	30 Oct 53	10
9 Nov 53	27 Nov 53	10
30 Nov 53	18 Dec 53	10
11 Jan 54	29 Jan 54	10

Six pilots received 15 hours of flight training in RC-121C aircraft under supervision of a Lockheed Instructor Pilot.

b. Flight Engineers

Class Enter	Class Graduate	No. Quotas Allocated
10 Aug 53	30 Nov 53	10
2 Nov 53	22 Jan 54	10
25 Jan 54	16 Apr 54	10

Six airmen from the class entering training on 10 Aug 53 remained at Lockheed for flight phase of training with the six pilots referred to above.

c. Maintenance Crew Chief

Class Enter	Class Graduate	No. Quotas Allocated
12 Oct 53	13 Nov 53	7
4 Jan 54	5 Feb 54	7
15 Mar 54	16 Apr 54	6
19 Apr 54	5 May 54	5

d. Power Plant Mechanics

Class Enter	Class Graduate	No. Quotas Allocated
19 Oct 53	30 Oct 53	7
11 Jan 54	22 Jan 54	7

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Class Enter	Class Graduate	No. Quotas Allocated
15 Feb 54	26 Feb 54	7
26 Apr 54	7 May 54	6
31 May 54	11 May 54	7

e. Hydraulic & Control

Class Enter	Class Graduate	No. Quotas Allocated
2 Nov 53	20 Nov 53	7
8 Mar 54	26 Mar 54	7

f. Electrical Systems

Class Enter	Class Graduate	No. Quotas Allocated
12 Oct 53	30 Oct 53	7
8 Mar 54	26 Mar 54	7
12 Apr 54	30 Apr 54	4

g. Air Conditioning Course

Class Enter	Class Graduate	No. Quotas Allocated
26 Oct 53	6 Nov 53	7
29 Mar 54	9 Apr 54	7
3 May 54	14 May 54	6

h. Communications Equipment Installation

Class Enter	Class Graduate	No. Quotas Allocated
12 Oct 53	23 Oct 53	7
15 Feb 54	26 Feb 54	7
17 May 54	28 May 54	6

i. Electronics (APS-45, 20B) Installations

Class Enter	Class Graduate	No. Quotas Allocated
23 Nov 53	22 Feb 54	10
14 Dec 53	15 Mar 54	8

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Class Enter	Class Graduate	No. Quotas Allocated
1 Feb 54	26 Apr 54	10

Forty six (46) radar repairmen will be trained by 30 June 1954. This number will provide sufficient qualified key personnel for the 4701st and 4712th AEW&C Squadrons.

2. An additional requirement exists for 21 spaces in the flight engineers course at Lockeed Aircraft Corporation. The dates for training are as follows:

FY	2/55	3/55	4/55	1/56
	5	5	5	6

3. A requirement exists for a suitable AEW&C radar operator course to train those personnel now attending Basic AC&W Radar Operator courses. The Training Command and Hq USAF have concurred. However, no conclusions have been reached at this time.

4. A requirement exists for forty-eight (48) Airborne Early Warning Radar Specialists. These airmen will be trained at the school operated by the Department of the Navy through the facilities of FAETUPAC. Quotas have been requested from 1 Jul 54 to 1 Jan 56 with an input of 8 students per class, course length of 12 weeks. Upon completion of the 12 weeks at FAETUPAC, two weeks of Electronics Equipment Installation instruction is required at Lockheed Aircraft Corporation.

5. Five (5) quotas have been requested for Senior Aircraft Propeller Specialists. Dates for entry of above students in ATRC course at Chanute have not been received as of this date.

6. Future requirements for Heavy Transport Carrier Mechanic (Crew Chief 43171C) based on attrition training and aircraft delivery schedules total 71 airmen, with training dates as follows:

FY	2/55	3/55	4/55	1/56	2/56
	8	7	21	21	14

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7. A requirement exists for 32 Aircraft Engine Mechanic quotas on the Wright Turbo-Compound R 3350-34 Engine to be allocated this command on the following time scale:

FY	2/55	3/55	4/55	1/56
	5	4	12	11

8. Due to the limited number of RC-121C & D aircraft programmed for use by the Air Force at the present date, maximum utilization of the training facilities at Lockheed Aircraft Corporation is recommended.

9. During the Operational Suitability Tests many of the Aircraft Controller and radar operator training requirements will be determined. Upon completion of the above tests, any adjustment required in formal school courses to train personnel to the desired proficiency levels will be presented.

10. The time phasing for military personnel assignment to the AEW&C Squadrons will be based upon aircraft delivery schedules and as authorized in T/D's and T/O's. In those AFSC's where lead time is required, the DCS/O will advise the DCS/P of the amount of lead time for each AFSC assignment.

VI. OPERATIONALLY READY REQUIREMENTS.

1. Activation, manning, construction of facilities, aircraft delivery and unit training are considered minimum essentials for operational ready AEW&C Wings. Any part or whole program stated above which is incomplete shall be considered as delaying the date on which full 24-hour operations on four stations can be accomplished.

2. Unit Activation Schedule:

Unit	(Calendar)	Location	Acft No.	Type of Organizatio
%8th Air Division Hq	In Being	McClellan AFB		T/D
*4701st AEW&C Sq	In Being	McClellan AFB	1-10	T/D

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Unit	(Calendar)	Location	Acft No.	Type of Organization
#4712th AEW&C Sq	In Being	McClellan AFB	11-20	T/D
961st AFW&C Sq	1 Dec 54	Otis AFB	31-40	T/O
551st Electronic Maint Sq	1 Dec 54	Otis AFB		T/O
551st AEW&C Wg	1 Dec 54	Otis AFB		T/O
551st Periodic Maint Sq	1 Dec 54	Otis AFB		T/O
552nd Electronic Maint Sq	1 Dec 54	McClellan AFB		T/O
552nd Periodic Maint Sq	1 Dec 54	McClellan AFB		T/O
964th AEW&C Sq	1 Mar 55	McClellan AFB	21-30	T/O
962nd AEW&C Sq	1 Jul 55	Otis AFB	41-50	T/O
**552nd AEW&C Wing	1 Jul 55	McClellan AFB		T/O
965th AEW&C Sq	1 Aug 55	McClellan AFB	51-60	T/O
966th AEW&C Sq	1 Nov 55	Seymour-Johnson	61-70	

% Scheduled to inactivate when three AEW&C sqns become operational at Otis AFB and the 551st AEW&C Wing activates.
* To move to Otis March 55, inactivate and be redesignated 960th AEW&C Sq.
# To be redesignated 963rd AEW&C Sq on 1 Mar 55.
** Activation during 3rd Qtr FY 55 under consideration.

3. Manning of AEW&C units is shown in Section III, Unit Organization, paragraphs 3, 4 and 5.

4. Construction of facilities to support the AEW&C Wings have been programmed in Public Works Programs during FY's 53, 54 and 55. The facilities consist of those normally connected with a tactical organization with maintenance buildings for aircraft and electronics equipment designed to meet size and utilization rates previously described for the RC-121C & D.

5. The current aircraft delivery schedule is as follows:

Date	RC-121C	RC-121D	Cumulative Totals*
On Hand	3*		3
May 1954	2		5
June 1954	2	1	8
July 1954	2	2	12
August 1954		3	15
September 1954		2	17
October 1954		2	19
November 1954		2	21
December 1954		3	24
January 1955		2	26
February 1955		2	28

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Date	RC-121C	RC-121D	Cumulative Totals*
March 1955		2	30
April 1955		2	32
May 1955		2	34
June 1955		2	36
July 1955		2	38
August 1955		4	42
September 1955		4	46
October 1955		4	50
November 1955		4	54
December 1955		3	57
January 1956		4	61
February 1956		4	65
March 1956		3	68
April 1956		4	72
May 1956		3	75
June 1956		4	79

(*Does not include RC-121C wrecked at San Pablo Bay, California, Feb 54)

VII. OPERATIONALLY READY DATES.

1. The AEW&C Wings as defined in this operations plan are expected to be capable of operations on four stations, 24 hours per day on the following dates:

UKO2 AEW&C Div, Otis AFB - 1 March 1956

UKO1 AEW&C, McClellan AFB - 1 January 1957

2. Partial barrier establishment during build up phases shall be as directed by the EADF and WADF Commanders in the accomplishment of their assigned mission and/or as intelligence information so dictates.

VIII. DEPLOYMENT LOCATIONS.

1. The AEW&C units will be based at the following locations as tenant units:

a. 8th Air Division - McClellan AFB, California

b. 551st AEW&Con Wing - Otis AFB, Mass.

c. 552nd AEW&Con Wing - McClellan AFB, California

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2. The "on-station" coordinates of AEW&C aircraft with picket vessels on-station are as follows:

East Coast		West Coast	
Sta 1 - 42 15'N	64 02'W	Sta 5 - 39 45'N	128 15'W
Sta 2 - 39 28'N	66 48'W	Sta 6 - 36 30'N	127 41'W
Sta 3 - 37 01'N	69 46'W	Sta 7 - 34 29'N	124 36'W
Sta 4 - 35 15'N	73 12'W	Sta 8 - 32 25'N	121 50'W

3. The "on-station" coordinates of AEW&C aircraft with no picket vessels on-station are as follows:

East Coast		West Coast	
Sta 1 - 42 48'N	66 18'W	Sta 5 - 38 43'N	126 55'W
Sta 2 - 39 35'N	68 20'W	Sta 6 - 36 01'N	125 15'W
Sta 3 - 38 10'N	71 56'W	Sta 7 - 33 36'N	123 28'W
Sta 4 - 35 30'N	73 05'W	Sta 8 - 31 26'N	120 25'W

4. Picket vessels "on-station" coordinates are as follows:

East Coast		West Coast	
Sta 1 - 42 45'N	68 12'W	Sta 6 - 47 40'N	126 50'W
Sta 2 - 41 00'N	68 00'W	Sta 7 - 46 00'N	126 45'W
Sta 3 - 40 00'N	70 00'W	Sta 8 - 44 20'N	126 11'W
Sta 4 - 38 56'N	72 05'W	Sta 9 - 37 42'N	124 59'W
Sta 5 - 37 41'N	73 00'W	Sta 10- 36 05'N	124 06'W

IX. CHANNELS OF CONTROL AND COMMUNICATIONS.

1. Operational control of AEW&C aircraft when on-station will be vested in the sector commander in whose area the AEW&C station is located.

2. The 8th AEW&C Division will be under the command and administrative control of Hq, Western Air Defense Force.

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3. Communications between AEW&C aircraft and ground stations will be by high frequency radio in the two to twelve MCS band. Voice communication is planned in the interest of speed when atmospheric conditions permit. Under some conditions it is anticipated that radio telegraph (CW) must be employed for realiability.

4. A total of seven ground HF radio stations are planned. The locations are as follows:

East Coast	West Coast
P-13 - Brunswich NAS, Me	Hamilton AFB
P-10 - North Truro, Mass	Norton AFB
P-45 - Montauk Point, N. Y.	
P-54 - Palermo, N. J.	
P-56 - Cape Charles, Va.	

Each of the above ground communications station is to be equipped with AN/FRT-15 (3KW) transmitters.

5. With four aircraft "on-station" using simplex type of operation, a total of 16 high frequencies (8 day and 8 night) between 2.8 and 8.0 MC are required for each coast. Minimum HF communication circuitry requirements will be determined as a result of Operational Suitability Test (Ref Sec II, paragraph 11). Power output used on these frequencies (see par. 4 above) will be adjusted to the minimum required for reliable communications.

6. Communications between AEW&C aircraft and interceptor aircraft will be accomplished by UHF radio. The frequencies for air-to-air operation will be made available from tactical frequencies presently assigned to ADC.

7. The complete list of programmed radar, ECM, navigation, identification, communications, and test equipment installed in the RC-121C and

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D aircraft is as follows:

NUMBER	NOMENCLATURE	PURPOSE	RC-121C	RC-121D
		RADAR		
5	AN/APA-56	P.P.I	9 Adapted APS 20B IP203 indicators	X
1	AN/APA-57B	Ground Position Ind	x	x
1	AN/APA-81	Indicator(G.S.P.I.)		x
1	AN/APS-20B	Search Radar	x	x
1	AN/APS-45	Radar Height Finder	x	x
1	AN/APR-27A	Radar Relay Receiver	x	x
1	AN/ART-28	Radar Relay Transmitter	x	x
1		AMTI	x	x
1	Poloroid Land			
2	Camera		x	
		COMMUNICATIONS		
1	R-23A/ARC-5	L/F Comm.		x
1	AN/AIC-8	Intercom System	x	
1	AN/AIC-10	Intercom System		x
8	AN/ARC-27	UHF Transceiver	x	x
3	AN/ARR-15	Command Liaison Rx	x	x
2	AN/ART-13	Command Liaison Tx	x	x
2	BC-453-B	L. F. Receiver	x	x
1	MI-36A	P. A. System	x	x
1	ARA-26	Emergency Keyer	x	x
1	LM-14	Frequency Meter	x	
*2	AN/ARC-21	H. F. Transceiver	x	x
		NAVIGATIONAL AIDS		
1	C-1	Compass Sig-Power Amp.	x	x
1	AN/APN-1	L. A. Radio Altimeter	x	
1	AN/APN-9	Loran	x	
1	AN/ARN-6	Radio Compass	x	x
1	AN/ARN-12	Marker Beacon		x
1	AN/ARN-14A	VOR Receiver	x	x
1	AN/ARN-18	Glide Slope Receiver	x	x
1	SCR-718-C	H. A. Radio Altimeter	x	
1	AN/APN-22	Radio Altimeter		x
1	AN/ARA-25	UHF Direction Finder		x
1	AN/APN-70	Loran Receiver		x
1	TS-352/U	Multimeter	(1-352A/U)	(-352A/U)
1	OS-4/AP	Oscilliscope	x	
1	TS-155C	Test Set	x	
1	AN/USM-3	Test-Tool Set	x	x

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NUMBER	NOMENCLATURE	PURPOSE	RC-121C	RC-121D
		NAVIGATIONAL AIDS CONTD		
1	TS-147(C)/UP	Test Set	x	(-147C/UP)
1	AN/USM-25	Oscilliscope		x
1	TS-403/U	Test Set		x
1	AN/ARN-21	Tacan	x	x
		IDENTIFICATION		
*1	AN/APX-6	IFF Transponder	x	x
1	AN/APX-7	Interrogator	x	x
*1	AN/APX-25	SIF	x	x
		ECM EQUIPMENT		
1	AN/APR-9B	ECM Receiver	x	x
1	AN/APA-69	D/F Unit	x	(1st 15 a/c x)
1	AN/ALA-11A	Pulse Analyzer	x	
**1	AN/ALA-6	D/F Unit		x
**1	AN/APA-74	Pulse Analyzer		x

* Installed or retrofitted when equipment becomes available.
** The AN/ALA-6 and AN/APA-74 will be retrofitted to replace the AN/APA-69 and AN/ALA-11A when equipment becomes available.

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208.6 29

DEPARTMENT OF THE AIR FORCE
WASHINGTON 25, D. C.

AFOMO 407J 11 October 1954

SUBJECT: Constitution and Activation of the Hq, 551st Airborne Early Warning and Control Wing and Certain Other USAF Units

TO: Commander, Air Defense Command

1. The following units are constituted, assigned to the Air Defense Command, and will be activated on or about 15 December 1954, as indicated:

Unit	T/O Composition	Authd Str Off	WO	Aum	Sta of Act
Hq, 551st Airborne Early Warning & Control Wg	1-2121, 1 Oct 54, 1 x Part II	27	1	123	Otis AFB, Falmouth, Mass
961st Airborne Early Warning & Control Sq	1-2128, 1 Oct 54, 1 x Part II	158		868	"
551st Electronics Maint Sq	1-2124, 1 Oct 54, 1 x Part II	8	3	430	McClellan AFB, Sacramento, Calif
551st Periodic Maint Sq	1-2125, 1 Oct 54, 1 x Part II	9	5	394	"

2. Personnel will be furnished from sources under control of the Commander, Air Defense Command.

3. The above are Category D units and are authorized equipment as currently listed in individual UAL's. Air Defense Command will prepare Unit Authorization Lists based on current UAL's listing Unit Essential equipment in the AME column of Form 601B, remainder of equipment will be listed in USE column. Within sixty (60) days from date of this letter, Air Defense Command will submit a proposed list of equipment to be included in the MSAL for UAL's listed above.

4. The precedence categories for the above units are established as indicated in the current issue of the USAF Operating Program - Priorities of Programmed Units; any changes will be reflected in subsequent issues of this publication.

5. Upon activation of the Headquarters, 551st Airborne Early Warning and Control Wing, the 961st Airborne Early Warning and Control Squadron is assigned to the 551st Airborne Early Warning and Control Wing.

6. When the action directed herein has been accomplished, report will be made to Headquarters USAF by means of the Air Force Organization Status Change Report (Reports Control Symbol AF-01) in compliance with current instructions.

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IAr AFOMO 4C7J, DAF, subject: Constitution and Activation of the [illegible]
551st Airborne Early Warning and Control Wing and Certain Other Units

1. Thirty (30) copies of the order issued pursuant to this letter will be forwarded to the Air Adjutant General, Headquarters USAF, ATTENTION: Publishing Division, Washington 25, D. C.

BY ORDER OF THE SECRETARY OF THE AIR FORCE:

L. E. Thiebaud
[illegible]
Colonel, USAF
Air Adjutant General

4 Incls
1. T/O 1-2121
2. T/O 1-2122
3. T/O 1-2123
4. T/O 1-2124

DISTRIBUTION:
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Joint Welfare Board (1)
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208.6

DEPARTMENT OF THE AIR FORCE
WASHINGTON 25, D. C.

AFOMO 427J

1 November 1954

SUBJECT: Constitution and Activation of the 551st Electronics Maintenance Squadron and the 551st Periodic Maintenance Squadron

TO: Commander, Air Defense Command

1. The 551st Electronics Maintenance Squadron and the 551st Periodic Maintenance Squadron are constituted, assigned to the Air Defense Command, and will be activated on or about 18 December 1954, at Otis Air Force Base, Falmouth, Massachusetts, under appropriate Unit Manning Documents with non-T/O authorization. Authority is granted to reorganize these units in the future as desired, without reference to this headquarters, provided the reorganization does not exceed the command's grade and space authorization.

2. Concurrently with the activation of the Headquarters, 551st Airborne Early Warning and Control Wing in letter AFOMO 407J, DAF, dated 11 October 1954, the above units are further assigned to the 551st Airborne Early Warning and Control Wing.

3. Personnel will be furnished from sources under control of the Commander, Air Defense Command.

4. UAL's for the above units will be prepared similarly to those prepared for like units directed activated in letter AFOMO 407J, DAF, dated 11 October 1954, except that all equipment will be listed in the USE column of Form 601B.

5. The precedence categories for the above units are established as indicated in the current issue of the USAF Operating Program - Priorities of Programmed Units; any change will be reflected in subsequent issues of this publication.

6. Redesignation, inactivation and any future activation of these units will remain a function of Headquarters USAF and appropriate directives will be issued upon request.

7. When the action directed herein has been accomplished, report will be made to Headquarters USAF by means of the Air Force Organization Status Change Report (Reports Control Symbol AF-01) in compliance with current instructions.

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Ltr AFCMO 4F7j, DAF, subject: Constitution and Activation of the 551st Electronics Maintenance Squadron and the 551st Periodic Maintenance Squadron

8. Thirty (30) copies of the order issued pursuant to this letter will be forwarded to the Air Adjutant General, Headquarters USAF, ATTENTION: Publishing Division, Washington 25, D. C.

BY ORDER OF THE SECRETARY OF THE AIR FORCE:

E. E. TORO
Colonel, USAF
Air Adjutant General

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Joint Welfare Board	(1)
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LI

TO: MC4W

15 NOV 195

APCMD AFTJ, Subj: Constitution and Activation of the 551st Electronics Maintenance Squadron and the 551st Periodic Maintenance Squadron

ADCOM (1 November 1954) 1st Ind

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

TO: Commander, Western Air Defense Force, Hamilton Air Force Base, California

1. The units listed in paragraph 1a basic letter, having been constituted, assigned to this command, are further assigned to Western Air Defense Force, and will be activated on 15 December 1954 at Otis Air Force Base, Massachusetts. Units will be activated under appropriate Unit Manning Documents as non-T/O organizations.

a. Concurrent with activation, units will be assigned as follows:

UNIT	ASSIGNMENT
551st Electronics Maintenance Squadron	551st Airborne Early Warning and Control Wing
551st Periodic Maintenance Squadron	551st Airborne Early Warning and Control Wing

2. Administrative and logistic support as required will be furnished these units from sources under control of the Commander, Western Air Defense Force.

3. Personnel will be furnished from sources under control of the Commander, Western Air Defense Force.

4. Other instructions:

a. The manning tables for these units are as outlined in letter, this headquarters, subject: "[illegible] Tables of Distribution", dated 12 November 1954.

b. The Commander, Western Air Defense Force will publish necessary orders effecting action directed herein.

MEMO FOR RECORD: Activations directed by this correspondence are programmed actions as approved by the ADC Council on 22 Sep 54. Units are being activated as Manned T/O organizations in view that contract maintenance will be utilized when the requirement for contract maintenance no longer exists units will be reorganized under T/Os.

2-CAT-C-[illegible]
2-CAT-B
3-DOS/O
4-DOS/M
5-DO/P
6-DCS/O
7-Adm

No

MSgt W A Thorburn/el
2145
10 Nov 54

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AFCMD 4273, Subj: Constitution and Activation of the [illegible] Electronics Maintenance Squadron and the 55[illegible] Periodic [illegible]

AFCMD (1 November 1954) 1st 2nd (Cont'd)

do. Additional distribution of orders pu[illegible] directed by paragraph 8, basic letter, and ten (10) [illegible] headquarters tasked for Manpower and Organization.

do. A report of completed action will be forwarded [illegible] 20--.

BY ORDER OF THE COMMANDER:

[illegible]

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208.6

APPROVED AEW&C PROGRAM

REVISED
22 SEPT 54

RC 121 ACFT DELIVERY SCHEDULE (CUM)

	1954						1955												1956					
	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
	13	17	19	22	25	27	29	32	34	36	38	42	46	52	57	60	62	65	68	71	74	77
McCLELLAN																						
4712 SQ.	3	7	9	12	15	17	REORG TO 963 SQ 9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
							ACTIVATE 964 SQ 10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
4701 SQ.	10	10	10	10	10	10	TRANSFER TO OTIS															
												ACTIVATE 965 SQ	—	2	7	10	10	10	10	10	10	10
				ACTIVATE 552 P/AM SQ ACTIVATE 552 E/AM SQ																		
8TH AIR DIV												INACT DIV ACTIVATE 552 WG HQ	ASGD TO WADF									
OTIS							REORG 960 SQ 10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
				ACTIVATE 961 SQ				—	2	4	6	8	10	10	10	10	10	10	10	10	10	10
												ACTIVATE 962 SQ	2	6	10	10	10	10	10	10	10	10
				ACTIVATE 551 P/AM SQ ACTIVATE 551 E/AM SQ																		
	PROV ACT 551 WG			ACTIVATE 551 WG HQ	ASGD TO DIV						REASON TO EADF											
SEYMOUR JOHNSON															ACTIVATE 966 SQ	—	2	5	8	10	10	REASN TO SEYMOUR JOHN 10
																						966 SQ 10

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C

208.3

O4T (Unclas) Summary of AFWAC Facilities
Dir/Instls

28 Sep 54
/s/t/ Capt.L.C.Porter,Jr./2616/1

1. The following resume of AFWAC Facilities is listed for your information and record:

a. McClellan AFB. It will be possible to park and maintain up to 40 RC-121 aircraft on the interim parking area shown on Inclosure #1. This plan has been coordinated between the 8th Air Division and the base commander at McClellan AFB. It should be pointed out that the permanent mission at this base has only 28 aircraft and the additional aircraft are shown to indicate the location of an additional squadron in the event Otis facilities are not available. Housing will be available for all assigned airmen as the decision has been made to double up permanent barracks space until additional housing is completed in December 1955. Real estate acquisition approval for our permanent facilities has been held up by House Armed Services Committee until recently and after Joint House and Senate Committee approval, money will be available to acquire this land. In view of this delay, it will be at least two years before any permanent maintenance or operational facilities are completed for the AFWAC wing and tactical squadrons. This headquarters, together with 8th Air Division personnel, proposes additional prefabricated buildings to house increased periodic and electronic maintenance requirements in the interim area which will meet the full Group operational mission until permanent facilities are completed some two years hence.

b. Otis AFB. The Public Works Program for AFWAC facilities at Otis AFB will provide Beneficial Occupancy of the major portion of the maintenance facilities between December '55 and February '56, including the necessary operational parking for 24 aircraft. This latest Beneficial Occupancy Date is at variance with the September '55 figure given in 8th Air Division presentation. In order to provide facilities for the programmed arrival of the 1st Squadron to Otis on 1 March 1955, certain interim maintenance facilities sited across the airfield out of the construction area, were programmed out of FY-55 MAO funds and will be ready for the 1 March 55 arrival of 10 C-121 aircraft. These facilities are shown on Inclosures 2 and 3. The maintenance facilities provide seven paved maintenance stubs, five of which are equipped with nose docks, electrical requirements, water and air. Prefabricated buildings will provide for periodic and electronic maintenance and technical supply facilities. Barracks, BOQ, training and administrative facilities have been provided by activation of existing buildings at Otis AFB. Although parking of 30 C-121 is a major problem, with 12 aircraft in the maintenance area and 9 aircraft on the existing T&B ramp, and with those at "Iran" and on missions, all assigned aircraft can be parked.

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OMF

(Unclas) Summary of AEW&C Facilities

Dir/Instls

28 Sep 54

/s/t/ Capt L.C.Porter,Jr

Comment No. 1 (Cont'd)

As the public works nose wing hangars and ramp become available in Dec. 1955 to Feb. 1956, the interim facilities will be vacated and are then available to receive the 1st C-121 Squadron programmed for Seymour-Johnson in Feb 1956 as facilities at Seymour will not be available until July 1956. This will provide parking and maintenance for the 10 assigned squadron aircraft for the interim period.

c. Seymour-Johnson AFB. Inclosure 4 shows the AEW&C programmed facilities for the single AEW&C Squadron at this base and will be available for occupancy in July 1956. This area has been planned so that the second and third squadrons can easily be integrated in this area.

/s/t/ JAMES A. DUSENBURY
Lt Colonel, USAF
Chief, Plans Division
Ext 2020

/s/t/ ROBERT E. L. KNAPP
Colonel, USAF
Deputy Director of
Installations

4 Incls
w/d

When Incls 1,2,3, and 4 are withdrawn or not attached, the classifiation of CONFIDENTIAL on this correspondence will be changed to UNCLASSIFIED.

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A
Comm (Ad)
Adm
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Class
Hist
Pub
Comd Surg
Comd Staf JA
Comd Chap
Comd IG
Insp Svs
PM
Flt Sfty
PIO
DCS/C
Bud
Fin
Mgt Anlys
Stat
DCS/P
Civ Pers
Mil Pers
Ass Asgmt
Off Asgmt
Cols & Rcds
Spec Actions
OS
Pers Sv
PPR
WAF
Trng
I/I
OI
R & E
S & T
DCS/O
C C A
C & E
M & O
O C D
Ops Anlys
Gen T
P & P
Wea O
DCS/M
Acft
Elect
Gn Sup & Svs
Instl
Log Plans
Hq Sq Sec
FCDA
CAA

Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3 no

Prepared by Maj L. W. Myers/ht/adg

Telephone 2722

6 November 1954

ADC HQ Form 11
5 Feb 54 Revised

CONFIDENTIAL

FILE NUMBER 208.1

33

2pp

ADCOM-SE

SUBJECT: (Unal) Mission and Responsibilities of 9th Air Division (AEWCom)

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

1. Reference our classified letter, Subject: AEWCom Program dated 16 June 1954, paragraph 3 b (1) (g). Expenditure of effort in the accomplishment of this responsibility by the 9th Air Division (AEWCom) appears to be premature at this time and not in consonance with our initial justification for the Division headquarters. Specifically, the following factors were considered by this headquarters:

a. The full capabilities of the 9th Air Division staff should be devoted to solution of the short range problems involved in gaining an operational status of authorized AEWCom forces at the earliest possible date.

b. Concepts for operation and utilization of an AEWCom Air Division as a mobile air defense task force have not been developed within the headquarters as of this date.

2. In view of the above, the 9th Air Division (AEWCom) is relieved of the responsibility outlined in paragraph 3 b (1) (g) of referenced letter until further notified by this headquarters.

3. The mission of the 9th Air Division (AEWCom) paragraph 3 a. (1) will be amended as follows:

"The mission of the air division (AEWCom) is to provide airborne early warning and control in the air defense combat zone. This includes: station patrol under the operational control of the Air Division (Def) Commander in those sector the aircraft is operating; emergency replacement duty for

B-12-1

Identical ltr sent to Comdr EADF

3/12/54

CONFIDENTIAL

This correspondence is classified ? in accordance with Par 24 b, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

EADF - 1 - 5/16/54 3/c

EADF - 1 - 5/18/54 2/c 3/c

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ADCOT-31
SUBJECT: (Unal) Mission and Responsibilities of 6th Air Division (ADHOCom) Cont'd.

inactive land based and/or picket ship surveillance and control stations and augmentation for over extended land based surveillance and control stations as directed by the Air Defense Force Commander."

BY ORDER OF THE COMMANDER:

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DISPOSITION FORM

SECURITY CLASSIFICATION (If any)

208-1

FILE NO.

SUBJECT: (Uncld) Mission and Responsibilities of 8th ADiv (AdWCon)

TO: DCS/O FROM: O&T DATE: 23 Nov 54 COMMENT NO. 1

Maj Lowery/2723/bc

1. On 16 June 1954 this headquarters forwarded to ADC and 8ADiv the mission and responsibilities of the 8th Air Division (AdWCon). ADC has since issued a similar directive to the division.

2. Numerous verbal queries by 8ADiv to clarify certain portions of the mission, and one particular responsibility contained within the above cited letter, have resulted. First, we omitted the policy pertaining to operational control of AdWCon aircraft when on-station. This is now clearly defined as being a function of the air division (defense) commander in whose area the aircraft is operating. Secondly, we did not define the responsibility for manning or assigning aircraft to emergency replacement duty for inactive land based or picket ship surveillance and control stations. This has been defined as a function of the task force commander.

3. The responsibility previously given the 8th Air Division (AdWCon) to make recommendations that will lead to this headquarters for the utilization of an AdWCon division as a mobile air defense task force appears premature. It is feasible to permit the retention of this responsibility for the 8th Air Division (AdWCon), but action thereto should be deferred until our current operational problems are solved. In view of the command council approval of the AdWCon program on 2 Sep 54, the 8th Air Division (AdWCon) staff should be expending all their efforts at this time in developing an operational capability off both coasts at the earliest possible date. To accomplish this, the attached letter relieves the 8th Air Division (AdWCon) of this "task force" responsibility until further notified by this headquarters.

EARL T. HART, JR.
Colonel, USAF
Ch, Opns Plans Div
DAO 2601 - 3

JOHN C. MAYER
Colonel, USAF
Director, O&T
DAO 2212 - 3

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

208.6

GENERAL ORDERS)
NUMBER 47)

28 December 1954

DESIGNATION AND ORGANIZATION OF PROVISIONAL UNITS--1. The Airborne Early Warning and Control Wing, Provisional is designated and organized at McClellan Air Force Base, California, effective 1 January 1955. Concurrent with organization this unit is attached to the 8th Air Division (AEW&Con) for operational and administrative control.

2. Mission: To develop plans, policies, and procedures for the Airborne Early Warning and Control units programmed for activation at McClellan Air Force Base.

3. Personnel will be attached for duty with this unit from standard type units under the control of the Commander, Western Air Defense Force.

4. Equipment will be furnished from sources under the control of the Commander, Western Air Defense Force.

5. Action directed herein will be reported in accordance with Air Force Regulation 20-49.

6. Authority: Air Force Regulation 20-27.

BY ORDER OF THE COMMANDER:

OFFICIAL:

GEORGE F. SMITH
Major General, USAF
Chief of Staff

WALTER W ROBINSON
Colonel, USAF
Command Adjutant

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

GENERAL ORDERS)
NUMBER 47)

28 December 1954

DESIGNATION AND ORGANIZATION OF PROVISIONAL UNITS--1. The Airborne Early Warning and Control Wing, Provisional is designated and organized at McClellan Air Force Base, California, effective 1 January 1955. Concurrent with organization this unit is attached to the 8th Air Division (AEW&Con) for operational and administrative control.

2. Mission: To develop plans, policies, and procedures for the Airborne Early Warning and Control units programmed for activation at McClellan Air Force Base.

3. Personnel will be attached for duty with this unit from standard type units under the control of the Commander, Western Air Defense Force.

4. Equipment will be furnished from sources under the control of the Commander, Western Air Defense Force.

5. Action directed herein will be reported in accordance with Air Force Regulation 20-49.

6. Authority: Air Force Regulation 20-27.

BY ORDER OF THE COMMANDER:

OFFICIAL:

GEORGE F SMITH
Major General, USAF
Chief of Staff

WALTER W ROBINSON
Colonel, USAF
Command Adjutant

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CONFIDENTIAL

36

HEADQUARTERS
8TH AIR DIVISION (AEW & C)
McCLELLAN AIR FORCE BASE
McCLELLAN, CALIFORNIA

8DOPR

7 DEC 1954

SUBJECT: Request for Provisional Organization

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

1. On 18 December 1954, scheduled activations of the approved AEW&C program, as revised 22 September 1954, will bring about an AEW&C organization structure as indicated on Inclosure #1 to this letter. As shown by that inclosure, at that time this Headquarters, in addition to directing the day-to-day operations of McClellan AEW&C Squadron units, will be engaged in supervising and directing the operation and buildup of a wing structure at Otis Air Force Base.

2. As a result, with a current authorization of 27 officers, 52 airmen and 6 civilians, this Headquarters on 18 December must perform all of the functions eventually to be assigned to the 552nd AEW&C Wing, and will be directing an operation which will be just one (1) squadron short of a fully activated AEW&C Wing with assigned tactical and support units. At the same time, the Division Headquarters must continue to accomplish the extensive planning and policy-making actions required for development of a two coast program of airborne early warning and control activities.

3. I consider the planning and policy-making functions which must be performed by this Headquarters prior to its scheduled inactivation in August 1955 to be of paramount importance to the future of the AEW&C program. The policies, tactics and procedures placed into being today will exist subsequent to August 1955. Of equal importance is the close supervision and direction of the day-to-day operations of the McClellan units. The procedures, tactics and flight policies now being developed here will provide the basis for all operations policies which will apply to the overall AEW&C program, now and in the future.

4. I have found it most difficult under the current organization to employ the Division staff resources in a manner which will permit

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SA/DIV 0417

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the limited number of authorized officers and airmen to carry out effectively the Wing and Division staff responsibilities required by our mission directive. A functional separation of staff responsibility is required. Furthermore, such a separation must be accompanied by a degree of physical separation of the agencies charged with the Wing and Division type operation.

5. It is requested, therefore, that your Headquarters take action to obtain authorization for organization of a provisional AEW&C Wing at McClellan Air Force Base.

6. The provisional organization requested will provide a trained staff for the 552nd AEW&C Wing when that organization is activated in August 1955. In addition, this organization will be the means whereby it will be possible to accomplish the functional and physical separations referred to in paragraph 4, above.

7. Although it is proposed to man the provisional wing organization from personnel resources available to the Division, attention is directed to the fact that the Division Headquarters personnel authorizations provide only for a staff consisting of 27 officers, 52 airmen and 6 civilians. The staff functions required of that group now, and under the provisional organization proposed, exceed possible limits of personnel performance which can be demanded. Therefore, in addition to the action requested in paragraph 5, it is requested that your Headquarters confirm the proposed action of this Headquarters to overman the 8th Air Division Headquarters as may be required to build up the provisional wing to a personnel position representative and required for wing operation. In this regard, reference is made to the situation described in paragraph 2 above. Additional floor space will not be required.

8. Favorable approval of the action requested will result in the following benefits:

a. In August 1955, there will be in place a trained and effectively operating and complete staff for manning of the 552nd AEW&C Wing when that organization is activated. I believe that the benefits which will accrue to the Western Air Defense Force AEW&C operation at that point in time are obvious.

b. The Division staff will be relieved from the responsibility of running the day-to-day aircraft operations of McClellan AEW&C units and can devote a maximum effort to developing the overall AEW&C program as required by mission directive. Again, I believe the benefits are obvious not only as it would pertain to your Headquarters, but to the overall air defense picture and future AEW&C operations.

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9. Full recognition has been given to conservation of manpower under the proposals made in this communication. I do not consider it necessary to man a Division staff under this concept of organization to the degree that 27 officers, 52 airmen and 6 civilians will be required. I propose instead to staff the provisional structure at Division level as follows: 15 officers, 17 airmen and 2 civilians. No additional civilian spaces will be required and the remaining four (4) civilian and forty-seven (47) military spaces now authorized will be made available to the provisional wing. A diagrammatic picture of the Division-Wing organization is contained in Inclosure #3 to this letter.

10. Reference is made to the position of Comptroller at Division level as shown on Inclosure #3. It should be noted that under the provisional organization proposed, that the Comptroller function will be retained in the Division Headquarters. This is required because of the two coast statistical and budget problems which will remain in existence until August 1955. At that point in time, the Comptroller function would revert to the 552nd Wing.

11. Operation of the provisional wing would be accomplished in the conventional manner. The Division staff, however, because of its limited size will function solely as a planning and policy-making body and in the closest coordination possible in developing all aspects of the program.

12. I consider that the personnel talent, planning and policy-making requirements inherent in developing the concepts of AEW&C, require a rank structure for staff personnel above that provided for in current manning documents. I do not consider it advisable to withhold from the provisional wing all of the ranking people required to perform the policy and planning which must be accomplished by the Division. Nor do I consider it advisable to retain for Division functioning, any of the senior ranks which will be authorized on 18 December for the 551st Wing. At the same time, however, I do believe it necessary that the three (3) most critical areas of the Division staff; i.e., Operations, Personnel and Materiel be occupied by officers in the rank of Colonel. In this regard, attention is invited to the Division Unit Manning Document submitted to your Headquarters for the 31 December 1954 cycle. Approval of the rank structure proposed in that document will man the provisional organization under the concepts proposed. It is recognized, however, that because of the scheduled inactivation of the Division in August 1955, that any significant action to provide required personnel may not be forthcoming. In such event, it is requested that, in addition to the currently authorized Colonel spaces now allocated to this command, that three (3) Colonels be made available to the Division to perform the Operations, Personnel and Materiel functions required between now and August 1955.

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13. Your Headquarters is aware of previous proposals made by this command regarding the possibility of retaining an AEW&C Division Headquarters activity beyond the August 1955 date. Informal information available to this command indicates that there is a possibility of future Headquarters Air Defense Command action to justify retention of a Division activity beyond that time. It is my opinion that, under the present concepts of operation as contained in the AEW&C Operational Plan of 10 March 1954, justification of a Division Headquarters will not be possible, unless its composition is designed under the most austere of manning standards and capable of producing with a small personnel complement planning and policy direction of sufficient value to justify its existence. The manning standards proposed for the Division provisional organization of 12 officers, 10 airmen and 2 civilians (personnel remaining after the Comptroller function reverts to the Wing, Ref: paragraph 10), may provide the basic justification should such action be taken.

14. In summary:

a. The 8th Air Division Headquarters organization and personnel authorizations are inadequate to perform the wing functions now required to direct the McClellan AFB AEW&C activities and simultaneously exercise Division policy direction required for the development of a two-coast activity. This dual effort decreases the operating efficiency of the command.

b. It is requested that action be initiated to authorize the activation of a provisional AEW&C Wing at McClellan AFB to permit a breakout of the wing functions. In addition, this provisional organization will provide a trained staff to man the 552nd AEW&C Wing in August 1955.

c. To staff the Division and Wing structures under this concept of provisional organization, it is requested that authority be granted to overman the Division Headquarters as required to bring into being a representative T/O Wing structure for McClellan operations.

d. Under this provisional concept, the Division Headquarters staff would be reduced to a complement of 18 officers, 17 airmen and 2 civilians; the remaining spaces to be made available to the provisional Wing.

e. Under this organization, the provisional Wing will have a primary mission of directing for the Western Air Defense Force all McClellan AEW&C activities. The Division Headquarters will be primarily concerned with the policy matters of the development of AEW&C on two coasts.

3 Incls
1 - Dec 54 Orgn
2 - Aug 55 Orgn
3 - Provisional Orgn

KENNETH H. GIBSON
Brigadier General, USAF
Commander

B-516-5

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Hq 8th ADiv (AEW&Con) 8DOPR Subj: Request for Provisional Organization

WDCDR (7 Dec 54) 1st Ind 10 Dec 1954

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

TO: Commander, Air Defense Command, Ent AFB, Colorado Springs, Colorado

1. I am in complete agreement with the proposal contained in basic letter to authorize the organization of a provisional AEW&C Wing Headquarters at McClellan Air Force Base and so recommend this action. This will permit a clear delineation of functions and responsibilities between the 8th Air Division (AEW&Con) Headquarters and the Wing Headquarters organization preparatory to activation of the 552d AEW&C Wing programmed for August 1955.

2. The supervision and operational aspects of this proposal are obvious. It follows the identical action which was taken to organize a provisional AEW&C Wing Headquarters at Otis Air Force Base preliminary to activation of the 551st AEW&C Wing Headquarters on 18 December 1954. The increased burden now placed within 8th Air Division Headquarters to perform in a dual capacity in that it must supervise the Wing activities at Otis Air Force Base plus those at McClellan Air Force Base without benefit of a Wing Headquarters organization at McClellan Air Force Base to which Wing problems can be delegated, is both operationally and organizationally unsound.

3. No additional manpower authorizations will be required to accomplish the proposed organization of the provisional Wing Headquarters at McClellan Air Force Base. Authorizations presently available to Headquarters 8th Air Division will be used for manning required positions in the provisional Wing Headquarters as indicated in paragraph 9 of basic letter. There is a question, however, of sufficient Colonel authorizations being available within present space allocations to permit the procurement of qualified key personnel to accomplish both Division and Wing functions at McClellan. To this extent, I agree with the proposal in paragraph 12 of basic letter that three (3) additional Colonels be made available until activation of the 552d AEW&C Wing Headquarters occurs in August 1955.

4. I consider the development of the AEW&C program to be of as sufficiently high priority and importance to our air defense mis- to warrant approval of the proposed action as soon as possible

3 Incls
1 Cy Ea Incl w/d

S/T WALTER E. [illegible]
Major General, USAF
Commander

B-516-6X

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FILE NUMBER 204.6 B

6 PP

28 DEC 1954

	Comdr
	VC
	Cdr
	Comdr Adj
	Adm
	Hist
	Pub
	Comd Secy
	Comd Sec Jr
	IG
	Insp Sys
	PM
	Flt Sfty
	PIO
	DCS/C
	Bud
	Fin
	Mgt Anlys
	Stat
	DCS/P
	Chm
	Civ Pers
	Mil Pers
	Ann Dir
	Off Div
	GS
	Pers Sv
	PP
	WAF
	Trng
	DCS/I
	C&D
	R&E
	S&E
	DCS/O
	Asst Prog
	CCA
	Comm & Elect
	M&O
	OCD
	Ops Anlys
	O&T
	P&R
	Wea O
	DCS/M
	Acft
	Elect
	Gn Sup & Sys
	Instl
	Log Plans
	HQ COMDT

3 Incls

FREDERIC H. SMITH, JR.
Major General, USAF
Vice Commander

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Record Evaluation
Permanent
Temporary
Until
Will Be Confirmed
in Std Publication
Form Under par 3a
ADCSM 5-3 No
Prepared by Lt Col Lewis/vpd
Telephone 2145
Date 21 Dec 54

2-516-1

ADC HQ Form 11
Revised 15 Aug 53

This correspondence is classified CONFIDENTIAL in accordance with Par , AFR 205-1, 24 Jun 53, or for the reason (s) stated.

SIGNATURE

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37

208.1

Projected ADWAC Program

DCS/M
Installations
DCS/P
DCS/O
DCS
CNT
CAS
AAC
Comptroller

ADWP

23 Sept 54

1. The 1954-1960 study incorporates the expansion of the ADWAC program from 7 squadrons at end FY 56 to 12 squadrons by end FY 59. Phasing and proposed location of the additional 5 squadrons are charted below:

	End FY 57			FY 58			FY 59			FY 60		
	Ac	Sq	A/C	Ac	Sq	A/C	Ac	Sq	A/C	Ac	Sq	A/C
McClellan	1	3	27	→								
Otis	1	3	33	→								
Brooklay							1	10	→			
Norton		1	10	→								
McChord		1	15	→								
Seymour-Johnson	1	1	11	1	2	26	1	3	31	→		

2. The present RC-121 aircraft production schedule terminates approximately August 1956. At that time we will have sufficient aircraft to equip the 3 squadrons at McClellan, 3 squadrons at Otis, and 1 squadron at Seymour-Johnson.

3. P&R is requesting that Headquarters USAF approve the ADWAC buildup immediately so that action may be initiated to fund the procurement of additional RC-121 aircraft and support facilities.

4. Request addressees develop detailed requirements appropriate to their functions so that immediate implementing action may be taken upon receipt of USAF approval.

CLAY TICE, JR.
Colonel, USAF
Assistant for Programming
Ext 2691

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27 Dec 1954

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Ltr 8th AD(A&S&Con), ESOPR, Subj: (U) Progress Report

5. Reference paragraph 1c(2), AF Forms 734 covering various facilities to be constructed as interim facilities for SAC units have been handcarried to your headquarters. These forms were received and forwarded to Headquarters USAF for approval and funding. To date no reply has been received.

6. Reference paragraph 1c(3), a directive has been issued to the Corps of Engineers to acquire the 60 acres of land for the permanent A&AC facilities. An information copy of this directive was forwarded to Headquarters 8th Air Division. The Secretary to District Engineer has initiated action to acquire the land authorized by this directive.

7. Reference paragraph 1c(4), no information has been received as to improvement in supply support as resulting from installation of service stock.

8. Reference paragraph 1c(5), request for installation of [illegible] in KC-121 aircraft has been received. Recommendation for delivery of the installation for test and evaluation purposes has been forwarded to Headquarters.

9. Reference paragraphs 1c(7), 1c( ). The 1c(1) is concerned with supply items. The Mentile AFB representative to the C-121 Weapons Phasing Group Meeting, 6-7 December 1954, reported that existing spare parts (bits and pieces) contracts for the A/N-APS-27B, A/A-95 and A/N-APS-42 radar equipment had received 99% complete support. By virtue of these having been shipped without stock number, many parts are now difficult to locate in Air Force supply. A marked improvement in supply support has been evident in the past three days, though 100% support is not yet evident.

FOR THE COMMANDER:

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Improve the HF reliability. Lockheed has indicated they have remedied the HF radio and ERAX interference. The line of sight difficulties will continue until the aircraft is capable of continuous operation at altitudes of 15 to 20 thousand feet. It is recommended that this deficiency of adequate communications be presented to ARDC for improvement.

5. LACK OF AIR SITUATION DISPLAY. The 8th Air Division and SHAPE can solve this problem by local fabrication and installation on delivered aircraft. AMC should be advised of this requirement for incorporating the plotting board on the production line at Lockheed. Our DCS/M should take action on this item.

6. LACK OF ADEQUATE RADIO AIDS. Lack of facilities, spare electronic components, and technicians combine to make this a serious problem. The coming months should see gradual improvement with experience and receipt of personnel from formal training courses. Adequate maintenance facilities will be a deterrent factor for a considerable period of time. All of these deficiencies pertain to DCS/M.

7. LACK OF AUTOMATIC ENGINE STABILIZATION AND NAVIGATION SYSTEM. This Director has processed the requirement for improving these two items. It appears that the APN-66 will meet the requirement. Action is currently under way to have one set installed in the RC-121D. Every effort is being made to have the equipment installed by Lockheed to expedite future installations if equipment proves successful. This particular deficiency correction is well under way.

8. LACK OF RADAR BEACON EQUIPMENT. It is our understanding that LAC has a delivery date in October for the first item. Expeditious delivery could undoubtedly be accomplished with adequate priority. We can provide the requirement for speed up to DCS/M and they should process same through AMC and logistic channels.

9. Since the AFDC presentation will be given as a briefing for Hq USAF Air Council with AMC and ARDC representation, it is recommended that definite channels be established for formal submission of the RC-121 discrepancies. We will then submit our requirements for corrective action to our DCS/M or to the appropriate command headquarters. Since the Navy is directly concerned under the present procurement, the Air Council should be advised of our mission requirements which do not parallel those of the Navy. A method of incorporating our modification requirements must be established as well as obtaining assistance from Air Force Research and Development agencies.

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28

MC-121 Deficiencies (Contd)

DCS/O CMT 1 Feb 1955
Maj. L. W. Myers/2602-3/ht

10. We have been advised by Mr. Schmittner, LAC Tech Rep, that DCS/M is preparing a status report on action taken by LAC to correct some of the above deficiencies. Although this report cannot be considered as a military solution to the problem, it may shed a different light on some of the corrective actions taken by the various contractors concerned, and the current status of the "fix" applicable to each major deficiency.

WM L. MAYO, JR.
Colonel USAF
Ch, Tech Plans Div
Ext. 2221-3

JOHN C. MEYER
Colonel USAF
Director, CMT
Ext. 2212-3

Concld

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HEADQUARTERS WESTERN AIR DEFENSE FORCE
HAMILTON AIR FORCE BASE
HAMILTON, CALIFORNIA

In Reply Refer To: WDOCE-R

SUBJECT: (Unclassified) Monthly AEW&C Air/Ground Communication

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

FILE NUMBER 208.10 B
2 pp

1. A monthly air/ground communication utilization report has been initiated by this headquarters to coordinate and evaluate results of the various communication tests being conducted with AEW&C aircraft. The initial report for the month of November is hereby submitted.

2. Radio teletype and single side-band equipment for RATT and SSB testing with AEW&C aircraft is installed at Hamilton Air Force Base. This equipment is operated by the 43rd Communications Squadron. UHF and HF installations at Mill Valley AFS (P-38) provide interim voice communication to support present AEW&C operation.

3. No tests have been run on SSB reception as of 30 November. Only one RATT test was run in November. This test was conducted with alternate 30-minute periods of transmission and monitoring on three frequencies. Transmission from the ground station was received garbled but identification was made. During the ground station monitoring periods, no identifiable signals were received. Information received from the 8th Air Division indicates that the aircraft had equipment malfunction throughout the test.

4. Total voice operation for month of November between ground station at P-38 and AEW&C aircraft was 48 hours 27 minutes. This time includes transmission and monitoring time on both HF and UHF frequencies. Signal strength varied from fair to good (3-5) in the aircraft and poor to good (0-5) at the ground station receivers. HF communication was approximately 60% effective. UHF was utilized whenever possible as back-up to HF communications. However, UHF communications is limited to line of sight and normal station keeping is beyond UHF range.

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Hq WADF WDOCF-R Subj: (Unclassified) Monthly AFWAC Air/Ground Communication

5. Reasons for not maintaining continuous HF communications were:

a. HF transmitter in radio operator's position interferes with Loran equipment in navigator's position thereby restricting transmission during periods of loran navigation.

b. Station is able to communicate on only one channel or frequency at any one time due to intra high frequency interference in the aircraft. Therefore mission reporting was interrupted several times on each flight in order for radio operator to give position reports as well as answer calls from the airways.

c. HF communication equipment malfunction in flight.

d. Noise level at ground station higher than signal received from aircraft. This was due primarily to atmospheric conditions and low power output of airborne equipment.

6. Recommendations for improvement of communications are as follows:

a. Simultaneous transmission on a minimum of two HF frequencies. Thus allowing the operator to switch circuits to facilitate a possible improved HF channel.

b. Authorization of additional frequencies to allow greater flexibility in frequency assignments.

c. An airborne HF transmitter be developed to provide .3KW to .4KW of power output. This additional power recommended to compensate for lack of aircraft antenna efficiency.

7. Request this headquarters be advised if future reports are desired.

FOR THE COMMANDER:

P. E. Haupt

P. E. HAUPT
CWO, USAF
Asst Adjutant

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DOCUMENT NO. 41

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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

271 B

ADOOT-B1

8 SEP 1954 12PP

SUBJECT: Expansion of the Ground Observer Corps

TO: Director of Operations
Headquarters, USAF
Washington 25, D. C.

1. A requirement exists for the rapid expansion of the Ground Observer Corps throughout the continental United States. Expansion is required as follows:

a. An immediate GOC augmentation on the south and west borders of the critical northeastern target complex to insure ground-up identification within ADIZ's planned for this area. This augmentation is planned for the latter part of FY 1955.

b. Early establishment of a surveillance and identification system along the southern border of the United States and throughout the Rocky Mountain region to meet the enemy's capability of end-running present surveillance systems and flying undetected through areas not programmed for radar cover.

2. The Ground Observer Corps has demonstrated its ability to perform identification of aircraft by correlation of flight plans and through a system of obtaining voluntary flight information reports from operators of aircraft exempt from filing flight plans under current CAA regulations. It is, therefore, the desire of this headquarters to exploit fully the capability of the GOC to perform identification as an augmentation of the Aircraft Control and Warning system.

3. The present Ground Observer Corps is organized in 36 states of which 27 are operating on a 24-hour basis (reference Incl 1). An expansion of the Corps is required throughout the 12 remaining states and 24-hour surveillance extended to critical peripheral areas and throughout Air Defense Identification Zones (reference Incl 2). Redesignation of ADIZ's and employment of the identification capability of the GOC are components of the identification plan which will be forwarded your headquarters in the near future.

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ADOOT-B1
SUBJECT: Expansion of the Ground Observer Corps

4. Expansion of the GOC throughout the continental United States is a program which can be implemented with a minimum of additional manpower and funds. This program would require:

a. 24 new filter centers (reference Incl 3).

b. 151 additional officers and 829 additional airmen (reference Incls 4, 5 and 6).

c. 4,600 additional observation posts.

d. 1,000,000 additional volunteers (reference Incl 7).

e. $381,360 for installation of new filter centers (reference Incl 8).

f. $4,056,000 for annual operating costs (reference Incl 8).

5. With your concurrence, this headquarters intends to inform the 12 state governors concerned of this program. Further, we would like to present the details of this program to the National Association of State and Territorial Civil Defense Directors at their regularly scheduled meeting to be held in the Drake Hotel, Chicago, Illinois, on 28, 29 and 30 September 1954.

6. Request approval for expansion of the Ground Observer Corps as outlined with immediate implementing authority. This program has been reviewed and approved by the Command Council.

8 Incls
1. Map of Present GOC (trip)
2. Map of Expanded GOC (trip)
3. List of New Filter Centers (trip)
4. Mil Pers Rqr (trip)
5. Sample GO Det T/D (trip)
6. Sample GO Sq T/D (trip)
7. Volunteer Rqr (trip)
8. Budget Estimates (trip)

FREDERICK H. SMITH JR.
Major General, USAF
Vice Commander

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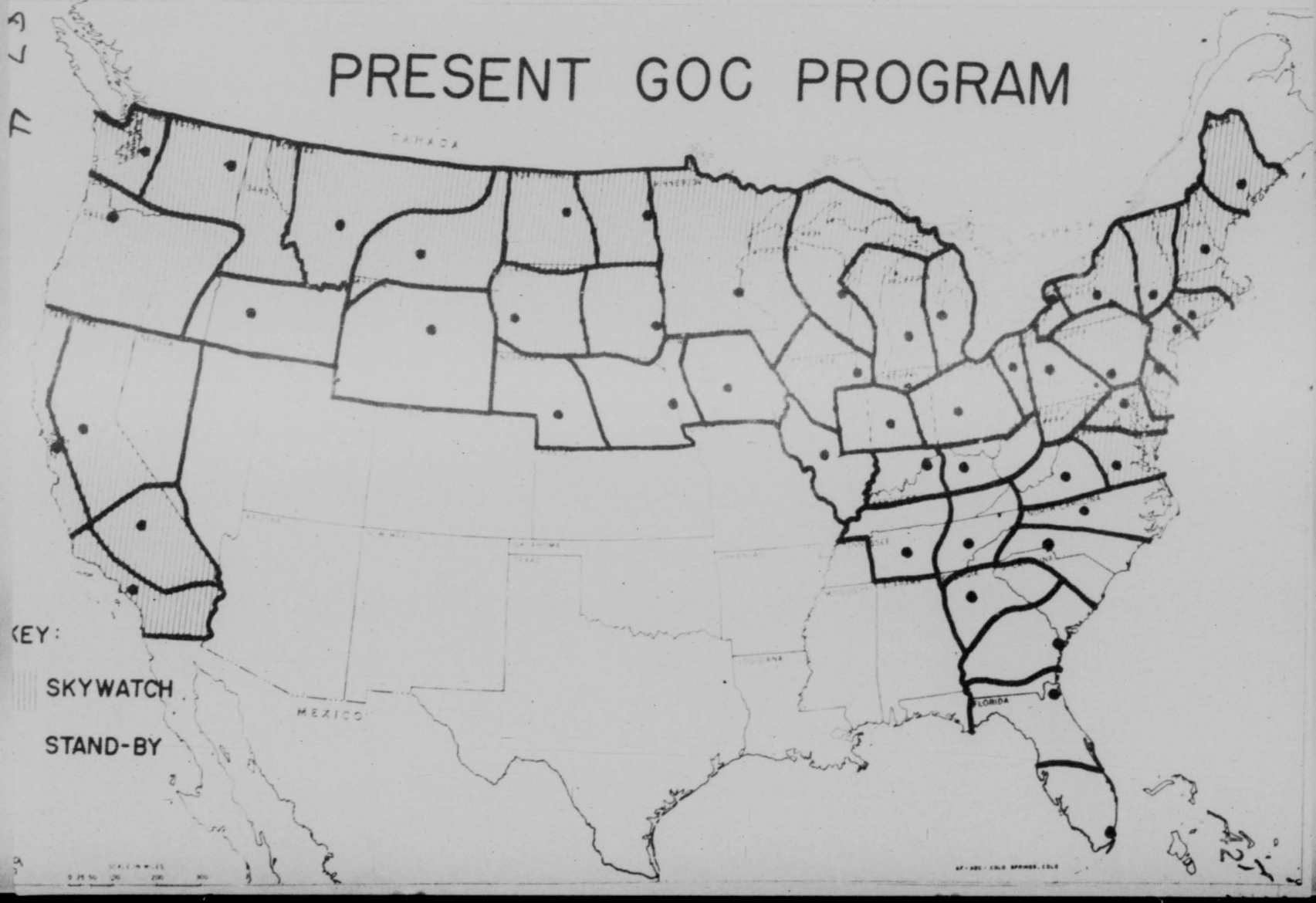
PRESENT GOC PROGRAM



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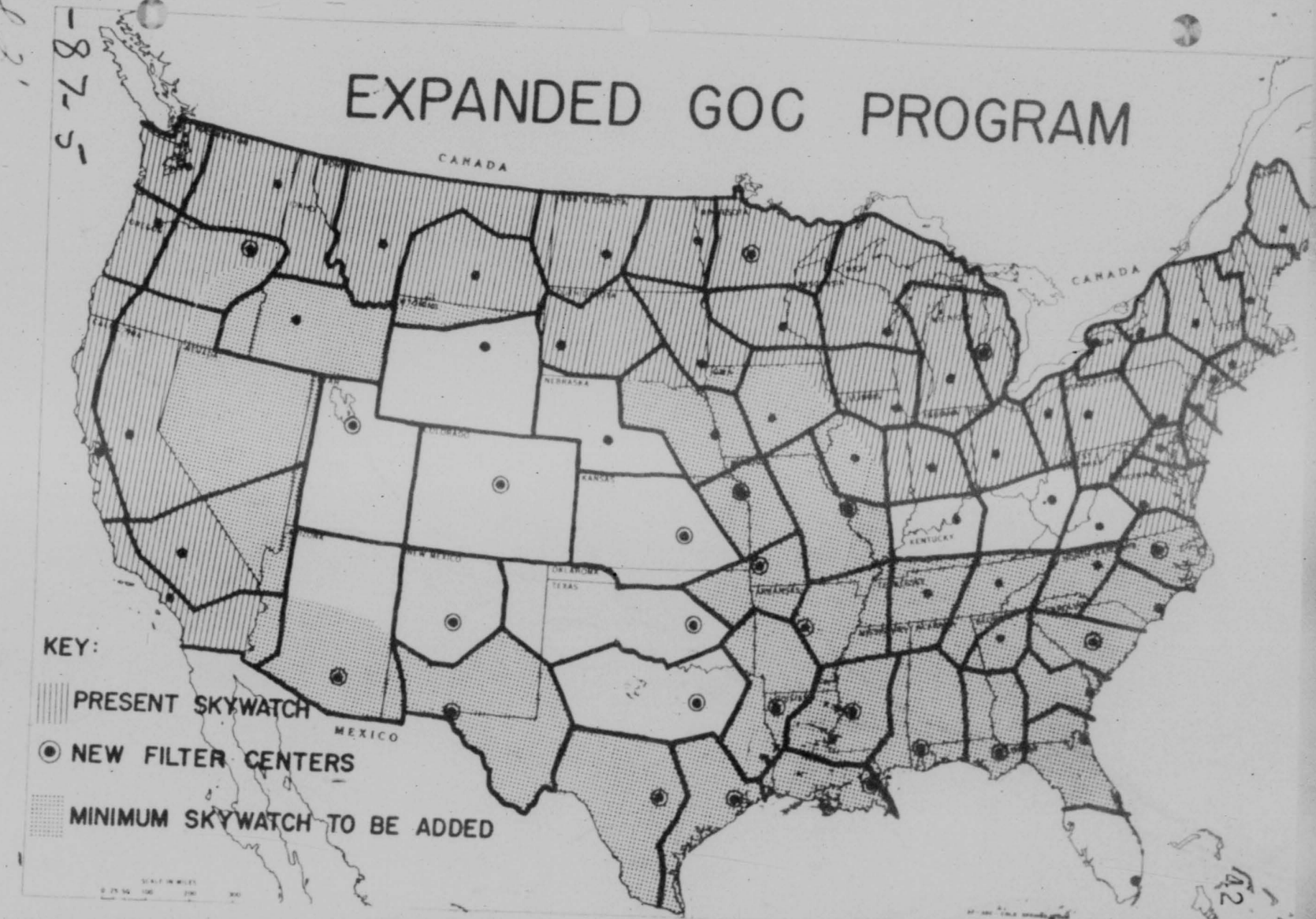
EXPANDED GOC PROGRAM



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NEW FILTER CENTERS FOR EXPANDED GOC PROGRAM

Pendleton, Oregon
Denver, Colorado
Albuquerque, New Mexico
San Antonio, Texas
Dallas, Texas
Wichita, Kansas
Saginaw, Michigan
St. Louis, Missouri
Little Rock, Arkansas
New Orleans, Louisiana
Mobile, Alabama
Columbia, South Carolina
Salt Lake City, Utah
Tuscon, Arizona
El Paso, Texas
Houston, Texas
Oklahoma City, Oklahoma
Bemidji, Minnesota
Kansas City, Kansas
Joplin, Missouri
Schreveport, Louisiana
Jackson, Mississippi
Tallahassee, Florida
Rocky Mount, North Carolina

Moves required of existing Filter Centers:

South Bend, Indiana to Indianapolis, Indiana (in progress).
Santa Ana, California to Bakersfield, California (in progress).
Charlotte, North Carolina to Wilmington, North Carolina.
Lexington, Kentucky to Charleston, West Virginia.

Incl #3

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MILITARY PERSONNEL REQUIREMENTS FOR EXPANDING GOC

		OP's	Squadrons	Filter Centers	Coord-inators	Total Officers	Total Airmen
FY 1955	1st Quarter	18,600	9	49	36	366	1199
	2nd Quarter	18,600	9	49	36	366	1199
	* 3rd Quarter	20,000	10	56	40	406	1327
	* 4th Quarter	20,000	10	56	40	406	1327
*FY 1956	1st Quarter	24,000	16	73	48	517	2028

* Total personnel requested in our letter, Subject: GOC Manning Standards and Deficiencies, dated 19 July 1954, does not include personnel for the Air Movement Identification Section

** Total program requirements including Air Movement Identification Personnel.

B-87-7
Incl 4/3

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NON T/O PERSONNEL AUTHORIZATION TABLE — P.A.V Date Mo 7 '54
PART II - ORGANIZATION

Organization and location:
4670 GR(HARRISB CY PA DT 04 [redacted]EAI

Section Code	Title	Ident	AFSC	Class	Fund Proj No.	Tot Civ	Tot Off / Tot Amn	Gen / M/Sgt	Col / T/Sgt	LtCol / S/Sgt	Maj / Sgt	Capt / Cpl	Lt / Pvt	W/O	Remarks
A9020	Qualification Section														
B0001	Command														
	Commander	0	07024				1					1			
							1					1			*
	Administrative Superviso	1	70270				1	1							
							1	1							*
B0091	Adjutant														
	Adjutant	0	07024				1						1		
							1						1		*
	Apprentice Clerk	1	70230				1					1			
	Senior Clerk	1	70250				1				1				
	Information Specialist	1	72150				1			1					
							3			1	1	1			*
C1195	Training														
	Educational Specialist	0	07524				3					X	Z3		
							3					X	Z3		*
	Education Specialist	1	75230				7			7					
	Education Technician	1	75270				5	2	3						
							12	2	3	7					*
D1701	Opr and Training														
	Educational Specialist	0	07524				1						1		
							1						1		*
	Air Operations Supervisor	1	27170				1		1						
	Air Operations Specialist	1	27150				4			2	2				
	Apprn Clerk	1	70230				1					1			
	Education Specialist	1	75230				3			3					
	Education Technician	1	75270				2	1	1						
							11	1	2	5	2	1			*
F1211	Unit Supply														
	Orgn Supply Specialist	1	64151				1				1				
							1				1				*
R9050	Recapitulation														
	Officers						6					2	3		
	Graded Civilians Off Pos			G											
	Airmen						28	4	5	13	4	2			
	Graded Civilians Amn Pos			G											
	Other Civilians Amn Pos			U											
							34	4	5	13	4	43	45		*

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Organiz ion and location:
4670 GROSQ ROSLYN CY NY

ADC EAD

NON T/O PERSONNEL AUTHORIZATION TABL
PART II - ORGANIZATION

P.A.V. Da
Mo 7 Yr 6

Section Code	Title	Ident	AFSC	Class	Fund Proj No.	Tot Civ	Tot Off / Tot Enn	Personnel Strength: Gen / M/Sgt	Col / T/Sgt	Lt Col / S/Sgt	Maj / Sgt	Capt / Cpl	Lt / Pvt	W/O	Rema
A9020	Qualification Section														
B0001	Command														
	Commander	0	07024				1				1				
							1				1				
	Administrative Superviso	1	70270				1	1							
							1	1							
B0091	Adjutant														
	Adjutant	0	07024				1						1		
							1						1		
	Apprentice Clerk	1	70230				1					1			
							1					1			
C0020	Pers and Admin														
	Apprentice Clerk	1	70230				1					1			
	Clerk	1	70250				1				1				
	Classification Specialist	1	73250				1			1					
	Personnel Specialist	1	73251				1			1					
							4			2	1	1			
D1301	Opr and Training														
	Educational Specialist	0	07524				1					1			
							1					1			
	Senior Clerk	1	70250				1			1					
							1			1					
R9050	Recapitulation														
	Officers						3				1	1	1		
	Graded Civilians Off Pos			G											
	Airmen						7	1		3	1	2			
	Graded Civilians Ann Pos			G											
	Other Civilians Ann Pos			U											
							10	1		3	2	3	1		

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CIVILIAN VOLUNTEER REQUIREMENTS
FOR EXPANDED OCC

	Filter Centers	Observation Posts
FY 1955 - 3rd quarter	42,500	1,200,000
FY 1956 - 1st quarter	46,300	1,300,000
- 3rd quarter	54,700	1,440,000

Estimated final program requirement: 1,500,000 (not including turnover).

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BUDGET ESTIMATES FOR GROUND OBSERVER CORPS EXPANSION
FY 1956 (Exclusive of Personnel, Transportation and TDY)

	Non-recurring	Recurring
1. Communications:		
a. Filter center equipment and associated central office equipment (24 x $2100 - installation)	$50,400.00	
(24 x $7200 - annual rental)		$172,800.(
b. Moves of existing filter centers (4 x $3000 - retermination)	12,000.00	
c. Private line local channels of ADCCs to filter centers (TML's) (48 x $250 - annual rental		12,000.(
(48 x $20 - installation)	960.00	
d. Private line interexchange channels between filter centers and channels to ADCC's. (24 x $28,500 - annual average rental)		684,000.
e. Observation Post Telephones:		
(1) Installation of 500 'phones per quarter: (a) (2000 x $15.00 - average installation)	30,000.00	
(2) Rental		
(a) 500 x $90 - annual rental x 9 months)		33,750.
(b) 500 x $90 " " x 6 months)		22,500.
(c) 500 x $90 " " x 3 months)		11,250.
f. Aircraft Flash Messages: (3000 additional OP's at rate of 0.25 calls per OP per hour at average toll rate of $.45 per call for one year). (3000 x 24 hours x .25 calls per hour x 365 days x $.45 per call)		2,956,500.
2. Installations:		
a. Filter Center Rental (24 x $6800 - average annual rental)		163,200
b. Construction of filter map tables and associated equipment (24 x $3000 - average cost)	72,000.00	
c. Alterations, R & U etc. (24 x $3,000 - average per center)	72,000.00	

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	Non-recurring	Recurring
T/A Equipment (24 x $6000 per center)	144,000.00	
	$381,360.00	$4,056,000.00

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D/Ltr fr Hq ADC, Subj: "Expansion of the Ground Observer Corps," dated 8 September 1954

AFYDC 1st Ind 27 SEP 1954

Department of the Air Force, Headquarters USAF, Washington 25, D.C.

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

1. This Headquarters approves your requirement to increase the Ground Observer Corps Program as requested. The program is now being priced and will be considered in FY 1956 budget. Additional officer and airmen spaces as required by the expansion will be provided.

2. Any additional fund requirements during Fiscal Year 1955 associated with this program change should be reflected in the appropriate quarterly revised annual financial plan pursuant to the provisions of Chapter 9, AFM 172-1.

3. It is envisioned that the installation of low altitude gap filler radars as programmed and planned will reduce or eliminate the requirement for the GOC.

4. For future planning purposes it is desired this Headquarters be furnished with a plan for phasing out or placing the GOC on standby, based upon integration of the low altitude gap filler radars into the ACDM program.

3 Incls
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O. C. Picher
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TO: CA - CA/C
FILE: Permanent
ACTION: NIAR
SIGNATURE: Robert W. Forlow
Major, USAF

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

GENERAL ORDERS)
NUMBER 41)

24 November 1954

DESIGNATION AND ORGANIZATION OF NON-TABLE OF ORGANIZATION UNITS -- 1. The following units are designated, assigned as indicated and will be organized under appropriate Unit Manning Documents effective 1 January 1955, at locations indicated.

UNIT	LOCATION	ASSIGNMENT
4768th Ground Observer Squadron	Tinker AFB, Oklahoma	33d Air Division (Defense)
Detachment #1, 4768th Ground Observer Squadron	San Antonio, Texas	4768th Ground Observer Squadron
Detachment #2, 4768th Ground Observer Squadron	Dallas, Texas	4768th Ground Observer Squadron
Detachment #3, 4768th Ground Observer Squadron	St. Louis, Missouri	4768th Ground Observer Squadron
Detachment #4, 4768th Ground Observer Squadron	Little Rock, Arkansas	4768th Ground Observer Squadron
Detachment #5, 4768th Ground Observer Squadron	~~New Orleans, Louisiana~~ Corpus Christi, Texas	4768th Ground Observer Squadron
Detachment #6, 4768th Ground Observer Squadron	Houston, Texas	4768th Ground Observer Squadron
Detachment #7, 4768th Ground Observer Squadron	Oklahoma City, Oklahoma	4768th Ground Observer Squadron
Detachment #8, 4768th Ground Observer Squadron	Kansas City, Kansas	4768th Ground Observer Squadron
Detachment #9, 4768th Ground Observer Squadron	Joplin, Missouri	4768th Ground Observer Squadron
Detachment #10, 4768th Ground Observer Squadron	Shreveport, Louisiana	4768th Ground Observer Squadron
Detachment #11, 4768th Ground Observer Squadron	Wichita, Kansas	4768th Ground Observer Squadron
4679th Ground Observer Squadron	Kirtland AFB, New Mexico	34th Air Division (Defense)
Detachment #1, 4679th Ground Observer Squadron	Albuquerque, New Mexico	4679th Ground Observer Squadron

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UNIT	LOCATION	ASSIGNMENT
Detachment #2, 4679th Ground Observer Squadron	Salt Lake City, Utah	4679th Ground Observer Squadron
Detachment #3, 4679th Ground Observer Squadron	Tucson, Arizona	4679th Ground Observer Squadron
Detachment #4, 4679th Ground Observer Squadron	Denver, Colorado	4679th Ground Observer Squadron
Detachment #5, 4679th Ground Observer Squadron	El Paso, Texas	4679th Ground Observer Squadron
Detachment #10, 4671st Ground Observer Squadron	Saginaw, Michigan	4671st Ground Observer Squadron
Detachment #9, 4672nd Ground Observer Squadron	Bemidji, Minnesota	4672nd Ground Observer Squadron
Detachment #9, 4674th Ground Observer Squadron	Mobile, Alabama	4674th Ground Observer Squadron
Detachment #10, 4674th Ground Observer Squadron	Columbia, South Carolina	4674th Ground Observer Squadron
Detachment #11, 4674th Ground Observer Squadron	Jackson, Mississippi	4674th Ground Observer Squadron
Detachment #12, 4674th Ground Observer Squadron	~~Tallahassee, Florida~~ Montgomery, Alabama	4674th Ground Observer Squadron
~~Detachment #13, 4674th Ground Observer Squadron~~	~~Rocky Mount, North Carolina~~	~~4674th Ground Observer Squadron~~
Detachment #3, 4755th Ground Observer Squadron	~~Pendleton~~, Bend, Oregon	4755th Ground Observer Squadron

2. Organizational equipment will be authorized by the Unit Authorization List to be published by the air defense force commander concerned.

3. Authority: AFR 20-27.

BY ORDER OF THE COMMANDER:

OFFICIAL:

GEORGE F. SMITH
Major General, USAF
Chief of Staff

WALTER W. ROBINSON
Colonel, USAF
Command Adjutant

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

GENERAL ORDERS)
NUMBER 46)

23 December 1954

AMENDMENT OF GENERAL ORDERS 41, THIS HEADQUARTERS, 1954.

1. So much of paragraph 1, General Orders 41, this headquarters, 1954, pertaining to designation and organization of certain ADC units, as reads:

UNIT	LOCATION	ASSIGNMENT
Detachment #5, 4768th Ground Observer Squadron	New Orleans, Louisiana	4768th Ground Observer Squadron
Detachment #12, 4674th Ground Observer Squadron	Tallahassee, Florida	4674th Ground Observer Squadron
Detachment #3, 4755th Ground Observer Squadron	Pendleton, Oregon	4755th Ground Observer Squadron

is amended to read:

UNIT	LOCATION	ASSIGNMENT
Detachment #5, 4768th Ground Observer Squadron	Corpus Christi, Texas	4768th Ground Observer Squadron
Detachment #12, 4674th Ground Observer Squadron	Montgomery, Alabama	4674th Ground Observer Squadron
Detachment #3, 4755th Ground Observer Squadron	Bend, Oregon	4755th Ground Observer Squadron

2. So much of paragraph 1 as reads:

UNIT	LOCATION	ASSIGNMENT
Detachment #13, 4674th Ground Observer Squadron	Rocky Mount, North Carolina	4674th Ground Observer Squadron

is deleted.

BY ORDER OF THE COMMANDER:

OFFICIAL:

GEORGE F SMITH
Major General, USAF
Chief of Staff

Walter W. Robinson

WALTER W ROBINSON
Colonel, USAF
Command Adjutant

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HEADQUARTERS WESTERN AIR DEFENSE FORCE
HAMILTON AIR FORCE BASE
HAMILTON, CALIFORNIA

In Reply Refer To: WDOCD

SUBJECT: Expansion of Skywatch Area in WADF

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

1. The Ground Observer Corps system in Western Air Defense Force is fully manned and ready for expansion in accordance with published ADC plans. It is requested that approval be granted to organize and place on Skywatch all of the WADF area. This expansion will involve the stand-by Boise Filter Center area of Idaho, Eastern Nevada and parts of Utah and Arizona.

2. The placement of these new areas on Skywatch at this time will facilitate the recruitment of civilian volunteers and improve the operational effectiveness of the GOC in WADF. The anticipated difficulty in obtaining sufficient volunteers in desired localities of these sparsely populated states would be materially reduced by concerted assistance from state civil defense directors. The publicity campaign which will be conducted in conjunction with the increase in Skywatch area is expected to provide the impetus needed to obtain full state support.

3. Of equal importance is the necessity for providing the Ground Observer Corps a "head start", so that when the double perimeter concept is fully operational the GOC will be organized, manned and operating effectively.

4. Upon receipt of approval, this headquarters will initiate action for installation of required wire facilities. The target date for expansion of Skywatch in WADF is tentatively established as 1 February 1955.

FOR THE COMMANDER:

[redacted]
Capt. USAF
Asst Adj

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Hq WADF WINCED Subj: Expansion of Skywatch Area in WADF

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HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colo.

TO: Commander, Western Air Defense Force, Hamilton Air Force Base, Hamilton, California

1. The request to place the Boise Filter Center area on Skywatch effective 1 February 1955 is not favorably considered. Institution of expanded Skywatch will be accomplished simultaneously throughout the command compatible with implementation of the double perimeter identification system.

2. Expansion of Skywatch activities in the areas of Eastern Nevada and the Western fringe of Arizona and Utah can be accomplished under authority of the revised Operations Order due for publication in January 1955. The revised order specifies Skywatch by filter center areas and includes the territory being integrated into the Pasadena, Bakersfield, and Sacramento Filter Centers.

BY ORDER OF THE COMMANDER:

DAVID F. [illegible]
Colonel, [illegible]
Air Co[illegible]

OPS 10-2-1

MEMO FOR RECORD

WADF is being refused because of similar denial of requests to CADF units. An operational date for expanded Skywatch is yet to be established probably sometime prior to implementation of the double perimeter identification system. The timing should be uniform throughout the command. Col. Aubrey, WADF, DCP, agrees with this position. Definition of Skywatch by filter center area brings WADF in line with EADF and CADF and permits them to expand eastward without publicly announcing integration of other filter center areas into Skywatch.

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R.W. Sorton
Major, USAF

OFFICE OF RECORD

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OPERATIONS ANALYSIS TECHNICAL MEMORANDUM NO. 14

TEST OF IDENTIFICATION OF GROUND OBSERVER CORPS TRACK AT THE SACRAMENTO FILTER CENTER

by

Richard H. Jordan

and

Robert Deane Branstetter

Approved

Philip S. Ball, Jr.
Chief, Operations Analysis Office

This material contains the results of analyses performed by Operations Analysts. It does not necessarily express ADC policy.

29 July 1954

Operations Analysis Office
Deputy Chief of Staff for Operations
Headquarters Air Defense Command
Colorado Springs, Colorado

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A. Tables 1 and 2
   1. Times Required to Identify
   2. Amount by Which Aircraft Missed ETA
B. Report of Test of Flight Plan Correlation by the Ground Observer Corps (Unclassified)

SECURITY ANNEX

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I. SUMMARY

This paper describes a test to determine the feasibility of identifying Ground Observer Corps tracks at the Ground Observer Corps filter centers rather than at the radars as under existing procedures. The test was conducted at the Sacramento Filter Center from 15 January through 4 February 1954.

An identification section, manned by civilian personnel under the direction of a military supervisor, was established on the dais overlooking the operations plotting board. Flight plans were received by monitoring the communications line between the Oakland CAA Air Route Traffic Control Center and the Mather (Sacramento) radar. All identified tracks, unknown and friendly, were forwarded to the Mather radar.

Basic procedures now in practice at the radars were used for identification at the filter center; that is, the identification was performed by flight plan matching. The actual position of the aircraft as reported by the observer was compared with the position as anticipated by the pilot on his flight plan and subsequent position report, using the standard correlation tolerances of ±5 minutes and ±10 miles.

The identification process was highly successful. This plan appears feasible in areas of medium and heavy traffic to solve in a large measure the problem of effective identification of Ground Observer Corps tracks without making somewhat difficult changes at present necessary to handle this function in the direction centers. These changes within the direction centers would include construction and manning of plotting boards to display Ground Observer Corps tracks for identification purposes, division of the pre-plot boards to accommodate the increased load, increased manning of the identification section, and increased space necessary for these expanded operations.

Furthermore, the availability of flight plans at the filter center aided the filtering process by supplying altitude, route, speed and type of those aircraft on flight plan. This information was not given to the filterers but was used on the dais to correct obvious filtering errors. This aid was of considerable importance as a partial solution to the filtering problem, one of the most difficult of the Ground Observer Corps operational problems.

Filter center personnel received the identification work enthusiastically. The knowledge of the identity of aircraft caused a marked increase in interest by giving meaning to hitherto unidentified tracks and thus a better understanding of the action on the plotting board.

Eleven percent of the filter center tracks were designated unknown, 59% of the flight plans received were correlated with aircraft, and tracks were identified in an average of 1.8 minutes. These figures compare favorably with radar operation and it is very probable that they can be improved with practice. The correlation figure should increase markedly under conditions of maximum manning of observation posts.

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Fifty percent of the observer post reports included the number of engines. Eight-four percent of these were reported and plotted correctly according to the flight planswith which they were matched. Effort should be made to improve the accuracy of post observing and reporting because of its great importance to over-all AC&W identification effectiveness.

It is recommended that similar data be gathered at the other filter centers adopting these procedures in the Western Air Defense Force to substantiate these results; that an attempt be made to determine the accuracy of the identification of tracks called friendly; and that every effort be made to improve the accuracy of reporting number of engines.

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II. INTRODUCTION

Past studies of aircraft identification in Air Defense Command radars have shown a limited capability under conditions of medium to heavy traffic. During periods of light traffic the problem of correlating flight plans with plotted tracks is not particularly difficult and the results are quite accurate. As traffic increases the problem becomes more difficult, with the result that the number of aircraft designated unknown rises at a rate considerably higher than the traffic build-up. Introducing Ground Observer Corps tracks for identification approximately doubles the correlation load. This additional burden, even during times of relatively light traffic, reduces overall accuracy; to introduce it during heavy traffic periods can seriously affect identification capability. This loss in capability accounts in part for the limited use made of Ground Observer Corps tracks in many direction centers.

It is immediately apparent that the situation just described can be improved either by enlarging and modifying the identification sections within the direction centers or by placing identification sections in the filter centers so that the Ground Observer Corps can identify their own tracks.

Difficulties are foreseen if identification of Ground Observer Corps tracks at the direction center is considered as the answer to the problem. First, Ground Observer Corps tracks must be plotted at the radar for identification purposes. This additional plotting increases chances for error, thus increasing the number of aircraft designated unknown that should otherwise be called friendly, and, what is perhaps worse, increasing the number of aircraft designated friendly that should be called unknown. Second, the plotting of Ground Observer Corps tracks at the direction center requires a board that can be seen by the identification personnel. This board requires one or more persons for plotting. Third, the identification pre-plot board should be sub-divided and the correlation work in each sub-division handled by a separate person or team if the workload is at all heavy. Fourth, the plan calls for additional identification personnel. Finally, all of the above modifications call for more space and space is at a premium in direction centers.

On the other hand, identification of Ground Observer Corps tracks at the filter center does not require additional plotting for identification. Space generally is not a problem and it was believed that civilian personnel might absorb a major part of the load. Only unknown tracks need be sent forward to the direction center in times of heavy load. In this case the unknown tracks could be placed directly on the vertical plotting board at the radar without the identification section being required to plot them first.

Because of these apparent advantages, it was decided to test the feasibility of identifying tracks in the Ground Observer Corps filter Center. The test described in this paper was initiated jointly by OOA and the Plans Section of Operations, Air Defense Command.

The 4772d Ground Observer Squadron, under whose direct supervision the test was conducted, is complimented on the spirit and efficiency with which they carried out the project. Their report of the test is found in Appendix B.

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III. DISCUSSION

A. Identification Procedures

1. An identification section similar in all essentials to that of a radar section was established on the dais over-looking the filter center plotting board. A listening drop with loudspeaker was placed on the line from the Oakland Air Route Traffic Control Center to the Mather (Sacramento) radar and flight plans were copied as passed on this line. Filter center personnel could not talk to the ARTCC over this line, and thus could not question CAA if flight plan information was not understood or was missed. The flight plan data was written on standard CAA flight strips placed in holders on racks common to ARTCC operation. Flight plan and position reports were correlated with actual aircraft positions using the standard correlation tolerances of ± 5 minutes and ± 10 miles.

2. All identified tracks, unknown and friendly, were forwarded to the Mather radar.

B. Results Not Substantiated Statistically

The test yielded certain results that were not measured statistically but were none the less important:

1. Improvement in interest and morale. The establishment of the identification section permitted filter center personnel to gain a far better understanding of the operation, as shown by the display on the filter center board, than was possible previously. They were able to determine which aircraft were commercial, military, or actual unknowns. This understanding stimulated interest and contributed measurably toward a sense of accomplishment. Furthermore, the identification processes themselves proved to be a definite stimulus because of mental activity involved.

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2. Identification as an aid to filtering. The availability of flight plan data concerning speed, altitude, routes, and type of aircraft, aided the process of filtering, that is, it helped in constructing tracks out of individual observer reports. The flight plan information was not given to the filterers but was used by the identification section to correct obvious filtering errors. This aid to filtering is of considerable importance in that this process is one of the most difficult of Ground Observer Corps operations.

C. Results Substantiated by Data

1. Number and percent of unknown aircraft

a. Of the 758 tracks from 20 January through 4 February, 82, or 11%, were designated unknown by the filter center identification section. This capability compares favorably with that of radar identification. No intercepts were made in order to determine the accuracy of the identifications and all inbound flights which faded outside the ADIZ were eliminated in the data analysis. Of the 82 unknowns, 25 (30%) were designated unknown because they missed the ± 5 minutes identification tolerance. None was reported unknown because of missing the ± 10 mile distance. Fifty-seven (70%) were designated unkown because they could not be correlated with any flight plan.

b. It is probable that most of these 57 unknowns were aircraft flying low to take advantage of the regulation which allows them to fly below 4000' without a flight plan. Others may well have been aircraft too far off their estimated times to be correlated with certainty with existing flight plans. Still others were aircraft on which flight plans were forwarded to the radar on emergency circuits not monitored by the filter center. Data were not collected to show the percentages attributed to each of these causes.

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2. Number of flight plans correlated

a. According to the report of the test submitted by the Sacramento Filter Center, 1534 flight plans were received on aircraft penetrating the Red Bluff and Reno areas. Of these 906, or 59%, were correlated with aircraft. Breaking this down it was shown that 766 were received from the Red Bluff area and 596 (78%) were correlated; 768 were received from the Reno area and 310 (40%) were correlated. The relatively poor showing made in the Reno area undoubtedly came about because of an insufficient number of manned observer posts. It was believed that adequate manning of posts would have raised the number of tracks correlated appreciably. This capability can be compared with radar capability using statistics collected by OOA ADC at Mather radar (Sacramento) in 1952. These data showed that the radar identification section correlated 83% of their flight plans in the Red Bluff area and 62% in the Reno area, or for both areas 75%. Other figures from radars in various parts of the country indicate correlations ranging from 60% to 80%.

3. Time required to make identification

The average time from the establishment of a track to the time of completed identification was 1.8 minutes, with a standard deviation of 2.8. (The cases were eliminated in which flight plans were delayed.) In 64% of the cases, identification required 1 minute or less; in 78% it required 2 minutes or less. Again, this compares very favorably with time taken for identification within radars. Details are shown in Table 1, Appendix A. It should be noted that GOC observation posts are very often located at or near aircraft reporting points. Because of this situation, computations for correlation are generally not necessary as in radar identification where aircraft commonly are

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detected at some distance from the point at which their position is reported. Thus, it is assumed that identification of GOC tracks will be more rapid than identification of radar tracks.

4. Amount by which aircraft missed ETAs along proposed routes of flight

Sixty-eight percent were within one minute of the estimates, 86% within two minutes, and 96% within five minutes. These results are shown in detail in Table 2 of Appendix A. It should be pointed out that these figures are subject to an error, probably small, introduced by the observer's estimate of elapsed time between his actual observation and the time taken for him to go to the phone and make his report. These results are of particular interest in that no statistics have been available up to this time to show the amount by which aircraft miss their estimates within the United States. Radars are not required to keep records on this point and no published figures of such studies have been available.

5. Number and accuracy of observations giving the number of engines

These data are not included as an argument for feasibility of identifying within filter centers as the utilization of reports on number of engines can be used equally well within radar identification sections. They are included because they throw light on the possibility of using number of engines to improve the over-all AC&W identification capability. The argument is that single and bi-motor aircraft do not constitute a threat at present and, if the number of engines can be reported accurately, these aircraft can be declared friendly without recourse to flight plan matching. This procedure eliminates the work as well as the errors inherent in flight plan identification. The GOC, in possessing this capability, has a distinct advantage over radar and has the potential of contributing

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immeasurably toward improving over-all identification. The results reviewed below indicate, at least at Sacramento, that accuracy of reports must be improved to take full advantage of the procedure. These results are as follows:

a. Of the 834 observations on which the number of engines were studied, 419 (50%) reported the number of engines. This included both day and night observations.

b. Of these, 580 observations were made during the day (0700 to 1700), with 385 (66%) of the daytime reports giving the number of engines; and of the 254 made at night, 34 (13%) reported the number of engines.

c. There were 357 observations on which the correctness of reports was based. The accuracy was determined by comparing reports listed on the filter center teller's log (as copied from the raid stand on the plotting table) with the correlated flight plans. It will be noted that this method does not show the source of the error, only that certain reports as displayed were incorrect on the filter center board. The error may have resulted because the observation was incorrect; or because an error was introduced in reporting or displaying the observation; or because the aircraft was correlated with the wrong flight plan.

d. Of the 357 observations, 298 (84%) were correct as they appeared on the plotting table. This included both day and night reports. When these figures were broken down by day and night, it was found that of the 330 day observations, 277 (84%) were correct; and of the 27 at night, 21 (78%) were correct. Because the number of night cases is small, the figure should not be used without further substantiation. As might be expected, 92% of the incorrect day observations were on aircraft reported as high or very high.

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e. A further breakdown showed that 171 aircraft were reported as four-engined. Of these, 146 (85%) actually were four-engined according to the flight plans with which they were correlated; 15% were single or bi-motor.

D. Training

Methods used in training GOC personnel in identification, and the results of this training, are found in Appendix B, "Report of Test of Flight Plan Correlation by Ground Observer Corps," as submitted by the 4772d Ground Observer Squadron, Sacramento, California.

E. Additional Personnel

It was found that one military supervisor should be on duty at the identification section at all times. At Sacramento this supervisor should be added to the regular complement of military personnel. For details see report of the 4772d Ground Observer Squadron in Appendix B.

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IV. CONCLUSIONS

1. Identification at the Sacramento Filter Center was highly successful using civilian personnel under direct military supervision.

2. Identification of Ground Observer Corps tracks in the filter center makes it possible to solve in a large measure the problem of identifying Ground Observer Corps tracks in areas of medium to heavy traffic without making somewhat difficult changes within the identification sections of direction centers.

3. Identification at the filter center aided the filtering process by making available information on altitude, speed, route of flight, and type of aircraft. This aid to filtering was of considerable importance as a partial solution to the difficult filtering problem.

4. The establishment of an identification section in the filter center caused a marked increase in filter center morale by giving meaning to the tracks on the plotting board and by contributing to a sense of responsibility.

5. The filter center identification section designated 11% of their tracks unknown. This appears to compare very favorably with radar identification. More testing is required to determine the accuracy of this identification.

6. Fifty-nine percent of the flight plans received in the Reno and Red Bluff areas were correlated with aircraft. This should not be considered a measure of the effectiveness of the identification process but is more closely related to the detection capability of the GOC. This capability compares rather closely with that shown by the Mather radar in a 1952 OOA study in which it was shown that radar correlated 75% of their flight plans

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in the Reno and Red Bluff areas. Radars country-wide usually correlate between 60% and 70% of their flight plans.

7. Fifty percent of the observations included the number of engines; 66% during the day, 13% at night. Of those observations which included number of engines, 81% were reported correctly according to the available figures. Efforts should be made to improve this accuracy because of the great importance this information can play in improvement of the over-all AC&W identification effectiveness.

8. An average of 1.8 minutes was required to make identification. This time probably can be reduced with practice to the one minute prescribed by regulation for radar identification.

V. RECOMMENDATIONS

It is recommended that:

1. These identification procedures be tested in CADF and EADF in addition to the proposed tests in other sites in WADF.

2. During these tests, similar data be gathered at filter centers adopting these procedures to substantiate these results. During these tests it is recommended that efforts be made to determine the accuracy of the identification of those aircraft designated friendly.

3. Instructions be issued to stress the importance of accurate reporting of the number of engines on aircraft observed. Further, in this matter, it be stressed that it is better to make an unknown report than to guess if the observation is in doubt.

Richard H. Jordan, Operations Analyst

Robert Deane Branstetter, Operations Analyst

Philip S. Ball, Jr., Chief, Operations Analysis

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APPENDIX A

TABLES 1 AND 2

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TABLE 1

TIME REQUIRED TO IDENTIFY

Time	Frequency	Cumulative Frequency	Cumulative Percent
0	285	285	40.3
1	169	454	64.2
2	100	554	78.4
3	35	589	83.3
4	39	628	88.8
5	14	642	90.8
6	16	658	93.1
7	12	670	94.8
8	12	682	96.5
9	3	685	96.9
10	7	692	97.9
11	4	696	98.4
12	1	697	98.6
13	1	698	98.7
14	4	702	99.3
15	1	703	99.4
17	1	704	99.6
20	2	706	99.9
24	1	707	100
	707		

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TABLE 2

AMOUNT BY WHICH AIRCRAFT MISSED ETA

Time	Frequency	Cumulative Frequency	Cumulative Percent
± 0	459	459	68.2
1	68	527	78.3
2	54	581	86.3
3	29	610	90.6
4	22	632	93.9
5	14	646	96.0
6	5	651	96.7
7	1	652	96.9
8	7	659	97.9
9	3	662	98.4
10	5	667	99.1
11	2	669	99.4
12	2	671	99.7
13	1	672	99.9
14	1	673	100
	673		

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APPENDIX B

REPORT OF TEST OF FLIGHT PLAN CORRELATION
BY THE GROUND OBSERVER CORPS

(The raw data submitted as Inclosure #2
of the letter has been omitted)

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OCO

26 February 1954

SUBJECT: Report of Test of Flight Plan Correlation by the Ground Observer Corps

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

1. Reference is made to ADC ADOOT-B1, subject as above, dated 9 December 1953 and 1st Indorsement thereto, Headquarters WADF, file WDOCO, dated 23 December 1953. The test proposed in the above letter was conducted by Detachment 2, 4772d Ground Observer Squadron, Sacramento, California, from 15 January through 4 February 1954.

2. By concurrence of Colonel W. H. Earle, Director of Civil Defense, Western Air Defense Force and Dr. Richard H. Jordan, ADC Analyst, the following report is submitted direct.

3. Procedures: The procedures adopted for the receipt of flight plans from AMIS and the correlation of the plans with tracks established at the Filter Center paralleled those used at a Direction Center as closely as possible. A rack was constructed for the handling of flight strips, slides were borrowed, and a pre-plot board was built. All procedures were developed after consultation with representatives of the 668th AC&W Squadron and were adopted with their approval. Operations Bulletin 53-7 (Attachment #1) was published to explain these procedures.

4. Instruction and Training:

a. Lecture: A training lecture of one and one half (1½) hours duration was given to a key group of the civilian volunteers (team, floor, and balcony supervisors) at the Filter Center. This lecture consisted of an introduction explaining the purpose of the movements identification position, familiarization with the San Francisco ADIZ and the airways leading into the area, types of the flight strips, time and distance limits placed on aircraft filing flight plans, time limits in which correlation was to be performed,

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and an explanation of the sequence to be followed in telling the information to the Air Defense Direction Center.

(1) Aircraft were correlated with plans only if they were within five (5) minutes and ten (10) miles of the penetration time and point.

(2) The lecture would have been more effective if practice in receiving flight plans from recorded AMIS calls had been possible. This can now be done and will be incorporated into future training programs should the movements identification section become permanent.

(3) Training Aids which were utilized included a map of the 28th Air Division (Defense) Area which showed the ADIZ and airways, and enlargement of a flight strip, and a flight strip rack and slides. Instruction was also provided, by demonstration, in the use of a 1:500,000 timer-divider to aid in pre-plotting.

b. After completing the lecture, the volunteers were placed at the movements Identification Position as they came in for their regular shifts. Some volunteers were able to receive flight plans almost immediately; others required more time and practice. The average person was able to take all flight plans after about six (6) hours of practice. To become proficient in correlating flight plans and tracks, however, required an additional three hours. Much of this time was shortened by practice during the training lecture. Shortage of military personnel did not permit as close supervision as desired, and perhaps contributed too to the longer time for complete training. The group of key personnel trained for the position definitely showed themselves capable of learning and applying the procedures required, although many would require slightly longer than the three (3) weeks provided for the test.

c. The test has indicated beyond doubt that a military supervisor should be present at the movement identification position at all times. This airman should be in addition to the one assigned to Filter Center Operations, thus resulting in a total requirement of ten (10) men assigned to Filter Center Operations shifts, working in teams of two (2). It is believed that two men (2) on each operations shift are necessary even without the Movements Identification Section. This is required because of lectures which must be given, visitors to

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be greeted and administrative duties, all of which often take the airman off the operations floor. The movements identification supervisor is necessary in order:

(1) To train volunteers and provide on the job taining in all phases of the movements identification section.

(2) To insure accuracy of decisions on correlations by volunteers.

(3) To man the section in the event of a shortage of civilian volunteers.

(4) To make the transition between volunteer shifts easier.

4. Accuracy of correlation between reports of Ground Observer Corps observers and flight plans received was considered to be very good, particularly in the area north of the ADIZ. An average of about seventy-eight percent (78%) of the flight plans received in the Red Bluff Area were correlated with tracks. Insufficient observation post coverage prevented an even greater percentage. Flight Plan Correlation in the Reno Area fell below fifty percent (50%) because of lack of observer posts. The Reno Post operates only about eight (8) hours daily and other posts on Green Three (3) Airway (outside the Local Traffic Area) operate a maximum of twelve (12) hours daily. Only a very few posts are operative in the vicinity of Mono Lake, which is a fairly high traffic region, considered as part of the Reno Area.

a. Three thousand eight hundred and ninety seven (3,897) Flight Plans of all types (all areas, Big Photos, and Mather Round Robins) were received. Eight hundred and seventy-nine (879) of these flight plans were correlated. However, the great majority of these plans were for Fresno or Coalinga penetrations. This detachment was unable to correlate any of these since the Sacramento Filter Center Area ends approximately forty (40) miles north of the southern boundary of the San Francisco ADIZ. The breakdown of flight plans received in the Reno and Fresno Area are given below:

(1) Red Bluff flight plans received were seven hundred and sixty-six (766) of which five hundred and ninety-six (596) were correlated.

(2) Reno flight plans received were seven hundred and sixty-eight (768) of which three hundred and ten (310) were correlated.

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b. The time required for correlation varied with the amount of air activity in the area. During relatively slack periods, correlation was made almost immediately after the plane was reported or the flight plan received, whichever was later. Even during the busier times, correlation rarely required more than two or three (2 or 3) minutes.

c. Failure to correlate tracks to flight plans was almost invariably caused by lack of observation posts. In some cases tracks were established which could not be identified with flight plans. Nearly all of these were single or bi-motored, flying low or very low. There were also cases of this kind caused by the transmission of flight plans by an alternate means to the Direction Center while the primary AMIS line was out of service.

5. The communcations provided for the test were adequate to provide the flight plans and still eliminate the need for additional work on the part of AMIS through repetition during a period of large scale training. The nose level of the loudspeaker and other filter center activities often worked against each other, however, making all operations difficult. It is believed that a two (2) way line connected to a hand telephone (as in an Air Defense Direction Center) or headset would be preferable to the present system for permanent installation of the movements identification position. Either the headset or handset would reduce the noise level and a two (2) way line would help insure that no flight plans were missed. It is not anticipated that the request for repetition would be much more numerous from the Filter Center than from the Direction Center after the initial training has been completed.

6. The interest shown by civilian volunteers in the Filter Center has shown great improvement as a result of the addition of the movements identification section. Many volunteers came in and spent time practicing above and beyond their regular duty hours. It is believed that interest will increase to an even higher degree if the position becomes permanent in the Filter Center.

7. Inclosed are the logs maintained during the test period showing all tracks which were penetrating the ADIZ, and type, ownership, and number of aircraft. The abbreviations used in the remarks column included are:

a. RBL - Red Bluff

b. RNO - Reno

c. ADDC - Identified by the Air Defense Direction Center

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Hq 28th ADiv (Def) Subject: Report of Test of Flight Plan Correlation by the Ground Observer Corps

d. F or FR - Friendly

e. FT - Friendly tell issued by ADDC

8. It is recommended that the movements identification section be made a permanent part of the Filter Center. The results indicate that civilian volunteers can definitely be trained in correlation procedures. Further, the accuracy of correlation between reports of the Ground Observers and Flight Plans was found to be high. With sufficient ground observation posts, and well trained observers, filter centers may be expected to identify aircraft.

FOR THE COMMANDER:

2 Incl
1. Det 2 Ops Bulletin 53-7
2. Test Log

MARION R. McCANN
Major USAF
Adjutant

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Detachment 2
4772d GROUND OBSERVER SQUADRON
Memorial Auditorium
15th & J
Sacramento, California

OPERATIONS BULLETIN)
NUMBER 53-7)

16 January 1954

SCHOOLS

SCHOOL TRAINING FOR F/C PERSONNEL

1----------Purpose
2----------Test
3----------Tracks
4----------Records

1. This bulletin is to set up a standing operation procedure on the Movements Identification Section of the Sacramento Filter Center for the twenty-one (21) day test period beginning 0001 hours 15 January 1954. We must remember that this is a test and even though we are able to identify our own tracks, our mission is still to give the ADDC early warning plus any other information they request.

2. During the test period all flight plans will be taken which are passed from Lost Sheep (CAA) to Radar (Overlay) with special emphasis placed on all northern flights which are south bound and eastern flight plans which are west bound which are penetrating the San Francisco ADIZ (Air Defense Identification Zone) or the target Area (Sacramento and the SF Bay Area). Flight plans which are taken in the Fresno (Southern) Area may be removed from the flight strip containers and filed immediately to relieve overcrowding the flight strip rack.

3. All tracks will be told to ADDC as in the past (former rules still apply).

a. When we have a flight plan correlation on the track, that will be told to ADDC (along with the usual track information) at the end of the report. EXAMPLE: "New Track, NL 4205, South, GN 405, at 19, one, multi, 10 thousand. We have correlated this track as United 601-DC3."

b. When an unknown is detected (a track with no flight plan correlation which must be identified immediately) it will be told to ADDC as first priority. An unknown will be told in accordance with current SOP for radar telling and adding at the end of the report that "we have no flight plan correlation on this track". EXAMPLE: "New track, NK45B, South, GN417, at 25, one, bi, 20 thousand, unknown, no flight plan correlation.

4. In addition to the current radar telling log, an Identification

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record will be kept. The information on this record will be used to determine the success of the Test. With this in mind, the Identification Record should be kept as accurately as possible. The Identification Record will contain the following information by column heading:

a. Track No-All track numbers which require identification will be recorded or all tracks which are not automatically friendly in accordance with current SOP's.

b. Reported Altitude-The altitude will be recorded just as the observer calls it in and it is displayed on the raid stand.

c. Time Flight Plan Received-If a track is correlated by Flight Plan the time that the flight plan was received from CAA will be logged.

d. Time Track Established-Same as time on raid stand.

e. Time Identified-The time identification is actually made on track.

f. Identified by Flight Plan:

(1) Amount missed:

(a) Time-the difference between the track time and the estimated time of penetration.

(b) Distance-The difference between the track position and the estimated point of penetration on the flight plan.

(2) Number of Engines: This will be taken from the type of aircraft on the raid stand whether single, bi, multi, etc; in reference to type of motor.

g. Identification:

(1) Aircraft ownership-taken from flight plan.

(2) Aircraft type-taken from flight plan.

(3) Aircraft number-taken from flight plan ID No.

h. Identified:

(1) Friendly: If we identify the aircraft as friendly, record the time we identify it friendly-if we do not identify it friendly leave this column blank.

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(2) Unknown: If we have no flight plan which will correlate-our identification will be unknown and we will call it to ADDC as such. If they identify it as friendly then put in remarks column that ADDC identified it as friendly and give time they identify it: EXAMPLE: "Friendly - ADDC - 1123." Leave the time we actually make it unknown recorded.

i. Remarks:

(1) If we have a correlation the area or the flight will be recorded-whether Red Bluff or Reno.

(2) If we have no correlation ADDC will be called. If they identify the track friendly-paragraph h, (2) above will apply, if they do not identify the track as friendly but leave it unknown, the reason why no identification was made will be explained in this column.

BY ORDER OF THE COMMANDER:

OFFICIAL:

GARELD F KRIEG
2Lt, USAF
Adjutant

/s/t/ GARELD F KRIEG
2Lt, USAF
Adjutant

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Administrator, FCDA, 1930 Columbia Road, N.E. Washington 25, D.C.	1
	93
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TOTAL	149

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DISPOSITION FORM

FILE NUMBER 27 B

47

FILE NO.

SUBJECT: (Uncl) Identification of GCC Tracks at Filter Centers

TO: [illegible] FROM: DCS/O DATE: 4 Oct 54 COMMENT NO. 1

1. Because of the reservations held by OOA at the time the attached Technical Memorandum was written, caused primarily by the limited scope of the test (one filter center only), they recommended that the system be tested in other places before universal adoption. Subsequently the system received an enthusiastic reception and was instituted throughout WADF where, according to qualitative information from Col Aubrey of WADF, it has met with success. OOA believes that these trials, although qualitative in nature, have been sufficient and that further quantitative testing of an exact nature is not necessary. I concur.

2. Furthermore, I feel that there is nothing to be lost and much to be gained by the adoption of the system, particularly if the following provisions are incorporated in the implementation:

a. The radar station be given the prerogative of asking either for all identified tracks, including both friendly and unknown, or of asking for unknowns only. Under this mode of operation the radars will not be limited in any way in the number or identity of the tracks told to them, and can recheck identification if they so desire.

b. The identification section at the filter center not be given the facilities to talk to the air route traffic control center, at least until the system is well established. That is, the filter center personnel will be able to listen to the flight plans as they are sent to the radar but will not be able to interrupt to ask questions.

3. I am sending O&T a copy of the report and of our exchange of comments with directions to implement the procedure country-wide.

1 Incl
OOA Tech Memo No. 14

KENNETH P. BERGQUIST
Brigadier General, USAF
DCS/Operations

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HEADQUARTERS
29TH AIR DIVISION (DEFENSE)
Great Falls Air Force Base, Montana

CRE 18 August 1954

SUBJECT: (Secret) Possible Use of Passive Detection to Gap-fill Present 29th Sector Radar Coverage

TO: Commander
Central Air Defense Force
Grandview Air Force Base
Grandview, Missouri

1. Present plans program the AN/FPS-14 radar to gap-fill the 29th Sector radar coverage for detection of low flying aircraft. An alternate and back-up method for air detection is Passive Detection (PD).

2. PD is often referred to as Early Early-Warning (EEW). Tests conducted by the UK resulted in PD intercepts consistently 25% greater than radar intercepts within the same EW system - even when the frequency of the striker's blind bombing and navigation radar was unknown. The 'low probability of interception' of electromagnetic waves has been solved by ARDC for airborne detection (ECM Reconnaissance) using 'Alfred' horns and crystal-video receivers (AN/ARD-4 and -6).

3. An intruder, penetrating the 29th Sector at low altitude (500 to 5000 ft) to evade or delay detection by the permanent radar sites, would rely on his blind bombing and navigation radar to maintain a track to his IP, and would then become susceptible to detection by PD. During times of jamming, PD with its wide-open receiver, will see the strobe of jamming. The permanent radars will see a strobe of the same jamming because the radar detection range is increased when jammed - even though the jamming source is at low altitude, and is in the radar shadow. The jamming source then can be pinpointed through triangulation of the LOPs. Therefore, during intruder jamming, PD becomes 'active' in the defense system.

4. The advantages of PD over radar related to Air Defense are:

a. Lower initial and sustaining costs.

b. Ease of maintenance. No timer, modulator, or transmitter.

c. Fewer supply and logistical problems. Equipment can be completely mobile and be driven to the parent organization for maintenance.

d. Longer interception range. UK tests conclusively proved this.

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CRE Subj: (Secret) Possible Use of Passive Detection to Gap-fill Present 29th Sector Radar Coverage

e. The use of PD as a gap-filler precludes the intruder radar-navigation, and will force him to a higher altitude within the detection capability of the permanent radar.

f. PD, as a 'gap-filler', is not interested in range and azimuth, but in azimuth and early warning of pending attack only.

5. The disadvantages of PD over radar as related to Air Defense are:

a. PD is 'dead' if the intruder does not radiate electromagnetic waves. As stated in paragraph 3, an intruder must radar-navigate under all but CAVU conditions. 'Rear' navigation does not deny PD. (Back lobe radiation).

b. Low 'probability of interception' of electromagnetic waves. The use of 'Alfred' horns and crystal-video receivers resolve this disadvantage.

6. It is recommended that use of PD as 'gap-fillers' be evaluated for possible use in the 29th Sector of responsibility.

FOR THE COMMANDER:

s/t/THOMAS M. CAFFERTY
Captain, USAF
Adjutant

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Hq 29th ADiv CRE, Subj: (Secret) Possible Use of Passive Detection to Gap-fill Present 29th Sector Radar Coverage

FCSR-R (18 Aug 54) 1st End 13 SEP 1954

HEADQUARTERS CENTRAL AIR DEFENSE FORCE, Grandview Air Force Base, Grandview, Missouri

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

1. This headquarters believes that a requirement exists for passive detection facilities at "outer ring" radars on the perimeter. However, it is not believed that such facilities should replace or negate the requirement for gap-filler radars.

2. Information available to this headquarters concerning the passive detection program is as follows:

a. Present passive detection equipment in operation at certain locations is unsatisfactory. ADC has established a requirement for development of better equipment. This project is being handled by Rome Air Development Center.

b. Requirements for communications and personnel for passive detection installations are being held in abeyance until a future date.

c. There are possibilities of using passive detection facilities of other commands.

3. Request this headquarters be advised of current programming of passive detection facilities.

FOR THE COMMANDER:

MILTON A. HENDERSON
Capt. USAF
Asst Adjutant

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Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3 No

Prepared by Capt R.J. Murphy/hb

Tel no 2648

Date 17 Sep 54

V-30-1

ADC HQ Form 11
Feb 54 Revised

This correspondence is classified _____ in accordance with Par 23b(6), AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____
SIGNATURE

[illegible] 25th AMly (Def) ORE, Subject: (Secret) [illegible] Detection to Gap-Fill Proposed 29th Semi-AW Radar Coverage

AFOCE-E (16 Aug 54) 2d Ind

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Central Air Defense Force, Scott Air Force Base, Illinois

1. Two years of testing passive detection in both ZOOF and ZOOF utilizing look-up equipment has failed to demonstrate dependable early warning information. The majority of the passive detections plots that have been correlated have averaged 80-140 miles on targets flying at 30,000 - 35,000 feet. These results are compatible with those obtained by the Royal Air Force, as specifically verified by our observer to last year's annual UK exercise.

2. Long-range plots that overage beyond radar range have been obtained primarily on tracking type missions; however, results as to range on penetration tracks are much less than that obtained by the latter. This has led us to conclude that operation of look-up equipment will not satisfy our requirements for a dependable passive detection facility.

3. RADC has developed a passive detection set, AN/ASD-3, that will undergo operational suitability tests at Eglin AFB in the near future and which may meet our requirements. A complete description and theory of operation of this equipment is included in ADC "ORE Digest," September 1953. Cost estimates for this equipment are from $300,000 - $500,000 each.

4. Current programming of passive detection facilities is outlined in USAF Program Communications-Electronics PC 55-3-1; however, until developmental equipment satisfies our requirements, the passive detection facilities outlined will not be activated.

5. Reference paragraph 2, basic letter. It is requested that any data substantiating the results of passive detection tests in the UK be forwarded this headquarters.

BY ORDER OF THE COMMANDER:

Comeback cy req'd for COMM file.

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

R. J. MURPHY, Capt USAF

A-51478/0415

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[illegible] OC

CGFS HQ USAF WASHINGTON DC

CGMAR US-FSS ATTN: OOD, [illegible] X

(CONFIDENTIAL) AFOCE-E_____. INFO received by this H from

[illegible] indicates that the field testing of the B/TL -5 passive detection

[illegible] will begin at [illegible] 3 1 J M 1955. Tests will INCL the det

comparator unit being [illegible] by Helgar. Your H S/S advised of any future

changes in this test program that are made [illegible] to this H.

[illegible] OC

[illegible].

[illegible], Capt USAF

Will be Confirmed in

Not Publication Form

Order par 3a, ADCSM

NO

Prepared by Capt JWClancy/hb

Telephone 2648

21 Sep 54 CAPT J. W. CLANCY

AFOCE-E 2648

AF HQ Form 11
Feb 54 Revised
1136-1X

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Par 24 b(12) AFR 205-1, 24 Jul 53, or for the reason (s) stated. J. W. CLANCY, Capt USAF
SIGNATURE

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280CE-2

OCT 1 5 1954

SUBJECT: (Unclassified) Electronic Passive Detection

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

1. Communications facility package MB-1D-1 is programmed in the USAF PC for installation during FY-57 at ADC sites P-2, M-96, P-37, and P-33. One (1) MB-1D-1 facility is presently installed at Hamilton Air Force Base (P-48) on a standby status.

2. The passive detection network tested in this Division during 1952-1953 utilizing three (3) MB-1D-1 units at sites P-38, P-37, and P-33, proved unsuccessful. Attached as Inclosure 1 is an evaluation report of this system detailing the following deficiencies:

a. Airborne equipment not suitable for continuous operation.

b. Low probability of detection using rotating antenna systems and receive frequency tuning.

c. The extremely small advantage in ranges over search radar coverage.

3. Based upon the attached report, it is recommended that the equipment listed in the SFEL for the MB-1D-1 facility package be deleted and replaced by equipment giving more desirable results.

4. This headquarters will request that one (1) each MB-1D-1 facility be included in the next PC revision for station P-38 to increase the capability of the outer coastal perimeter passive detection network.

5. No action has been taken by this headquarters in the planning of wire or radio communications for the passive detection system and will be held in abeyance pending receipt of operational requirements.

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HEDAIRDIVDEF 28 28OCE-2 Subject: (Unclassified) Electronic Passive Detection

6. It is requested that this headquarters be provided the current and planned policies concerning passive detection to enable proper planning, programming and engineering of this facility.

FOR THE COMMANDER:

1 Incl:
HEDAIRDIVDEF 28 Ltr,
28OCE-3A 413.44
19 Nov 52 (trip)

WDOCE-P (15 Oct 54) 1st Ind 9 NOV 1954

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

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

1. Reference paragraph 2 basic communication, deficiencies cited are correct, and the value of a Passive Detection Facility utilizing airborne equipment provided by Standard Facility Package MB-1D-1 is questionable.

2. To provide a reliable Passive Detection System capable of 24-hour operation and providing optimum coverage, it is recommended that the airborne equipment currently listed in the Standard Facility Package MB-1D-1 be deleted and replaced with Fixed Plant type of equipment.

3. Reference paragraph 5 and 6 basic communication, it is requested that this headquarters be provided an Operational Plan and policies concerning this system to facilitate planning, programming, and engineering of wire and emergency radio communications required in support of the system.

4. Request this headquarters be advised of action taken to obtain suitable Fixed Plant equipment to replace unsatisfactory airborne equipment currently listed in the Standard Facilities Equipment List.

FOR THE COMMANDER:

1 Incl
n/c (1 cy w/d)

cc: Comdr 28th ADiv (D)

2

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CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No

Prep by Capt RJMurphy/hb
Telephone 2618
Date 30 Nov 54

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X 221 Glen 50

Hq 28th ADiv (Def) 28OCE-2, Subj: (Uncl) Electronic Passive Detection

AFOCE-EW (15 Oct 54) 2d Ind

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Western Air Defense Force, Hamilton AFB, Calif.

1. This headquarters is cognizant of the deficiencies of the MX-1D-1 passive detection package. Action is currently being taken to withdraw the requirement for a passive detection system due to delay in procurement of a suitable facility and due to existing and programmed radar programs.

2. Upon approval of this action, a revision will be incorporated to the PC reflecting this change, and instructions will be issued regarding disposition of present equipment.

BY ORDER OF THE COMMANDER:

MEMO FOR RECORD:

1 Incl
w/d 1 cy

A letter to the Director of Requirements, Hq USAF, to withdraw the requirement for a passive detection system is currently being coordinated through the headquarters. Deletion of this requirement will negate the need for interim passive detection equipment.

3

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified _____ in accordance with Par 26a, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____ SIGNATURE

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FILE NUMBER 405.2 51 DV

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

AFOOP OP D

11 OCT 1954

SUBJECT: (Unal) Mid Canada Early Warning System

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

FILED OPS 4

1. Transmitted herewith is the Final Report of the Systems Engineering Group for the Mid Canada Early Warning Line, dated 27 August 1954 (Incl 1).

2. Review of the report and establishment of a USAF position was accomplished during the period of 1-3 September 1954, with representatives of your command in attendance.

3. The following comments summarize the position established by this Headquarters and transmitted to the RCAF on 20 September 1954.

a. The USAF concurs in the SEG and RCAF selection of the MK II Doppler System for that segment of the line extending from Hopedale to Dawson Creek, with identification radars at necessary dense traffic points and across James Bay. Initial installation of a composite line of radars for this segment is not recommended unless the test circuit shows the MK II system to be operationally deficient. To safeguard against slippage in this eventuality, radar siting, procurement and logistics planning should be conducted concurrently to permit early implementing action upon a decision to employ radars.

b. The target date of 1 January 1957 meets USAF requirements. Earlier siting of some doppler stations, allowing some construction and installation at doppler sites in 1955, would provide added assurance of meeting the target date by reducing the magnitude of construction planned in the summer of 1956.

c. The USAF concurs with the RCAF recommendation that the western segment of the line follow the existing chain of radars from Dawson Creek (Saskatoon Mountain) to Holberg, Vancouver Island. In view of the inter-governmental agreement on the MEW line, and its possible availability within a year following the Mid Canada Line, the deletion of the Alaskan link is warranted. This chain will require augmentation to be compatible with the operational capability of the rest of the line. It was proposed to the RCAF that the two Air Defense Commands determine the requirements for this route.

Systems Div Inquiries file copy for future action.

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Letter to Commander, ADC, Subj: "(Uncl) Mid Canada Early Warning System" (Cont)

d. The USAF concurs in the SEQ's recommendation that a minimum number of gap filler radars be added to the MEAC radar system from Hopedale to Cape Race for the eastern segment of the line. The specific number of radars to be installed will need to be determined by further site survey. Further study is required of the gap left in the Strait of Belle Isle area. It was proposed that this segment of the line be considered as a U.S. gap filling problem and that the entire project, including procurement, construction and operation be undertaken by the USAF.

4. Early actions are being taken to obtain necessary approvals and authorization to initiate implementing actions. Particular emphasis will be placed upon early authorization to conduct site surveys for such portions of the Mid Canada Line as may become USAF responsibilities. Canadian decision on this matter is currently being awaited.

BY ORDER OF THE CHIEF OF STAFF:

R. E. Koon

1 Incl
SEQ Rpt (6 cys)

R. E. KOCN
Brig. General, USAF
Deputy Director of Operations
Deputy Chief of Staff, Operations

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The Chief of the
Air Force Headquarters,
Ottawa, Ontario.

Mid-Canada Line
AHQ 8000 (Def AIR 8000)

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405.1

9 Sep 54

9 Sep 54

1 The Final Report of The Systems Engineering Group for the Mid-Canada Early Warning Line has been received and studied by this Headquarters. As a result of this study, we wish to submit certain recommendations for your consideration in arriving at final decisions concerning construction of the proposed warning line.

2 As you are aware, since conception of the plan for a Mid-Canada Line, and specification of the operational requirements for it, certain unexpected developments have occurred which have had the double effect of both making the proposed line incapable of meeting the laid down operational requirements against a portion of the strategic air threat, and requiring the acceleration of plans and programmes to provide active air defence measures against this same new portion of the threat. While we are not yet in a position to submit to your HQ revised plans in detail, we have reached quite firm agreement with Headquarters, Continental Air Defence Command on the general requirements across Canada for the period from now until 1958. The purpose of this submission is to show the impact of these requirements on the proposed Mid-Canada early warning line. The views expressed hereunder generally represent the agreed views of RCAF ADC HQ and HQ Continental Air Defence Command.

3 As a general guide, because of the greater speed and altitude capabilities of new Soviet bombers, and because of the possible degradation of our surveillance and control systems by ECM, the Combat Zone must [illegible] to permit continuous tracking and fighting against jet bombers to begin approximately 500 n.m. from critical target areas. In some areas, where radar coverage could be provided relatively cheaply, greater coverage will be recommended, and a lower density of defensive weapons required. In other areas, where radar coverage can only be provided at considerable expense, less coverage will be recommended but this will, of necessity, require a higher density of weapons.

4 For ease of reference, the radar requirements as agreed between the two Air Defence Commands will be related to the proposed Mid-Canada Line, and divided into the following segments:

(a) Prince Rupert to Fish Flon

(b) Fish Flon to Knob Lake

(c) Knob Lake to the eastern seaboard.

5 From Prince Rupert to Fish Flon the radar coverage which will be provided would extend the fringe of the combat zone outward at least to the proposed route of the Mid-Canada Line, and in some areas well beyond it - at least [illegible] coverage. For low coverage, however, the radars proposed [illegible] sufficiently close to that which we would [illegible] to permit adequate argument. If both the heavy and [illegible]

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[redacted]

6 From Dawson Creek to the Pacific Coast, it is the view of the two Air Defence Commands that sufficient warning can be provided by the Holberg, Puntzi Mountain, Baldy Hughes, Saskatoon Mountain radar chain. We therefore recommend that this chain be considered as a section of the Mid-Canada Line from Dawson Creek to the Pacific Coast, and that no additional installations be made.

7 From Flin Flon to Knob Lake we recommend continuation of the Mid-Canada Line in accordance with the recommendations of the SEC. While we will eventually be submitting a recommendation to extend radar coverage northward in this area to approximately the 55th parallel (this is already included in the USAF ADC Requirements Plan 1954-1960) it is believed that such a program could not be completed in this area by 1957. We believe, therefore, that construction of this segment of the Mid-Canada line is fully justified as an interim measure, and that the equipment installed in it can be fully utilized in the expanded Combat Zone to provide detection of low-flying aircraft at the fringe of the Zone.

8 From Knob Lake eastward we do not agree with the proposed routing of the Mid-Canada Line. In both our past and present concepts of air defence of North America the Labrador-Newfoundland area is not included in the continental Combat Zone. While the importance of Goose Bay and Harmon Air Force Bases is realized, our studies have led us to the firm conclusion that they, like Thule, should be treated as isolated targets, for which special local defences should be provided, and that the continental Combat Zone should terminate just inside the Pinetree chain. (In passing, it should be stated that we agree that the coverage now provided by the Pinetree chain is not adequate for the defences of the NEAC area, but we also believe that the additional coverage which would be provided by the proposed Mid-Canada Line facilities is not suited to this local requirement).

9 Because of the heavy concentration of critical targets immediately southwestward of this area, as well as the fact that the most natural approach to these targets passes over the Labrador-Quebec-Newfoundland area, it is considered that identification of aircraft entering the fringe of the combat zone around these targets must be virtually absolute and immediate. Because of the high volume of both local and transoceanic traffic flying through this area, and the uncertainties involved in positive flight planning of such flights, the required standards of identification could not be readily achieved along a line running down the Labrador-Newfoundland coast. We therefore favour a line inside the coastal region, at which such standards of identification are practicable, even if it is necessary to sacrifice some depth in the Combat Zone itself in order to achieve this. The Air Defence function of the Pinetree chain [redacted] the defence of the continental area) would then [redacted]

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required to fix [illegible] tailored for each [illegible]

10 As a result of the foregoing, the ideal routing of the eastern segment of the Mid-Canada Line would be over a straight line running from Knob Lake to Fort Chimo. Because of the logistic and technical difficulties that such a route would involve, however, the Air Defence Commands are prepared to accept a line running from the railway from Knob Lake to Wabush, to Wabamo, to Ambrosetti, to The Narrows to Cape North. This line, however, in addition to providing virtually absolute detection at all practical flying altitudes up to 65000 ft, must fill in the gaps in radar coverage which now exist between the Pinetree Chain and the adjacent fringe radars of the Combat Zone (i.e. Wabush, St. Margaret's, Sydney) - otherwise continuous tracking from the Pinetree chain into the Combat Zone would still not be possible and the identification capabilities of the Pinetree chain could not be utilized.

11 With regard to the proposed Alcan link, it is the view of the two ADC's that this link would serve a useful purpose only if the Mid-Canada Line and the seawings were completed and operating, and the DEW line not yet completed. After the DEW Line is completed, the seawings will become extensions of the DEW Line, the Mid-Canada Line will, in effect, become a part of the Combat Zone, and the Alcan link would be redundant. The cost of constructing this link must therefore be weighed against its usefulness for what may be a fairly brief interval. On the assumption that a DEW line will be built, and that it will probably be completed fairly soon after completion of the Mid-Canada Line, the two ADCs do not feel that the cost of the Alcan link could be justified for air defence reasons.

12 In summary, the following are the recommendations of the RCAF and Continental Air Defence Commands in respect to the proposed Mid-Canada Line:

(a) That the Saskatoon Mountain-Melberg radar chain be considered as the westward extension of the Line from Dawson Creek to the Pacific Coast.

(b) That, if it is expected that a DEW line will be constructed soon, the Alcan link be not constructed.

(c) That the segment from Dawson Creek to Flin Flon be proceeded with, in accordance with the recommendations of the SHAPE, without prejudice to the earliest possible expansion of the radar system in this area.

(d) That the segment from Flin Flon to Knob Lake be proceeded with, in accordance with the recommendations of the [illegible]

(e) That the segment from Knob Lake to Wabush to Cape [illegible] be not proceeded with.

(f) That the eastward extension from Knob Lake be routed via Nichols Island, The Narrows Islands to [illegible] and that this segment be constructed either [illegible] with retarding radars so as to [illegible] coverage which now exist between [illegible] and the adjacent fringe radars of the [illegible]

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15 DEC 1954

(Memo) dtd 3 DEC 54 3875 fr Col Denham, AFOOP-OP-D. Two parts. Part I. We are concerned ABT the CONT study and ATTN being given to a proposal for a segment of the DEW Line to PIN from Greenland to England, via Iceland and the Faroe Islands. Our views on this proposed segment are known to the DEW Line Implementation GP and to the DEW Line Feasibility Study Committee. Our POSITN on this segment of the Line was that it is unacceptable for CONUS Air Defense purposes and cannot be justified for NEC purposes. In our opinion it is an unnecessary waste of time for the above GP to CONT studying the segment of the DEW Line that is UNSAT for our Continental Air Defense purposes. The urgency of the situation dictates IMMED and positive ACT to IMPR the DEW Line SYS. In ADD to the urgent requirement for IMMED improvements in the ANT air defense SYS, the DEW Line SYS is a vital and critical requirement for Air Defense. Therefore the purpose of this MSG is twofold, first, to bitch the terms of REF and NEC of COMAD that PERT to responsibilities for the IMP and replacement of the DEW Early WARN SYS and, second, to maintain our desired IOC of the DEW Line SYS. The terms of REF and NEC for

Lt Col CSGlenn/bt
2521
15 Dec 54

COMEBACK COPY

Not requested, not filmed

Returned 15/12/54 (Date) (Initials)

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ROUTINE

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CONAD that specifically relate to the SAGE are PARA 4, 5a, and 6a. These terms of REF and the NIE list CINCONAD HERE to INS that the early WRN SYS are designed and OPR in a manner responsive to Continental Air Defense requirements. Furthermore the requirement for COORD with the appropriate U. S. and Allied Commanders is being complied with. For example, we have consummated a CORD U. S. and Canada AEC proposed DEW Line LOC. Our proposed design, LOC and employment of the DEW Line for WRN purposes for CONUS against air attack is still firm. Our POSIT was first stated in TOPSEC DOCU, Air Forces Plan for the Defense of the CONUS Against Air Attack, dated 8 Jun 53. Our POSIT of this proposed line was reached only after careful STUDY of all known existing plans, studies, FLD EXP, and trials. It was planned by CHAL, engineer, HERE people in Air Defense matters, who have vigorously pursued the NEED of Early WRN for over three years. The CORD U. S. CANAD/NORAD Air Defense COMD proposed LOC of the DEW Early WRN SYS is as FOLs: The DEW Line will comprise a land based segment with Atlantic and PAC sea stops. Until such a time as the DEW has the capability to

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Lt Col CHALmers/bb

ADOPR 5282

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Ref Ltr, with ATT, your Ltr 25 Nov 54 re further discussion on your case

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MESSAGE TRANSMITTED WITH FOLLOWING DATE TIME GROUP B-7-15 152118Z

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Lt Col CSGlenn/bt
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14 Dec 54

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E a Herbes, Col

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A [illegible] of Agreement

I. The following agreement between the Chief of Naval Operations and the Chief of Staff, U. S. Air Force will govern all phases of the Navy participation in the planning, programming and operation of:

a. The extension to seaward of contiguous radar coverage of the Continental air defense system, and

b. The seaward extension of the early warning system.

II. Extension to Seaward of Contiguous Radar Coverage:

a. Ships and lighter-than-air aircraft for continuous radar coverage will be naval forces.

b. Airborne early warning and control (AEW&C) aircraft for extensions to seaward of contiguous radar coverage will be Air Force forces.

c. The extension to seaward of contiguous radar coverage of the Continental air defense system will operate under the direction of Commander, NORAD. Naval forces for the contiguous extension will be allocated by and operated under the command of appropriate area commanders. Operational procedures for naval forces operating and participating in the system will be as prescribed by the Commander, Air Defense Command, after consultation with appropriate Navy commanders.

III. Seaward Extension of the Early Warning System:

a. Forces for the seaward extension of the early warning system will be naval forces.

b. The seaward extension of the early warning system will operate under the direction of CINCLANT and CINCPAC as appropriate, who will coordinate plans with other appropriate unified commanders and with Commander, NORAD.

c. The emphasis afforded to this program will be equal to that afforded the program for contiguous radar coverage.

IV. General

a. All ships become available from both the Air Service program and the contiguous radar program that may be assigned or diverted

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by the Joint Chiefs of Staff to fill the contiguous radar coverage requirement in order to compensate for possible discrepancies in planning as between the programs.

/s/ NATHAN F. TWINING
Chief of Staff, U.S. Air Force

24 December 1953
(Date)

/s/ ROBERT B. CARNEY
Chief of Naval Operations

17 December 1953
(Date)

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THE JOINT CHIEFS OF STAFF
Washington 25, D.C.

SM-688-54
2 August 1954

MEMORANDUM FOR: Chief of Staff, U.S. Army
Chief of Naval Operations
Chief of Staff, U.S. Air Force
Commandant of the Marine Corps

Subject: Continental Air Defense Command

1. Under the authority of the Secretary of Defense, the Continental Air Defense Command (CONAD) is established, effective 1 September 1954, as a Joint Command for the air defense of the continental United States, with headquarters at Ent Air Force Base, Colorado Springs, Colorado. The Secretary of Defense has designated the Department of the Air Force as the executive agency for this command.

2. The Joint Chiefs of Staff designate General Benjamin W. Chidlaw as Commander in Chief, Continental Air Defense Command (CINCONAD).

3. The mission of CONAD and the terms of reference for the commander are contained in the Annex hereto. CINCONAD will submit to the Joint Chiefs of Staff for approval, revisions to the attachments as experience dictates.

Info copies to:
Commander in Chief, U.S. European Command
Commander in Chief, Far East
Commander in Chief, Pacific
Commander in Chief, Atlantic
Commander in Chief, Caribbean
Commander in Chief, Alaska
Commander in Chief, U.S. Northeast Command
Commander, Strategic Air Command
Commander in Chief, U.S. Naval Forces,
Eastern Atlantic and Mediterranean
Commander in Chief, U.S. Air Forces in Europe.

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4. The following forces are initially allocated to CONAD:

a. The U.S.A.F. Air Defense Command.

b. The U.S.A. Antiaircraft Command.

c. Naval forces of the contiguous radar coverage system.

5. Initial press releases regarding the establishment of this command will be made by the Secretary of Defense.

6. Addressees are directed to take action as necessary.

EDWIN H. J. CARNS,
Brigadier General, USA,
Secretary.

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ANNEX

TERMS OF REFERENCE AND MISSION

1. The Continental Air Defense Command (CONAD) is established as a joint command for the defense of the continental United States against air attack. The Department of the Air Force has been designated as the executive agency therefor. Headquarters USAF Air Defense Command is additionally designated as Headquarters, CONAD, the staff of which will be augmented by appropriate representation from all Services.

2. The Commander in Chief (CINC) CONAD will exercise operational control# over all forces assigned or otherwise made available by the Joint Chiefs of Staff or other proper authority, for defense of the continental United States against air attack. The command will be established in accordance with the appropriate provisions of Joint Action Armed Forces (JAAF), and the directives contained herein. The command shall consist initially of the U.S. Air Force Air Defense Command, the U.S. Army Antiaircraft Command, and a Naval Command composed of the naval forces of the contiguous radar coverage system.. During the periods that augmentation forces of the Army, Navy/Marine Corps, and Air Force are employed in air defense of the continental United States, operational control of such forces shall be temporarily vested in CINCONAD.

3. The CINCONAD will be a U.S. Air Force general officer who will be designated Commander, U.S. Air Force Air Defense Command. The Commanding General, Antiaircraft Command, will be the principal advisor to CINCONAD on Army matters pertaining to the CONAD. An appropriate Naval Command, under a flag officer, will be

"Operational control" wherever used in this paper is as defined in Tab "D" hereto

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established with headquarters at ENT Air Force Base and the Commander will also be the principal advisor to CINCONAD on Navy matters pertaining to the 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 absence of the Joint Commander, the Senior Component Commander will assume temporary command.

4. Forces and operations of the seaward extensions of the early warning system will continue under the Commander in Chief, Atlantic (CINCLANT), and the Commander in Chief, Pacific (CINCPAC), and early warning installations in Alaska and the Northeast Command under the Commander in Chief, Alaska (CINCAL) and the Commander in Chief, Northeast Command (CINCNE). However, 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 operations of, these elements of the early warning system will be responsive to the needs of CINCONAD.

5. The mission of the CINCONAD will be to:

a. Defend the continental United States against air attack.

b. Support CINCPAC, CINCLANT, CINCARIB, COMSAC, CINCAL and CINCNE in their missions to the maximum extent consistent with the primary mission outlined in subparagraph a above.

6. In carrying out his mission, CINCONAD will:

a. Conduct operations to the limit of the capabilities of available forces in the defense of the continental United States against air attack.

b. Prepare joint plans and requirements for the defense of the continental United States against air attack and submit these plans and requirements to the Joint Chiefs of Staff for approval.

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c. Implement JCS approved plans, through the appropriate component commands; and exercise such emergency powers as may be delegated to him by proper authority.

d. Coordinate plans, operations and exercises with appropriate United States Commanders and with Canadian and Mexican Commanders in accordance with agreed Canada-United States and Mexico-United States defense policies.

e. In coordination with# appropriate U.S. and Allied commanders, plan for early warning systems and procedures which will provide early warning of air attack for the defense of the continental United States to insure that these systems are designed and operated in a manner responsive to continental air defense requirements and in consonance with national policy.

f. In coordination with commanders concerned, establish procedures and methods of operation for all forces allocated, attached or otherwise made available for the air defense of the continental United States.

g. In coordination with commanders concerned, prepare and submit to the Joint Chiefs of Staff for approval, plans for the full utilization of all military forces, including reserve forces, which have an air defense capability and which can temporarily augment the air defense forces in event of emergency.

h. When there exists an imminent threat of air attack upon the continental United States, or in case such an attack develops, assume operational control of those forces specifically having been made temporarily available from other commands (augmentation forces). Such operational control over forces having been made temporarily available from other commands, will be relinquished when the imminence of the

"In coordination with" wherever used in this paper is as defined in the "Dictionary of U.S. Military Terms for Joint Usage (Second Revision)."

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threat has dissipated or when the attack is ended. In the event that the commander who made the forces available should consider that his primary mission requires their return to their permanent command assignments, he should first make appropriate requests to the Air Defense commander; if such request is not granted his next recourse is to the Joint Chiefs of Staff.

i. Plan for and conduct air defense exercises, including participation by augmentation forces, coordinating plans as appropriate with other U.S. commands and military agencies of Canada and Mexico.

j. Plan for, train, exercise and operate in coordination with appropriate authorities a Ground Observer Corps of necessary military personnel, and civilian volunteers.

k. Coordinate with appropriate military governmental and non-governmental agencies in the development of plans, policies and procedures for the security control of air traffic, the control of electromagnetic radiations, and the control of illumination and, when appropriate, initiate implementing actions therefor in the defense of continental United States against air attack.

l. Coordinate with the Federal Civil Defense Administration, State Civil Defense agencies, and other non-military agencies on matters of participation in air defense.

7. Based on missions or tasks assigned by CINCONAD in consonance with JCS approved plans, detailed planning as to forces and their deployments will be accomplished by component commanders coordinated as necessary with other commanders of their Services.

8. In matters not covered by JCS approved joint plans, doctrines or procedures, interim directives, promulgated by CINCONAD

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will govern all Air Defense operations. These will be formulated in consonance with existing inter-Service and inter-Command agreements and decisions of the Joint Chiefs of Staff.

9. Responsibilities of component commanders relating to the participation of the forces provided by each Service for air defense of the continental United States are contained in the appendices to these terms of reference:

Tab "A" - Air Force Forces

Tab "B" - Army Forces

Tab "C" - Naval Forces

Tab "D" - Command Arrangements

Tab "E" - Command Chart.

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TAB "A"

RESPONSIBILITIES OF THE COMMANDER, AIR FORCE/
AIR DEFENSE COMMAND

1. Serve as the Commander of the Air Force component command of the CONAD.

2. Command all Air Force forces assigned or otherwise made available for air defense of the continental United States.

3. Coordinate with the other Service component commanders on matters of mutual interest.

4. Organize, administer, equip, train, and prepare for combat, units and combat crews of the Air Force as may be designated, assigned or attached to the Air Defense Command.

5. Recommend plans and policies for the employment of the military reserve forces of the Air Force in the air defense of the United States.

6. Develop tactics, techniques, and recommend equipment employed by Air Force forces in defense against air attack.

7. Participate in disaster relief and other domestic emergencies as required.

8. Prepare combat Air Force air defense units for overseas deployment as required, to include organizing, training, and equipping.

Commander, USAF ADC is also CINCONAD

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Tab "C"

RESPONSIBILITIES OF THE COMMANDING GENERAL,
ARMY AIR/AIRCRAFT COMMAND

1. Serve as the Commander of the Army Component of the CONAD.

2. Command all Army forces assigned or otherwise made available for air defense of the continental United States.

3. Provide above forces for operational control by the CINCONAD, in accordance with Tab "D", on the basis of JCS approved plans, doctrines and procedures pertaining to the air defense of the continental United States.

4. Develop detailed plans for Army forces and their deployments allocated for the air defense of the United States based on mission or tasks assigned by the CINCONAD in consonance with approved JCS plans.

5. Organize and establish a suitable headquarters and subordinate headquarters and commands as deemed necessary to accomplish the assigned missions or tasks.

6. Participate in ground defense, harbor defense, disaster relief, and other domestic emergencies when such participation will not interfere with the air defense mission.

7. Coordinate with the Department of the Army and other Army agencies on matters pertaining to the support, administration, organization, and equipping of Army units assigned or otheriwse made available for the air defense mission.

8. Prepare combat Army air defense units for overseas deployment as required, to include organizing, training, and equipping.

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TAB "C"

RESPONSIBILITIES OF THE COMMANDER, NAVAL FORCES
AIR DEFENSE COMMAND

1. Organize a suitable command under a flag officer with appropriate headquarters necessary to meet the requirements set forth by higher authority.

2. Serve as the Commander of the Naval component command of the CONAD.

3. Coordinate with the other Service component commanders on matters of mutual interest.

4. Command all Naval forces assigned or otherwise allocated for employment in the contiguous radar coverage of the continental United States air defense system.

5. Coordinate with appropriate fleet and training command for provision of naval augmentation forces for continental air defense.

6. Provide above forces for operational control by the CINCONAD in accordance with Tab "D", on the basis of JCS approved plans, doctrines and procedures pertaining to the air defense of the United States.

7. Provide appropriate Air Defense Commanders with required information relative to the status and operating characteristics of all Naval forces allocated for the air defense of the continental United States, and Naval augmentation forces and facilities capable of emergency employment in air defense of the United States.

8. Provide for the control of fire of the Antiaircraft batteries of vessels in port by the Air Defense Commander through the local Army, Antiaircraft Control Center, if one is established, otherwise through a Navy AA Control Center.

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Tab "D"

COMMAND ARRANGEMENTS

SECTION I

Operational Control

1. The operational control exercised by CINCONAD over all forces assigned or otherwise made available, will consist of the following:

a. Direct the conduct of the tactical air battle including the engagement and disengagement of air defense weapons.

b. Control of fighters.

c. Specify the conditions of alert.

d. Station the early warning elements of the command and their control elements.

e. Locate and deploy the combat elements of the command in accordance with plans approved by the Joint Chiefs of Staff.

SECTION II

Implementation of Operational Control

2. Operational control as defined above will be implemented in accordance with the chart, shown in Tab "E", in the following manner.

a. When reporting on station, naval forces in contiguous radar coverage system come under operational control of the appropriate regional headquarters through the appropriate naval regional component channel.

b. Naval surface forces made available in case of emergency will report for operational control to the Commander in Chief through the appropriate Naval Regional Component Commander. Limitations on the deployments of these surface forces may be prescribed by the fleet commander making the forces available.

c. Naval aviation augmentation forces, provided in case of emergency, will report for operational control to the

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appropriate Air Division Command. The Fleet or Naval Air Training Command Commander making the forces available will prescribe whether such forces may be deployed to other than home bases.

d. Operational control, as defined in paragraph 1 Section I, above, will be exercised by the joint air defense commanders in accordance with the chart in Tab "F".

e. Operational control will be exercised over all forces assigned or otherwise made available in a geographical area by the appropriate joint regional or sector air defense commander thereof.

f. Army antiaircraft units will pass to the operational control of the appropriate air defense commander upon deployment to tactical air defense positions.

SECTION III

Organization and Command Arrangements

1. The mission of air defense is a functional mission carried out on a geographical basis. Since time of reaction to the threat is all-important, successful Air Defense must be predicated upon decentralization of control. The United States is now divided into three Air Defense regions which are further subdivided into sectors; each region having an Air Defense Force Commander responsible for the defense of his area against air attack and utilizing all available forces of the military establishment which have an air defense capability.

2. The existing organization of the USAF Air Defense Command, with its air defense system for surveillance, warning and control, and combat is the basic structure which will be utilized for the Joint Command. Each USAF headquarters from command down to air division level will be additionally designated as a Joint headquarters commanded by an Air Force officer and with appropriate representation from each Service. The Army Antiaircraft

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Command and the Naval Command will parallel this organization through the regional level and with a Component Commander or staff representation below regional level as experience dictates. The numbers of personnel who will represent each component commander at the Joint Regional Air Defense Force level will be a matter for agreement between him and the Commander, Joint Regional Air Defense Force.

3. The Chart, Tab "E", shows the lines of operational control and command as set forth in Tab "D".

4. The Service component commanders at regional or lower levels, in addition to their uni-service functions, shall be Army Deputy and Navy Deputy, respectively, to the joint commanders for matters of concern to their Services.

5. The Component Commanders will be responsible for the military command of their components in accordance with directives and procedures of their Services. Logistic and administrative support of the Service components will be provided as directed by the Service concerned.

6. The Joint manning of the staff of the Commander in Chief, due to the proximity of the headquarters of the component commands should be kept to a minimum. Thus, augmentation of the Command will be approximately as follows:

	ARMY	NAVY	MARINE
Operations and Training	1	1	-
Operations Analysis	1	1	-
Communication and Electronics	1	1	-
Plans and Requirements	1	2	-
Assistant to the DCS/O	1	1	1
Intelligence	1	1	-
Material	-	1	-
Comptroller	-	1	-
Information Services	1	1	-
	7	10	1

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7. [illegible] upon its contiguous radar coverage system will be extended to the regional (second echelon) level for the east and west coasts.

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COMBATANT DIRECTIONAL CONTROL CHART

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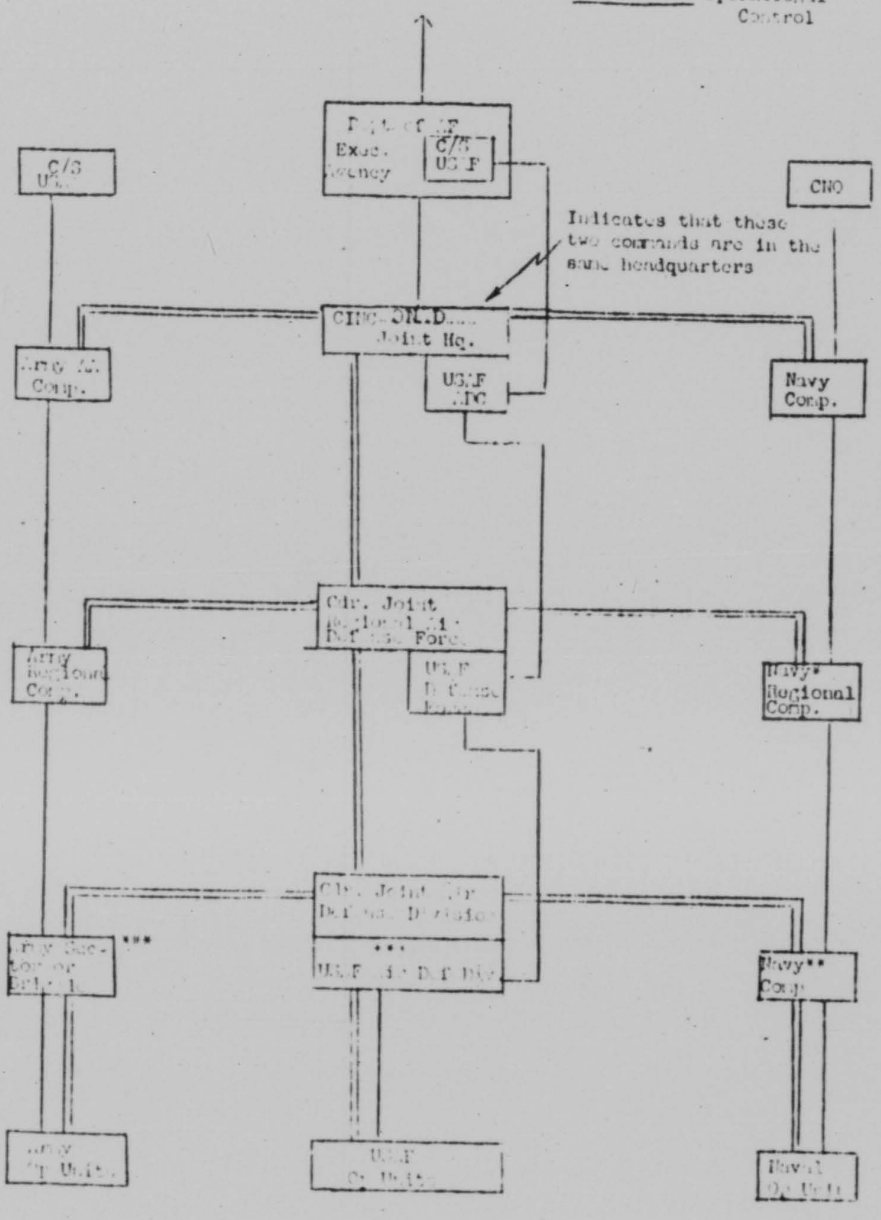
Secretary of Defense
and Joint Chiefs of Staff

Command

Operational Control



*Naval Surface augmentation forces and Naval continuous coverage radar.
** Naval air augmentation forces
*** Army augmentation forces
**** USAF air augmentation forces

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FORCES AND DEPLOYMENTS (TENTATIVE) BARRIER AND CONTIGUOUS SYSTEMS FOR CONTINENTAL DEFENS

ATIONAL DATES	AVAILABLE		DEPLOYMENT				CONTIGUOUS SYSTEM AIR		CONTIGUOUS SYSTEM A		AEW BARRIER ATL		AEW BARRIER PAC	
	DEW	MIDP	DEW LANT	DEW PAC	TRACK AIR	TRACK PAC								
EMBER 1954	6	0	6	0	0	0	0	0	0	0				
1955	9	4	6	3	4	0	9	4	6	3	0			
MBER 1955	12	4	9	3	4	0	9	4	6	3				
AY 1956	15	4	9	6	4	0	9	4	6	6	0			
1956	18	4	12	6	4	0	9	4	6	6				
1956	18	8	12	6	4	4	9	4	6	6	4	5	3	9
MBER 1956	21	8	15	6	4	4	9	4	6	6	4	5	6	18
MBER 1956	24	8	18	6	4	4	9	4	6	6	4	5	9	27
AY 1957	27	8	21	6	4	4	9	4	6	6	4	5	12	27
1957	30	8	23	7	4	4	9	4	6	6	4	5	14	29
1957	30	12	14	10	8	4	0	8	6	9	4	6	14	29
MBER 1957	33	12	14	10	8	4	0	8	6	9	4	6	14	29
AY 1958	30	12	14	22	8	4	0	8	6	9	4	6	14	25
1958	30	16	14	22	8	8	0	8	6	0	8	6	4	29

																	7	16		
															10	27				
															15	35				
															22	53				

CONTIGUOUS PICKET STATIONS

PRIORITY	EAST COAST	WEST COAST
	39° 37'N - 69° 20'W	47° 40'N - 128° 50'W
	39° 11'N - 70° 20'W	46° 00'N - 128° 45'W
	40° 42'N - 67° 33'W	44° 20'N - 128° 11'W
	42° 05'N - 67° 32'W	37° 42'N - 124° 50'W
	38° 18'N - 71° 43'W	36° 05'N - 124° 06'W
	37° 13'N - 72° 41'W	

TENTATIVE AEW/ASW BARRIER PICKET STATIONS

PRIORITY	LANT		PAC	
1	45° 55 N	48° 40 W	53° 20 N	131° 40 W
2	43° 55 N	43° 20 W	49° 55 N	134° 15 W
3	42° 20' N	38° 00 W	46° 05 N	134° 40 W
4	40° 30 N	33° 00 W	42° 5 N	135° 20 W
5			37° 40 N	136° W
6			33° 00 N	136° 20 W
7			28° 15 N	137° 00 W

NOTES:

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PROJECT 46

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DER (CONVERSION)

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FILE NUMBER 377.6

CONVERTED DER	UNCONVERTED DE
ARMAMENT:	
2-3"/50 RF SINGLE	3-3"/50 SINGLE DP(SF)
4 -20 MM TWIN	3-40 MM TWIN
1-MK 15 HEDGEHOG	10-20 MM SINGLE
1-D.C. TRACK	2-D.C. TRACKS
	8-D.C. PROJECTORS
	1-MK 10 PROJECTOR
RADAR EQUIPMENT:	
1 AIR SEARCH RADAR (SPS-12)	1 AIR SEARCH RADAR (SA or SC)
1 HEIGHT FINDING RADAR (SPS-8)	
1 SURFACE SEARCH RADAR (SPS-10)	1 SURFACE SEARCH RADAR (SL)
1 AEW SYSTEM	
SONAR EQUIPMENT:	
SCANNING SONAR	SEARCHLIGHT SONAR
UNDERWATER COMMUNICATIONS SYSTEM	

OP 09D 10-13-54 09010.25A CH2

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1956 CONVERSION PROGRAM: DER

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- MUCH IMPROVED AIR EARLY WARNING & INTERCEPT CONTROL
  - AIR SEARCH RADAR
  - HEIGHT FINDING RADAR
  - AEW RELAY REPEATER
- IMPROVED A/S ARMAMENT

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PROJECT 126

LIBERTY SHIP CONVERSION TO RADAR PICKET YAGR

377.6

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LENGTH	442′
BEAM	57′
DRAFT	28′
DISPLACEMENT	9,000 T (EST)
SPEED	11 KTS
ARMAMENT	2 – 3″/50 S. F. SINGLE MOUNT
CREW SPACE	OFFICERS 12 MEN 120
MAXIMUM RANGE	9,000 NM @ 11 KTS
RADAR EQUIPMENT	AIR SEARCH RADAR HEIGHT FINDING RADAR SURFACE SEARCH RADAR

SHIPBUILDING PROGRAM – OP-09D
13 AUGUST 1954 – 09010.29A CH-1

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1956 CONVERSION PROGRAM: LIBERTY SHIP TO RADAR PICK

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ADVANTAGES: 1. PROVIDES SATISFACTORY PICKET SHIP AT REASONABLE COST
2. CAPABLE OF OPERATING ON ECONOMICAL BASIS

CHARACTERISTICS REQUIRED:

STABLE RADAR PLATFORM

SEA AND STATION KEEPING QUALITIES SUITABLE FOR ALL WEATHER CONDITIONS

SUFFICIENT SPACE FOR INSTALLATION OF RADAR, CIC & COMMUNICATIONS

ADEQUATE LIVING & MAINTENANCE FACILITIES

HELICOPTER PLATFORM (SPACE RESERVED)

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COPY

FILE NUMBER 209

FROM: COMDR ADC ENT AFB COLORADO SPRINGS COLO 5 Jun 1954

TO: COMDR EADF
STEWART AFB
NEWBURGH, NEW YORK

(SECRET) ADOPR 0946. Ref your msg EAOPM-C-562. Current ADC requirement for Picket Vessel stations on East Coast is five (5), REF LTR ADC, SUBJ: (U) Requirement for Seaward Extension of Contiguous Radar Coverage, 1954-56, dtd 11 Feb 54. Planning indicates Picket Vessel requirements on East Coast may be reduced to four (4) stations upon integration of AEW&C and Texas Towers. Based on programmed operational dates, this could occur APPROX mid-1956. Your hqs will be advised when firm concept of operations is developed for time period after 1956.

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COPY 59

FROM: HQ EADF STEWART AFB NEWBURGH NY 27 May 1954

TO: COMDR ADC ENT AFB COLO SPGS COLO

/S E C R E T/ EAOPM-C 562. Some controversy has arisen regarding whether our curr rqmt for Picket Vessel stations on the East Coast is 5 or 6. We are forwarding to your by separate ltr a list of refs which establish our rqmt as being 6 stations and have planned and operated on that figure since Dec 1950. Req the following info fr your hq: A. Do you cour present rqmt for 6 Picket Vessel stations. B. Based on Texas Tower and AEW&C integration, will the rqmt for Picket Vessel stations be reduced fr now through the 1960. If so, when and in what number. This info is required in order to coordinate our planning with that of your hq.

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RADV RACPW Subjects (Unclassified) Picket Ship Requirements

MTN / RADAR

(8 Jun 54) 1st Ind 9 Jul 1954

AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado, 1 Jul 54

Commander Eastern Air Defense Force, Stewart AFB, Newburgh, New York

1. Reference letter AIGOP, Subjects (Unclassified) Requirement for Seaward Extension of Contiguous Radar Coverage 1958-56, 11 Feb 54.

2. The letter referenced above established the Air Defense Command position for picket vessel Stations during the time period indicated. The recommended deployment of 5 picket vessel Stations on each coast resulted from detailed studies of all information available that would affect the Air Defense System during this time period. As vessels become available and radar coverage is calibrated it may be necessary to re-examine this position.

3. Upon integration of Texas Towers into the Air Defense System, picket vessel Stations will be relocated to provide coverage compatible with the Air Defense requirements of the time period. Detailed justification and concept of operations for picket vessels as a part of the Air Defense System thru 1960 is included in the Air Defense Command 1954-60 Requirements Plan. This plan is in the final stages of preparations and will be published in the near future.

BY ORDER OF THE COMMANDER

3771

This correspondence is classified _____ in accordance with _____ AFR 205-1, 24 Jul 53 or its

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COMMANDER NAVAL FORCES
CONTINENTAL AIR DEFENSE COMMAND
Ent Air Force Base
Colorado Springs, Colorado

CONFIDENTIAL

19 November 1954

BRIEFING

PICKET VESSEL COMMUNICATIONS

The picket vessels with which we are particularly concerned, and over which this command will exercise operational control, are those whose function will be "the extension to seaward of contiguous radar coverage". "Contiguous" means "in contact" or "near, though not in contact". Contiguous radar coverage, in Air Force parlance, refers directly to the extension of radar coverage from land based radars off the East and West coasts.

Our picket vessels then, are being added to a system already in existence. The Air Force looks upon these ships as an extension of the radar coverage of that system. Therefore in discussing picket vessel communications, it will be necessary to have an understanding of the air force communications system to which the picket vessels will be tied. Here it is:

(Show Chart 1)

We need not concern ourselves with the adequacy of the Air Force landline nets between Direction Centers, Control Centers, and higher command COC's. This system is truly a complex, with provision to meet almost any eventuality. This schematic diagram of the communications system within a single air division will reveal this better than further discussion.

(Show Blueprint of typical Air Division Communications Net)

In interpreting Chart 1 we must remember that the air battle is conducted from the direction center. The higher echelons of the Air Defense Command (Air Division, Air Force, and Air Command) coordinate and shift forces as the situation may dictate, but so long as the battle proceeds satisfactorily the control of interceptor "scrambles", and the conduct of the intercept, is left at the direction center level. Experience in recent defense exercises has confirmed this doctrine and until the "SAGE" system goes into operation, control will remain in the Direction Center. In keeping with this concept picket vessels are tied directly to direction centers, since information which they generate is primarily for the use of the direction centers. For example, all identification is to be accomplished at direction centers where information on friendly military and civilian aircraft movements is available. Later such responsibilities may be passed to the picket.

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PICKET VESSEL COMMUNICATIONS (Continued)

In the operation of our picket vessels, as in other military operations, communications have posed the most difficult problems. The original Navy concept, that communications could be handled on the Navy ship-to-shore system, was found to be erroneous. A number of systems have been tried, including CW, radio-teletype, and voice, with various links between the PV and the Direction Center. For some time it has been obvious that the only acceptable system, with present equipment, is direct HF voice communications between the two. This is the system now in use on the Eastern seaboard.

During the prolonged tests of PV-DC communications the Beavertail Radar Facility at Newport was used as a relay and monitoring station. The need for a monitoring station to control the circuit was clearly apparent and the present system of direct HF voice from PV to DC retains Beavertail as the monitor.

Referring again to our chart, each PV talks to one primary station, indicated by the solid lines connecting the PV and DC. The dotted lines indicate the secondary, or standby, circuit, to be used in case of a casualty at the primary D.C. At present, with DERs on picket station, only one HF circuit is used for "telling" and control traffic. During exercises two circuits for each ship-to-shore link can be established.

These ship-to-shore HF voice circuits provide direct communications between the picket CIC and the Direction Center. The positions of all aircraft contacts are continuously reported by the PV over the "telling circuit" so that, in effect, the status board in the DC displays all of the information obtained by the picket. Information required by the picket such as identification of contacts, and directions for taking or relinquishing control of interceptors, comes back over the other HF circuit, known as the "Control Circuit".

Nineteen high frequencies are now assigned for these communications. These are on loan from CNO and, eventually, permanent frequencies must be assigned. This question of frequencies is critical, but more of that later.

In addition to the one or two HF PV-DC circuits, each PV is required to monitor and be prepared to transmit on the following VHF circuits:

1. Emergency
2. GCI/Joint USAF/Canada/USN/UK, etc.

Pickets are also required to monitor and be prepared to transmit on the UHF air control circuit plus the emergency and AICC commons. Each picket vessel, then, has 3 UHF circuits for normal "one-controller" operations. If additional intercepts are to be conducted simultaneously, an additional UHF circuit must be provided for each additional air controller.

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PICKET VESSEL COMMUNICATIONS (Continued)

In summary, the system now in use on the East Coast requires, for operations with the Air Force, 2 high frequency circuits, 2 VHF circuits, and 3 or more UHF circuits. It should be remembered that these ships will also be required to maintain a listening watch on 500 KC and a watch on the emergency frequency, 8364 KC, as well as operate on any other naval circuits required. The communications load for around-the-clock operations is already high.

Communications for West Coast pickets will be under a slightly different system than those for the East Coast. This chart shows the net planned for operations in the immediate future.

(Show Chart 2)

Note that the three northern pickets are all tied-in to the Direction Center at McChord, also the location of 25th Air Division Headquarters. The southern pickets communicate through Hamilton AFB to the nearby direction center at Mill Valley. This centralization of picket control on the West Coast is a departure from the single PV reporting to a single parent DC on the East Coast. We understand that the mountanous terrain on the West Coast creates problemsin HF radio reception which require costly engineering solutions, hence the need to handle the pickets through as few shore stations as possible. It should be noted that all of our experience has been gained on the East Coast. Perhaps the plan will be changed in the light of West Coast operating experience.

We have gone into some detail on the present communications system because its the one with which we are now living. Of equal importance to us is the concept, now in the planning stage, for the ultimate communications network.

Under this concept the number of high frequency circuits per ship has been increased to 3, 1 for control and 2 for telling. The air force expects the picket vessels to be able to operate on 6 UHF circuits simultaneously. These requirements may be controversial but they are based on the principal that communications must be 100% reliable if the picket vessels are to realize their full potentiality. To this end ADC has requested the allocation of 60 high frequency channels by USAF for the exclusive use of the PV to DC communications on the East Coast. The same number is required for West Coast operations. This number was arrived at by assigning two day and two night frequencies to each of the 3 circuits, a total of 12 frequencies per ship. In justification for the request it should be remembered that seasonal variations in radio propagation and varying degrees of interference from stations abroad may, through the year, require the use of all 60 frequencies. Since frequencies must be assigned well in advance, ADC considers the allocation of so many as fully justified.

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PICKET VESSEL COMMUNICATIONS (Continued)

The requirements of UHF circuits have been increased to 6, with 4 allotted to the 4 air controllers for control, leaving the AICC and emergency circuits still guarded. This, again, may appear to be an unreasonable requirement but one which can be justified if the picket vessels are to be fully effective.

While it may not be possible to provide communications equipment which would meet these requirements for DER's and other fleet units which may be temporarily assigned to the contiguous early warning system, we should have no trouble in building them into the YAGR's.

CNO has scheduled the phasing of naval units into the extension of the contiguous radar system. By July '55 we will be manning 5 stations in the Atlantic with 4 YAGR assigned and 6 DER diverted to this mission. By July '57 the YAGR will have taken over all East Coast stations with 8 in commission for this. The Air Force plans require only 5 stations on the East Coast so it may be possible to anticipate the date when all of these will be manned by YAGR.

On the West Coast we will operate one DER picket next year but YAGR will not be phased into the system until the middle of '56. By July '58 all Pacific contiguous pickets will be YAGR.

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CONTINENTAL AIR DEFENSE

AND

AIR DEFENSE COMMAND

History

July - December 1954

VOLUME II
SUPPORTING DOCUMENTS
Nos. 62-120

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FILE NUMBER 377.4 B

HEADQUARTERS
EASTERN AIR DEFENSE FORCE
STEWART AIR FORCE BASE, NEWBURGH, N. Y.

EAOCE-C

26 JUN 1954

SUBJECT: (Unclassified) Plan for Central Communications Facilities to Support Picket Vessel and AEW&C Operations

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

FILED

1. General: A high frequency radio communications system, utilizing equipment installed at six (6) ADDC's, has been established to provide reliable communications for picket vessel operations and to provide communications with aircraft carriers and other fleet units for flight plan reporting. With the added requirement to support AEW&C operations, the HF radio system must be augmented beyond the expansion capability of existing facilities. It is planned therefore, to establish two (2) radio stations, one in the 26th Air Division Area and one in the 32nd Air Division Area to combine communications facilities for all operations off the east coast.

2. Assumptions

a. AEW&C operations will be in accordance with the Air Defense Command Concept of Operations as outlined in the document titled "Operational Concept of Seaward Extension of Radar Coverage", dated 1 February 1953.

b. Picket Vessel operations will be conducted in accordance with EADF publication "SOP for Radar Picket Vessels in EADF Region", dated 9 June 1952 with the exeeption that only five (5) picket vessel stations will be required instead of six (6). Picket Vessel stations No. 1 and No. 2 as outlined in the SOP will be combined and designated station No. 2 as shown on Appendix No. 1.

c. The Bell Telephone Company will provide equipment to accomplish remote voice operation of radio facilities from the ADDC's.

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Hq EADF, EAOCE-C, Subject: (U) Plan for Central Comm Facs to Support Picket Vessel and AEW&C Operations

d. Communications will be required between AEW&C aircraft and their home base.

e. Radio facilities will be established at Fort Dix, New Jersey and Camp Edwards, Massachusetts.

f. Picket vessel and AEW&C stations will be located as indicated on Appendix No. 1 hereto.

g. Since HF radio is the only means of communications available with these units, some provisions must be made to provide emergency communications in the event of the failure of the primary system.

3. Operational Concept

a. U.S. Naval units will man five (5) designated picket vessel stations approximately [illegible] off the east coast. Radar information received by these units will be passed directly and reliably to a parent ADDC. Due to the [illegible] ibility of providing wire facilities and the lack of line [illegible] ecluding the use of VHF or microwave, communications must be by means of HF radio voice channels. Each picket vessel requires a minimum of three simplex voice channels between plotter/teller and controller positions.

b. USAF AEW&C aircraft will establish four (4) AEW&C positions approximately 250 miles off the east coast. Each aircraft will be equipped to transmit and receive on two (2) HF voice channels for the passing of radar information to a parent ADDC.

c. Circuits will be established as required from naval aircraft carriers to provide an expeditious channel for the passage of flight plans to the air defense system for carrier based operations. This information is required to preclude the unnecessary scramble of Air Defense Command fighter aircraft to identify friendly naval aircraft.

d. Air/Ground communications between AEW&C aircraft and their parent unit is required for the passage of flight information while the aircraft is enroute to and from their designated station.

e. Upon installation of the Lincoln System the information passed from all units will be routed to the computer sites instead of the ADDC's.

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Hq EADF, EACCE-C, Subject: (U) Plan for Central Comm Facs to Support Picket Vessel and AEW&C Operations

f. Alternate communications in the event of the failure of the central communications stations or of the computer site will be provided by utilizing the radio facilities programmed for the ADDC's picket vessel requirement.

g. Communications stations at Camp Edwards and Fort Dix will provide radio facilities for the units to carry out individual operational responsibilities listed below:

(1) Camp Edwards:

(a) P-10 North Truro
Picket Vessel Station No. 3
Picket Vessel Station No. 4
AEW Station No. 1
Secondary AEW Station No. 2

(b) P-13 Brunswick NAS
Secondary Picket Vessel Station No. 4
Secondary AEW Station No. 1

(c) P-45 Montauk, New York
AEW Station No. 2
Secondary Picket Vessel No. 3

(d) AEW&C Group

(e) Headquarters 32nd Air Division

(f) Computer Sites - Sectors No. 2 and No. 4

(2) Fort Dix:

(a) P-45 Montauk, New York
Picket Vessel Station No. 2

(b) P-9 Highlands, New Jersey
Picket Vessel No. 5
Secondary AEW No. 3
Secondary Picket Vessel No. 2

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Hq EADF, EAOCE-C, Subject: (U) Plan for Central Comm Facs to Support Picket Vessel and AEW&C Operations

(c) P-54 Palermo, New Jersey
AEW Station No. 3
Secondary Picket Vessel Station No. 5
Secondary Picket Vessel Station No. 6
Secondary AEW Station No. 6

(d) P-56 Custis, Virginia
AEW Station No. 4
Picket Vessel Station No. 6

(e) AEW&C Group

(f) Headquarters 26th Air Division

(g) Computer Sites - Sectors No. 1 and No. 3

4. Mission: The mission of the proposed communications stations will be to provide the radio facilities necessary to support all seaward units of the air defense system.

5. Special Measures:

a. Radio

(1) All radio equipment will be remotely operated by the designated ADDC or the AEW&C parent unit. Sufficient equipment will be required to provide three (3) channels to each picket vessels station, two (2) channels for each AEW&C station, one (1) channel for carrier reporting and one (1) channel for AEW&C operations.

(2) AN/FRT-15, 3 KW transmitter equipment will be used at communications stations.

(3) Class "G" rhombic transmitter antennas will be used with AEW&C stations.

(4) Because of relatively short distances involved, rhombic transmitter antennas are not deemed necessary for picket vessel and carrier operations.

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Hq EADF, EAOCE-C, Subject: (U) Plan for Central Comm Facs to Support Picket Vessel and AEW&C Operations

(5) Dual diversity reception utilizing uni-directional, high gain antennas and employing multicouplers will be used on all circuits to assure reliability.

b. Wire

(1) Wire requirements at each communications station will vary with the number of circuits operated and the number of ADDC's served. Generally the requirement will be as follows:

(a) Three (3) pair voice control to the designated ADDC for each picket vessel station.

(b) Two (2) pair voice control to the designated ADDC for each AEW&C station.

(c) One (1) pair voice control to each ADDC for carrier operations.

(d) One (1) pair to each ADDC for technical control.

(e) One (1) pair to AEW&C operations control.

(f) One (1) pair voice control to the secondary ADDC for each picket vessel station.

(g) One (1) pair voice control to the secondary ADDC for each AEW&C station.

(h) One (1) pair technical control and coordination to the ADCC.

(i) Upon integration of the Lincoln System an undetermined number of circuits will be required to two (2) computer sites.

c. Frequencies

(1) A total of 94 HF frequencies in the 2-11 mcs band is required. These will provide two (2) day and two (2) night frequencies per circuit with the exception of the carrier flight plan reporting and AEW&C enroute circuits. Frequencies will be utilized as follows:

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Hq EADF, EAOCE-C, Subject: (U) Plan for Central Comm Facs to Support Picket Vessel and AEW&C Operations

Service	Circuits	Day	Night	Total
Picket Vessel	15	30	30	60
AEW&C	8	16	16	32
AEW&C Enroute	1	1	1	2
	24	47	47	94

(2) Frequencies for carrier operations will be provided by the U.S. Navy from JANAP 195C.

6. Administration and Logistics:

a. This plan will require twenty-seven (27) AN/FRT-15 transmitters. It has been indicated that twenty-five (25) AN/FRT-15 transmitters will be made available to EADF as prime equipment for this function. The Wilcox 96D equipment programmed for installation at the ADDC's will be used as an interim measure and will revert to an emergency system upon completion of these stations.

b. Preliminary studies indicate a requirement for approximately fifty (50) acres of land and 1500 square feet of operating space at the transmitter sites. This will require a standard type "D" communications building plus an extension of 32 feet. It is recommended that due to the large number of high power transmitters to be installed, these buildings be completely air conditioned.

c. Receiver sites will require approximately thirty-five (35) acres for antenna installations with a standard type "B" 1070 square foot building.

d. An actual survey of the Fort Dix area conducted by personnel of this command, and a map survey of the Camp Edwards area indicate that sufficient land is available on the military reservations to establish these facilities. Personnel at these stations will be housed and administered by Air Defense Command units at Otis Air Force Base and McGuire Air Force Base.

e. Power requirements.

(1) Primary power will be extended from the base power source. Three (3) phase 220 volts will be required at the transmitter building. Single phase 120 volts will be required at the receiver building.

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(2) Emergency power will be provided by locally installed power generators. Transmitter building - 200KW 3/phase 220 volts. Receiver building - 50KW 1/phase 120 volts.

f. Cable Support

(1) Additional cable will be required in the Fort Dix area however, initial studies by Western Electric in conjunction with the Lincoln Transition System indicate sufficient capability for expansion in this area. Commercial microwave is also available in the Fort Dix area.

(2) The New England Bell Telephone Company has indicated that considerable cables are available in Camp Edwards area. Additional entrance cable will be required to the telephone exchange.

g. The following number of personnel will be required at each station to provide 24 hour operation of these facilities:

(1) Twenty-six (26) airmen - ground radio maintenance technician - 301 career field.

(2) Ten (10) airmen - vehicle and motorized equipment engine mechanic - 471 career field.

(3) Three (3) airmen - 641 career field for tech supply.

(4) Two (2) officers - 3034 career field.

7. The contents of this letter is classified SECRET in accordance with paragraph 23c AFR 205-1.

FOR THE COMMANDER:

J. W. FOUNTAIN, JR.
Capt

4 Incls:
1. App #1 Area Coverage Chart
2. Comm Circuit Rqr Chart
3. Prim and Secondary Picket Vessel Circuits
4. Prim and Secondary AEW&C Comm Circuits

Info Copy:
Hq 26th Air Division
Hq 32nd Air Division

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SECRET

FILE NUMBER 209 B

HEADQUARTERS
EASTERN AIR DEFENSE FORCE
STEWART AIR FORCE BASE, NEWBURGH, N. Y.

14 pp

EAOCE-CR

16 NOV 1954

SUBJECT: (Uncl) Operations Plan for Picket Vessel and AEW&C Communications

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

1. Attached is an alternate plan to the Operational Plan for Picket Vessel and AEW&C Communications forwarded to your headquarters on 26 June 1954. The original plan provided two major communications stations, located at Fort Dix, New Jersey and Camp Edwards, Massachusetts, as shore terminals for all HF radio circuits seaward. Circuits were extended to direction centers by landline, and emergency facilities were provided by establishing a minimum number of radio circuits from the seaward units direct to the controlling direction center.

2. The original plan is still recommended by this headquarters for the following reasons:

a. Increased efficiency since the functional units operating the central communications stations would be charged only with the responsibility of providing reliable communications.

b. The trend towards seaward expansion of the air defense system may require additional communications facilities which can more economically and effectively be provided by the central stations rather than continual addition and construction to already overtaxed facilities.

c. Additional construction of building space, cable facilities, and antenna farms must be performed to fulfill the present requirement at each of the five (5) direction centers concerned.

d. Increased effectiveness of available personnel since technicians can be concentrated at two sites with standardization of equipment types and facilities.

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Hq EAIF, EAOCS-CR, Subj: (Uncl) Operations Plan for Picket Vessel and AEW&C Communications

3. Emergency radio facilities at direction centers proposed under the previous plan could be provided by interim equipment presently installed at those direction centers but scheduled for replacement by more modern types.

4. The attached revised plan utilizes the same number of frequencies as the original plan, and a like amount of equipment as previously required to operate the two central stations. However, the overall system is considered to be less reliable because of antenna site limitations and for the reasons outlined in Paragraph 2, above.

5. It is the understanding of this headquarters that twenty-five (25) each AN/FRT-15 type transmitters have been allocated to this program. Our review indicates that, while the transmitter as such is tunable over the frequency range 2-30 Mcs, each of the individual channels is restricted to a small band rather than the complete range. Since the frequencies currently in use for picket vessel operations range from 2.5 to 8.7 Mcs, and the most reliable are from 2.5 to 5.0 Mcs, it appears that only one or two of the channels available in this equipment could be pre-tuned to assigned frequencies. For this reason it is strongly recommended that a like quantity of Wilcox 96D type transmitters be programmed in lieu of the presently allocated AN/FRT-15 equipment.

6. It should be noted at this time that the estimated building, land, and power augmentation or expansion, as contained in the attached plan, is predicated only on the Picket Vessel AEW&C Program equipment requirement. Future requirements for the Texas Tower, SAGE, and 1 KW UHF Amplifier Programs have not been considered in this plan.

7. The contents of this letter are classified SECRET in accordance with Paragraph 23.c., AFR 205-1.

FOR THE COMMANDER:

Ben D. Moorhead

1 Encl (dup)
Alternate Plan to
Opnl Plan for PV
and AEW&C Comm w/5 Atchmts
in dup

Info cys to:
Comdr, 26th ADiv w/Encl
Comdr, 32nd ADiv w/Encl

BEN D. MOORHEAD
1st Lt, USAF
Asst Adjutant

Radio 22776
ans. by ltr to
FADF

Radio C+E
Baldwin

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SUBJECT: Operations Plan for Picket Vessel and AEW&C Communications

1. GENERAL. The effective utilization of picket vessels and AEW&C aircraft is completely dependent upon rapid and reliable communications.

2. OPERATIONAL CONCEPT. U. S. Naval units will operate five (5) picket vessel priority stations off the east coast of the United States to provide seaward extension of contiguous radar coverage. ADC AEW&C aircraft will operate four (4) designated stations to provide further extension. Three (3) channels of HF voice or CW will be required to each picket vessel station and two (2) channels HF voice, CW or RATT, will be required to each AEW&C aircraft from designated shore stations. Two (2) channels HF voice or CW will be required at Otis Air Force Base as in-flight communications with AEW&C aircraft enroute to and from their home station.

3. COMMUNICATIONS.

a. Picket vessel communications will be conducted directly between concerned picket vessels and ADIC's with netting as follows:

Unit	Location
Picket Vessel Station #1	42° 45' N - 68° 12' W
654th AC&W Squadron (P)	Brunswick NAS, Maine
762d AC&W Squadron (S)	North Truro, Mass.
Picket Vessel Station #2	41° 00' N - 68° 00' W
762d AC&W Squadron (P)	North Truro, Mass.
654th AC&W Squadron (S)	Brunswick NAS, Maine
Picket Vessel Station #3	40° 00' N - 70° 00' W
773d AC&W Squadron (P)	Montauk, L.I., N.Y.
770th AC&W Squadron (S)	Palermo, New Jersey
Picket Vessel Station #4	38° 56' N - 72° 05' W
770th AC&W Squadron (P)	Palermo, New Jersey
771st AC&W Squadron (S)	Cape Charles, Virginia

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Unit	Location
Picket Vessel Station #5	37° 41' N - 73° 00' W
771st AC&W Squadron (P)	Cape Charles, Virginia
770th AC&W Squadron (S)	Palermo, New Jersey

b. AEW&C communications will be conducted with netting as follows:

Unit	Location
AEW&C Station #1	42° 15' N - 64° 02' W
654th AC&W Squadron (P)	Brunswick NAS, Maine
762d AC&W Squadron (S)	North Truro, Mass.
AEW&C Station #2	39° 28' N - 66° 48' W
762d AC&W Squadron (P)	North Truro, Mass
654th AC&W Squadron (S)	Brunswick NAS, Maine
AEW&C Station #3	47° 01' N - 69° 46' W
770th AC&W Squadron (P)	Palermo, New Jersey
771st AC&W Squadron (S)	Cape Charles, Virginia
AEW&C Station #4	35° 15' N - 73° 12' W
771st AC&W Squadron (P)	Cape Charles, Virginia
770th AC&W Squadron (S)	Palermo, N. J.

4. EQUIPMENT REQUIREMENTS: This headquarters has been advised that twenty-five (25) AN/FRT-15 transmitters have been allocated to meet these requirements. Distribution of this equipment to the ADDC's based on circuit requirements will be as follows:

Unit	No. of Equipments
654th AC&W Sq, Brunswick NAS, Me.	5
762d AC&W Sq, North Truro, Mass.	5
773d AC&W Sq, Montauk, L.I., NY	3
770th AC&W Sq, Palermo, New Jersey	5
771st AC&W Sq, Cape Charles, Va.	5
564th Air Def Gp, Otis AFB, Mass.	2

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5. SPECIAL MEASURES:

a. Radio.

(1) Voice operation of all equipment will be from positions in the direction center. A CW operating and technical control position will be established at the remote receiver site.

(2) Due to the flexibility required and the smaller land area required, the Engineering agency has recommended Discone transmitting antennas instead of Rhombics.

b. Wire.

(1) No additional cable will be required off base.

(2) On-base cable for remote operation of the equipment will have to be augmented in all cases.

c. Frequencies.

A total of 94 HF frequencies in the 2-11 Mc Band will be required to provide a primary day and primary night frequency with suitable secondary frequencies for each circuit. Since HF radio is the only means of communications available, secondary frequencies are considered essential. These frequencies will be utilized as follows:

Service	Circuits	Day	Night	Total
Picket Vessel	15	30	30	60
AEW&C	8	16	16	32
Enroute	1	1	1	2
	24	47	47	94

6. Additional building, land and power requirements for individual stations are listed in Attachment #1 - 5.

7. This correspondence is classified SECRET in accordance with paragraph 23c, AFR 205-1.

5 Atchmts
1. Palermo AFS
2. Montauk AFS
3. North Truro AFS
4. Brunswick NAS
5. Cape Charles AFS

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Palermo Air Force Station

1. TRANSMITTER SITE.

a. Antenna Farm. Area approximately 500' by 750' must be procured to provide sufficient space. Area southwest of existing property boundary is considered suitable. Site cannot be extended to the south, since Garden State Parkway runs by that end of site.

b. Building Requirements. Transmitter building must be extended minimum of twenty (20) feet in lengthwise direction toward fence. This will provide only sufficient space for five (5) each AN/FRT-15 transmitters and four (4) control racks (72" racks).

c. Power Requirements. Present high line, transformers and low line are designed to carry load at 45 KVA. This system must be expanded to carry minimum of 112.5 KVA (3 each 37.5 KVA transformers). Existing main circuit breaker must be replaced as well.

d. Control Cable. Present 51 pair telephone cable from transmitter building to main frame in Operations Center cannot carry additional control requirements. Approximately nine (9) pairs are available. It will be necessary to install minimum of eleven (11) additional (26 preferred) cable pairs to carry additional circuit requirements. This figure only approximate. Type of transmitting equipment utilized will determine actual cable requirement.

2. RECEIVER SITE.

a. Antenna Farm. Area approximately 300' by 1000' must be procured to provide sufficient space for receiving antennas, installed for space diversity reception. Area to the Northwest of the site was considered suitable for the antenna farm.

b. Building Requirements. Present receiver building must be extended a minimum of 15' to provide space for radio control consoles. This extension should be sound-proofed. This will provide space for seven (7) HF radio control positions. The VHF/UHF monitoring position should be relocated to this room. There will be sufficient space in the present equipment room for the additional receiving equipment.

c. Power Requirements. Present power system capable of carrying 22.5 KVA load (3 each 7.5 KVA transformers). No additional power will be required for radio equipment.

d. Control Cable. Present 51 pair telephone cable to the main frame, at the Operations Center, nearly saturated. Will require minimum 26 additional cable pairs to satisfy control requirements.

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Portsmouth Air Force Station

1. [illegible].

a. Antenna Farm. No additional space required.

b. Building Requirements. Additional transmitting equipment can be installed in present building, however, this will utilize all available floor space, and make further expansion impossible. It is recommended that transmitter building equipment room be extended (approximately 20 feet) to provide for suitable installation.

c. Power Requirements. Same as Paragraph 1.c., Attachment #1.

d. Control Cable. Same as Paragraph 1.d., Attachment #1.

2. [illegible].

a. Antenna Farm. No additional space required.

b. Building Requirements. Present building must be extended minimum of 10-15 feet to provide space for radio control room. This room should be sound-proofed. The additional space will be utilized for the installation of five (5) HF radio control positions. The MF/HF monitoring position should be placed in this room. There will be sufficient space in the equipment room for the additional receiving equipment.

c. Power Requirements. Same as Paragraph 2.c., Attachment #1.

d. Control Cable. Same as Paragraph 2.d., Attachment #1.

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North Truro Air Force Station

1. TRANSMITTER SITE.

a. Antenna Farm. Additional area must be acquired. The only area suitable would be directly west of the existing transmitter site boundary. The main access road and high tension lines to the installation run diagonally across this area.

b. Building Requirements. The transmitter building must be expanded approximately 400 square feet to accommodate the necessary equipment for this plan.

c. Power Requirements. Power is being increased sufficiently to take care of this requirement.

d. Control Cable. Additional on-base cable (26 pair minimum) must be furnished.

2. RECEIVER SITE.

a. Antenna Farm. The only possible expansion is in a southerly direction. The land is not particularly suited for this purpose, however, as it is heavily wooded and very irregular, covered with prominent knolls and deep gullies.

b. Building Requirements. The receiver building must be extended approximately twenty (20) feet to provide a technical control and operating room separate from the equipment room.

c. Power Requirements. Power is adequate.

d. Control Cable. Additional control cable (26 pair minimum) must be provided.

3. REMARKS. In view of the considerable expansion foreseen at this station (in support of this plan, SAGE, and Texas Towers), it is recommended that an off-base transmitter site be constructed of a size necessary to fill all requirements. Upon approval of such action, it is further proposed to relocate the receiver facilities to the vacated transmitter site to gain the receiver space required without additional construction.

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Brunswick NAS

1. TRANSMITTER SITE.

a. Antenna Farm. Sufficient space is available for expansion of the transmitter antenna farm only in the direction of the receiver antenna farm. This area is on base, but very heavily wooded.

b. Building Requirements. The existing transmitter building is not satisfactory. The foundation of this building is sinking and it has been necessary to brace to roof in several places to prevent sagging.

c. Power Requirements. Power is adequate.

d. Control Cable. Control cables (26 pair minimum) will be required.

2. RECEIVER SITE.

a. Antenna Farm. The same problem exists as in Paragraph 1.a., above. Expansion is limited to the direction of the transmitter site. The area is very heavily wooded.

b. Building Requirements. The existing building must be extended approximately twenty (20) feet to provide sufficient space for technical control and operating positions.

c. Power Requirements. Power is adequate.

d. Control Cable. Additional control cables (26 pair minimum) will be required.

3. REMARKS. It is recommended that a new transmitter building be erected with adequate space to support all foreseen communications requirements at this station (in support of this plan, SAGE, and Texas Towers). This base is very small however, and an off-base site is recommended.

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[illegible] Shepard Air Force Station

1. TRANSMITTER SITE.

a. Antenna Farm. Sufficient government property is available for the necessary expansion.

b. Building Requirements. The existing transmitter building is not adequate, however an abandoned coast artillery bunker is available which would be adequate.

c. Power Requirements. Sufficient power is available.

d. Control Cable. Additional control cable (20 pair minimum) will be required.

2. RECEIVER SITE.

a. Antenna Farm. Same as Paragraph 1.a., above.

b. Building Requirements. Building should be expanded approximately 350 square feet to provide space for technical control and operating positions.

c. Power Requirements. Sufficient power is available.

d. Control Cable. On-base cable (26 pair minimum) will be required.

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SUBJECT: (U) Operations Plan for Picket Vessel and [redacted] Communications

TO: [redacted]

1. Reference is made to [redacted] letter [redacted]-CR, subject same as above, dated 16 November 1954. In consideration of all factors affecting and pertaining to Picket Vessel and [redacted] operations on the East Coast, operations and communications plans will be based upon the alternate plan submitted as inclosure No. 1 to the correspondence referenced above.

2. Reference paragraph 3, basic letter. Emergency radio equipment presently installed, with such replacement equipment as programmed, will be considered ~~not to be~~ adequate for back-up to primary circuits.

3. Reference paragraph 5. Twenty-five transmitters, AN/FRT-15, have been approved by Hq USAF for installation at East Coast stations. Review of the Manufacturers' Handbook on this equipment ~~does not~~ indicates that the transmitter is capable of tuning any channel over the entire frequency range 2.0 to 30.0 mcs. Any of the pre-set channels can be tuned to any frequency desired. If your headquarters has information to the contrary, request such be forwarded to this headquarters.

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4. Reference paragraph 6. Each of the five AC&W sites will require 2 each 1 KW amplifiers. Space criteria etc, will be forthcoming from this headquarters in the immediate future.

5. Reference paragraph 2, Operations Plan for Picket Vessel and AEW&C Communications

a. This headquarters has specified that only reliable voice circuits will satisfy the pre-SAGE communications requirements. The sentence, "Three (3) channels of HF voice or CW will be required to each picket vessel station and two (2) channels HF voice, CW or RATT", etc, and the sentence following referencing HF voice or CW, is believed, therefore, to be in error. CW capability will be reflected as being required for alternate or emergency use in the event of unsatisfactory voice communications. Radioteletype is a requirement for operation when the SAGE System comes into being.

b. The requirement for 2 each AN/FRT-15 transmitters with associated receivers, etc, to be installed at Otis AFB is not considered necessary. Aircraft, upon becoming airborne out of Otis AFB could communicate with an appropriate direction center and secure any flight

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information required. Emergency communications could be conducted on either the UHF or HF emergency frequencies. Furthermore, it is extremely doubtful that sufficient numbers of frequencies could be secured to provide acceptable communications with aircraft flying to and from all four operating locations. It is recommended that one each AN/FRT-15 be installed at North Truro-P-10, and Cape Charles - P-56. This arrangement will afford better utilization of equipments and enable the direction center to communicate with the aircraft while en route to and from the operating location. Additional channels not used for en route reporting etc, could be used as spare back-up channels for the other HF frequencies. MAANA, Olmsted AFB, Middletown, Pa., is being advised to increase the number of AN/FRT-15's to total 6 at North Truro - P-10 and Cape Charles, P-56. Your headquarters will be information addressee on this message.

This headquarters will ~~take action necessary to reflect changes~~ in the ~~IC containing~~ to radio equipments at the five selected direction ~~centers~~.

Copies of changes will be forwarded to your headquarters.

6. An up-to-date CONAD Operations Plan for picket vessels will be published approximately 1 December 1954. This plan will reflect the

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concept outlined in the alternate plan submitted by your headquarters. Some of the detailed operations will be forthcoming in an amendment or change to the Plan.

7. Request your headquarters take necessary action to provide facilities and utilities, as outlined in the attachments to your alternate plan, in the most expeditious manner possible. Also request this headquarters be advised as actions are taken.

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Comd Stf JA
Comd Chap
Comd IG
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DCS/P
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Mil Pers
Amn Asgmt
Off Asgmt
Cols & Rcds
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Gn Sup & Svs
Instl
Log Plans
Hq Sq Sec
FCDA

5 CONAV for Comd ats

Will be Confirmed in

Std Publication For

Under par 3a, ADCS

S-3

Major, USAF

Prepared by Lak

Telephone 2645

1 Nov 54

ADOCE-C

SUBJECT: (Uncl) Operations Plan for Picket Vessel and AEW&C Communications

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Reference Headquarters EADF letter EAOCE-CR, subject same as above, dated 16 November 1954. In consideration of all factors affecting and pertaining to Picket Vessel and AEW&C operations on the East Coast, operations and communications plans will be based upon the alternate plan submitted as inclosure No. 1 to the correspondence referenced above.

2. Reference paragraph 3, basic letter. Emergency radio equipment presently installed, with such replacement equipment as programmed, will be considered adequate for back-up to primary circuits.

3. Reference paragraph 5. Twenty-five transmitters, AN/FRT-15's, have been approved by Headquarters USAF for installation at East Coast stations. Review of the Manufacturers' Handbook on this equipment indicates that the transmitter is capable of tuning any channel over the entire frequency range 2.0 to 30.0 mcs. Any of the pre-set channels can be tuned to any frequency desired. If your headquarters has information to the contrary, request such information be forwarded to this headquarters.

4. Reference paragraph 6. Each of the five AC&W sites will require 2 each 1 KW amplifiers. Space criteria etc, will be forthcoming from this headquarters in the immediate future.

5. Reference paragraph 2, Operations Plan for Picket Vessel and AEW&C Communications.

a. This headquarters has specified that only reliable voice circuits will satisfy the pre-SAGE communications requirements. The sentence, "Three (3) channels of HF voice or CW will be required to each picket vessel station and two (2) channels HF voice, CW or RATT", etc, and the sentence following referencing HF voice or CW, is believed, therefore, to be in error. CW capability will be reflected as being required for alternate or emergency use in the event of unsatisfactory voice communications. Radioteletype is a requirement for operation when the SAGE System comes into being.

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ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified CONFIDENTIAL in accordance with Par 2h, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

AF - ADC - COLO SPRINGS, COLO

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Will be Confirmed in
Std Publication Form
Under par 3a, ADCR
S-3
Prepared by
Phone
Date

54 TO

ADC ADOCE-C Subj: (U) Operations Plan for Picket Vessel and AEW&C Communications

b. The requirement for 2 each AN/FRT-15 transmitters with associated receivers, etc, to be installed at Otis AFB is not considered necessary. Aircraft, upon becoming airborne out of Otis AFB could communicate with an appropriate direction center and secure any flight information required. Emergency communications could be conducted on either the UHF or HF emergency frequencies. Furthermore, it is extremely doubtful that sufficient numbers of frequencies could be secured to provide acceptable communications with aircraft flying to and from all four operating locations. It is recommended that one each AN/FRT-15 be installed at North Truro, P-10, and Cape Charles, P-56. This arrangement will afford better utilization of equipments and enable the direction center to communicate with the aircraft while en route to and from the operating location. Additional channels not used for en route reporting etc, could be used as spare back-up channels for the other HF frequencies. MAAMA, Olmsted AFB, Middletown, Pa., is being advised to increase the number of AN /FRT-15's to total 6 at North Truro, P-10 and Cape Charles, P-56. Your headquarters will be information addressee on this message. This headquarters is taking action to correct PC entries to reflect the requirement for one (1) additional AN/FRT-15 at P-10 and P-56. Copies of changes will be forwarded to your headquarters.

6. An up-to-date CONAD Operations Plan for picket vessels will be published approximately 1 December 1954. This plan will reflect the concept outlined in the alternate plan submitted by your headquarters. Some of the detailed operations will be forthcoming in an amendment or change to the plan.

7. Request your headquarters take necessary action to provide facilities and utilities, as outlined in the attachments to your alternate plan, in the most expeditious manner possible. Also request this headquarters be advised as actions are taken.

BY ORDER OF THE COMMANDER:

MEMO FOR RECORD: The referenced letter from EADF was to have been a final and firm operations plan for PV & AEW&C operation. The new plan was to be based upon utilizing 5 DC shore based stations to operate with PV & AEW&C which was to cancel their previous plan that called for two ground radio stations, Camp Edwards & Ft. Dix. After consulting with both P&O and OAT, ADC, it was decided to adopt EADF's alternate plan. Only minor changes to the alternate plan are anticipated in the future.

—

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ADC HQ Form 11
5 Feb 54 Revised

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JEDEN/COMAIRDEFCOM ENT AFB COLO
INFO ZEN/COMDR RAFD GRIFISS AFB ROME NY
ZEN/COMMAMA OLMSTED AFB MIDDLETOWN PA

34289

ACTION: [redacted] P+R
INFO: C, I, [redacted] O+E
Susp: 13 Dec 54.

/C O N F I D E N T I A L/ FROM AFOAC-S/E 54516 CURRENT PLANNING FOR TEXAS TOWERS INDICATES ONE TOWERS ~~INDICATES ONE~~ TO BE OPERATIONAL 4TH QUARTER FY56 AND FIVE TOWERS TO BE OPERATIONAL BY END 3RD QUARTER FY57. REFERENCE IS MADE TO RAFD MESSAGE MRMN-II-3-E CMM DTD 19 NOV 54. SUGGESTED CONFERENCE SCHEDULED AT THIS HEADQUARTERS CMM 0930 14 DEC 54 CMM ROOM 5B474. FOR AMC. REPRESENTATIVES FROM RAFD AND MAAMA DESIRED AT THIS CONFERENCE. AGENDA ITEMS SHULD BE SUBMITTED TO THIS HEADQUARTERS NOT LATER THAN 13 DEC 54. FOR ADC. REPRESENTATION FROM YOUR HEADQUARTERS DESIRED. AGENDA ITEMS ALSO DESIRED.
[illegible] DDC JEPHQ

- TEXAS Towers

FILE NUMBER 208

Called AG again to info:- Mary Ann there. Pam

Mastony

B-23-1X

ADC Hq-O-AG-Form 22
9 April 53

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This is copy No. ____ of ____ copies.

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66

FILE NUMBER
Doc 66

HISTORICAL OFFICE
Cross Reference Sheet

DATE: 20 Jul 54

FROM:

TO:

SUBJECT: Operational Plan for Texas Towers

CLASSIFICATION:

NO. OF PAGES:

FANFOLD NO:

HISTORIAN: Bussa

REMARKS:

HIST SVS, Form 3
19 May 1952

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FILE NUMBER 209
2 PP

COMDR ADC

ROUTINE

COMDR RADC
GRIFFISS AFB
ROME, N. Y.

x

x

1 DEC 1954

ACOS-10-6-E CONFIDENTIAL

(CONF) ADOPR 2089 reference your msg ACOS-10-6-E. Concept of operation for Texas Towers considers two means of operation -- Manual and SAGE. This msg deals with manual operations only. The concept of operation provides that search radar video and all control functions will be remoted to shore direction center. Height information will be passed from tower to shore by voice. The possibility of ARDC being unable to remote radar video from the tower to shore by the time the towers are operational must be considered. This is being done in that initially four control positions utilizing present equipment or UPA-35's will be installed on the tower. In the event ARDC is still unable to remote the radar video to shore after the GPA-37 is proven to be operational satisfactory, it will be desirable to install four GPA-23's on each tower to obtain increased control capability. Estimate this would occur in CY 1957. Therefore at the present the requirement exists to consider the space and power necessary to support GPA-23 operation on the tower in the event a decision is made at a later date to install the equipment. ~~In addition~~ Therefore (mc), to provide for this

1 2

MajMFCrispen/bt

P1

JAMES S. PURDUM
USAF
Command Adj

CONFIDENTIAL

ADOPR 2089

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Prepared by
Telephone
Date
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Under par 3a, ADCSM
5-3

Prepared by [illegible] Crispen/bt
Telephone 2981
Date 17 Nov 54 Maj/CCrispen/bt

ROUTINE

X

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contingency a GPA-37 with four GPA-23 consoles for each tower will be included in ADC programming documents. After the SAGE system becomes operational the GPA-35's or GPA-23's whichever is installed will be retained on the tower for emergency capability.

MESSAGE TRANSMITTED
WITH FOLLOWING DATE TIME GROUP
01 2206Z B-8-1

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ADC HQ Form 11
5 Feb 54 Revised

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J. Crispen
Major

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SECRET

68

FILE NUMBER 209 B

ROUTINE

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X

OCSUR ADC

OCSUR RADC
[redacted] AFB
ROME, N. Y.

19 Jan 1955

(SECRET) ADOPR CC96 For RCOSI. Concur with comment contained in your letter dated 30 Nov 54, Subject: (Secret) Use of AN/GPA-37 on Texas Towers. However, ADC immediate concern is for radar data transmission means and video switching device which will be operationally available for use from first operational Texas Tower to respective shore station. FGD not scheduled for operation until 1957 and then provides no means of reconstituting video for PPI presentation OR AN/GPA-23. Therefore alternate means must be made available in earlier time period as requested in our MSG ADOPR 2089.

MEMO FOR RECORD:

Msg ADOPR 2089 states the ADC concept of Texas Tower operation, i.e., all control functions will be remoted to appropriate shore ADDC, provided a suitable radar data remoting means is made available. Otherwise the AN/GPA-23 will be installed on Texas Towers. RADC letter "Use of AN/GPA-37 on Texas Towers" stated that FGD is expected to be used in SAGE for radar video remoting and that it is not designed to reconstitute the video on a radar scope. It also stated that no device exists or is being developed to accomplish this task.

- - 1 1

Will be Confirmed in 3rd Publication Form Under par 3c, ADCM

S-3

Prepared by Maj HMFarmer/dng

Telephone 2183

22 Dec 1954

Return to Packfield

MAJ H.M.FARMER/dng

ADC HQ ADOPR

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Under par 3a, ADCSM
5-3 No
LtColBell/gk
Prepared by
Telephone 2412
Nov 54

ADDCB-C

SUBJECT: Tropospheric Radio Communications to Texas Towers (Secret)

Director of Communications
Headquarters USAF
Washington 25, D. C.

Cow 2

1. This headquarters has, during the past two months, reviewed and researched considerable information from numerous sources pertaining to the employment of tropospheric radio techniques for communications service. (See inclosures.) As a result of these studies, this headquarters feels that it is both economical and feasible to establish at this time dependable voice communications channels to the Texas Towers. Technical advances will probably permit tropospheric radio circuits to be employed for pulse type transmissions at a later date.

2. The approved operational plan for Texas Towers provides for submarine cable to furnish primary communications and tropospheric radio to be used as a back-up. At the present time, there appears to be some doubt that a dependable submarine cable facility can be developed, manufactured, and installed to meet programmed operational date of Summer 1955 for the first Texas Tower. To insure that the Air Force is not forced into installation of an incorrectly designed submarine cable facility under pressure of meeting an operational date, this headquarters offers the following suggestions:

a. For operation of the first Texas Tower, a 12-channel voice radio facility will satisfy the initial communications requirements until a submarine cable of proper design can be installed.

b. A 24-voice channel tropospheric radio communications link is commercially available today. Although component parts of the system are not normally stocked, manufacturing and installation can be accomplished within a 6 months period, (vice Mr. R. C. Page, Page Communications Engineers, Inc., 710 Fourteenth Street Northwest, Washington, D. C., who is an outstanding authority on design and installation of scatter and tropospheric radio link for government agencies).

c. If Styroflex is used for the submarine cable, a completely designed facility (including terminal equipments) should be tested thoroughly prior to installation.

d. The operational plan provides that in the event of failure to the operating communications link, the back-up facility would be

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Hq ADC ADOCS-C Subj: Tropospheric Radio Communications to Texas Towers

transferred immediately to restore service. With this requirement in mind, the permanent communications facility should have both the radio and cable links designed so as to require only one set of terminal equipments. Duplication of incompatible terminal equipments is costly and will consume added tower space.

c. The radio equipment installed to meet initial communications requirements can be transferred for use of the next scheduled tower once the permanent communications system has been installed.

3. This letter is written for the express purpose of pointing out steps that can be taken to provide interim communications for Texas Towers until a permanent submarine cable facility can be developed, tested, and installed.

FOR THE COMMANDER:

Info copies to:
HADF
RADC
MAAMA
ARDC

2 Incls
1. Ltr fr ARDC w/1 incl
2. Ltr fr MIT w/1 incl

OKayed previously by Col Neal
per Lt/c Doll.

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COMAIR ADC

COMAIR RAFD GRIFFISS AFB ROME N Y X

COMAIR MAAMA OLMSTED AFB MIDDLETOWN, PA

COMAIR EADF STEWART AFB NEWBURGH N Y MRMN S-10-63-E AFOAC-P/F 54170 SECRET

(SECRET) ADOCE-CR_____. This MSG in2 parts. Part 1 for RAFD; part 2 for MAAMA. Part 1 - REF RAFD MSG MRMNS-10-63-E. FOL FREQS tentatively ASGD tropospheric scatter for Texas Towers. P-13 to Browns Bank, 444 MCS; Browns Bank to P-13, 408 MCS; P-13 to Cashes Ledge, 432 MCS; Cashes Ledge to P-13, 412 MCS; P-10 to Georges Shoal, 448 MCS; Georges Shoal to P-10, 436 MCS; P-45 to Nantucket Shoal, 436 MCS. Nantucket Shoal to P-45, 412 MCS; P-9 to Unnamed Shoal, 444 MCS; Unnamed Shoal to P-9, 498 MCS. ASGMT these FREQS still pending since HQ USAF has not concluded COORD with other agencies and slight adjustment may be NEC. Part 2 - REF USAF MSG AFOAC-P/F 54170 MAAMA. Will these ASGMTS be SAT. REQ you reply direct HQ USAF with INFO HQ ADC, for ADOCE-CR.

FOR COORD: Higher frequencies were originally proposed by FAA but could not be authorized by USAF since they fell in UHF TV band and therefore were not assigned by USAF.

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ADOCE-CR

ADC HQ Form 11
5 Feb 54 Revised

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AF-ADC-COLO. SPRINGS, COLO

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ADMMC

3 JAN 1955

SUBJECT: (Unclassified) Cross-Servicing Agreement for Texas Towers

TO: Director of Supply and Services
Headquarters USAF
Washington 25, D. C.

1. The first of the Texas Towers is scheduled for beneficial occupancy by this command approximately 1 September 1955.. In view of the fact that a considerable portion of the logistic support, services, and other support functions will be accomplished by the Department of the Navy, it will be necessary for the Department of the Navy and the Air Force to enter into a cross-servicing agreement for support of the Texas Towers. The proposed cross-servicing agreement will include the following areas of support responsibilities:

a. Navy.

(1) Installations (R&U)

(2) Transportation including emergency delivery of supplies and evacuation of personnel.

(3) Common items of supply such as: subsistence, POL, and housekeeping supplies.

(4) Services (PX or ship store).

(5) On shore facilities (if required).

(6) Items of equipment to be Navy-furnished.

(7) Submarine detection and protection.

b. Air Force.

(1) Peculiar Air Force items.

(2) Air Force personnel.

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Prepared by M.S.ALEXANDER/fs

Telephone 2744

Date 31 Dec 54

SECRET

FILE NUMBER 209 B

Hq ADC ADSMC Subj: (Unclas) Cross-Servicing Agreement for Texas Towers

(3) Electronics supply.

2. In addition to the above, arrangements must be made for:

a. Funding and budgeting.

b. Agreement as to supply procedures.

c. Maintenance of equipment other than USAF-furnished.

d. Assignment of Naval personnel.

e. Jurisdiction over Naval personnel, if assigned.

3. In order that an agreement can be consummated at the earliest practicable date, it is recommended that your headquarters arrange a conference between Department of the Navy and Department of the Air Force personnel to include personnel of this command. It is suggested that this conference be held as soon as possible and that this headquarters be advised of the place and date selected, and the names of the individuals who will represent your headquarters and the Department of the Navy.

FOR THE COMMANDER:

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5 Feb 54 Revised

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ADC Form 11
Revised 15 Aug 53

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CONFIDENTIAL 72

FILE NUMBER 209 B

PRIORITY
ROUTINE
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8 DEC 1954

ATTN COL AGAN.

MESSAGE TRANSMITTED WITH FOLLOWING DATE TIME GROUP
B-11-8 0823Z

COMEBACK COPY B-2

C. F. HUMPHREYS
Captain, USAF
Executive Adjutant

(Date) (Initials)

CONFIDENTIAL

This correspondence [illegible] in accordance with Par 24 [illegible], AFR 205-1, 24 Jul 53, or for the reasons (s) stated.

(CONFIDENTIAL) ADVR 3028 /1 REF CONF LTR this HQ SUBJ Texas Tower Program, 15 NOV 54. Informal queries on SUBJ LTR PERT to DTL OPR plan indicate an urgency of COMPL of this plan beyond that intended. The objective of SUBJ LTR was to delineate the overall RQMT of this HQ and HQ RADF. As regards your PERD of a DTL OPR plan it is not envisioned that such a plan could REC be COMPL without receipt of our [illegible] plan, AF-Navy cross-servicing agreement, CNO instructions to appropriate NAV agencies and other PERT INFO. Until these items are PERT you no COMPL date for your DTL OPR plan can be RQMD. In this respect our OPR plan should reach your HQ NLT 1 JAN 55. No RQT date can be given as to when a cross-servicing agreement w/b AVAL. Prior to the COMPL of your DTL OPR plan, any REQR you have concerning the OPR, logistic or administrative aspects of Texas Tower OPR should be [illegible] REQV items for consideration.

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FF8-SD/YB:ce
A16
Ser013 -55
FEB 8 1955

From: Commander Naval Forces, Continental Air Defense Command
To: Commander in Chief, Continental Air Defense Command

Subj: Texas Towers Project, Navy Responsibilities

Encl: (1) Copy of CNO CONFIDENTIAL Ltr Op-401E1/mgt Ser 011P40 of 22 January 1955

1. In recent months many queries have been received regarding the status of cross-servicing agreements for the support of Texas Towers.

2. This command had no data on or knowledge of any agreements of the type required and requested information from the Office of the Chief of Naval Operations.

3. Enclosure (1), a definition of the Navy responsibilities in the Texas Tower Project, is forwarded herewith for information.

4. The classification of this letter may be downgraded when the enclosure is removed.

A. K. HORTHOUSE

Prepared by CDR V F CASEY
Typed 4 Feb 55 by Edith Sampson

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COPY

DEPARTMENT OF THE NAVY
Office of the Chief of Naval Operations
Washington 25, D. C.

In reply refer to
Op-601E1/mgt
Ser 011P60

22 January 1955

CONFIDENTIAL

From: Chief of Naval Operations
Commander in Chief, Atlantic Fleet
Commander, Eastern Sea Frontier
Commander Naval Forces, Continental Air Defense Command

Subj: Texas Tower Project, Navy responsibilities

1. Recent correspondence from Commander, Eastern Sea Frontier and Commander Naval Forces, Continental Air Defense Command indicates uncertainty concerning the Navy's responsibilities in the Texas Tower Project of the Air Force.

2. The Bureau of Yards and Docks is responsible for the construction of the Towers, utilizing a civilian contractor. Otherwise, the Navy has no responsibilities.

3. No Navy planning has been done with respect to logistic support of Texas Towers. It is expected that the Chief of Staff, U. S. Air Force will make a request to the Chief of Naval Operations if the Air Force desires naval assistance. Pending definite guidance, subordinate commands do not have authority to enter into cross-servicing agreements, nor to make commitments for naval support.

M. B. GARDNER
Deputy Chief of Naval Operations (Plans and Policy)

Copy to:
COMNAVEASTCONAD
BUAER
BUDOCKS
BUSANDA
BUSHIPS
Chief of Staff, USAF
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AUTHENTICATED

/s/ B. J. ROBERTS
LTJG, USN

Enclosure (1)

CONFIDENTIAL

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DOCUMENT NO. 74

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IN VOLUME VII OF THE SUPPORTING

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Will be Confirmed in Std Publication Form Under par 3a. ADCSM
S-3 NO
Prepared by
Telephone
20 Dec 54
cc to Funkhd No.

ADC HQ

FILE NUMBER 207.1 75 12

SECRET

COMAIR ADC

[redacted] [redacted]

COMAIR NAVY SUBMARINE AND [redacted]

COMAIR RAPID [redacted] AFB NY

COMAIR KANSAS [redacted] AFB KS

B-12-21 21224Z

21 DEC 1954

(SECRET) ADCCS-AL 3130, Sites M-107, [redacted], Pa, and M-123, Dublin, MD, have been DELT from the 1st Phase Program. Deactivation of 2nd Phase sites into 1st Phase will not be ADCOM. There are a total of 42 sites now in 1st Phase program. P-56A, Dublin, Va, has been DELT from the gap-filler program, and P-56A, [redacted], Va, and P-56A, Bethany South, Ill, have been approved by this Hq.

MEMO FOR RECORD: Msg from Hq USAF approved deletion of M-107, M-123, and P-56A. Hq USAF has changed their policy of keeping the 1st Phase Program at 44 sites; therefore, with this deletion, the program will be dropped to 42 sites.

RALPH J. STREAMER
Major, USAF

SECRET

Furnished 21/12/54 (Initials)
(Date)

JAMES S. FURDUM
Major, USAF
Asst Command Adj

Maj Ralph J. Streamer/54

This correspondence is classified SECRET in accordance with Par 23, AFR 205-1, 15 Dec 53, or for the reason (s) stated.

for HASKELL E. NEAL
Colonel USAF
Dir of Comm & Elect

ADCCS-AL

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FILE NUMBER 51.5 Dd

Minutes of Programming Meeting, 11 January 1955

AFMVP 14 January 1955

GaOS
DCS/P
DCS/M
DCS/O
DCS/C
NRO
ORT
ADPTR
ADMIS

Attached for your information is copy of minutes of the programming meeting held on 11 January 1955.

1 Incl
3 pages Prog Minutes

for Stickell
GLAY TICE, JR.
Colonel, USAF
Assistant for Programming
Ext 2691

Encl

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A meeting was held on 11 January 1955 to inform the staff of recent changes in the ADC program.

The following is a summary of this meeting.

1. By USAF directed changes to the 3 January 1955 ADC Fighter Program.

	By USAF	ADC Position
331 Walker	Act 3/57, equip F-86D 4/57	Act 1/57, equip F-86D 2/57
482 Sqeuvar-Johnson	Convert to F-102 - 1/58	Convert F-102 - 4/57
329 Griffiss	Act 2/56, F-86D - 3/56	Act 3/56, F-86D 4/56
518 Presque Isle	Convert to F-89D/H 2/58	F-89D through FY 59
324 Wurtsmith	Act 2/56, F-86D 3/56	Act 3/56, F-86D 4/56
97 Wright-Pat	Delete F-89D/H conversion convert F-102 4/59	Convert F-89D/H 2/58
546 Cadillac Area	Act 3/57, F-102 4/57	Act 4/57, F-102 1/58
74 Paine	Pr NEAC F-102, 1/59	Pr NEAC F-102, 4/58
322 Palmdale	Act 3/57, F-86D 4/57	Act 2/57, F-86D 3/57

2. F-89D Squadrons Equipping Summary through FY 56.

3/55	4/55	1/56	2/56	3/56	4/56
438 Kinross	58 Otis	83 Paine		11 Duluth F-89D/H	83 Paine F-89D/H
497 Portland				337 Minn-St Paul F-89D/H	58 Otis F-89D/H
337 Minn-St Paul					438 Kinross F-89D/H
518 Presque Isle				63 Wurtsmith F-89D/H	354 Concord F-89D/H
82 Presque Isle					84 Hamilton F-89D
63 Wurtsmith				98 Klamath Falls F-89D/H	
11 Duluth				437 Otis F-89D	
Total Sqs 7	8	9	9	11	13
Total Acft *175	207	238	258	330	363

* Note: These aircraft figures are subject to change due to attrition factors and may cause early conversions.

3. Programmed actions through FY 1956.

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1/56	2/56	3/56	4/56
Otis F-89D	83 Paine F-89D	49 Hanscom F-86D	11 Duluth F-89D/H	76 Dover F-94C
		319 Westover F-86D	337 Minn-St Paul F-89D/H	482 Seymour-Johnson F-86D
			329 Griffiss F-86D	58 Otis F-89D/H
			437 Otis F-89D	438 Kinross F-89D/H
			63 Wurtsmith F-89D/H	484 Lockbourne F-86I
			324 Wurtsmith F-86D	83 Paine F-89D/H
			327 K. I. Sawyer F-94C	84 Hamilton F-89D
			498 Bunker Hill F-94C	354 Oxnard F-89D/H
			98 Klamath Falls F-89D/H	
			538 Castle F-86D	

Note: Above indicates equippage of units. Activation and reorganization dates should precede equippage by at least 90 days.

4. Changes in end FY 58 position by type aircraft.

	New		Old
93 Kirtland	F-102	vice	F-86D
98 Klamath Falls	F-102	vice	F-89D/H
84 Hamilton	F-89D/H	vice	F-102
37 Burlington	F-102	vice	F-86D
49 Hanscom	F-89D	vice	F-102
318 Presque Isle	F-89D/H	vice	F-89D
97 Wright-Patterson	F-89D	vice	F-89D/H

5. Information from Headquarters USAF indicates an increase of five AEMS C Squadrons.

3 squadrons to be programmed by end FY 58
2 additional squadrons by end FY 60 or sooner if production of aircraft permits.

6. Missiles.

TALOS: 2 squadrons programmed by end FY 58
5 squadrons programmed by end FY 59

The 10-site concept for 5 TALOS squadrons is not yet approved by Hq USAF.

BOMARC: 1 squadron programmed by end FY 59

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7. ACSW.

Air Divisions: 37th and 58th scheduled to activate Sep 55 (1/56)
85th and 20th scheduled to activate Nov 55 (2/56)
These activations dependent on
BO dates which are currently estimated
for Nov and Dec 55 respectively

Division boundary changes estimated to be effected March 1956.

First Phase ACSW: Reduced to a total of 41 sites, all to be operational by end FY 56.

Second Phase: Reduced to a total of 23 sites, 21 to be operational by end FY 56 and remainder in FY 57.

Third Phase: 12 to be operational by end FY 56 and total of 24 by end FY 57.

Fourth Phase: Informal information from Hq USAF indicates approval of 21 Canadian sites, estimated to be operational by end FY 58.

Gap Fillers: 125 by end FY 56
268 by end FY 57
423 by end FY 58

Texas Towers: 1 by end FY 56 and all 5 by end FY 57

SAGE Program: All phases on schedule. First direction center will be activated May 1956, to be operational March 1957. Locations for 16 DC's and 4 CC's have been approved by Hq USAF.

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FROM: (Originator)
COMDR ADC ENT AFB COLO SPRGS COLO

DATE-TIME GROUP: 1500Z Nov 13, 54
SECURITY CLASSIFICATION: CONFIDENTIAL
PRECEDENCE FOR: ACTION: AIR MAIL
INFORMATION: AIR MAIL

☐ BOOK MESSAGE ☒ ORIGINAL MESSAGE
☒ MULTIPLE ADDRESS CRYPTOPRECAUTION ☐ YES ☒ NO
REFERS TO MESSAGE:
IDENTIFICATION CLASSIFICATION

TO: COMDR RAFD GRIFFISS AFB ROME NY
COMDR CADF GRANDVIEW AFB MO
COMDR EADF STEWART AFB NEWBURGH NY
[redacted] COMDR WADF HAMILTON AFB CALIF
INFO: COFS USAF WASHDC (3 OFFICES)
COMDR MAAMA OIMSTEAD AFB PA
COMDR OOAMA HILL AFB UTAH
COMDR OCAMA TINKER AFB OKCTY OKLA
COMDR SBAMA NORTON AFB CALIF
COMDR SMAMA MCCLELLAN AFB CALIF
COMDR SAAMA KELLY AFB TEX
COMDR WRAMA ROBINS AFB GA

E-4413 thru E-4424 pcf

2017

(CONFIDENTIAL) ADOCE-A 2014. For AFOOP-OP-D, AFOCE-E and AFOAI-CSR at USAF.

Part I. Following changes have been made in 1st and 2nd phase mobile programs. Request action be stopped immediately on all items which have been deleted, pending further instructions being forwarded by letter. PC changes have been submitted and are not required from defense forces.

CONFIDENTIAL — PAGE 1 OF 3 PAGES

DRAFTER'S NAME (and signature, when required)
RELEASING OFFICER'S SIGNATURE
SYMBOL TELEPHONE
OFFICIAL TITLE JAMES S. PUDIM
Lt. Col. USAF, Asst. Command Adj.

DD FORM 1 MAY 48 173 REPLACES WD AGO FORM 11-48, 15 JUN 1945, AND WD AGO FORM 468, 1 APR 1946, WHICH MAY BE USED.

AF - ABC - COLO. SPRINGS, COLO.

Will be confirmed in Standard Publication Form under paragraph 3 of ADCSM 55-3 YES NO

Prepared by Mr. Patterson/id
phone 2643
Date 16 Nov 54

COORDINATE WITH COLORED PENCIL ONLY

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Site	Delete	Add
M-89	1 ea AB-396 for MPS-11	1 ea AB-397, with 25 ft AB-16 for MPS-11
M-92	1 ea Temp TWR for MPS-7	1 ea Arctic TWR for MPS-7
M-102	1 ea MPS-11 (Arctic) 1 ea TPS-10D 1 ea Temp TWR for TPS-10D 1 ea Temp TWR for TPS-1D	1 ea FPS-3A (Arctic) 1 ea FPS-6 (Arctic) 1 ea Arctic TWR for TPS-10D 1 ea Arctic TWR for TPS-1D
M-114	1 ea MPS-11 (ADC) 1 ea TPS-1D	1 ea FPS-8 (Navy) 1 ea FPS-8, with AB-397 and 75 ft AB-16 1 ea MPS-14, with AB-258 and 75 ft AB-16
M-120	1 ea TPS-1D 1 ea TPS-10D 1 ea Temp Tower for TPS-10D	1 ea MPS-11 (Arctic), with AB-313 1 ea FPS-4 (Arctic) 1 ea Arctic Tower for TPS-10D
SM-139	1 ea Temp Tower for FPS-4	1 ea Arctic TWR for FPS-4
SM-149	1 ea MPS-11 (Arctic)	1 ea MPS-7
SM-153	1 ea MPS-7 1 ea MPS-14 1 ea MPS-11 (Arctic) 1 ea Temp TWR for TPS-10D	1 ea FPS-3A (Arctic) 1 ea FPS-6 (Arctic) 1 ea FPS-8 (Arctic) 1 ea Arctic Tower for TPS-10D
SM-157	1 ea TPS-1D	1 ea MPS-11

Part II. Following changes in radars will not require installation stoppage.

No tower changes required.

Site	Delete	Add
M-95	1 ea TPS-10D	1 ea MPS-8
M-96	1 ea TPS-10D	1 ea MPS-8
M-111	1 ea TPS-10D	1 ea MPS-8
M-113	1 ea TPS-10D	1 ea MPS-8

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ADOCE-A_____

Site	Delete	Add
M-115	1 ea TPS-10D	1 ea MPS-8
M-116	1 ea MPS-14	1 ea FPS-6
M-119	1 ea TPS-10D	1 ea MPS-8
M-121	1 ea TPS-10D	1 ea MPS-8
M-124	1 ea TPS-10D (ADC)	1 ea MPS-8 (ADC)
M-130	1 ea TPS-10D	1 ea MPS-8
SM-143	1 ea TPS-10D	1 ea MPS-8
SM-148	1 ea TPS-10D (ADC)	1 ea MPS-8 (ADC)
SM-151	1 ea TPS-10D	1 ea MPS-8
SM-157	1 ea TPS-10D	1 ea MPS-8
SM-161	1 ea TPS-10D	1 ea MPS-8
SM-162	1 ea TPS-10D	1 ea MPS-8

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

FILE NUMBER 214
AV

ADOCE-A

24 November 1954

SUBJECT: (Unclassified) ADC Revised Radar and Radar Tower Requirements

MTI Radar

TO: All Recipients

1. The attached revised radar and radar tower requirements for permanent and semi-mobile radar programs are forwarded for information. This headquarters has submitted PC changes to authorize all equipment shown. Changes to the PC are not required from defense forces.

2. Defense forces will take immediate action to determine if additional real estate is needed at sites where radars have been added. Action will be initiated by defense forces to procure such land.

3. The Permanent Program equipment list included two AN/FPS-6 radars for each direction center in the first SAGE sector. AN/FPS-6's will be added later for subsequent SAGE sectors.

4. In addition to the radars listed, one AN/TPS-10D will be installed as interim equipment at M-116, Cherry Point MCAS, N. C., and M-117, Roanoke Rapids, N. C. This radar has been included in the PC. All interim height finders programmed for P-sites will remain in use until all programmed permanent height finders are operational. At that time, defense forces will request disposition instructions for the interim equipment.

5. Towers for the following radars are to be installed by AMC unless the defense force, the AFIR and the AMA concerned agree that the Corps of Engineers can install the towers without delaying the programmed operational date:

Site	Radar
M-96, Almaden, Calif.	1 ea AN/FPS-8
M-103, N. Concord, Vt.	1 ea AN/FPS-6 (Arctic)
M-112, Hunter AFB, Ga.	1 ea AN/FPS-8
M-113, Charleston AFB, S. C.	1 ea AN/FPS-8
M-115, Ft Fisher, N. C.	1 ea AN/MPS-11
M-116, Cherry Point MCAS, N. C.	1 ea AN/FPS-6
M-117, Roanoke Rapids, N. C.	2 ea AN/FPS-6

BY ORDER OF THE COMMANDER:

8 Incls
(see next page)

JAMES S. PURDUM
Major, USAF
Asst Command Adj

V-765-1x

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Under par 3a, ADCSM
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Prepared by
Telephone
Date 13 Sep 54 Maj JPFarmer/bt

V-64-1x

ADOPR

ADC HQ Form 11
5 Feb 54 Revised

SECRET

FILE NUMBER 207.1

COMDR ADC

PRIORITY

C OF S
HQ USAF
WASH 25, D. C.

ATTN LRNOAP

(SECRET) ADOPR 1607 As a result of the Radar Improvements conference at CHC 2 Sep 54, this command recommends that the AN/FPS-38 radar (Hybrid) be procured in lieu of the FPS-34s programmed for the 3rd phase radar program. Information from your Hqs indicates that these equipments will become available beginning in Aug 1955 at a rate of four per month. This procurement rate is in phase with the operational date for the 3rd phase radar program.

WITH [illegible] GROUP
142143 2
B-15-14

EXERCISE NOT REQUIRED
[illegible] 14 Sep 54

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15 Dec 53

AF-ADC-ENLO, SPRINGS, COLO

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COMDR ADC

COFS HQ USAF WASHINGTON DC

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Std Publication Form
Under par 3a, ADCSM
5-3 No
Prepared by Lt Col HKAnderson/hb
Telephone 2410
Date 29 Oct 54

LT COL H. K. ANDERSON

ADOCE-E 2410

AFC HQ Form 11
1 Feb 54 Revised

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Par ____, AFR 205-1, 24 Jul 53, or for the reason (a) stated.

79 51

ROUTINE

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ADOPR 1607 SECRET

(SECRET) ADOCE-E_____. MTMSG ADOPR 1607, dated 14 SEP 54.

This COMD withdraws RECM for procurement of AN/FPS-3B radar. Desire

programming of AN/FPS-3A radar for 3d phase program. RECM present USAF

CONTR AF30(635)-1818 with Bendix for AN/FPS-3B (UNSPEC) be SPEC AN/FPS-3A

and finalised soonest to insure CONT PDN. My POSIT for overall improvement

of ground radar program, as discussed with MAJ King AFOAC, and Mr. Breen,

AFMSG, 28 OCT 54, forthcoming by LTR.

Comeback cy req'd for COMR file.

HERBERT K. ANDERSON, Lt Col USAF

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	Comm & Elect
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	Gn Sup & Sys
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Record Evaluation
Temporary
Will Be Confirmed
Form Under par 3a,
ADC
Date 24 June 1954
2521
V-49-1

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FILED Ops 7-1-1

B-18-25 252331

FILE NUMBER 707.10
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UNSG AFOOP-OP-D 57776 CONFIDENTIAL

(CONFIDENTIAL) ADOPR 1090. UNSG AFOOP-OP-D 57776. Discussions between [redacted] have been in progress since the first of the year to establish a mutually [redacted] position regarding new detailed basic Concept for Air Defense. This [redacted] established prior to any discussion of details. For instance, a meeting [redacted] St. Robert during week of 2 February 1954 to discuss concept. [redacted] officers in attendance were: General Chidlaw, Maj Gen Nugent, Maj Gen [redacted] and AVM Jones. This meeting was preceded by several days of preparatory [redacted] between Director of P&R and team from this Hq and compatible personnel [redacted] ADC. During last week in March, Air Marshal Slemon accompanied by [redacted] Assts of RCAF-ADC and party visited General Chidlaw for further [redacted] along this line. During week of 17 May 1954, Director of P&R and [redacted] this Hq attended another meeting at St. Robert for further discussions. [redacted] May weekend, extending into the first week of June, AVM Jones [redacted] General Chidlaw to continue discussions regarding a mutually acceptable [redacted] During this meeting a general understanding was reached which will provide [redacted] ored by [redacted] M.F. Crispen [redacted] of details, i.e., [redacted] sites and associated programs. The first meeting [redacted] EBCID PHOTOGRAPHIC [redacted] tain, USAF [redacted] Asst Command Ad

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ADC HQ Form 11 Revised [redacted] This correspondence is classified [redacted] in accordance with [redacted] AFR 205-1, 24 Jul 53, or for the reason (a) stated [redacted] 15 Dec

M. F. Crispen
SIGNATURE

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ADCSM 5-3------
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Date---- -----

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ADC HQ Form [illegible]
Revised 15 Aug 53

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USSO AFOOP-CP-D 5778 CONFIDENTIAL

for this purpose is scheduled for two weeks beginning 20 Jul 54 at St. Hubert, this command is vitally interested in resolving "H" sites in Canada and is doing everything possible to obtain a decision. In telephone conversation with Lt Commdr Annis, SASD, HCAF-ADC on 23 June, it was confirmed that further study is still required and that 20 July would be earliest time that profitable discussion in detail could be held on this and closely related projects. Indications are that if this problem is pressed it might delay detailed discussion beyond 20 July. Recommend this item not be included on the agenda for the July meeting of PJBD.

Coord verbally with DCS/O
Ed Herbe
Dir. P&R

CECIL F. HUMPHREYS
Captain, USAF
Asst Command Adj

2 2

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ADC Hq-O-AG-Form 22
9 April 53

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CONDR ADC		
CONFR HQ USAF WASHINGTON DC	X	
		X

10 JAN 1955

CONDR ARDC BALTIMORE MD

(CONFIDENTIAL) ADOOE-SE 0058 . For AFOAC-E/A. This MSG in [illegible]te. Part I. At meeting with RCAF here 13-17 DEC, Canadians suggested [illegible]f British type 80 or 81 radar for 4th phase. Canadians stated this [illegible] now in PDN in England and capability similar to FPS-7. We offered no [illegible]on as data not AVAL here to EVAL this set. Technical INFO and PDN [illegible] needed to finalize our POSIT regarding 4th phase. Part II. We have [illegible] advised that the English have developed wind CHNR capable of 80 [illegible] output. Such device would be of great value for unmanned gap-filler [illegible] and isolated INSTL. We plan to SEN requirement for this type generator, [illegible] more INFO on feasibility. Part III. REQ ARDC be made for US team, [illegible] of at least 2 members each from ADC and ARDC and such others as you [illegible] MSG, visits England ASAP to INVES both items.

COMEBACK COPY

Not requested, not furnished

Furnished 10/11/55 DPS

(Date) (Initials)

Comeback req'd for COMM file.

F. K. NICHOLS, Lt Col USAF

C&E 10/11/55 DPS

PURPOSE NOT FOLLOWED

INFO SECTION

REFER DECLASSIFYING, Memo for Record: Over.

MESSAGE TRANSMITTED WITH FOLLOWING DATE-TIME GROUP

B-5-10 102117Z

C&E 10/11/55 DPS

Will be Confirmed in Std Publication Form Under par 3a, AFM 5-3 No

Prepared by Lt Col FKNichols/hb

Telephone 2717

Date 6 Jan 55

F. K. NICHOLS

ADOOE-SE 155104 2717

V1563-M

CONFIDENTIAL

AMC HQ Form 11 5 Feb 54 Revised

This correspondence is classified in accordance with Par 2Ab(12), AFR 205-1, 24 Jul 53, or for the reason (s) stated.

F. K. NICHOLS, Lt Col USAF

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Headquarters
ROME AIR FORCE DEPOT
Air Materiel Command
Griffiss Air Force Base

Office of the Commander

Rome, New York

AUG 30 1954

SUBJECT: Gap Filler Program (24)

TO: Commander
Air Materiel Command
ATTN: MCZ
Wright-Patterson AFB, Ohio

1. At the ADAW Phasing Group Meeting held at your Headquarters, 25 August 1954, it was stated by representatives of Headquarters, USAF that unprecedented action must be afforded subject program in order to meet the operational dates as established by the National Security Council Directive. As a result this depot will meet, within its responsibilities, the operational dates as stated providing assurance is furnished the following directed actions are taken at the specified times:

a. That ARDC be directed to:

(1) Provide sufficient engineering support and assistance to enable the prime contractor to submit the first article by 30 June 1955.

(2) Establish first article test procedures which will assure first article approval not later than 31 July 1955.

(3) Initiate and/or approve only those engineering changes which will not delay submission of the first article beyond 30 June 1955 and which will not delay deliveries of subsequent production articles beyond the delivery schedule called for in the contract.

(4) Establish by 10 September 1954 the primary and standby power requirements for an [illegible] site.

(5) Initiate a change to the present [illegible] specification which will advise this depot and the prime contractor by 15 [illegible] 1954 as to these primary and standby power

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Hq RAFD MRF, SUBJ: Gap Filler Program

d. That this depot be advised not later than 10 September 1954 of any additional provisions for an FPS-14 site to be furnished by the prime contractor which are not now in the FPS-14 specification such as SDV equipment.

e. That this depot be advised by 10 September 1954 whether or not the FPS-14 prime contractor is to be given systems responsibility or whether he is to be responsible for the radar only.

f. That Air Defense Command be directed to:

(1) Provide this depot by 1 November 1954 with a typical operations plan.

(2) Provide this depot with all cite locations for the first phase no later than 1 March 1955.

(3) Insure beneficial occupancy at least 30 days in advance of each installation. (1st beneficial occupancy date, 1 August 1955).

2. The failure of any other agency to meet the dates specified will nullify the unprecedented action taken by this Depot and the ability of ARDC to meet the operational date. As a result reprogramming action will be necessary. In view of this, it is requested this Depot be furnished assurance that the above actions have been or will be taken by the dates indicated.

M. F. SUPPERFELT
Colonel, USAF
Commander

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HQ USAFD, TO COMDR, AMC 30 Aug 54 Subj: (U) Gap Filler Program

MCSWT

1st Ind SEP 1954

HQ AMC, Wright-Patterson Air Force Base, Ohio, 8 September 1954

TO: Director of Communications, Headquarters, USAF, Attn: AFOAC-E/A, Washington 25, D. C.

1. Basic communication is forwarded for necessary action in accordance with agreements of 25 August 1954 at A.C.&.A. Phasing Group meeting, HQ AMC, and 2 September 1954 meeting at Cambridge Research Center, Bedford, Massachusetts.

2. Request HQ AMC be advised of action to be taken on power equipment requirements. Reference paragraph 1a(4) and (5) of basic communication, Rome Air Force [illegible] has been advised to proceed with procurement of FPS-14 in accordance with present specifications which do not include power units, Slewed Zoom Video or other system responsibilities.

3. Request HQ AMC be advised at the earliest possible date if ARDC and ADC can comply with the requests in basic letter.

FOR THE COMMANDER:

Frederick H. Miller Jr.
FREDERICK H. MILLER, JR.
Brigadier General, USAF
Assistant for Programming

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R/Ltr fr Hq RAFD, Griffiss AFB, N.Y., Subj: "(U) Gap Filler Program", dated 30 Aug 54

AFOAC-E/A 2nd Ind

Dept of the Air Force, Hq USAF, Washington 25, D. C. 24 SEP 1954

TO: Commander, Air Material Command, Wright-Patterson Air Force Base, Ohio

1. Air Research and Development Command and the Air Defense Command have been queried, under separate correspondence, as to their capabilities to complete the required actions by the dates indicated in paragraphs 1.e.(1), (2), (3), and 1.f.(1), (2), and (3), basic correspondence. In view of the urgency of this and other Air Defense programs, direct coordination with other commands must be established in order that programmed dates can be met. This headquarters should be kept advised of the progress resulting from these coordinated efforts.

2. The primary and standby power requirements for an FPS-14 site are as follows:

a. Where reliable commercial power is available - one (1) standby diesel unit will be provided.

b. Where marginal or unreliable commercial power is available - two (2) diesel units will be provided.

c. Where commercial power is not available - three (3) diesel units will be provided.

The procurement specifications for the FPS-14 are being amended to include two (2) suitable diesel power units per set.

3. This headquarters believes that a "Package Concept" is essential in the Gap Filler Radar Program. At the 2 September 1954 meeting at Air Force Cambridge Research Center such a package concept was discussed. This concept envisions a supplementary agreement with the AN/FPS-14 contractor to provide the following:

a. Engineering Services - This would provide that the contractor will assume responsibility for the initial integration of the electronic, electrical, and power driven equipment which will be housed within the building at the Gap Filler site.

b. Diesel Generators - Recommend from the Air Force standard family, a modified diesel-driven generator of suitable capacity to satisfy the power requirements of the Gap Filler station. In this connection,

0[illegible]062

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B/Ltr fr Hq RAFD, subj: "(U) Gap Filler Program", dtd 30 Aug 54 (1st Ind Contd)

a 60-KW unit should be furnished if it is found that this supply can be made to operate adequately with the magnetron FPS-14. If this is found technically impractical, a 30-KW unit will be used for the magnetron sets, to be replaced with 60-KW units as the klystron modification program becomes available.

4. ARDC and ADC have been requested to furnish the information as outlined in parr graph 1 direct to your headquarters.

BY ORDER OF THE CHIEF OF STAFF:

2 Incls
1. Cy ltr to ARDC, subj as abv
2. Cy ltr to ADC, subj as abv

When ~~inclosure(s) #~~. B/Ltr is (~~are~~) withdrawn or not attached, the classification of this correspondence will be changed to Confidential in accordance with par 25e, AFR 205-1

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V156-7

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AFOAC-E/A

24 SEP 1954

SUBJECT: (U) Gap Filler Radar Program

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

1. Your attention is invited to Inclosure #1, basic letter from Rome Air Force Depot (RAFD), subject: "Gap Filler Program", dated 30 August 1954 with two (2) indorsements.

2. In order that programmed dates established for subject program can be met request Headquarters Air Materiel Command (AMC) be furnished the following information:

a. Typical operations plan for a Gap Filler Radar Station by 1 November 1954.

b. Site locations for first phase (125 stations) by 1 March 1955.

c. Insurance that benificial occupancy can be effected at least thirty (30) days in advance of each installation. (First B.O. date, 1 August 1955).

3. Further, request courtesy copy of information furnished Air Materiel Command (AMC) be forwarded this headquarters.

BY ORDER OF THE CHIEF OF STAFF:

2 Incls
1. B/ltr fr RAFD to AMC, w/2 Inds
2. Cy ltr to ARDC, subj: as abv

When inclosure(s) No. 1 is (are) detached, the classification on this correspondence will be changed to Confidential in accordance with par 2c, AFR 205-1

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AFOAC-E/A

SUBJECT: (U) Gap Filler Radar Program

TO: Commander
Air Research and Development Command
P.O. Box 1395
Baltimore 3, Maryland

1. Your attention is invited to Inclosure #1, basic letter from Rome Air Force Depot (RAFD), subject: "Gap Filler Program", dated 30 August 1954 with two (2) indorsements.

2. In order that programmed dates established for subject program can be met request Headquarters Air Materiel Command (AMC) be furnished the following information:

a. Assurance that all possible engineering support and assistance will be given to enable the prime contractor to submit the first AN/FPS-14 by 30 June 1955.

b. Assuming first article delivery by 30 June 1955 establishment of first article institution of test procedures which will assure first article approval not later than 31 July 1955.

c. Assurance that only those engineering changes will be approved which will not delay submission of the first article beyond 30 June 1955, and which will not delay deliveries of subsequent production articles beyond the delivery schedule called for in the contract.

3. Further, request courtesy copy of information furnished Air Materiel Command (AMC) be forwarded this headquarters.

BY ORDER OF THE CHIEF OF STAFF:

2 Incls
1. B/ltr fr RAFD to AMC, w/2 Inds
2. Cy ltr to ADC, subj: as abv

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CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 HQ
Prepared by Maj EPatterson/id
Telephone 2643
Date 22 Oct 54

SECRET

mgt 4-2 87
-82

FILED

From: USAF, AFOAC-S/A, Subject: (Unsl) Gap Filler Radar Program

AFOCE-A (24 Sep 54) 1st Ind 26 OCT 1954

TO: AIR DEFENSE COMMAND, Ent Air Force Base, Colorado Springs, Colorado

TO: Commander, Air Materiel Command, ATTN: MCEEM, Wright-Patterson Air Force Base, Ohio

1. A typical gap-filler radar siting report and operational plan is attached as Inclosure 3. This plan was prepared using Interim Instructions on Appendix IV of TO 16-30-4 as a guide where applicable. The siting report format is attached as Inclosure 4.

2. A twenty-five light of the first 125 gap-filler radar sites is attached as Inclosure 5. These locations will not be final until siting surveys are completed. This will be done by 1 March 1955. The final list of site locations will be sent to you at that time.

3. Procedures have been set up which will provide for beneficial occupancy at least 60 days prior to the programmed operational date of all gap-filler sites. Every effort will be made to conform to this schedule.

FOR THE COMMANDER:

FILE NUMBER 211.1

2 Incls
w/d
Added - 3 Incls
3. Siting Report P-45-A
4. Siting Rept Format
5. List of 125 Gap-Filler Radars

E-3679
E-3680
E-3681

cc: Dir of Comm, USAF, with 1 cy Incls 4 & 5

Chief, Air Def Engrg Svcs Proj Off, with 1 cy Incls 4 & 5

Incls not rqrd for AG file.

WILLIAM A. LAWRENZ
Lt Colonel, USAF
Chief, Plans & Proj Div

2

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified SECRET in accordance with Par 23, AFR 205-1, ~~24 Jul 53~~ 15 Dec, or for the reason (s) stated.

HASKELL E. NEAL
Colonel, USAF
SIGNATURE
Dir of Comm & Elect

V-56-1

AF-ADC-COLO. SPRINGS, COLO

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der par 3a, AFCSM

red by Maj R W Lloyd/bt
ne 2981
27 Sep 54

Y-59-1

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FILED mar 4-2

ADOPR

SUBJECT: (Uncl) Small Automatic Radar Program

TO: Deputy Chief of Staff, Operations
Headquarters, USAF
Washington 25, D. C.

FILE NUMBER 211.1 DV

1. References:

a. Letter, this headquarters, ADOPR 413.44, subject as above, dated 4 September 1953, w/inclosures.

b. Letter, this headquarters, ADOPR, subject as above, dated June 1954, w/inclosures.

c. Air Defense Command, Air Defense Requirements, 1954-1960.

d. Letter, this headquarters, ADOPR, subject: "(Uncl) Low Altitude Gap Filler Radars and 1st and 2nd Phase Radar Stations, Canada", dated 24 September 1954.

2. Attached as Inclosure 1, is the planned deployment for the 2nd and 3rd increments of low altitude gap filler radars. These will be employed to meet the requirement for coverage as established in reference b above. Site survey instructions for gap filler radars to be deployed in Canada will be held in abeyance pending a United States-Canada joint agreement.

3. The total low altitude gap filler radar requirement through the proposed 4th phase prime radar program consists of approximately 421 gap filler radars, reference c above. The 1st increment now consists of 124 radars and planning has been completed for the integration of 243 radars into the 2nd increment and 154 radars in the 3rd increment of the gap filler program. The proposed deployment as indicated on attached lists is for planning purposes only. Final locations will be determined after site surveys have been completed. The prioritizing for installation of these stations will be contained in siting directive, subject: "(Uncl) Siting Directive for 2nd and 3rd Increments, Low Altitude Gap Filler Radar Program", now in preparation at this headquarters.

4. The USAF "O-55-3 reflects a requirement of 200 radars in the 2nd

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par 6/10/21

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15 Dec

SIGNATURE

AF - ADC - COLO. SPRINGS, COLO

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Under par 3a, ADCSM

5-3

Prepared by Maj R. L. Lloyd/bt

Telephone 2981

27 Sep 54

83 90

ADOPR

SUBJECT: (Uncl) Small Automatic Radar Program

Increment and 98 radars in the 3rd increment of the LADFR program. Request the present ADC requirement, as established in reference c, be approved and necessary reprogramming action be taken to satisfy this increased requirement.

FOR THE COMMANDER:

1 Incl
Planned Deployment 2nd & 3rd Increments LADFR Program (U.S. & Canada) (5 cys)

cc: w/Incl
AIRES
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L- 34315/0068
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Feb 54 Revised

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COPIES TO:

[illegible] 3-12-12

FOR [illegible]

FOR R. A. [illegible], JR.

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Par [illegible], AFR 205-1, 24 Jul 53, or for the reason (s) stated. [illegible]

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V-58-1

HQ Form 11
Feb 54 Revised

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SUBJECT: (Incl) Low Altitude Gap Filler Radars and 1st and 2nd Phase Radar Stations, Canada

TO: Deputy Chief of Staff, Operations
Headquarters, USAF
Washington 25, D. C.

1. Reference is made to message, this headquarters, ADOPS 1090, dated 25 June 1954. A recent meeting between representatives of this headquarters and Headquarters ADC-ARC has resulted in a joint position concerning the number and locations for the 1st and 2nd phase prime radars, and the 1st and 2nd increments of low altitude gap filler radars in Canada. It is requested that these items be placed on the agenda for discussion at the next meeting of the PJBD with emphasis upon obtaining site survey rights for the gap filler radars. The approved survey reports for the 1st and 2nd phase sites are on file in your headquarters.

2. Current joint ADC-ARC/CONAD planning indicates a further requirement for additional radars in Canada. The proposed program includes the 4th phase prime radar program and associated gap filler radars. For information purposes, this program will consist of approximately twenty-one (21) prime radars, and sixty (60) low altitude gap fillers. When an agreed position is reached between the respective defense commands, this requirement will be submitted to your headquarters for approval and subsequent submission to the PJBD.

3. Attached as inclosures 1 and 2 are lists of stations referred to in paragraph 2 above.

FOR THE COMMANDER:

2 Incls
1. M & SM Program (Canada) (5 cys)
2. 1st & 2nd LAFF Program (Canada) (5 cys)

cc: RADF, EADF, CADF, AMC, AIDS

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CMD ALC

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HQ USAF
WASH 25, D. C.

(SECRET) ADR _____ For Director of equirements. ubject: (ncl)
utomatic Fault- inding quipment for Gap- iller adar tations. eference
letter, subject as above, 4 June 1954 and your 1st indorsement thereto
dated 24 eptember 1954. he operational concept of the gap-filler program
is for an unattended facility. t is proposed that preventative maintenance
on a weekly basis be provided by a mobile maintenance team. s concept
permits the flexibility necessary to cope with emergencies as well as main-
tain routine schedule. o follow a plan of daily visits to each of the sites
would require a full maintenance team, for example, radar, communications,
and diesel personnel to be dispatched from the parent station. his pro-
cedure would require manning of a minimum of three (3) skilled personnel
for each of the individual facilities. or one maintenance team to visit
more than one gap-filler site per day to perform emergency or routine
maintenance is practically a physical impossibility. he plan of daily
visitation to each gap-filler site would increase our manpower requirements.

1 2

Major Barnhart

2981

AFC Hq Form 11
4 Feb 54 Revised

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Par _____, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____

SIGNATURE

AF-AGC-COLO SPRINGS, COLO

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Under par 3a, AFCSM
5-1

Prepared by Maj W. Eisen/bt
Telephone 2981
15 Nov 54

Maj W. Eisen/bt

It is estimated that our total minimum personnel requirements would be four (4) times as many skilled maintenance personnel as would be required under the unattended concept using fault-indicating equipment and techniques. In addition to manpower, other costs for the plan for daily visitation would increase. For example, vehicles, spare parts, tools and test equipment. The impact of these items will be explained in letter form that will follow this message. It is our opinion that consideration of only the manpower requirement for maintenance purposes fully justifies the installation of equipment that will automatically indicate to the prime radar station the failure or operational status of the primary components at the tracking stations. It is requested that this requirement be approved.

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified _____ in accordance with Par 23 b, C, AFR 205-1, ~~Apr 51~~, or for the reason (a) stated. 15 Dec.

SIGNATURE

AF-ADC COLO SPRINGS, COLO

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FILE NUMBER 252 87 20

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ADCOT-E1

18 DEC 1954

SUBJECT: (Uncld) Redesignation of ADIZs and Incorporation of the ADIZ-Vertical Plane Concept in Identification

TO: DIRECTOR of Operations
Headquarters USAF
Washington 25, D. C.

1. The advent of the 1st, 2nd, and 3rd Phase supplemental radar programs extends radar coverage at the perimeter of and within the U.S. The completion of these programs will provide the Continental Air Defense Command with the capability of timely identification of aircraft penetrating boundaries and approaching critical target areas within the U.S., enabling a more effective employment of air defense weapons.

2. The identification of all aircraft penetrating the perimeter of and critical target areas within the U.S. is an air defense requirement. To provide an identification system which will be commensurate with the increased radar detection capability and at the same time minimize restrictions to the flow of air traffic, the ADIZ-Vertical Plane isincorporated into the ADIZ concept (Inclosures 1, 2, 3 and 4). The domestic ADIZ begins at 2,000 feet above the terrain and extends upwards to infinity. The 2,000 feet of air space beneath the domestic ADIZ provides a free flight area for aircraft operators, both military and civil. The vertical plane is located at the inner edge of domestic ADIZs and at international boundaries, except that portion of the U.S. - Canadian Boundary between 46° 00' N, 83° 26' W and 46° 00' N, 70° 18' W which is south of the Security Identification Zone. The Plane extends from the ground up and is within optimum radar coverage and supported by the Ground Observer Corps. The vertical plane does not restrict air traffic as would a down-to-the-ground ADIZ.

3. The concept of operation is that identification will be performed at the perimeter of the U.S. Aircraft identified [redacted] at the perimeter but lost from radar coverage will be reidentified when penetrating a critical target area (Inclsoure 5).

Capt L.W.LaSalle/adg
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Not requested
Furnished 18 1954
(Date) (Initials)

E-5538

MEMORANDUM FOR THE RECORD: Believed to be self explanatory.

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This correspondence is classified [redacted] in accordance with Par 23 [redacted] AFR 205-1, 24 Jul 53, or for the reason (s) stated: [redacted]

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ADCOT-H1
SUBJECT: (Unold) Redesignation of ADIZs and Incorporation of the ADIZ-Vertical Plane Concept in Identification

4. To achieve this operational capability, a redesignation of ADIZs and designation of ADIZ-Vertical Planes are necessary (Inclosures 2 and 4). The locations of proposed ADIZs and ADIZ-Vertical Planes are based on the following factors:

a. The requirement for identifying all aircraft penetrating the perimeter of or critical target areas within the U. S. This requirement includes the accomplishment of identification as far as possible from such areas and from the ground up.

b. Radar coverage as computed when programmed radars are installed and operating.

c. The need for minimizing restrictions to friendly air traffic.

5. A fund requirement for $3,277,000.00 with which to meet ADIZ, CAA personnel and communications costs during Fiscal Year 1956 was included in our Fiscal Year 1956 budget estimate submitted to your headquarters 20 July 1954.

6. The GOC expansion approved by your headquarters is a pertinent feature of this Identification Plan. Recognition and correlation are being performed by the GOC and implementation of the expansion program is under way. New areas of GOC are correlated to the proposed ADIZs.

7. Although this Identification Plan has very few cross border implications, the concept has been presented to representatives of the RCAF ADC and formal concurrence is expected shortly. Any changes resulting will be forwarded separately.

8. It is anticipated that minor revisions will be required as the radar program progresses. Any changes effecting the overall concept will be coordinated with your headquarters.

9. Request that necessary action be taken to:

a. Coordinate the ADIZ and ADIZ-Vertical Plane concept with the CAA.

b. Have ADIZs and ADIZ-Vertical Planes designated as described in Inclosure 2.

c. Have the Knoxville ADIZ abolished concurrently with effective date of accomplishment of paragraph 9b.

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ADCOT-21
SUBJECT: (Unald) Redesignation of ADIZs and Incorporation of the ADIZ-Vertical Plane Concept in Identification

d. Revise AFR 60-22, "Identification and Security Control of Military Aircraft," 26 January 1953, as recommended in Inclosure 6, draft proposal of revised AFR 60-22.

e. Have Army Regulations 95-210, OPNAV Instruction 3722.5 and Part 620 of the Regulations of the Administrator changed to be in accord with the revised AFR 60-22.

f. Advise the CAA of those ADAW units which will be assigned an identification function (reference Inclosure 7).

g. Inform the CAA of communication requirements between the various ADAW units performing identification and appropriate ARTCC's (reference Inclosure 8).

10. Further request that actions listed in paragraph 9 be completed in order that this plan can become effective 1 September 1955.

FOR THE COMMANDER:

C. F. [illegible]
Captain, USAF
Aval Command Adj

6 Incls
1. Definitions (dupe)
2. ADIZ & ADIZ-Vertical Plane Designation (dupe)
3. ADIZ-Vertical Plane Concept (Chart) (dupe)
4. ADIZs (dupe)
5. Operation (w/1 Incl) (dupe)
6. Draft of proposed AFR 60-22 w/2 Attachments (dupe)
7. Fin Agy Identn Function (dupe)
8. Comm (dupe)

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SECURITY CLASSIFICATION (If any)

DISPOSITION FORM

FILE NUMBER 250 X270 B

15 PP

FILE NO.	SUBJECT Summary of Identification Plan
TO VC	FROM DCS/O DATE 13 Aug 54 COMMENT NO. 1

Attached is a summary of the Identification Plan for Double Perimeter Concept and GOC expansion as presented to the Air Defense Command Council on 7 August 1954.

for KENNETH P. BERGQUIST
Brigadier General, USAF
DCS/Operations

2 Incl
1. Identification Plan for Double Perimeter Concept
2. Plan for GOC Expansion

LED Ops 2

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DD FORM 1 FEB 50 96 REPLACES NME FORM 96, 1 OCT 48, WHICH MAY BE USED. SECRET

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SECURITY CLASSIFICATION (If any)

DISPOSITION FORM

FILE NO.	SUBJECT
	Command Council Meeting

TO: ~~DCS/O~~
DCS/M
DCS/I
DCS/P
DCS/C
IG
Asst for Programming

FROM: VC

DATE: 23 Jul 54

COMMENT NO. 1

1. There will be a meeting of the Air Defense Command Council at 0900, 7 August 1954, in the Air Room. Subjects for discussion are Identification Plan for Double Perimeter Concept and GOC Expansion. An outline of materials to be presented is attached.

for FREDERIC H. SMITH, JR.
Major General, USAF
Vice Commander

2 Incl
1. Outline - Identification Plan for Double Perimeter Concept
2. Outline - GOC Expansion

Note to DCS/O. --Request a written summary of the presentation be submitted to this office 3 days after the Council meeting for inclusion in council meeting report.

O+T D/O

Please comply with "Note to DCS/O" including Col. Smyth's part.

RAWLEY W. MARTIN
Lt Colonel, USAF
DCS/O Exec Officer

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IDENTIFICATION IN THE COMBAT ZONE DURING THE PERIOD 1955-56

General Smith, Gentlemen:

The presentation that I am about to give is the same one that I gave to the Military Study Group in Ottowa, Canada on 4 August 1954.

Air Commordore Annis, Chief of Staff of the RCAF ADC gave the presentation on Identification in the Early Warning Zone, while I covered Identification in the Combat Zone. General Bergquist has asked me to outline briefly what the Canadian presentation covered. In general the RCAF stated what they consider to be weaknesses in their system and that they are taking action to:

1. Back up their CADIZ rules by suitable legislation and that further legislation similar to our SCAT plan be enacted.
2. Establish Multiple Corridor Identification Systems at Goose Bay and Gander.
3. Establish Air Movement Information Sections at the Department of Transport Traffic Control Centers.
4. Develope identification proceoures at the early warning lines, based on briefings at departure base, use of code words or maneuvers when penetrating the line. They also expressed a hope that SIF would be the answer for identification for military aircraft.

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All in all the Canadian ADC has gone right down the line with our concepts, and apparently are going to start actions to move forward.

The presentation that I am going to give this morning covers the identification of aircraft penetrating the boundaries of the North American Combat Zone. It also covers the identification of the aircraft flying within the confines of the Combat Zone.

Because of the large amount of air traffic flying within the combat zone, a volume beyond the identification and tracking capabilities of the present AC&W system, we have focused our attention on the identification of all aircraft penetrating the perimeter of the combat zone. Our experience in the last few years has given great promise of achieving a high degree of effectiveness in these areas where traffic is relatively light.

However, until we have achieved a tight ground-up detection capability around the perimeter of the combat zone so that we can detect all penetrations, and until we have reasonable assurance of a continuous tracking capability, it is essential to maintain a system for the re-identification of aircraft penetrating or flying within domestic ADIZs of the combat zone.

CHART 1

Here is a chart which shows the ADIZs and CADIZs as they exist today. It is required that all aircraft penetrating the perimeter from the sea are those crossing the CADIZ, regardless of altitude of flight, must file a flight plan in order that identification be accomplished. In the U. S., for civil aircraft,

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those flying within or entering domestic ADIZs from the interior of the country, and flying at altitudes above 4,000 ft. are required to file a flight plan.

Present identification procedures depend largely on flight-plan matching, wherein it is presumed that an aircraft arriving at a given location, flying at a pre-arranged heading and altitude and a pre-arranged time, is the one for which a flight plan was filed. A certain amount of tolerance (± or -5 minutes and ± or -10 miles) is permitted in pre-planned positions to allow for unpredictable variables such as wind and error in navigation. Because of these uncertainties, together with the difficulties of accurate navigation over the oceans, it has been necessary to establish additional operational requirements for the pilots flying these routes. Under these requirements the pilot is assigned one or about five ten-degree-wide corridors converging on a navigational aid near the point where identification is desired. (Multi-corridors- refer to chart) The pilot must fly within this corridor and should come within ± or -10 minutes of his estimated time while within the corridor. He is also assigned a maneuver to perform on challenge if he should miss his corridor. This system, the multiple corridor system, is in operation at three points in the San Francisco, Los Angeles, and Boston areas, and is scheduled for operation at Atlantic City as soon as the navigational beacon is available. For the increased navigational efficiency which would result in fewer unknowns, each of these four corridors

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will be equipped with consolan beacons by the first of July, 1955, according to latest USAF estimate, however, we are pressing for 1 April 1955. These beacons will have a range of 800 to 1500 miles depending upon their power output and will enable the pilot to fly accurately within his assigned corridor by the counting of a series of dots and dashes.

Approximately 30 percent of the oceanic arrivals were identified as UNKNOWNS before the use of this system. At present the percent of UNKNOWNS averages about three percent of those overseas aircraft arriving at San Francisco and Los Angeles.

However the MOIS is still on a voluntary participation basis and while participation is 100% on the West coast, the east coast has been a problem. EADF has started to take vigorous action in bringing participation at the Nantucket corridor to a higher level. At the present time participation is at about 70% with every indication of going higher.

CHART II

Our next chart shows a general arrangement of the ADIZs as planned for 1955-56. You will note that in addition to the ADIZs shown on Chart I that domestic ADIZs consisting of double perimeters are drawn around critical target areas. These new ADIZs are compatible with our new radar installation program and the overall concept of operation has been discussed informally with the CAA and our Air Defense Forces. You will note that the eastern zone extends down through the center of the U. S. and then slants to

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the southeast toward Jacksonville, Florida. A North-South double perimeter is also established along the eastern boundary of the Western Air Defense Force area. These double perimeter ADIZs differ in configuration from the presently existing ADIZs in that the use of a vertical plane in conjunction with an ADIZ is envisioned. Briefly this ADIZ will begin at 2000 ft above the terrain and extend upwards to infinity. The vertical plane is the inner line of the ADIZ and extends from the ground up and is located within optimum radar coverage and supported by the GOC.

The purpose of the double perimeter plan is to provide a positive means of identification of all aircraft from the ground up and as far away from our critical target areas as possible, while at the same time imposing minimum restrictions on internal air traffic. Based on these requirements and upon the approved radar installations of the first and second phase radar program, these ADIZs were developed.

Initially, the identification function will not be done by the Off-Shore Radar Installation, this function will be accomplished by the Air Defense Direction Center in whose sub-sector the Off-Shore Radar Installation is located. Later if communications permit and if operational experience indicates increased efficiency, the identification function may be transferred to the Off-Shore installation.

The third phase radar installation program is scheduled to virtually be completed by autumn of 1956. The third phase radar

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program will provide a double perimeter along the southern boundary of the combat zone and along the border of the Northern edge of the combat zone between the Eastern and Western double perimeter ADIZs. These third phase ADIZs will accomplish their identification function in the same manner as described previously for the Western and Eastern double perimeters, however, it may be necessary to keep internal ADIZs for some time or until such ti e as the perimeter ADIZ's have proven they can provide the positive identification capability we require.

PROBLEM AREAS

If sufficient warning information is available to enable the execution of the plan for the security control of air traffic (SCAT), the problem of internal identification in certain areas will be simplified to a great extent. In other areas, however, the grounding of non-essential air traffic is imperative if the air defense system is to be effective. In this connection the identification and movement of essential air traffic during a military emergency has erected certain problems which still must be resolved:

A. High priority flights. In order that the major air commands and the Navy may accomplish their mission during a military emergency, they have established a requirement for routes and navigational aids along these routes. In certain instances the routes have been slected without regard to critical target areas. Here is a sample of the routes which have been

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requested in the Western Air Defense Force area. While these routes in all probability will not all be used simultaneously or continuously, the problems that arise just trying to keep the plan current are readily apparent. It is also visualized that under certain conditions simultaneous implementation of the various major commands emergency war plans will:

(1) Cause saturation of the air space in certain areas.

(2) Compromise ADC's requirement to control navigational aids (CONELRAD Program).

(3) Position tactical air traffic in a battle or threatened area.

To alleviate this situation the following actions are being taken:

A. Air defense forces are recommending routes and accompanying navigation aids which are compatible with the air defense mission and which will provide the necessary means for the other major air commands to accomplish their mission.

B. Hq USAF has been requested to establish a priority system for use by the CAA during a military emergency.

C. ADC-USAF is making a study to reduce the number of navigational aids required and is studying the possibility of operating those essential aids on a coded time basis.

D. ADC-USAF has requested authority to divert essential air traffic away from battle or threatened areas during a military emergency.

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SAC CATEGORY 2 DEPLOYMENT FLIGHTS. A second problem which will exist in the event of hostilities is that SAC category 2 flights are classified as Top Secret, and therefore the flight plans must be passed directly from SAC Headquarters to Headquarters ADC for dissemination. Due to the high classification of these flight plans plus the large number involved, it is anticipated that a long delay can be expected at each headquarters through which the flight plans must pass prior to receipt by the using agency. This problem is further complicated due to the fact that the ADC using agency, the direction centers, are not cleared to handle Top Secret material. Since CAA is the only agency that can physically control the navigational aids required for these flights, it is not possible to make aids available to SAC without compromising the classification of these flight plans.

It does not appear to be realistic to use one system of flight plan correlation in peacetime and then attempt to revert to an altogether new system when an emergency is declared.

Recommendations have been made that USAF direct SAC to down-grade to unclassified those portions of their Category 2 Flights pertaining to routes within the Combat Zone. In the event this is not possible, it is recommended that SAC pass their flight plans directly to the Air Defense Control Centers directly concerned. This would still result in a compromise of security, since the CAA personnel controlling aids are not cleared for Top Secret information.

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As mentioned before, civil aircraft flying below 4000 ft are required to file flight plans when penetrating or flying within a domestic ADIZ. In order to establish a tight perimeter zone with a down-to-ground identification capability as shown on Chart II, it will be necessary to revise Part 620 of the Administrator's Regulations of CAA, amending the 4000 ft clause to read 2000 ft, and include the requirement for flight plans on all aircraft penetrating the vertical plane. The CAA will be briefed on this requirement, and appropriate action will be taken to request the CAA and Headquarters USAF to secure necessary amendments to existing regulations.

At the present time in order to accomplish identification of civil aircraft flying in ADIZs below 4000 ft, a voluntary flight plan reporting system has been developed and is in operation in the Green Bay and Minneapolis areas. This system consists of the private pilot placing a collect telephone call to the nearest GOC Filter Center prior to his flight. This information is treated like a normal flight plan and is passed to the associated radar. Both the GOC Filter Center and the radar then attempt to make appropriate correlation. It is contemplated that this system will be expanded throughout the domestic ADIZs.

Fighter Deployment - Identification. One of the problems associated with the double perimeter concept is the lack of strategically located fighters to assist in the identification

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of aircraft whose flight fails to correlate with the established identification criteria.

To alleviate this situation, action is being taken to request the major air commands and the Navy to provide a fighter alert committment at those locations along the double perimeter where ADC fighter locations are non-existent. A similar request has been made and approved by Headquarters USAF for the ANG to provide a fighter alert capability at 17 locations.

Gentlemen, this concludes a brief presentation of the identification systems for the combat zone. We feel these systems are compatible with the capability of presently planned and programmed equipments. In developing this plan consideration was given to plans and theories of the various methods of identification that have been made known to us.

The CAA has been informally briefed and has expressed acceptance of these identification systems as presented and we hope to obtain formal USAF andCAA concurrence in the near future.

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THE GROUND OBSERVER CORPS EXPANSION

PROGRAM

1. The identification plan just presented contemplates extensive use of the GOC for low altitude detection and identification in and around the ADIZs. With the addition of flight plan correlation at the filter centers, the GOC can assist in identification of low altitude penetrations of the ADIZ and particularly those flights at low altitude which might cross the vertical AD-Z plane. With flight information reporting, the GOC can filter out those flights permitted to operate freely below 2000 feet in the ADIZ. Consequently, we feel an urgent requirement exists for the expansion of the GOC coincident with the expansion of the radar network.

2. Before taking up the details of the installations, communications, and military organizational requirements for the expansion, it may be well to review briefly the operational concept of the GOC for the vertical plane identification system. This concept requires complete detection and positive identification. In the absence of low altitude gap fillers, the GOC has proven its ability to assist in this function. The analysis of Operation SKY Scan indicates a high probability of detection by the GOC even with its present state of organization. The flight plan correlation at the filter center, mentioned by Colonel Mayo, has proven so helpful in tests at Sacramento that the Western Air Defense Force has expanded its use to the other filter centers in its area. Similarly, the voluntary use of flight information reporting to the filter centers by light planes as inaugurated at Green Bay, Wisconsin, proved of sufficient value to be expanded into the four northern ADIZs, Great Falls, Minneapolis, Traverse City, and Bangor.

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3. No claim is being made of perfection with any of these processes. They represent merely an improved capability that is immediately available

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at a relatively low cost. Now back to the plan for expansion.

4. For ease of explanation the plan has been devided into four steps. The first includes actions to be taken to more closely intgrate the present GOC into the ACkW system. The other three steps consist of actions to be taken and geographical areas to be organized to extend the GOC coincident with the completion of the second and third phases radar expansion.

5. The actions which must be taken to successfully operate the GOC as an integral part of the ACkW system are: (1) to establish filter center areas of responsibility to correspond to radar sub-sectors; (2) increase the operational effectiveness of the GOC, and (3) establish an organizational structure for the GOC which will permit its most efficient operation. In each of these we have already made some progress.

6. One of the major operational problems confronting the GoC evolves from the fact that filter center areas no longer match the areas of the radar stations to which they report. Filter center area realignment has been underway for some time and has been completed at Pasadena, Oakland, White Plains, Seattle, Trenton, Harrisburg, Pittsburg, Canton, Columbus, Grand Rapids, and Indianapolis. Others must wait for radar installations and precise definition of air division boundaries.

7. Plans for increasing the operational effectiveness of the GOC include accelerated organization of additional observation posts, improved reporting techniques, improved filtering and tracking operations, and better use of GOC information. To accelerate observation post organization, Hq USAF has established a new manning yardstick for GOC units which provides

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a substantial increase in manpower. Comparable equipment authorizations are established or are on the way— for vehicles, projection equipment, acoustic detectors, etc. Recent revisions to Air Force Manuals 50-12 and 50-13 emphasize improved aircraft recognition information reporting from observation posts, air movement processing for filter centers and greater emphasis on correct filtering. Exploitation of the identification capability of the GOC - through improved recognition and air movements sections, should increase the use to which GOC information will be put by the direction centers.

8. For the purpose of this plan the present squadron structure of the military units of the GOC has been maintained. It provides the best administrative control and most direct contact with civil defense agencies. Operational control remains with the ADIZ unit. Tests to date placing the filter center detachments under the administrative control of the ADIZ units have not proven entirely satisfactory. Unnecessary delays in administrative matters are being encountered and personnel selection does not receive the meticulous attention required for GOC units.

2nd overlay

9. Step Two of the GoC expansion plan is based on institution of the double perimeter or vertical plane ADIZ system. With down-the-ground surveillance and positive identification required, the GOC system should be expanded so that it will be operating upon the completion of Phase II supplementary radar, which is the 3rd quarter of Fiscal Year 1963. To do this the Observer Corps will have to be expanded into the states of Oklahoma, Arkansas, Missouri and Kansas as shown on the overlay in Green. This puts the 33d Air Division in the GOC business and a new squadron headquarters is required. Four state co-ordinators are required. The

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filter centers are planned to be located at Kansas City, Springfield, Mo., St. Louis, and Little Rock. The present filter centers at Nashville, Knox-

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ville and Atlanta can absorb the parts of Alabama and Mississippi needed in the perimeter area and the filter centers at Sacramento, and Bakersfield and Pasadena can absorb the eastern part of Nevada and the western fringe of Arizona.

10. Time phasing of the new elements is very important. It takes at least a year to organize a state properly to the point where it can support GOC operations. The first step is to get the coordinators in place to lay the groundwork for state civil defense assistance. Four co-ordinators for Kansas, Oklahoma, Missouri, and Arkansas should be available in the 3d quarter of FY 55 in order to give them a twelve-month lead time. The new squadron and its detachments should be activated and in place six months ahead of the target date so that with their real estate acquired, map tables built, and communications equipment installed.

11. By the same operational target date - 3d quarter FY 1956, the realignment of the present filter center areas, including new centers needed for our present system, should be completed. Three new centers are required - Columbia, S. C., Saginaw, Michigan and Bemidji, Minnesota. This means a total of seven new detachments ~~finishing~~ to be activated in the 1st quarterof Fy 1956. We have already authorized EADF to initiate action on Saginaw within their own resources.

12. During thmis period a further complexity arises, that is the conversion to sixteen air divisions. This increases the number of squadron headquarters required and reshuffles the detachments between squadrons.

3-d Overlay

13. The third step of the GOC expansion program is designed for for the interim period between Phase II and phase III radar completion. To maintain the twelve month leade time initial action must be taken in the 1st quarter of FY 56 for the addition of eight co-ordinators for the

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balance of the 48 states. The area to be organized is indicated on this overlay in blue and ~~white~~ includes the balance of the states of Kansas and Oklahoma and the entire areas of the states of Utah and Colorado.

14. The organization of the GOC in the central Rocky Mountain region and its contigious counterpart in the ~~mid~~west is considered a requirement for flight following of penetrations of the northern border which may progress southward into the area of no-programmed radar cover. Our ability to organize observation posts in this area will be limited due to sparse population. The procurement of accoustic detectors will aid considerably in this respect.

15. Because of its relatively low density of population, this fill-in area can by handled by four new detachments - Wichita, Kansas, Oklahoma City, Salt Lake City, and Denver, with a squadron headquarters at Albuquerque. A fifth detachment is required within our present area of organization - Pendleton, Oregon.- ~~and here~~

4th Qtr 58

16. The final phase of GOC expansion is that required for operation ~~with~~ in conjuction with Phase III radars, the target date for which is 1st quarter ~~FY~~ 57. Maintaining the six month lead time requires activation of the detachments by 3rd quarter 56. The balance of the area is shown on this overlay in~~cross~~ red. Eleven filter center areas will be needed to work successfully with the new radars. These eleven detachments will be assigned to existing squadrons.

17. No mention has been made so far of the areas in which 24 hour operation of the GOC will be required. Since we cannot yet rely on other sources of surveillance, twenty-four hour operation must continue along our northern border and along the coasts for the present. In addition

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twenty-four hour operation is required in the ADIZ's. Some reduction in the Skywatch area can be made when the areas encompassed in the Phase II portion of the radar double perimeter is completed. As contigious seaward extension is satisfactorily achieved, coastal areas may be relieved of continious skywatch. When Canada has completed her plans for guarding the northern approaches by additional radar and/or her Ground Observer Corps, we may eliminate or further reduce the area of continous watch along the northern border.

Last overlay

19. When and if the Trans-Canada doppler line proves successful ~~throughout~~ and the extension barriers ~~xxxxx~~ become operational, it may be ~~possible~~ to place the GOC on a complete standby basis.

19. This final overlay shows the area presently visualized for twenty-four operation in conjunction with Phase II a[redacted]-radars.

Charts

20. The unit and personnel reqhirements and their time phasing ~~are~~ shown on these two charts.

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Comdr
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Mil Pers
Asm Asgmt
Off Asgmt
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Log Plans
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FCDA
CAA

Will be Confirmed in Std Publication Form Under par 3a, ADCSM S-3

Prepared by Capt Lacaille/adg

Tel 2722-2814

Dat 1 November 1954

ADOOT-B1

SUBJECT: (Uncld) Redesignation of ADIZs and Incorporation of the ADIZ-Vertical Plane Concept in Identification

TO: Air Officer Commanding
Air Defence Command, RCAF
St. Huberts
Province of Quebec
Canada

1. The advent of the first, second, and third phase supplemental radar programs extends radar coverage at the perimeter of and within the U. S. The completion of these programs will provide the Continental Air Defense Command with the capability of timely identification of aircraft penetrating boundaries and approaching critical target areas within the U. S., enabling a more effective employment of air defense weapons.

2. The identification of all aircraft penetrating the perimeter of and critical target areas within the U. S. is an air defense requirement. To provide an identification system which will be commensurate with the increased radar detection capability and at the same time minimize restrictions to the flow of air traffic, the ADIZ-Vertical Plane is incorporated into the ADIZ concept (Inclosure 1). The domestic ADIZ begins at 2,000 feet above the terrain and extends upwards to infinity. The 2,000 feet of air space beneath the domestic ADIZ provides a free flight area for aircraft operators, both military and civil.

3. The vertical plane is located at the inner edge of domestic ADIZs and at international boundaries, except that portion of the U. S.-Canadian Boundary between 46° 00' N, 83° 26' W and 46° 00' N, 70° 18' W which is south of the Security Identification Zone (Inclosure 2). The plane extends from the ground up and is within optimum radar coverage and supported by the Ground Observer Corps. The vertical plane does not restrict air traffic as would a down-to-the-ground ADIZ.

4. Desired effective date for the ADIZs and ADIZ-Vertical Planes as indicated on Inclosure 2 is 1 September 1955. Exact coordinates and details of this concept are still subject to change.

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified _____ in accordance with Par 23 b, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____
SIGNATURE

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ADOOT-Bl
SUBJECT: (Uncld) Redesignation of ADIZs and Incorporation of the ADIZ-Vertical Plane concept in Identification

5. To improve identification capability and at the same time retain standardization of ADIZ structure within both air defense commands, request your comments as to the feasibility of redesignating the Canadian Domestic ADIZs to extend from 2,000 feet above the terrain to infinity.

FOR THE COMMANDER:

2 Incls
1. ADIZ-Vertical Plane Concept
2. ADIZs

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BEFORE DECLASSIFYING. 90

FILE NUMBER 251
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ROUTINE

CGHER ADC

ADC ADC RCAF SEA ST HUBERT QUEBEC
CANADA

X X

FILED Ops 2

12 AUG 1954

ADCOT-81 1412 . UNCLASSIFIED, Subj: PAC ADIZ - Vancouver ADIZ - Proposed Redesignation, 7 Jul 54. This hq is considering a WARP Req to estb MCIS at Neah Bay, Wash. However, we consider loc of MCIS at C-18 as being more desirable. Req you consider the feasibility of estb MCIS at stn C-18 which will elim rqmt for Neah Bay MCIS and permit ADIZ-CADIZ realignment as proposed.

8-5-12 1321532

WITH FOLLOWING DATE TIME GROUP

MEMO FOR RECORD: If ADIZ-CADIZ realignment is approved as proposed, Neah Bay MCIS would require that our stations identify aircraft in the Vancouver CADIZ. Establishment of MCIS at C-18 (Holberg, Vancouver Island) would avoid duplication of identification and permit realignment of Pacific ADIZ - Vancouver CADIZ as recommended by Canadians.

DAT 12/9/54 (Initial)

SECRET 1 1

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Hq Sq Sec
FCDA
CAA

Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3 NO

Prepared by Capt. LaSalle/bjd

Telephone 2722

Date 10 Aug 54

V-8-1x

ADC HQ Form 11
5 Feb 54 Revised

ADCOT-81 correspondence is classified SECRET in accordance with Par 23b, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

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CAA

Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3

Prepared by

Teler

Date V-6-1 August 54

27

DC HQ Form 11
Feb 54 Revised
2298

CDHR ADS

ADS
CARAIRNEW
ST HUBERT PROV QUEBEC, CANADA

FILE NUMBER 409 251 ROUTINE

FILED 1 SEP 1954 OPS 2

COMDR WADF HAMILTON AFB CALIF AC 152 SECRET

(SECRET) ADCOS-31 1540 /1 CANUSECURITY CANADENDO AC 152, 23 Aug 54.

ADS has determined that to date the MEB is the most positive method of ident of acft approaching the US from overseas. MEB have been oth on the part of the US where the volume of commie inbound air tfc has info such a rqr except in the Pac NW. WADF has stated a rqr for the oth of MEB to identify rqr from Alaska and the N Pac. Your proposed realignmnt of the Pac ADIZ-Vancouver CADIZ will place most of these flts under Can juris and the impl of a MEB at Moth Bay, Wash., as originally proposed by WADF would place the corridors in the Vancouver CADIZ. The proposal to install MEB at stn C-18 would prov ident at the lmt of surveillance capability of that stn thereby prov ident at a max dis from the Vancouver and Seattle Tyt complexes. The 25th ADiv(Def) would accept ident by C-18 as valid thus elim unnecessary dups of ident. Ident performed by C-18 in the proposed Vancouver CADIZ would avoid admin complications which could result

1 2

MEMO FOR THE RECORD: NOT NECESSARY

L. W. LASALLE, Capt, USAF/adg

ADCOS-31 2720/2041

Oct 11 1954 1128

This correspondence is classified SECRET in accordance with Par 29(b), AFR 205-1, 24 Jul 53, or for the reason (s) stated. ATTACHED MESSAGE

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(SECRET) ADVS-51

If the 25th Adiv (Inf) were [illegible] in this area. If you
concur in our proposal to exch a MIR at the 6-26, this cmd
w/each in the dav of exch you and [illegible].

MESSAGE TRANSMITTED
WITH FOLLOWING DATE TIME GROUP
8-6-61 0125Z

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FILE NUMBER 763

20 Feb 54

FROM: CONUS ADC

TO: CONUS APG DELHI AFB FLA

ADCOM-NI CONUS, RECLASSIFIED CONUS/O-NI 30265. Gen plan USAF and CAA way is as foll: Remote com devices w/b used to com (start off and turn on) unattended nav aids during a mil emerg on Air Def Wngs. The CAA is responsible for com nav aids ZAW instrl cmbnd in oprns AGAIN (duty Con of Air Traffic and Electromagnetic Radiations) Plans which are developed at Abdy (Def) Level. AGAIN Plans call for turning on a nav aid 15 min prior to estimated time radio aft will pass the aid. The nav aid w/b turned off as soon as the radio aft has passed the aid. The Abdy (Def) Cmdr will determine whether or not the time required for turning off the oriented AGAIN aids by maintenance pers will meet his regts. Agreements relative to use of such aids w/i an Abdy (Def) area are responsibility of the oprng Abdy (Def) Cmdr. Recommend that reliability test conducted by gen use use of various transmitting and receiving equip to determine most eff method of use aids. This may continue SECRET also of test results. Reply by wire.

CONUS ADC

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COPY

HEADQUARTERS WESTERN AIR DEFENSE FORCE
Hamilton Air Force Base
Hamilton, California

WDOPR-1 8 Jun 1954

SUBJECT: Navy (Pacific Fleet) Routes and Navigation Aids

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

FILE NUMBER 263

1. Reference is made to your headquarters SECRET letter ADOOT-B, subject as above, dated 27 April 1954.

2. The number of air routes and navigation aids requested for use by Navy tactical air traffic appears to be excessive. The proposed use of "direct" and VOR routes in the vicinity of vital target areas is contrary to the belief held by this headquarters that tactical air traffic should be confined to the lowest possible number of airways. Adoption of the large number of navigation aids requested by the Navy would vitiate the efforts of this headquarters in reducing the number of electronic emissions in the Western Region during air defense warnings red and yellow.

3. A map of air routes and a list of navigation aids acceptable to this headquarters was delivered to your headquarters on 27 May 1954; it is recommended that Navy tactical air traffic be required to use those routes and navigation aids.

4. The inclusion of the proposed routes and navigation aids in Western Region SCATER plans will be held in abeyance pending further instructions from your headquarters.

FOR THE COMMANDER:

/s/t/ J. P. CRIM
Major, USAF
Adjutant

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Ltr Hq WADF WDOPR-1 Subj: (Navy (Pacific Fleet) Routes and Navigation Aids

ADOOT-B1 (8 Jun 54) 1st Ind 17 Jun 1954

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

TO: Commander, Western Air Defense Force, Hamilton Air Force Base, Hamilton, California

1. The comments and recommendations contained in basic letter are being consolidated with those of CADF and forwarded to Commander in Chief, US Pacific Fleet.

2. Reference is made to paragraph four. Pending development of mutually acceptable routes and navigational aid requirements with the Pacific Fleet, the list previously forwarded with our secret letter ADOOT-B, subject as above, dated 27 Apr 54, will not be included in Western Region SCATER Plans.

BY ORDER OF THE COMMANDER:

/s/t/ CECIL F. HUMPHREYS
Captain, USAF
Asst Command Adj

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FILE NUMBER 258
263

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

ADCOT-B1

24 JUL 1954

SUBJECT: (Unclassified) Headquarters USAF Conference on Problems Relative to Movement of Tactical Air Traffic during a Military Emergency

TO: Director of Operations
Headquarters USAF
Washington 25, D. C.

1. Inclosed is a report of a conference convened on 10 June 54 by your headquarters for the purpose of resolving problems pertaining to the movement of tactical air traffic during a military emergency. This summary includes the problem areas discussed and recommendations for resolution thereof.

2. Request you advise this headquarters of the status of action taken on these recommendations, since the majority of the problems, until resolved, will continue to adversely affect our defense capability.

FOR THE COMMANDER:

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

1 Incl
Rept of Conf,
subj as above

SECRET

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E-1478

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SUBJECT: USAF Conference on Problems Relative to Movement of Tactical Air Traffic During a Military Emergency.

1. A conference was convened at Headquarters USAF on 10 June 1954, for the purpose of discussing various problems related to the movement of tactical air traffic during a military emergency. Headquarters USAF, major air commands and Navy were represented.

2. The following is a summary of the problem areas discussed:

PROBLEM:

Where conflict for the use of the same air space arises between major commands or services, who will be given priority?

DISCUSSION:

a. Under certain conceivable conditions, i.e., simultaneous implementation of the various major commands emergency war plans, saturation of air space in certain geographical areas of the U. S. is anticipated. This problem will become particularly acute in the northeast where the bulk of this traffic tends to funnel out of the U. S. It was generally agreed that it would not be possible to predetermine where these problems would arise. Consequently they would have to be resolved at the time of conflict.

b. It was generally agreed among the conferees that a reduction in aircraft separation both by time and altitude could be accepted with minimum additional risk to the air traffic involved. Further it was agreed that it would be better to reduce separation between traffic to the maximum extent possible prior to diverting any traffic due to the possible adverse effects these diversions would have on various emergency war plans.

c. Strategic Air Command requested that they be given first priority until their deployment plan was completed. In turn, AMC and MATS felt that they should be given equal priority since their operations would be in direct support of SAC's primary mission. The Navy requested that it be made a matter of record that they could not accept an Air Force decision in this matter. It was further determined that one set of priorities would not be adequate for the entire emergency period but would have to be adjustable to meet the change in requirements of the various commands.

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Subj: USAF Conference on Problems Relative to Movement of Tactical Air Traffic During a Military Emergency. (Cont'd)

RECOMMENDATIONS:

a. It was recommended that USAF review the major commands EWP's to determine the feasibility of establishing a priority listing for CAA's use during a military emergency. (It is anticipated that this decision will require JCS approval in that more than one service is involved.)

b. That the priority listing be made adjustable based on changing mission requirements of the various commands and services.

c. That CAA be authorized to reduce separation minima between tactical aircraft.

PROBLEM:

Is the requirement to keep certain aircraft movements highly classified compatible with air defense requirements.

DISCUSSION:

a. Present procedures require that SAC Phase III Category 2 flight plans, classified TOP SECRET, be passed directly from SAC Hqs to Hq ADC for dissemination. Due to the high classification of these flight plans plus the large number involved, it is anticipated that a long delay can be expected at each headquarters through which these flight plans must pass prior to receipt by the using agency. This problem is further complicated due to the fact that the ADC using agency, our direction centers, are not cleared to handle TOP SECRET material.

b. Strategic Air Command representatives took the position that it would not be possible to downgrade these flight plans as it would compromise actual strike missions departing from the U. S. In those cases where they are deploying to staging bases it would provide the enemy with a good indication as to when their forces would be refueling at these bases, consequently jeopardizing their mission. SAC representatives further indicated that they were required by USAF regulations to classify these flight plans as TOP SECRET.

c. Since CAA is the only agency that can physically control the navigational aids required for these flights, it is not possible to make the aids available to SAC without compromising their classification.

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Subj: USAF Conference on Problems Relative to Movement of Tactical Air Traffic During a Military Emergency. (Cont'd)

d. It was pointed out that it does not appear realistic to use one system of flight plan correlation in peacetime and then revert to an altogether new system when an emergency is declared.

RECOMMENDATIONS:

a. That USAF direct SAC to downgrade to unclassified those portions of their Category II Flight Plans pertaining to routes within the continental United States and Canada. (This would permit these flight plans to be processed through normal CAA channels.)

b. That in the event it is determined that it is not possible to downgrade these flight plans, Strategic Air Command be directed to pass the flight plans directly to the Air Defense Command's Air Division (Defense) Control center concerned. (Under this proposal navigational aids would be provided as directed by control centers to meet SAC's needs. Consequently this would be a compromise of security since the CAA personnel operating these aids are not cleared for TOP SECRET.)

PROBLEM:

Does the requirement for navigational aids by tactical commands compromise ADC's requirement to control navigational aids in accordance with Executive Order 10312?

DISCUSSION:

a. SAC's dispersal plan requires a large number of navigational aids throughout the U.S. during our most critical period of air defense. The operation of these aids, during this critical period, to a large extent nullifies our CONELRAD Program.

b. During the deployment phase of SAC and the airlift phase for TAC, certain routes through the U. S. will be in continuous use requiring that navigational aids along these routes be in continuous operation for long periods of time. These aids, in most cases, will be away from critical target areas; however they could be used as a valuable enroute fix by the enemy.

RECOMMENDATION:

That major commands cooperate with ADC to reduce aids wherever possible. (This at best will still leave a serious weakness in the CONELRAD Program. As a result this headquarters is studying the possibility of operating these aids on a coded time basis.)

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PROBLEM:

Should the Air Division (Defense) Commander be given authority to divert tactical air traffic around a battle or threatened area during a Red or Yellow alert?

DISCUSSION:

It was the opinion of the major command representatives that this action could be taken without jeopardizing their war plans providing that diversion was of limited distance and would not require an additional refueling stop.

RECOMMENDATIONS:

a. That USAF give ADC authority to make these diversions where necessary.

b. That major commands be directed to stand by on appropriate air defense frequencies in order that they may be contacted in the event that diversion is necessary.

PROBLEM:

Is SAC's proposal to have blanket air space reservations approved for an indefinite period of time valid and workable?

DISCUSSION:

a. It was not possible at the conference to determine if SAC air space reservation plan would conflict with the plans of other commands in that the plan had never been made available to any organization outside Strategic Air Command.

b. As a result SAC representatives indicated that they would forward these requirements to CAA at an early date. Further SAC will submit to Hq USAF the full details of air space requirements and method of procuring the air space when needed.

RECOMMENDATION:

That Hq USAF review SAC's air space reservation requirements to determine if they are compatible with other major command emergency war plans.

3. These problems and recommendations are presently being reviewed by Hq USAF to determine future course of action.

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p 51

[redacted]

AFOOP-OC-PL

Department of the Air Force, [redacted]

TO: Commander, Air Defense Command, [redacted] Colorado Springs, Colorado

1. The recommendations submitted are being considered by this Headquarters.

2. You will be advised immediately upon resolution of this problem.

BY ORDER OF THE CHIEF OF STAFF:

FILED 1955 2

1 Incl
n/c (w/d 1 cy)

P. A. Jones

PAUL A. JONES
Colonel, USAF
Deputy,
Operations & Commitments Div, D/O

If inclosure no. 1 is withdrawn (or not attached), the classification of this correspondence will be downgraded to Unclassified in accordance with paragraph 25e, AFR 205-1.

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FCDA
CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No
Prepared by
Telephone
8 Dec 54

ADC HQ Form 11
5 Feb 54 Revised

CONFIDENTIAL 95

FILE NUMBER 263 AV

ROUTINE

CONDR ADC

CONDR MATS, ANDREWS AFB, WASH., D.C.

CIC US ATLANTIC FLT, US NAVY BASE, NORFOLK, VA X

13 DEC 1954

(CONFIDENTIAL) ADCOM 3057. Recent EASTER Conf con ch this hq revealed urgent nec to finalize EWP's using list of navigational aids prov in our clas ltr ADCOM-SE, Subj, (UNCLS) Navigational Aids for Use During a Mil Emerg, 8 Sep 54. Req this Hq be advised of acpt in ccth 1 Mar 55 as suspense date to revise EWP's utilizing the navigational aids ltd with above cited ltr.

MEMO FOR RECORD: All other commands and services have submitted revised EWP's using our suggested list of nav aids. SAC has been advised to make deletions or substitutions in SAC Manual 55-4. Pending SAC concurrance, the two above addressees are the only obstacles to the completed plan. Since MATS is the largest user, the magnitude of revising their EWP documents is a considerable task.

MESSAGE TRANSMITTED
WITH FOLLOWING DATE TIME GROUP
13-3-12 1320442
PURPOSE NOT REQUIRED
13/12/01

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

Major L. W. Myers/hb
ADCOM-SE 2722-2824

This correspondence is classified _____ in accordance with Par 24b, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

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

96

ADOOT-B1

SUBJECT: (Unclassified) Navigational Aids for Use during a Military Emergency

TO: Commander
Military Air Transport Service
Andrews Air Force Base
Washington 25, D. C.

1. In an effort to reduce the number of navigational aids required during periods of air defense warning red or yellow, this headquarters has compiled the inclosed list of navigational aids for use by tactical air traffic of all major commands. The navigational aids included within this list are controllable within time limits acceptable to air division (defense) commanders and, in general, are considered adequate for navigation along the present routes included within Emergency War Plans (EWPs) of the major commands of the Air Force and Navy.

2. It is requested that revision of route and navigational aid requirements for tactical flights be formulated using the navigational aids listed in Inclosure 1. All existing routes and navigational aid requirements contained in EWPs of major commands will remain in effect pending receipt of revisions. In those instances where navigational aids are considered to be inadequate, your recommendations should be submitted to this headquarters for mutually acceptable additions to the list.

3. Your attention is invited to the following factors when using the list of navigational aids:

a. The inclosed list contains "en route" aids only. Destination aids required by tactical air traffic during a military emergency will be made available from information contained within the Flight Clearance Form (DD Form 175) of each particular flight. Normally, the destination aid will be turned on fifteen minutes prior to estimated time of arrival.

b. Air Force and CAA radars (air surveillance and precision approach) are not included in the list. Pilots of tactical aircraft should be advised to consult the latest Radio Facility Chart for location, type of operation, and assistance these various radars may provide should the need arise.

4. The Air Defense Command has no authority to ground tactical air traffic during a military emergency or during periods of air defense

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Subj: (Unclassified) Navigational Aids for Use during a Military Emergency (Contd)

warning yellow or red. Air battles may be in progress around densely populated or critical target areas when aircraft of various commands are executing a tactical mission. Your cooperation in avoiding these critical areas when developing flight routes in EWPs will be mutually beneficial to all.

5. Considering the magnitude of revising EWPs to utilize the navigational aids inclosed, no time limit for submission of revisions is being stated. Any major discrepancies which are noted in the development of tactical flight routes in EWPs should be resolved at the earliest possible date. To assist in rapid identification of navigational aids by air division (defense) location, Inclosure 2 is forwarded to identify the air division (defense) boundary.

FOR THE COMMANDER:

6 Humphreys

2 Incl
1. List of nav aids for EADF, CADF, and WADF
2. Map

Info copy to
Comdr, EADF
" WADF
" CADF
Hq USAF

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Hq Air Defense Command, Subj: (Uncl) Navigational Aids for Use during a Military Emergency, dtd 8 Sep 1954

MAOCP 1st Ind

HQ, MILITARY AIR TRANSPORT SERVICE, USAF, Washington 25, D. C. 6 DEC 1954

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

1. The inclosed list of navigational aids has been studied by this command and the following questions regarding the use of the aids have arisen:

a. It is assumed that the aids listed will be operated intermittently by air division area or areas depending on the existence of a warning red or yellow for a particular section of the country rather than on a nationwide basis. Is this assumption correct?

b. Will aircraft be required to file flight plans via established airways during periods of intermittent operations; and, if so, will all stations on the intended route which are included on the list be considered compulsory reporting points? If so, a problem is posed in operation of aircraft of this command which are not VOR equipped. For example, in the mid-central area of the country bounded roughly by Denver, Oklahoma City and St. Louis, the en route aids listed are almost excusively VOR. Similar situations obtain between Phoenix and El Paso and between Austin and Mobile. The provision of some LF/MF coverage in these areas or authority for an aircraft to file point to point for aids it is equipped to receive would eliminate these problems.

c. The basic letter makes no reference to departure aids. It is assumed that departure aids will be made available on request for five minutes from time of departure. Is this assumption correct?

2. It is requested that answers to the above questions be provided in order that action can be completed on the enclosed list at the earliest possible date. (UNCL)

FOR THE COMMANDER:

James M. Johnson

[illegible] of Staff,

2 Incl
n/c

Paragraph 1 classified SECRET in accordance with paragraph 23c AFR 205-1, dtd 15 Dec 1953

V659-5

SECRET 3

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Hq Air Defense Command, Subj: (Uncl) Navigational Aids for Use During a Military Emergency, dtd 8 September 1954

ADOOT-B1 (8 Sep 54) 2nd Ind 29 DEC 1954

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Military Air Transport Service, Andrews Air Force Base, Washington 25, D. C.

1. Reference paragraph 1a, 1st Ind. Your assumption is correct.

2. Reference paragraph 1b, 1st Ind. Since this paragraph covers several major points, the following clarifications are provided:

a. Aircraft need not be routed via airways. Pilots will file flight plans with route information which will provide the air defense system with a track over the ground. If the route indicated is from one air navigation aid direct to another and the flight path happens to be along presently established airways, such airway designation may be used. This airway routing is not compulsory and it is suggested that aircraft be routed from departure point, direct via necessary en route navigation aids thence to destination airfield.

b. Each en route navigational aid listed in the flight plan will be a compulsory reporting point. This position report is required by the air defense system to effect identification and expedite shut down of the navigational aid. If the aircraft does not report over the station within five minutes of its estimated time, the aid will be turned off.

c. With reference to certain areas where VOR ranges are prevalent, certain LF/MF charts have been incorporated in the list. These are:

Gila Bend, SBAZ, BVOR	Cochise, LFAMZ, BVOR
Prescott, SBAZ, BVOR	Columbus, SBAZ, BVOR
Winslow, SBAZ, BVOR	Abilene, SBAZ, BVOR
Tucson, RNH, BVOR .	Mineral Wells, RNL, BVOR

If your command has additional requirements for LF/MF stations which can be provided in the same geographical locations as the VOR facility, your requirements should be forwarded to this headquarters as soon as possible.

V659-6

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Hq Air Deiense Command, Subj: (Uncl) Navigational Aids for Use during a Military Emergency, dtd 8 Sept 1954

ADOOT-Bl (8 Sep 54) 2nd Ind (Contd)

If the LF/HF facilities are acceptable to the Air Division (Deiense) Co mander concerned, they will be added to the list of en route navigational aids.

3. Reference paragraph 1 c of 1st Ind. The assumption is correct. Detailed information concerning control of navigational aids during air defense warning yellow or red is contained in our classified message ADOOT-Bl 0846, 20 May 54. The procedures as stated therein remain unchanged for departure, en route and destination aids.

FOR THE COMMANDER:

2 Incl
n/c

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Basic Ltr fm Hq ADC, subj: (Uncl) Navigational Aids for Use during a Military Emergency

MAOCP (8 Sep 54) 3rd Ind

HQ, MILITARY AIR TRANSPORT SERVICE, USAF, Washington 25, D. C. 15 FEB 1955

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

With the additions contained in paragraph 2 c, 2nd Indorsement, and the clarification on use provided by the 2nd Indorsement, the list of navigational aids contained in Inclosure 1 to the basic letter is acceptable to this command. MATS Emergency Plans are being revised to incorporate the new list of aids.

FOR THE COMMANDER:

2 Incl
n/c

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Basic Ltr fm Hq ADC, subj: (Uncl) Navigational Aids for Use during a Military Emergency

MAOCP (8 Sep 54) 3rd Ind

HQ, MILITARY AIR TRANSPORT SERVICE, USAF, Washington 25, D. C. 15 FEB 1955

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

With the additions contained in paragraph 2 c, 2nd Indorsement, and the clarification on use provided by the 2nd Indorsement, the list of navigational aids contained in Inclosure 1 to the basic letter is acceptable to this command. MATS Emergency Plans are being revised to incorporate the new list of aids.

FOR THE COMMANDER:

James C. Hamm

2 Incl
n/c

263 AW

This indorsement is in itself UNCLASSIFIED.

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WESTERN AIR DEFENSE FORCE
LIST OF NAVIGATIONAL AIDS RECOMMENDED FOR USE BY TACTICAL AIR TRAFFIC
DURING AIR DEFENSE WARNING RED AND YELLOW

25TH AIR DIVISION (DEFENSE)

Missoula SBMRAZ, BVOR
Mullan Pass BMRLZ, BVOR
Spokane SBRAZ, BVOR
Larson RBN-HW, GCA
Ellensburg, SBMRAZ, BVOR
Whidbey MRLZ, GCA, ASR
Neah Bay SRAWZ
McChord SBMRA, GCA
Portland SBRAZ, BVOR
The Dalles SBRAZ, BVOR
Pendleton SBRAZ, BVOR
Boise SBRAZ, BVOR
Eugene SBRAZ, BVOR
Medford SBRAZ, BVOR

28TH AIR DIVISION (DEFENSE)

Ft. Jones SBRAZ
Red Bluff SBRAZ, BVOR
Arcata SBMRLZ
Sacramento SBMRAZ, BVOR
Moffett SMRLZ, GCA
Pescadero RBN
Stockton BMRLZ
Fresno SBRAZ, BVOR, ILS
Donner Summit RBN
Reno SBRAZ, VORW
Lovelock BMRLZ, BVOR
Battle Mountain BMRLZ, BVOR
Elko SBRAZ

27TH AIR DIVISION (DEFENSE)

Bakersfield SBMRAZ, BVOR
Newhall MRLW
Santa Barbara SBMRLZ, BVOR
Long Beach SBMRLZ, BVOR
Oceanside RBN
San Diego SBRAZ, BVOR
Daggett SBRAZ, BVOR
Las Vegas SBMRAZ, BVOR
Needles BMRLZ, BVOR
Riverside SBERAZ
El Centro SBMRLZ
Blythe SBMRAZ, BVOR
Thermal BMRLZ, BVOR
Yuma SBERAZ, BVOR
Phoenix SBMRAZ, BVOR

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EASTERN AIR DEFENSE FORCE
LIST OF NAVIGATIONAL AIDS RECOMMENDED FOR USE BY TACTICAL AIR TRAFFIC
DURING AIR DEFENSE WARNINGS RED AND YELLOW

26TH AIR DIVISION (DEFENSE)

Elmira SBRAZ
Wilkes Barre SBMRAZ
Poughkeepsie SBRAZ
Altoona SBMRAZ
Lynchburgh SBRAZ
Millville SBRAZ
Richmond SBRAZ

32D AIR DIVISION (DEFENSE)

Buffalo SBRA
Syracuse SBRA
ALbany SBRA
Burlington SBRA
Chicapee SBRA
North Bangor SBRA
Presque Isle SBRA
Portland BMRL
Otis MHW

30TH AIR DIVISION (DEFENSE)

Houghton BRL
Evansville BVOR
Charleston SBRAZ, BVOR
Louisville, BVOR, LF

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CENTRAL AIR DEFENSE FORCE
LIST OF NAVIGATIONAL AIDS RECOMMENDED FOR USE BY TACTICAL AIR TRAFFIC
DURING AIR DEFENSE WARNINGS RED AND YELLOW

29TH AIR DIVISION (DEFENSE)

Great Falls SBRAZ
Miles City SBMRAZ
Bismarck SBRAZ
Fargo SLRAZ
Missoula SBMRAZ
Helena SBMRAZ
Dillon BMRLZ
Fort Bridges SBRAZ
Sinclair SBRAZ
Cheyenne SBRAZ
North Platte SBRAZ
Grand Island SBMRLZ
Lincoln SBMRLZ
Sioux Falls SBRAZ
Watertown BMRLZ
Cherokee BVOR
Casper BVOR

31ST AIR DIVISION (DEFENSE)

Alexandria BMRLZ
Minneapolis SBRAZ
La Crosse SBRAZ
Omaha SBRAZ
Des Moines SBRAZ
Burlington SBRAZ
Springfield SBMRAZ

33RD AIR DIVISION (DEFENSE)

Randolph MRLWZ
Palacious RBN, BVOR
Perrin SBMRAZ
Tyler BMRLZ
Alexandria SBRAZ
Austin SBMRLZ, BVOR
Monroe BVOR
Texarkana SBRAZ
Little Rock SBRAZ
Amarillo SBRAZ
Springfield BVOR
Vicky BVOR
Ardmore BMH

33RD AIR DIVISION (DEFENSE) (CONTD)

Vance MRLWZ
Gage SBRAZ
Hutchinson SBMRLZ
Columbia BVOR
Chanute SBRAZ
Advance MRAWZ
Abilene BVOR
Midland BMRLZ, BVOR
San Angelo BMRLZ, BVOR
Wichita Falls SBMRAZ
Lubbock BMRLZ
College Station BVOR
Lufkin BVOR
Mineral Wells BVOR
Ponca City BVOR
Neosho BVOR
Farmington BVOR
Kirksville BVOR
Emporia BVOR
Russell BVOR
Hill City BVOR
Goodland BVOR
Dodge City BVOR
Garden City BVOR
Beaumont BVOR
Lafayette BVOR
Cotula BVOR
Junction BVOR

34TH AIR DIVISION (DEFENSE)

Albuquerque SBRAZ, BVOR
Wendover SBRAZ, BVOR
Salt Lake City SBRAZ, BVOR
Ogden SBRAZ, BVOR
Denver SBMRAZ, BVOR
Akron SBMRAZ, BVOR
El Paso SBRAZ, BVOR
Salt Flat BMRLZ, BVOR
Wink SBRAZ, BVOR
Roswell SBMRAZ, BVOR
Truth or Consequences SBRAZ
Hobbs BMRLZ
Carlsbad BMRLZ

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[illegible] AIR DIVISION (DEFENSE) CONTD)

Trinidad SBRAZ
Colorado Spgs SBMLZ
La Junta SBLLZ
Enterprise SBRAZ
Delta BVOR
Prescott BVOR
Winslow BVOR
Tonopah BVOR
Wagontongue BVOR
Mile Pond BVOR
Phoenix BVOR
Tucson BVOR
Douglas BVOR
Cochise BVOR
Columbus BVOR
Pueblo BVOR
Milford BVOR

[illegible] AIR DIVISION (DEFENSE)

Columbus SBRMLZ
Orlando SBRMLZ
Alma SBRAZ
Memphis SBRAZ, BVOR
Montgomery SBRAZ, BVOR
Nashville SBRAZ, BVOR
Meridian SBRAZ, BVOR
Tallahassee SBRAZ, BVOR
Cross City SBRRAZ, BVOR
West Palm Beach SBRRA, BVOR
Savannah SBRRLZ, BVOR
Florence SBRRLZ, BVOR
Raleigh SBRAZ, BVOR
Spartanburg SBRAZ, BVOR
Macon SBRRAZ, BVOR
Crestview SBRAZ, BVOR
Mobile BVOR
Huntsville BVOR
Anderson BVOR

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by LtColBy/adg
2661-3

3 July 1954

rm 11
Revised

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AFOOP-S

8 AUG 1954

SUBJECT: (U) Problem Relative to Issuance of Technical Air [illegible]

TO: Director of Operations
[illegible]

FILE NUMBER 263-38

[illegible]

[illegible]

[illegible]

[illegible]

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MEMO FOR RECORD NOT REQUIRED ___ Not requested, not furnis
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A-8740/0500

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This correspondence is classified
Par 23 (b) AFR 205-1, it may be [illegible] by the reason (s)

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(Encl not nec for AG file)

THOMAS C. SAVAGE
Major, USAF
Asst Command Adj

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263

ADOOT-SL

19 NOV 1954

SUBJECT: (Unsld) SAC Manual 55-4, Standard Operating Procedures for Traffic Control During SAC Emergency Deployment, November 1954

TO: Commander
Strategic Air Command
Offutt Air Force Base
Omaha, Nebraska

1. The revised SAC Manual 55-4 has been reviewed by interested staff agencies of this headquarters. It appears that the major change to subject manual is the downgrading from TOP SECRET to Confidential the classification of those portions of Category 2 flight plans which pertain to flight within the United States and Canada.

2. Those parts of the Manual which to this headquarters appear to be undesirable from an air defense standpoint are:

a. Section III paragraph 2 d. Headquarters ADC COC has no requirement for Category 1 flight plans. These flights should be handled as normal IFR traffic as indicated in Section III, paragraph 1 a (2).

b. Section VIII, paragraph 2. Control of navigation aids during an air defense warning yellow or red will be accomplished by the CAA for the air division (defense) commander. Your command does not authorize the CAA to receive Category 2 flight plans; consequently, the CAA has no knowledge of when to make the aids available for these flights. If the air division control center requests that certain aids be made available at specific times along Category 2 routes within the U. S., the security of such flights will be compromised.

c. Section VIII, paragraph 3 a. The enroute navigation aid listing is not compatible with the list contained in our classified letter subject: Navigational Aids for use during a Military Emergency, dated 8 September 1954. It is requested that the following changes be made in the navigation aids to be used by Category 2 flights.

(1) Substitute Louisville, Kentucky, Range for Cincinnati Range.

M/R: Acceptance of Confi classification on Category 2 flight is a last ditch stand which we may be forced to accept. No change in our previously stated position is recommended at this time and for this reason, we have purposely avoided placing the requirement on SAC to submit Category 2 flight plans to appropriate Air Div (Def) thru whose area the flights will traverse.

This correspondence is classified _____ in accordance with Par 24 b, AFR 205-1, 15 Dec 53, or for the reason (s) stated.

Capt LaSalle/adg
2722-2814
10 12 Nov 54

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ADOOT-HQ
SUBJECT: (Uncld) SAC Manual 55-4, Standard Operating Procedures for Traffic Control During SAC Emergency Deployment, November 1954 (Cont'd)

(2) Substitute Buffalo, N. Y., Range for Youngstown Range.

(3) Substitute Burlington, Vermont, Range for Montpelier Range.

(4) Substitute Raleigh, N. C., Range for Cherry Point Range.

(5) Delete New Castle Range.

(6) Substitute Orlando or West Palm Beach, Fla., Range for Tampa Range.

(7) Substitute Sacramento, Calif., Range for Travis Range.

3. Reference is made to Section IX, paragraph 3.

a. Request you advise this headquarters as to which "Military Channels" will be used for transmitting Category 2 flight plans to Headquarters ADC, COC.

b. Reference is made to our 1st Indorsement dated 4 October 1954, to your classified letter, subj: SAC Altitude Requirements for Emergency Deployment, 15 September 1954 (Incl 1). The recommendations as contained in the above cited correspondence represent the desired procedures for Category 2 flight plans which will insure the most efficient mission accomplishment by both ADC and SAC. The Confidential classification of Category 2 flight plans still poses the problem of decoding, encoding and relay to subordinate headquarters. This procedural requirement involves a prohibitive time delay before the flight plan information is made available to the direction center, the using agency.

4. Request you take the necessary action to amend subject manual to eliminate the deficiencies outlined in paragraph 2;

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ADOOT-SI
SUBJECT: (Unald) SAC Manual 55-4, Standard Operating Procedures for Traffic Control During SAC Emergency Deployment, November 1954 (Cont'd)

further, request status of action of our 1st Indorsement to your letter referred to in paragraph 2 d (2) above.

FOR THE COMMANDER:

1 Incl (not rec for AG files)
Cy of 1st Ind to Hq SAC
DOPLP, Subj: SAC Alt Req
for Emerg Deployment (Conf)

[redacted]
[redacted], USAF
Asst Command Adj

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CONFIDENTIAL

ADOOZ-EH 20 Feb 1954

SUBJECT: Priority of Tactical Flights (Unclf)

TO: Director of Operations
Headquarters USAF
Washington 25, D. C.

FILE NUMBER 263

1. This headquarters is conducting a detailed evaluation of plans for the movement of tactical air traffic through the air defense system (ZI) during a military emergency. Overlays of known tactical movements of SAC, TAC, MATS, ADC and Navy have disclosed a possibility of conflict. This is especially true between some phases of SAC deployment and other commands or the Navy.

2. Headquarters SAC has stated a requirement for areas of reserved altitudes for category 2 operations of the deployment phase. These reservations which will be provided by the CAA will be held for an indefinite period of time. Due to the classification placed upon these operations by Headquarters SAC, flight plans will not be filed with the CAA. The CAA will not be informed of numbers of aircraft or periods of time when the altitude reservation is actually in use. This will preclude the CAA from using the altitudes reserved by SAC for the movement of other tactical operations.

3. In an effort to resolve the problem, a conference was held in this headquarters on 9 Feb 54 with representatives of CAA and SAC. SAC representatives stated a firm requirement that their category 2 operations must operate as set forth in paragraph 2 above.

4. Heretofore, the planning of this headquarters has been on the basis of equal priority for tactical movements. It now appears that there is a requirement for a command or services priority listing applicable to tactical operations.

5. Representatives of this command are available to assist in establishing a priority determination. Representatives of SAC and CAA have expressed a willingness to participate if deemed necessary.

FOR THE COMMANDER:

THOMAS C. SAVAGE
Major, USAF
Asst Command Adj

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ADCSM 5-3 ------
Prepared by ------
Telephone ------
Date ------
ADC HQ Form 1
Revised 15 Aug 53

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Paraphrase not required
before declassifying

COMDR ADC

FILE NUMBER 263

PRIORITY ROUTINE

COMUS HQ USAF WASH DC

FILED aps 10-2

COMDR HAMILTON AFB CALIF
COMDR OADF KANSAS CITY MO
COMDR RADF STEWART AFB NEWBURGH NY
DEPT OF COMMERCE CAA WASH DC

21 APR 1954

0655

ADOOS-2R

Studies of the nr of the acft by other comd during a nil emerg indicate that in many instances such traf is channeled over areas of dense population and/or over highly industrialized areas. Flt conducted over such areas during a nil emerg constitute a problem insofar that during such a pd it is quite probable that these areas have become threatened or hostile areas. The flow of such traf increases the complexity of the air picture in addition to creating an identification problem. Since this cond is not auth to ground or reroute the air traf to avoid critical areas, req action be taken to insure that maj air comd and Navy revise Emerg War Plans and reroute all the traf around such areas.

MEMO FOR RECORD NOT NEC

OFFICIAL BUSINESS

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Not requested, not furnished

Furnished to ------ (Date) 28 APR 1954 (Initials)

TRANSMITTED
MESSAGE
WITH FOLLOWING DATE TIME GROUP
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JAMES S. PURDUM
Major, USAF
Asst Command Adj

SIGNATURE

ADOOS-2R

This correspondence is classified SECRET in accordance with
Par 22b, AFR 205-1, 24 Jul 53, or for the reason (s) stated. V-36-1X

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ADC HQ Form
Revised 15 Aug 53

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FILE NUMBER 263 AV

COMDR ADC

ROUTINE DEFERRED

COMDR 64AF HAMILTON AFB HAMILTON CALIF
COMDR 64AF GRANDVIEW AFB MO
COMDR 64AF STEWART AFB NEWBURGH NY x X

COMDR USAF WASH DC
DEPT OF COMMERCE CAA WASH DC

0762

7 MAY 1954

[redacted]. The fol clas msg fr Hq USAF is quoted for your info and

msg action: "FROM AFOOP-OP-D 55847. The fol msg has been dispatched to all msj
Comd in response to your ADOOT-B1 0655, 22 Apr 54. The CNO has been similarly
informed. Air Def Force Comdr are auth dir comm in this matter. 'Studies of the
ops of acft during a mil emerg indicate many instances where traffic is channeled
over areas of dense population and/or over highly industrialized areas. Flt
control over such areas during a mil emerg constitutes an air def problem of
serious proportion. Desire all comdr coord emerg traffic flow w/agcup air def
to insure no loss either in air def eff or capability of other comd to
perform assgn msn. Instances where coord cannot be eff except at a loss in comd's
emerg capability w/b resolved at this hq."

Paraphrase not required
sec crypto section

MEMO FOR RECORD ONLY

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Not requested, not furnished
Furnished 7/15/54

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LaSalle
Capt LaSalle/mc

LEWIS E. SMITH
Captain, USAF
Asst Command Adj

ADOOT-B2 2722 SECRET

This correspondence is classified SECRET in accordance with Par 23b, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

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FILE NUMBER 263

From: HQ 34TH ADIV (DEF)

11 May 1954

CDC

SUBJECT: Tactical Operations in Albuquerque ADIZ During Emergencies

TO: Commander
Central Air Defense Force
Grandview Air Force Base
P. O. Box 528
Kansas City 41, Missouri

1. The problem of tactical operations into and through and ADIZ during emergencies is outlined below. This division considers the matter an urgent one and requests aid and assistance in completing required planning necessary to avert serious difficulties during actual air defense actions.

2. A large amount of tactical air traffic will be dispatched into and through the Albuquerque area with the declaration of a military emergency or upon the beginning of hostilities. Concurrently, due to the nature of activities located at Kirtland, Sandia and Los Alamos, a considerable number of Strategic Air Command, Naval, MATS and support type aircraft of other commands will stage into this important base. This has been confirmed by personnel of the Special Weapons Center. This and other information indicates that the tactical air traffic which will enter the Albuquerque ADIZ during an emergency may be of such volume as to strain the air defense capability of this division unless appropriate plans are formulated. Strategic Air Command aircraft will conduct their planned operations into this ADIZ under any conditions of alert. In this respect, the identification of aircraft closely resembling enemy types is of particular concern since during a red alert all aircraft must be identified as either friendly or hostile.

3. The requirement for preparation of comprehensive plans for the handling of air traffic scheduled to fly into and through the Albuquerque area shortly after hostilities begin must necessarily be accorded a high priority. At the present time, official information upon which to base such plans is not available to the 34th Air division (Defense). It is possible that plans of the various military services have been coordinated with Air Defense Command headquarters and that the necessary information is therefore available at that level. It is strongly recommended that immediate measures

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Hq 34ADD CDC, Subj: Tactical Operations in Albuquerque ADIZ During Emergencies

be taken to furnish this headquarters with detailed information regarding planned flights to include specific routes into or through this ADIZ during emergency conditions. Such information will permit the preparation of plans for accommodation and particularly for identification of the air traffic which causes concern. The strategic and tactical importance of the Kirtland-Sandia-Los Alamos target complex is such as to warrant extreme measures to provide for its defense.

/s/t/ WENDELL W. BOWMAN
Colonel, USAF
Commander

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Hq 34th ADiv, CDC, Subject: Tactical Operations in Albuquerque ADIZ During Emergencies

PO&R-A (11 May 54) 1st Ind 26 May 1954

HQ CENTRAL AIR DEFENSE FORCE, Grandview Air Force Base, P. O. Box 528, Kansas City 41, Missouri

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

1. Reference paragraph 3 of above letter, all information pertaining to high priority tactical flights that has been made available to this headquarters has been forwarded to the 34th Air Division. A tabulation of this information is as follows:

a. AMC - Routes and aids required were forwarded from Headquarters ADC 19 December 1953 and indorsed by this headquarters to 34th Air Division 28 December 1953.

b. Navy - Routes and aids required were forwarded from Headquarters ADC 30 March 1953 and indorsed by this headquarters to 34th Air Division 10 April 1953. An additional listing of Navy Pacific Fleet flights was received from Headquarters ADC and indorsed to the 34th Air Division on 20 May.

c. MATS - Routes and aids required were forwarded from Headquarters ADC 11 February 1954 and indorsed by this headquarters to 34th Air Division 19 February 1954.

d. TAC - Aids required were listed in letter from Headquarters ADC, dated 17 March 1952. None were in the 34th Air Division area; however, as was stated in the Headquarters ADC letter and paraphrased here: "In the event a high priority military flight should be ordered by USAF, the required navigational aids would be provided subject to the following conditions:

"(1) File an IFR flight plan regardless of weather conditions, listing the minimum aids required.

"(2) When selecting aids, extreme care should be taken to select aids at least 150 miles from critical target areas such as New York City, Detroit, San Francisco, and Albuquerque."

e. SAC - Information regarding aids and routes is provided the Air Divisions by the respective SAC wings operating within the Air Division area. As is evidenced by the classified supplement to the 34th Air Division SCATER plan which is being forwarded under separate cover for your approval, SAC forces have coordinated with the 34th Air Division.

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Hq 34th ADiv, CDC, Subject: Tactical Operations in Albuquerque ADIZ Durin g Emergencies

2. This headquarters appreciates the concern the Commander, 34th Air Division, evidences for his sector and realizes the problem inherent in the location of Albuquerque. Any advice from your headquarters or information concerning future plans for control of traffic during an emergency that would be of use to the Commander, 34th Air Division, would be appreciated.

FOR THE COMMANDER:

/s/t/ C. B. OVERACKER
Colonel, USAF
Deputy for Operations

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Hq 34th ADiv (Def) CDC Subj: Tactical Operations in Albuquerque ADIZ During Emergencies

ADOOT-B1 (11 May 1954) 2d Ind 8 Jun 1954

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colo.

TO: Commander, Central Air Defense Force, Grandview Air Force Base, P. O. Box 528, Kansas City 41, Missouri

1. This headquarters is well aware of the problems associated with tactical air traffic through an ADIZ during periods of emergency or air defense warning yellow or red. The concern of the Commander, 34th Air Division (Defense), is appreciated and is certainly well justified.

2. A conference is being held in Headquarters USAF on 10 June to be attended by representatives of all major commands and the Navy. The conferees will attempt to resolve airspace requirements, establish a command or service priority listing, and discuss routing of tactical traffic together with navigational aids required along these routes. We believe that mutually acceptable procedures must be developed whereby all commands can accomplish their assigned mission.

3. Reference is made to paragraph three of basic letter. All information available to this headquarters has been disseminated to the defense forces. The route and navigational aid requirements applicable to each major command and the Navy have been made available to each air division (defense) commander. All air divisions (defense) will be able to correlate flight plan data (which includes an identifying three letter prefix) with the EWP route and navigational aid requirements of major commands and Navy.

4. We do not believe that the volume of tactical air traffic through an ADIZ during a military emergency will be so intensive that it will saturate the capability of the defense system. As pointed out in our recent indorsement to your letter on Navy (Pacific Fleet) requirements, we have requested Headquarters USAF to consider giving air division (defense) commanders the authority to divert tactical air traffic around threatened or battle areas. This capability, if approved, will further assist us in accomplishing the defense mission.

BY ORDER OF THE COMMANDER:

/s/t/ JAMES S. PURDUM
Major, USAF
Asst Command Adj.

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COPY

FILE NUMBER 263

28 May 1954

ADOOT-B1

SUBJECT: (SECRET) Request for Authority to Divert Tactical Air Traffic During Military Emergency

TO: Director of Operations
Headquarters USAF
Washington 25, D. C.

1. The "Plan for the Security Control of Air Traffic during a Military Emergency," 15 July 1952, is not applicable to military aircraft engaged in tactical operations (reference paragraph 5c); consequently, our air division (defense) commanders are not presently authorized to divert tactical air traffic around battle or threatened areas.

2. If tactical aircraft were to enter a battle or threatened area, the air defense problem would become more complex and air defense capability seriously impaired further, the safety of the aircraft and aircrews would become highly questionable.

3. This command is making every attempt to route tactical aircraft around critical target and densely populated areas. The authorization granted by your headquarters, permitting the air defense forces to assist major commands in preparing mutually acceptable routes, should reduce diversion requirements to a minimum and at the same time reduce the number of navigational aids required.

4. It is requested that the air division (defense) commanders be granted the authority to divert the tactical flights in those instances where their proposed route will encounter a threatened or battle area. In addition, this diversion authority would permit the turning off of navigational aids in the threatened area. In our opinion diversion of tactical traffic would be mutually advantageous to this command and to those commands participating.

FOR THE COMMANDER:

/s/t/ JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

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CONFIDENTIAL

104

HEADQUARTERS
CENTRAL AIR DEFENSE FORCE
GRANDVIEW AIR FORCE BASE
GRANDVIEW, MISSOURI

4 OCT 1954

POSR-R

SUBJECT: Security Control Positions (Uncl)

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

1. Reference is made to a letter from the 35th Air Division, subject as above, 27 August 1953, and your 2d Indorsement thereto.

2. Approval was granted to establish security control positions at Jacksonville, New Orleans and Washington ARTCCs provided adequate communications were available and agreements for participation of concerned augmentation radars were adequate.

3. It is requested that security control positions be established at Jacksonville ARTCC to provide air movements information on a twenty-four hour basis.

4. Initially the Jacksonville ARTCC will provide air movements information to the Ninth Air Force Tactical radar network through the 507th Tactical Control Group radar located at Myrtle Beach, South Carolina.

5. The Ninth Air Force - CADF Joint Agreement is considered adequate for purposes of assisting in identification of air movements. Units of the 507th Tactical Control Group operate on a twenty-four hour basis and have agreed to accept responsibilities concerning all phases of air defense operations.

6. A request for an air movements (AM) circuit from the TAC ADCC at Myrtle Beach to the Jacksonville ARTCC has been submitted by previous correspondence. Entrance facilities and cable pairs are available for this circuit. Operational date for this circuit was requested for 15 October 1954. It is recommended that staffing of positions required for security control at Jacksonville ARTCC coincide as closely as possible with the operational date of the AM circuit.

FOR THE COMMANDER:

MILTON A. HENDERSON
Capt. USAF
Asst Adjutant

cc: Comdr, 35th ADiv
Comdr, 507th Tac
Con Gp

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Hq Sq Sec
FCDA
CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSO
5-3
Prepared by Capt LaSalle/adg
Tel ne 2722-2814

6 November 1954

CONFIDENTIAL

FOSR-R Subj: (Unald) Security Control Positions

ADOOT-Hl (4 Oct 54) 1st Ind 8 NOV 1954

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Commander, Central Air Defense Force, Grandview AFB, Grandview, Missouri

1. Reference is made to paragraph 2 of basic letter. The establishment of security control positions at Jacksonville ARTCC is being held in abeyance pending an evaluation of the AMIS budget authorization relative to 1st Quarter AMIS obligations and requirements for the balance of Fiscal Year 1955. You will be advised of the results of the evaluation. If funds are available to reimburse CAA, a security controller position will be established.

2. Reference is made to paragraph 6 of basic letter. Action on the request for an air movements circuit from the TAC ADCC at Myrtle Beach to the Jacksonville ARTCC is being withheld pending the evaluation of our budget authorization as described in paragraph 1 above.

BY ORDER OF THE COMMANDER:

mgt 5

MEMORANDUM FOR THE RECORD: Not necessary

JAMES
Major, USAF
Asst Command Adj

COMEBACK COPY

_____ Not requested, not furnished
✓ Furnished 8 NOV 1954 _____
(Date) (Initials)

A-76491/037
p57

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CONFIDENTIAL

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified _____ in accordance with Par 23 b, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

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Hq CADF FOSR-E Subject: Security Control Positions (Unc)

FOSR-E (4 Oct 54) 2nd Ind 27 NOV 1954

HEADQUARTERS CENTRAL AIR DEFENSE FORCE, Ernestview Air Force Base, Ernestview, Wisconsin

TO: Commander, Air Defense Command, 10th Air Force Base, Colorado Springs, Colorado

1. If ADIZ budgetary allowances are inadequate to establish the required security control positions at Jacksonville ADSEC, it is requested that:

a. Ten of the five security control positions authorized at Fort Worth ADSEC be transferred to Jacksonville ADSEC.

b. Three of the five security control positions authorized at San Antonio ADSEC be transferred to Jacksonville ADSEC.

2. This action is recommended for the following reasons:

a. The primary function of security control in the [illegible] Division is training ADC, in which capability the [illegible] exists.

b. Jacksonville, Fort Worth and San Antonio ADSECs are each about equal [illegible] and the basic ADSEC SOI is adequate [illegible] in the identification system associated with the [illegible] positions.

c. The priority for an identification capability within the Jacksonville ADSEC area is higher than that of the Fort Worth and San Antonio ADSEC areas. This requirement is based upon the amount of radar coverage within the Jacksonville control area and the necessity for training radar supervisors [illegible] in identification.

[illegible]

[illegible]

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C

Colorado Springs, Colo.

Peterson Field, Greenview Air Force Base,

to paragraph 3 of Ltr 2nd AFAS budget
to establish five security control positions

Investigation, advises that the security control spaces will
Directive 5 January 1955 and filled as soon thereafter as possible.

that present AMIS budget
adequate to establish these positions.
prepared to transfer personnel from Ft.
Antonio ARTC Centers will result
since these slots would need be
the 1955 Slot Plan is implemented.
permanent if arrow personnel from strength
temporary loan a last resort measure
immediate assignment of Jackrabbit

1st ADC
1 Oct 54
A-28897/066

CONFIDENTIAL

This document is classified in accordance with AFR 205-1, 26 Jul 53, or for the reason (s) stated.

L W Le Belle
SIGNATURE

AF-ADC-COLO. SPRINGS, COLO

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HEADQUARTERS
CENTRAL AIR DEFENSE FORCE
GRANDVIEW AIR FORCE BASE
GRANDVIEW, MISSOURI

105

3 DEC 1954

PO&R-R

SUBJECT: (Unclassified) Requirement for AMIS Service

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

251

1. A requirement exists for establishing AMIS service at the Winnipeg ARTCC at the earliest practical date.

2. This requirement is based upon the following facts:

a. The present method of obtaining air movements information through multiple relays has proven completely inefficient. Security controllers at Winnipeg ARTCC now provide data to the Minneapolis AMIS which is relayed to appropriate ADCC's. The time element involved results in the greater percentage of initial tracks requiring identification being classified as unknown.

b. The amount of air traffic within the Winnipeg CADIZ requires special handling which is not possible through security control type service. The large number of tracks under surveillance of radar within the Winnipeg CADIZ, requires direct dissemination of air movements information to the identification agency as soon as possible. At the present time, there is no capability to provide position reports and/or changes in flight plans to appropriate ADCC's.

c. The large geographical area under control of the Winnipeg CADIZ, makes it next to impossible for dissemination to be accomplished through the Minneapolis AMIS efficiently. Again, the time element becomes critical, since the Winnipeg ARTCC control area overlaps the complete control areas of the Great Falls, Minneapolis, and Traverse City ARTCC's.

V-520-1

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Hq CADF, POAR-R, Subj: (Uncl) Requirement for AMIS Service

d. The most critical area for identification by P-26, P-27, P-28, P-29, C-17 and C-16, lies within their surveillance coverage of the Winnipeg CADIZ.

e. Proper use of fighter-interceptors, presently stationed or programmed for bases near the Canadian border, requires early identification action of the track while still in Canadian territory. A quick and accurate identification system must be implemented within the Winnipeg CADIZ to insure that these fighter-interceptors are not always committed to tail-chase intercept action.

f. Programmed Fourth Phase radars west of C-17, will require dissemination of air movements information to them by the Winnipeg AMIS.

3. A conference with DOT officials associated with the Winnipeg ARTCC was held at Beausejour, Manitoba on 18 - 19 November 1954. Arrangements were made for passing flight plans direct to C-17, which would relay those applicable to C-16. DOT officials stated that in the past they have been unable to pass flight plans, as desired, to include position reports. DOT officials also estimated that an increase of five (5) controller positions, in addition to the five (5) now authorized, would be required to provide AMIS service.

4. It is requested that AMIS service from the Winnipeg ARTCC be provided:

a. P-26, P-27, P-28, P-29, C-17, and C-16.

5. Upon approval of this request, air movement (AM) circuits will be requested to the AC&W units listed in paragraph 4 above.

FOR THE COMMANDER:

CLIFFORD H. REES
Brigadier General, USAF
Deputy for Operations

Info Cy:
Comdr, 29th ADiv
Comdr, 31st ADiv

V-520-2

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Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No
Prepared by Capt LW LaSalle/kt
Tele w2722-2814
Date 20 Dec 54
V-520-3X

ADC HQ Form 11
5 Feb 54 Revised

SECRET

105

1st Ind

(3 Dec 1954)

8 DEC 1954

Commander, Central Air Defense Force, Grandview Air Force Base, Grandview, Mo.

1. Reference is made to paragraph 1 of the basic letter. Previous discussions have been conducted between representatives of this headquarters and NEAF ADC relative to the establishment of air movement communication sections at Canadian AIFC Centers. At the present time the NEAF ADC is conducting a traffic survey in an attempt to justify an operational requirement for AMEB service in the various AIFC Centers. When the requirement is justified, NEF estimates a personnel training period from 12 to 18 months will be necessary before the service will be satisfactory.

2. Reference is made to paragraph 4 of the basic letter. The requirement for AMEB service at the Winnipeg AIFC Center has been referred to NEAF ADC for comments. Comments received will be forwarded to your headquarters for planning purposes.

BY ORDER OF THE COMMANDER:

JAMES S. PURDUM
Major, USAF
Asst Command Adj

COMSTOCK Corp
Not received, not furnished
Furnished 3/12/62 JCJ

A-2877/6666

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This correspondence is classified _____ in accordance with Par 23b, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____
SIGNATURE

AF-ADC-COLO. SPRINGS, COLO

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Will be Confirmed in 3rd Publication Form Under par 3a, ADCSM

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Capt LaSarre/bc

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29 DEC 54

ADOOR-M1

SUBJECT: (Unclassified) Requirement for AMIS Service

TO: Air Officer Commanding
Air Defense Command, RCAF Station
St. Hubert, Province of Quebec
Canada

1. A requirement exists for establishing AMIS service at the Winnipeg ARTCC at the earliest practical date.

2. This requirement is based upon the following facts:

a. The present method of obtaining air movements information through multiple relays has proven completely inefficient. Security controllers at Winnipeg ARTCC now provide data to the Minneapolis AMIS which is relayed to appropriate ADCCs. The time element involved results in the greater percentage of initial tracks being classified as unknown.

b. The amount of air traffic within the Winnipeg CADIZ requires special handling which is not possible through security control type service. The large number of tracks under surveillance of radar within the Winnipeg CADIZ requires direct dissemination of air movements information to the identification agency as soon as possible. At the present time, there is no capability to provide position reports and/or changes in flight plans to appropriate ADCCs.

c. The large geographical area under control of the Winnipeg CADIZ makes it next to impossible for dissemination to be accomplished through the Minneapolis AMIS efficiently. Again, the time element becomes critical, since the Winnipeg ARTCC control area overlaps the complete control areas of the Great Falls, Minneapolis, and Traverse City ARTCCs.

d. The most critical area for identification by F-26, F-27, F-28, F-29, C-17, and C-16 lies within their surveillance coverage of the Winnipeg CADIZ.

E-5723

e. Proper use of fighter-interceptors, presently stationed or programmed for bases near the Canadian border, requires early identification action of the track while still in Canadian territory.

MEMO FOR RECORD NOT REQ NEC

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

FILE NUMBER 251
SW

16 DEC 1954

Mr. J. H. Tippets, Director
Office Federal Airways
Civil Aeronautics Administration
Department of Commerce
Washington 25, D. C.

Dear Mr. Tippets:

Our supplemental radar programs indicate that M and SM radars associated with the 1955 Identification Plan will be operational by December 1955. The completion of installation of the sites establishes a requirement for AMIS operation at the following ARTC Centers:

1. Kansas City
2. St. Louis
3. Memphis
4. Atlanta
5. Jacksonville

Air movement circuits required for this service have been programmed and should be operational by December 1955.

Request you take the necessary action to implement AMIS service on a 24 hour basis at the above ARTC Centers during 2nd Quarter Fiscal Year 1956.

Sincerely,

/s/t/ JOHN C. MEYER
Colonel, USAF
Director, Operations and Training

V-544-1x

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[O&R-R]

SUBJECT: Requirement for AMIS Service

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

1. In considering the identification system associated with the 155 double perimeter concept of operation a requirement exists for AIS operation at the following ARTCCs:

a. Kansas City
b. St. Louis
c. Memphis
d. Jacksonville
e. Atlanta

2. Air movement circuits required for this service have been programmed and should be operational by December, 1955. Present programs indicate that M and SM radars associated with the 1955 double perimeter should be operational by December, 1955.

3. It is requested that AMIS service be implemented at the above locations during 2nd Quarter Fiscal Year 1956. It is further requested that necessary funds be allocated for AMIS service at these locations on a twenty-four hour basis.

FOR THE COMMANDER:

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Will be Continued in 3rd Publication Form Under par 3c, ADCSM

S-3 _____

Prepared by Capt LaSalle/bjd

Telephone 2722

Date 27 Dec 54

Reference to Penfield No. E33433

ADC HQ [illegible] 11

HQ CADF, POAR-R, SUBJECT: Requirement for AMIS Service

ADOOT-B (29 Nov 54) 1st Ind

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

TO: Commander, Central Air Defense Force, Grandview Air Force Base, Grandview, Missouri

Reference is made to paragraph 3 of the basic letter. Inclosed is a copy of letter this headquarters, same subject, 16 December 1954, to CAA, Washington, which requests that AMIS service be implemented on a twenty-four hour basis during second quarter Fiscal Year 1956 at the ARTC Centers listed in paragraph 1.a. through 1.e. of your basic letter.

BY ORDER OF THE COMMANDER:

1 Incl
Cy ltr Hq ADC
to CAA, Wash.

30/12/54

M/R: Not nec. Cy of Incl not nec for AG file.

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HEADQUARTERS
CENTRAL AIR DEFENSE FORCE
GRANDVIEW AIR FORCE BASE
GRANDVIEW, MISSOURI

PO&R-R

SUBJECT: Requirement for AMIS Service

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

1. In considering the identification system associated with the 1955 double perimeter concept of operation a requirement exists for AMIS operation at the following ARTCCs:

a. Kansas City
b. St. Louis
c. Memphis
d. Jacksonville
e. Atlanta

2. Air movement circuits required for this service have been programmed and should be operational by December, 1955. Present programs indicate that M and SM radars associated with the 1955 double perimeter should be operational by December, 1955.

3. It is requested that AMIS service be implemented at the above locations during 2nd Quarter Fiscal Year 1956. It is further requested that necessary funds be allocated for AMIS service at these locations on a twenty-four hour basis.

FOR THE COMMANDER:

/s/t/ MILTON A. HENDERSON
Capt, USAF
Asst Adjutant

33433

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7AS

30 Dec 54

General Nathan F. Twining
Chief of Staff, USAF
Headquarters USAF
Washington 25, D. C.

Dear Nate:

For some time now I have been concerned with the modus operandi of the Joint CAA-USAF Air Defense Planning Board. As you know, this Board is responsible for coordinating and facilitating air defense activities of mutual concern to the CAA and USAF and monitoring air defense activities of joint interests. To date our only relationship with this Board is to provide technical advisors to the USAF representatives.

A new proposed charter was recently drafted by this Board, changing the title to "Board for Security Control of Air Traffic in Air Defense" (SCAT Board). The functions of the new board are even more closely tied to air defense than heretofore. The proposed charter includes additional membership for the U. S. Navy and Civil Aeronautics Board leaving ADC's relationship unchanged.

As it now stands, CONAD, the primary agency responsible for continental air defense, is excluded from membership on a Board which is concerned with nothing else. Consequently, I recommend the adoption of a charter which provides for:

(1) Board membership limited to CONAD and CAA representatives (full Navy representation secured through CONAD staff and Commander Naval Forces, CONAD).

(2) Chairmanship by CONAD.

(3) Meetings at CONAD on call.

(4) Liaison representation or observers from USAF, CAB, or other interested agencies, when agenda items touch on areas of their concern.

Prepared by Capt J. J. LeSage/mfg
Telephone 2722-2814
Date 21 December 1954

MEMORANDUM FOR THE RECORD: The Joint Board sent Gen Twining a draft of a proposed charter which, if adopted, would abolish the Joint CAA-USAF Air Def Planning Board and at the same activate the SCAT Board. The charter was revised in accordance w/ USAF's thoughts and returned to the Joint Board. The ltr of trans returning the charter to the Board was signed by Gen Twining. Consequently we are writing [illegible]

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I recommend adoption of the proposed inclosed charter which closely follows the charter as presented by the Joint CAA-USAF Air Defense Planning Board with the exception of the recommended changes outlined above.

1 Incl
Proposed Draft
Charter

B. W. CHIDLAW
General, USAF
Commander-in-Chief

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[redacted]

[redacted]

[redacted]

I. [redacted]

The Chief of Staff, United States Air Force, and the Administrator of Civil Aeronautics have mutually agreed to the establishment of an inter-agency group to aid in the development, coordination, and refinement of programs relating to the security control of air traffic in the air defense of the United States as a measure to assist each agency in the discharge of its responsibilities assigned by the Civil Aeronautics Act of 1938, as amended, (primarily Public Law 758 of the 81st Congress) and the National Security Act of 1947, as amended.

II. [redacted]

A. There is hereby established the Board for Security Control of Air Traffic in Air Defense, hereinafter called the SCAT Board.

B. The SCAT Board shall consist of a Chairman and Executive Secretary, and in addition, three members and three alternate members each from the Continental Air Defense Command and the Civil Aeronautics Administration.

[redacted]

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c. Each member and alternate member shall be appointed by and serve at the pleasure of the agency he represents.

d. Each agency may designate one or more permanent advisors to the NSC Board and such other temporary advisors as may be appropriate.

e. When appropriate, the NSC Board may also invite representatives from other governmental departments and agencies.

III. [illegible]

A. The NSC Board shall, as pertains to Security Control of Air Traffic:

1. Formulate recommendations with respect to broad basic policies, plans, and programs which will assist the agencies represented to prepare and execute detailed plans and procedures which are required in the interest of national security.

2. Facilitate planning, coordination, and implementation of plans and programs which involve both the civil and military agencies represented.

3. Formulate appropriate recommendations for the expeditious implementation of such plans and programs.

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4. Provide for preliminary internal coordination between the Department of Defense and other governmental agencies as required by the Civil Aeronautics Act of 1938, as amended, primarily Public Law 758 of the 81st Congress.

5. Provide for necessary coordination with non-member governmental agencies and civil organizations.

6. In the performance of its functions, give primary consideration to the use and exploitation of available equipments and proven techniques without excluding the recognition of research which may provide solutions within the foreseeable future.

B. The SSAF Board shall perform such other related duties as may be mutually agreeable to the agencies represented.

C. The SSAF Board shall prepare an annual report of its activities for the Administrator, CAA and Headquarters USAF, the Executive Agency for GCNAS.

-3-

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IV. [redacted]

A. The Chairman shall be appointed by the Commander, Continental Air Defense Command.

B. The Executive Secretary shall be appointed by the Administrator of Civil Aeronautics.

C. The Chairman may designate one of the other members as Vice-Chairman, who shall, in the absence of the Chairman, act for and exercise the powers of the Chairman.

V. [redacted]

A. The SAIF Board shall meet at the call of the Chairman or at such time or times as may be fixed by the Board.

B. Only the Chairman and members or, in their absence, their designated alternates shall possess voting power. The Executive Secretary shall not possess voting power. The presence of one member or one alternate from each member agency shall constitute a quorum.

C. Recommendations which are concurred in by a majority of the members shall be forwarded to appropriate agencies for consideration and action. A minority report, if submitted, shall accompany the recommendations.

D. All necessary procedural rules shall be prescribed by the SAIF Board.

E. The cost of travel by members and staff shall be borne by the agency from which the individual is appointed.

VI. [redacted]

A. The SAIF Board is empowered to establish an Industry Advisory Committee consisting of representatives from industry organizations.

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b. The ANE Board shall provide the necessary procedural rules to be utilized in guiding the establishment of the Industry Advisory Committee.

c. The activities of the Industry Advisory Committee shall be limited by any restrictions imposed on activities of Advisory Committees by the Department of Defense or the Civil Aeronautics Administration.

VII. SECURITY CLEARANCES

A. Members of the ANE Board, permanent advisors, and members of the Industry Advisory Committee must possess TOP SECRET security clearances.

b. The appropriate security clearance will be required of temporary advisors and liaison representatives depending upon the classification of the information to be discussed during their participation.

VIII. COORDINATION

The ANE Board is authorized to communicate directly with member agencies, other governmental agencies, and civil organizations concerning matters within the ANE Board's jurisdiction.

IX. [redacted]

The Joint Chiefs of Staff Military Planning Board established by the Administrator of Civil Aeronautics and the Chief of Staff, United States Air Force, under date of June 24, 1948, is hereby dissolved.

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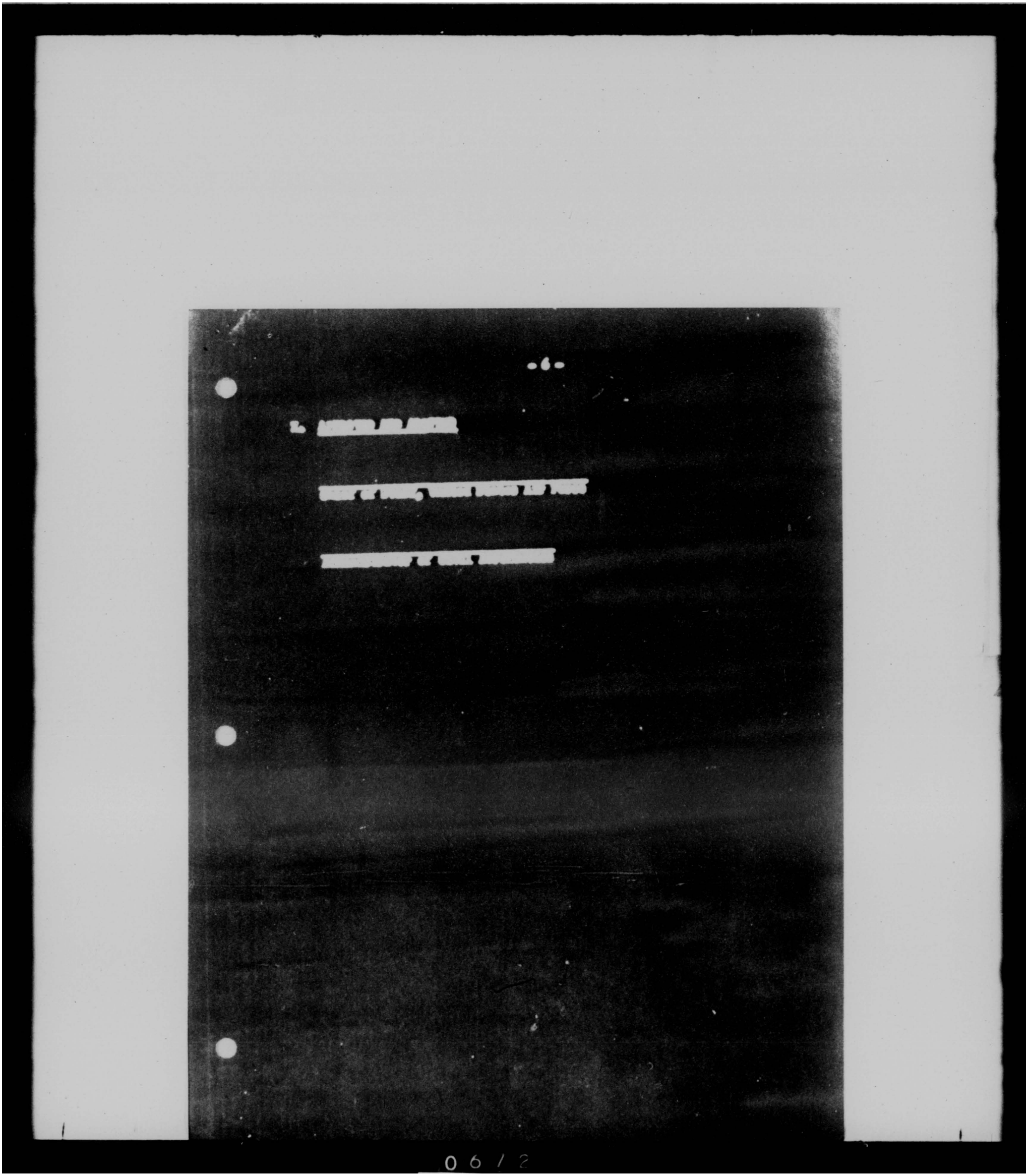

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COPY OF INCOMING CLASSIFIED MESSAGE

FILE NUMBER 260

AG-86
A-37-28
PRIC PRIORITY
DTG 191430Z JAN 56
FM ADC
TO COMS USAF/AFOTC AFDRC/
INFO ADC ATTN AFD C
EADF EADC1-FX
AMC WCMTCS
ARDC RDDS-4 OAR
RADC MRMCI RAD
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PAGE TWO A-37-28

EADF CMM AFC CMM ARD
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TECHNICAL MATTERS
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FIVE PER CENT FOR
TEST PROGRAM
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19/2230Z JAN JEGL

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ADC Hq-O-AG-Form 22

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22 DEC 1954

AACCT-CW

SUBJECT: (Unclassified) IFF Equipment for ANG Fighter Squadrons

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

1. A recent survey of ANG Fighter Squadrons participating in the Air Alert Plan and/or having an M-Day assignment to EADF indicates that only 57% of the assigned fighter or T-33 aircraft are equipped with Mark X IFF. Information available to the ANG Fighter Squadrons and this command does not indicate that IFF equipment is programmed for installation in those ANG fighters and T-33s not presently equipped or whether aircraft programmed for ANG Fighter Squadrons will be equipped with IFF.

2. Request a requirement be established or that other appropriate action be taken to equip all ANG fighter and T-33 aircraft with suitable IFF.

3. The following justification for IFF equipment is submitted:

a. Provides a method of positive interceptor control which is not otherwise possible due to poor blip scan ratio for jet type interceptors.

b. Use of different modes offers a means of recognising flight leaders, elements, or individual aircraft after interceptors have engaged targets or have become separated.

c. Provides immediate indication of an aircraft in distress.

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AV X

CGMDR EADF STEWART AFB NY

CGMDR CADF GR NEWVIEW AFB MO

CGMDR WADF HAMILTON AFB CALIF

AFOAC 53489 CONFIDENTIAL

(CONFIDENTIAL) ADOOT-C 3039. For AFOAC-S/A. This msg in 2 parts.

Part I. UNCLASDMSG AFOAC 53489 dtd 10 Nov 54. The following is a priority list for AN/GPA-16 installations for stas shedd to be in operation by 30 June 1955. This priority is based on a requirement for idsnt in critical tgt areas.

SITE NO.	SQUADRON	LOCATION
P-1	635th	McChord AFB, Wash.
P-40	637th	Othello, Wash.
P-44	758th	Neah Bay, Wash.
P-46	757th	Blaine, Wash.
P-38	666th	Mill Valley, Calif.
P-58	668th	Mather AFB, Calif.
P-39	670th	San Clemente Island, Calif.
P-15	669th	Santa Rosa Island, Calif.

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Lt Col Price/lrb

ADOOT-C 2601-10

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(CONFIDENTIAL) ADCOM-C_____.

SITE NO.	SQUADRON	LOCATION
P-99	750th	Boron, Calif.
M-94	687th	~~Kirtland AFB, N. Mexico~~ West Mesa, N. Mexico
P-24	681st	Cut Bank, Mont.
P-74	774th	Madera, Calif.
P-51	768th	Moriarity, Mex.
P-69	756th	Finland, Minn.
P-78	745th	Duncanville, Tex.
P-71	789th	Omaha, Nebr.
P-37	776th	Pt. Arena, Calif.
P-17	739th	Wadena, Minn.
P-57	759th	Maselle, Wash.
P-29	785th	Finley, N. Dak.
P-42	663rd	Lake City, Tenn.
P-72	738th	Olathe, Kans.
P-25	778th	Havre, Mont.
P-27	780th	Fortuna, N. Dak.
P-76	751st	Mt. Laguna, Calif.
P-81	788th	Waverly, Iowa.
P-2	775th	Cambria, Calif.
P-28	786th	Minot, N. Dak.
P-11	680th	Isak, Mont.
P-33	777th	Klamath, Calif
P-32	636th	Condon, Ore.

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(CONFIDENTIAL) ABOOR-6_____. (Cont'd)

SITE NO.	SCHARBOK	LOCATION
P-6	767th	Tierra Amarilla, N. Mex.
P-16	767th	Chandler, Minn.
P-65	771st	Rapid City, Ill.
P-60	760th	Colville, Wash.
P-6	638th	Curlew, Wash.
P-70	770th	Belleville, Ill.
P-64	770th	Kirksville, Mo.
P-77	776th	Bartlesville, Okla.
P-66	777th	Portland, Mo.
P-75	741st	Lackland AFB, Tex.
P-67	773rd	Hutchison, Kans.
P-79	747th	Ellington AFB, Tex.
P-92	746th	Vance AFB, Okla.
P-7	769th	Continental Divide, N. Mex.
P-12	761st	E. Bend, Ore.
P-26	779th	[illegible]ain, Mont.
M-129	660th	[illegible]Hill AFB, Fla.
M-90	666th	[illegible]alker AFB, N. Mex.
M-121	649th	Bedford, Va.
M-98	902nd	Miles City, Mont.
M-125	653rd	Alexandria AFB, La.
M-95	659th	Las Cruces, N. Mex.
M-97	740th	Ellsworth AFB, S. D.

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Mgt Anlys
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Hq Sq Sec
FCDA
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(CONFIDENTIAL) ADCOM-2_____. (Cont'd)

SITE NO.	SQUADRON	LOCATION
M-126	697th	Moore Mtn, La.
M-92	703rd	Texarkana, Ark.
M-113	779th	Charleston AFB, S. C.
M-100	697th	Mt. Ida, Ore.
M-112	703rd	Hunter AFB, Ga.
M-117	639th	Roanoke Rapids, N. Car.
M-111	869th	Robbins AFB, Ga.
M-122	639th	Dallas Center, Iowa
M-96	639th	Almaden, Calif.
M-151	823rd	Saiger Mtn, Wash.
M-159	661st	Alken, S. Car.
M-143	729th	Walnut Ridge, Ark.

Part II. For WADF and OADF. Above priorities do not incl AN/GPA-26's being installed for OSF purposes within WADF. Anticipated that these sets will remain as final installation at completion of OSF.

M/R: Not nec.

MESSAGE TRANSMITTED WITH FOLLOWING DATE TIME GROUP

Will be Confirmed in Std Publication Form [illegible] Under par 3a, ADCOM 5-3

Prepared by Lt Col Price/irb 19 2015+ 8-1-19

Telep -2601

Da 7 Dec 54

V-761-4

CONFIDENTIAL

ADC HQ Form 11
5 Feb 54 Revised

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AG006
A-14-11

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ACTION COPY

32042 ACTION: C+E
INFO: C, D, IG, DO
Susp: 16 Nov 54

WR JEDEN
DE JEPHQ 168C
R 102208Z
FM HEDUSAF WASHDC
TO COMAIRDEFCOM ENT AFB COLO
/C O N F I D E N T A L/ FROM AFOAC 53489 THIS MSG IN TWO PARTS. CONCERNS ALOC OF AN/GPA-16 SIF EQP FOR YOUR COMD. PART I. AN/GPA-16 SIF EQP WILL BE READY FOR DLVR AS A COMPL STA PACKAGE WITHIN THE NEXT THIRTY PAREN 30 PAREN DAYS. REQ THIS HQ CMM ATTN CLN AFOAC-E/A CMM BE PROV WITH A PRIORITY OF INSTALLATION LIST TO INCL THOSE SITES SKED TO BE IN OPERATION BY 30 JUN 1955. THIS INFO IS NEC IN ORDER TO PROV CONTRACTOR WITH INFO RELATIVE TO INTERCONNECT CABLES RQRS FOR EACH TYPE OF BASIC RADAR. PART II. RQRS WILL NOT INCL AN/GPA-16'S BEING INSTALLED FOR OST PURPOSES AT EADF. ANTICIPATED THAT THESE UNITS WILL REMAIN AS FINAL INSTALLATION AT COMPLETION OF OST.
10/ 222ØZ NOV JEPHQ

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TO: AG - AG-C
FILE: _____
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SIGNATURE: _____

AGO Reg-0-AG-Form 22
9 April 53

This document consists of ____ pages.
This is copy No. ____ of ____ copies.

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HEADQUARTERS
AIR DEFENSE COMMAND

for an

To: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. The beacon assist capability of the Mark X IFF system is being used within this command for the control of jet interceptors, due to the small radar echoing area of jet type aircraft. An operational deficiency exists in this technique, in that the Mark X IFF returns have too great an azimuthal dimension to permit accurate positioning of interceptors for lead collision attacks. In order to overcome this deficiency, the following qualitative operational requirement is submitted in accordance with AFR 57-3.

2. The AS-295/UP Mark X IFF antenna is currently being used on all search and control radars operated by this command. The characteristics of this antenna are such that it produces a beam width on the order of 4° to 4½°. Operational experience has indicated that a beam width of this magnitude is too great to accurately position interceptors for lead collision attacks. An antenna having a beam width on the order of 2°-2½° will satisfactorily overcome this deficiency if it will result in a reduction of azimuthal size of the displayed IFF return by approximately one-half.

3. Nomenclature: It is believed antenna AT-309/GPX (USAF Exhibit CMG-21A/6A) would satisfactorily meet this command's requirement.

4. Purpose: Subject antenna will be used on all search and control radars operated by this command to provide a higher degree of azimuth discrimination for Mark X IFF operations.

5. Performance: Antenna must provide a maximum beam width of 2.5° with side lobe suppression on the order of 25 db. The azimuthal size of the displayed IFF return must be reduced to approximately half its present size to permit effective control of interceptors.

6. Design and Special Features: Antenna must be electrically and mechanically interchangeable with antenna AS-295/UP. Antenna must be usable with the following radars: AN/CPS-6B, AN/FPS-3, AN/MPS-11,

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Hq ADC ADOCE-E, Subj: (Uncl) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna (Contd)

AN/FPS-8, AN/FPS-10, AN/FPS-7, and the AN/FPS-7 is procured by the Air Force. Antenna, when installed, must be capable of operating under currently installed and proposed systems.

7. Proposed Basis of Issue: Antennas will be required on a one-for-one basis to replace the [illegible] presently in use and programmed. Total command requirements will be approximately 260 plus necessary spares.

8. Method of Meeting the Requirement: It is believed that the use of the AT-309/GPX or similar antenna will reduce the displayed IFF return by approximately one-half the size of the current display; if this is true, recommend the procurement of sufficient AT-309/GPX or similar antennas to meet the command requirements.

FOR THE COMMANDER:

KENNETH P. [illegible]
Brigadier General, USAF
DCS/Operations

Info cys:
Comdr, AMC
Comdr, ARDC

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Basic letter Hq ADC, File No. ADOCE-E, dtd 30 Jul 54, subj: (Uncl) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna

12 OCT 1954

AFDRQ-AD/C 1st Ind

Department of the Air Force, Hq USAF, Washington 25, D. C.

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

The Air Force has procured eleven antenna AT-309/GPX as part of the AN/GPX-19, Mark X IFF interconnecting equipment for AN/CPS-1 - AN/MPS-5 radars. Equipment for operational suitability test at Air Proving Ground Command is expected to be available about January 1955. It is anticipated that test data on the improved traffic control capability of the larger antenna compared to the AS-295/UP will be available about July 1955. Your headquarters will be advised of the results of the Air Proving Ground Command tests.

BY ORDER OF THE CHIEF OF STAFF:

Gilbert L. Meyers

[illegible]
Deputy Chief of Staff, Development

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Hq ADC ADOCE-E, Subj: (Uncl) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna

ADOCE-E (30 Jul 54) 2d Ind

HQ AIR DEFENSE COMMAND, Ent AFB, Colorado Springs, Colorado

TO: Director of Requirements, Headquarters USAF, Washington 25, D. C.

1. Your attention is invited to the following paragraph from a paper prepared by Rome Air Development Center entitled, "Mark X IFF and Extensions," dated 19 October 1953.

> "Antenna AT-309/GPX, which is mechanically and electrically interchangeable with the AS-295, was originally intended to be a 40 ft. antenna for use on large radar sets. One model, a 37 ft. version, was built by Hughes Aircraft in 1950. This antenna has been thoroughly tested and it demonstrates the characteristics which RADC personnel have long claimed were needed for optimum utility of the Mark X system, such as a 2° beam width and side lobe suppression between 26 and 32 db. Specification requirements have since been reduced to 30 ft., due to mechanical conflicts on installations under radomes. However, Hq USAF does not agree that there is a need for an improved antenna and they have refused to sanction its production. Their argument is based, in part, on the fact that the operating Commands have not indicated any requirement for such an antenna."

2. Further to my paragraph 8 of the basic letter, inasmuch as the AT-309/GPX is apparently a lengthened version of the AS-295, the limited technical information available to this headquarters indicates that it may be feasible to modify the existing AS-295 antenna by the addition of sections. It is suggested that the feasibility of such a modification be investigated in the interest of time-saving, simplicity, and economy.

3. The course of action, as outlined by your 1st Ind, can reasonably be expected to result in this antenna being made available to operational units during the latter part of calendar 1956 or, possibly, early 1957. The basic letter has established the operational requirement of this command for antenna AT-309/GPX in accordance with AFR 57-3. With further reference to the paragraph quoted in paragraph 1 above, it is recommended that action to meet this requirement not be delayed, pending the availability of OST data.

FOR THE COMMANDER:

Info cy:
Dir of Comm, Hq USAF

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Basic ltr Hq ADC, 30 Jul 54, subj: (Uncl) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna

AFDRQ-AD/C 3d Ind

DEPARTMENT OF THE AIR FORCE, HQ USAF, Washington 25, D. C.

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

1. The parameters for a replacement Mark X IFF antenna cited in the basic letter establish the criteria for development and testing of an antenna such as the AT-309/GPX. Production of AT-309 and replacement of the AS-295/UP antennas in your command will be deferred until the operational suitability test of AT-309 demonstrates its capacity to meet your stated requirement or proves to have reasonable improvement over the performance of AS-295/UP for control purposes.

2. Action has been initiated to have the Air Research and Development Command determine the technical feasibility of converting AS-295 antennas into AT-309/GPX equipment.

3. Limited production models of the AT-309/GPX antenna are being made available to Rome Air Development Center, Cambridge Research Center and Air Proving Ground Command for testing and evaluation of this equipment. One (1) additional AT-309/GPX antenna is available to your command upon request. Evaluation studies of the antenna by your command would provide valuable supplementary information to the APGC test report.

BY ORDER OF THE CHIEF OF STAFF:

Gilbert S. Meyers

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AJOCE-M (CO Jul 54)

FOR: Commander, [illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

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6. [illegible]

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Ho ADC, ADCCE-E, Subj: (Uncl) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna

ADCCE-E (30 Jul 54) 1st Ind

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

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

1. Reference paragraph 4, preceding Indorsement, this headquarters has selected site I-57 for the proposed testing and evaluation of the AT-309/APX antenna.

2. Recommend that equipment be shipped as follows:

AF-09-3C
McChord Air Force Base
Tacoma, Washington
Marked for:
799th ACW Squadron
Naselle Air Force Station
Naselle, Washington

3. Request that this headquarters be advised of date and method of shipment so that follow-up action can be taken.

4. Although this headquarters concurs with the installation, your attention is invited to the lack of complete instrumentation at I-57 and/or available to Western Air Defense Force, for a comprehensive testing and evaluation of this antenna. The data extracted from this test can only be basic and supplementary to that of Rome Air Development Center, Cambridge Research Center and Air Proving Ground Command.

FOR THE COMMANDER:

P E Haupt

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ADOCE-EW

SUBJECT: (Unclassified) Request for Shipment of AT-309/GPX Mark X IFF Antenna

TO: Director of Requirements
Headquarters USAF
ATTN: AFDRQ-AD/C
Washington 25, D. C.

1. Reference is made to our letter ADOCE-E, subject: "(Unclassified) Qualitative Operational Requirement for an Improved Mark X IFF IR Antenna," 30 July 1954, and your third Indorsement thereto.

2. This command desires the one AT-309/GPX antenna be made available for operational testing. Shipping instructions are as follows:

AF-69-SO
McChord Air Force Base
Tacoma, Washington
Marked for:
759th AC&W Squadron
Naselle Air Force Station
Naselle, Washington

3. Request this headquarters be advised of date and method of shipment.

FOR THE COMMANDER:

Will be Confirmed in Std Publication Form Under par 2e ADCSM

S-3 No

Prepared by Capt [illegible]/hb

Phone 6[illegible]

Date 9 Mar 55

Refers to Form(s) No 3-06-56

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This correspondence is classified _____ in accordance with Par _____, AFR 205-1, 15 Dec 53, or for the reason (s) stated.

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113

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

ADOPR 413.44

SUBJECT: (Uncl) Requirement for Automatic Directional Finding Equipment

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. The inadequacy of our present Identification Procedure to properly identify all detected aircraft and provide the Air Division Commander with a method of determining when his sector is under attack by the enemy, has caused identification to become one of the weakest links in our defense system.

2. In order that the Air Division Commander may be provided with a means whereby he can properly tag all detected aircraft as friend or foe and thereby with no hesitation, intelligently commit his forces in the defense of his sector an improved means of identification must be provided. A requirement therefore exists for automatic directional finding equipment which combined with secure operational procedures will provide the Air Division Commander with this means.

3. Description of proposed equipment is as follows:

a. Nomenclature: Automatic Direction Finding Equipment.

b. Purpose: To automatically obtain the instantaneous bearing of a communication signal being transmitted by an aircraft and to positively associate this bearing with the radar return as seen on the PPI scope. It is recommended that 1A priority be assigned this requirement.

c. Performance: This D/F equipment must be capable of continuous operation and adaptable to all search radars of this command such as AN/CPS 6B, AN/FPS 10, AN/FPS-3 and AN/TPS-1D. It also must be capable of automatically obtaining accurate bearings of communication signals and presenting this information on a PPI scope.

d. Design Features: The receiver-transmitter must be crystal controlled, capable of operating in the VHF (100 MC - 180 MC) band and in the UHF (225 MC - 400 MC) band and contain 10 preset channels each, with a total of 281 available channels in the VHF band and 1751 channels in the UHF band. The power output of the transmitter must not be less than 12 watts. Channel selection should be accomplished by means of a

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ADOPR 413.44, Subj: (Uncl) Requirement for Automatic Directional Finding Equipment (Cont'd)

telephone dial and switch, the number of these selection positions should not be less than three (3), and a lamp type indicator, provided at each position to indicate which of the ten (10) channels is being utilized. The accuracy of the D/F bearing should not be less than ±3°.

e. Special Features: None

f. Proposed Basis of Issue: It is proposed that all ADC radars along both coasts and certain ADC and Canadian radar stations which will, in the future, be assigned identification responsibilities for certain areas have installed one (1) complete set of D/F equipment. Total numbers of D/F equipment will be furnished at a later date. It is recommended that this equipment be made a part of the radar stations fixed equipment.

g. Methods of Meeting the Requirement: It is understood that a modification kit is being developed which will enable the AN/GRA-9 to be used with CPS-6B, AN/FPS-3 and AN/TPS-1D type radars. It is possible such equipment would meet the requirements of the command.

4. Recommend this requirement be approved and immediate action taken to accomplish it.

Jarred W. Crabb

Info cy to:
CG, RADC
CG, ARDC
CG, AMC

SECRET

SECURITY INFORMATION

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53-666

C2-33599

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B/Ltr Hq ADC, 30 Oct 1952, subj: (Uncl) Requirement for Automatic Directional Finding Equipment

AFDRQ-AD/C 1st Ind.

DEPARTMENT OF THE AIR FORCE, HQ USAF, WASHINGTON 25, D. C. 26 JUN 1953

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

1. The latest development status of the Direction Finding Group AN/GRA-9 and the associated indicator modification for the AN/CPS-6B and AN/FPS-3 radar sets is as follows:

a. Direction Finding Group AN/GRA-9 with an associate installation kit will satisfy all the requirements listed in the basic letter, except for the following limitations:

(1) AN/TPS-1D. This radar set operates from a 400 cycle power source whereas the D/F equipment operates from 60 cycle power. Furthermore, the form factor and utilization of this set as normally used is not readily conducive to adding additional functions. If, however, the AN/TPS-1D is used in a fixed installation with permanent shelters and 2 kw of commercial 60 cycle power available these objections would be minimized.

(2) Receiver - Transmitter. The D/F equipment does not normally encompass a communications transmitter, however, this could be incorporated into the installation kit without difficulty. If a separate transmitter is required, this D/F requirement should stipulate that a separate transmitter should be located with the D/F equipment rather than with the normal VHF and UHF communications transmitters for the radar station.

(3) VHF (100 mc - 180 mc). The equipment as presently designed only covers 100 to 156 mc with some degradation between 100 and 110 mc.

(4) Accuracy. Accuracies with this type of installation are not fully known but are expected to be better than $\pm 5^{\circ}$ for all frequencies over the band.

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SECURITY INFORMATION

The bearings at any single frequency vary approximately ±3°. Test data indicates this equipment will have a standard deviation of 1.9° when operated over the entire band without reorientation at each frequency.

b. Air Research and Development Command states that the Air Defense Command requirement can satisfactorily be met by equipment presently developed except for the application to the AN/TPS-1D. Additional information will be required on the application and type of installation of the AN/TPS-1D before an evaluation of the development requirement can be made.

c. Equipments under development which are applicable to the ADC requirement are: Direction Finder Group AN/GRA-9, Radio Set AN/GRC-30 and the AN/FPS-3 and AN/CPS-6B indicator modifications. The final integration of these equipments into the overall system will require further study and design. Engineering models of a modification to the PPI's are being developed by Bendix Radio Corporation. The model for the AN/FPS-3 is scheduled for delivery to June 19 3 and the model for the AN/CPS-6B is expected in September 1953.

d. Assuming that equipment presently under development will satisfy the subject requirement, procurement information for use on AN/FPS-3, AN/CPS-6B and AN/FPS-10 is expected to be available by January 1954. No date for procurement information for AN/TPS-1D can be estimated at this time. Production lead time is estimated to be about 18 months.

e. Rome Air Development Center has been instructed to take no further action to develop capabilities beyond those already designed into the AN/GRA-9. As soon as practicable, your headquarters will be invited to attend a demonstration of subject equipment. In addition to the demonstration of performance, a presentation will be made to indicate the estimated costs, time schedules, engineering effort, etc. to provide the subject equipment to the USAF.

2. Reference is made to par 2 of the basic letter. This headquarters does not concur in the general use of UHF-VHF/DF facilities for identification of all aircraft detected by the ADC radar stations. The IFF Mark X system has been adopted by the CAN-UK-US military services as the combined electronic identification system. It is considered that the basic IFF Mark X system with the SIF attached will

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provide the most reliable and secure IFF system that can be produced with existing electronic and cryptographic techniques. The SIF equipment will provide Air Defense Command with an improved means of identification.

3. The basic IFF Mark X system will provide accurate bearing and range information on all friendly aircraft equipped with the AN/APX-6. After the SIF is attached to the basic IFF Mark X equipment, "who are you" and "where are you" information will be available at the controllers PPI scope for a specific interrogated aircraft. The SIF equipment is expected to be in production by January 1954. This equipment will provide improved facilities at the radar station for locating, identifying and controlling the movement of individual military aircraft equipped with the AN/APX-25.

4. Request your headquarters re-examine the existing requirement for automatic direction finding equipment at the aircraft control and warning radar stations and determine if this need still exists.

BY COMMAND OF THE CHIEF OF STAFF:

James K. Gamble

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Hq ADC ADOPR 413.44 Subject: (Uncl) Requirement for Automatic Directional Finding Equipment

ADOPR 413.44 (30 Oct 52) 2d Ind

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

TO: Director of Requirements, Headquarters USAF, Washington 25, D. C.

1. Reference paragraph 1a(1), 1st Indorsement. We plan to use direction finding group AN/GRA-9 with approximately 8 AN/TPS-1D radar sets. These installations will have 2 KW 60 cycle commercial power available.

2. Reference paragraph 1a(2), 1st Indorsement. Each installation requires separate VHF/UHF transmitters. Ten pretuned VHF and UHF channels are required.

3. Listed below is our quantitative requirements, by types of associated radars, for AN/GRA-9 equipment; of these, eight are Canadian radars.

a. 34 FPS-3

b. 14 MPS-7

c. 9 MPS-11 ?

d. 2 FPS-8 ?

e. 8 TPS-1D

f. 2 FPS-10

g. 2 FPS-502 (FPS-3)

4. We are aware of the potential value of SIF for Mark X IFF to the air defense system. It will not, however, solve the identification problem pertaining to nonmilitary aircraft. Your headquarters concurred in our desire to limit installation of SIF equipment to military aircraft for security reasons. Manifestly, other means to identify civilian air traffic must be used. Operational means such as VHF/UHF automatic DF used with a secure voice code is one of these means. Our requirement for automatic direction finding is therefore still firm.

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AFDRQ 478/53
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Hq ADC ADOPR 413.44 Subject: (Uncl) Requirements for Automatic Directional Finding Equipment

ADOPR 413.44 (30 Oct 52) 2d Ind (Contd)

5. Request we be advised to the adaptability of this equipment to the FPS-8 since the original requirement was written the AN/FPS-8 and MPS-11 has been selected for certain first and second phase mobile radars. Further request necessary action be taken to include this requirement in FY 55 budget.

FOR THE COMMANDER:

JOSEPH D. LOMBARDO
Lt Col, USAF
Asst Command Adj

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Basic letter Hq ADC, ADOPR 413.44, 30 Oct 1952, subj: (Uncl) Requirement for Automatic Directional Finding Equipment.

AFDRQ-AD/C 3d Ind.

Department of the Air Force, Hq USAF, Washington 25, D. C.

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

1. The following information has been received from Air Research and Development Command:

a. An additional 12 months will be required to complete development on the AN/TPS-1D indicator modification to display AN/GRA-9 direction finding information and complete the integration of the two equipments. Production specifications are expected to be available by July 1955.

b. Models of the modified PPI scopes of the AN/FPS-3, AN/CPS-6B and AN/FPS-10 to display D/F information now undergoing testing at RADC. It is proposed that final integration of the direction finder and the radars should be accomplished on a production contract. Production specifications can be available by June 1954.

c. The AN/CPS-6B indicator modification kit will be applicable to the AN/FPS-8 and AN/MPS--11 indicators. It is estimated that procurement specifications could be available by June 1954.

d. The present VHF receiver R-264/GRD of the AN/GRA-9 is designed to operate in the 100 to 156 mc frequency range. If ADC requires operation in frequency range of 156 to 180 mcs, the VHF receiver R-264/GRD will require redesign.

e. The estimated dates that procurement information will be available for the above equipments are made with the assumption that the testing underway will be completed satisfactorily and that the equipment as presently designed will be operationally acceptable.

2. Reference is made to par 1,d above. In view of present established frequency allocation in 156-180 mc range, request clarification of requirement for AN/GRA-9 to operate within this frequency band.

3. Air Defense Command representatives attended a demonstration and discussion of the above equipment at RADC, Rome, N. Y. on 27 April 1954. At this meeting, RADC personnel stated that the automatic D/F bearing accuracy of the production equipment for AC&W use will be in the order of $\pm 4^{\circ}$ to $\pm 5^{\circ}$. It was further indicated that the accuracies requested by ADC can not be obtained without a major redesign of the AN/GRA-9 equipment. Request ADC comments on the acceptability of these accuracies forecast for the production equipment.

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AFDRQ-AD/C, 3d Ind to Com, ADC, subj: (Uncl) Requirement for Automatic Directional Finding Equipment.

4. Testing of the AN/GRA-9 is currently being performed by RADC with this equipment attached to an AN/CPN-18 radar. RADC has not performed any testing of the AN/GRA-9 attached to an air defense radar and displayed on the modified AN/FPS-3 or AN/CPS-6B indicator. AN/GRA-9 equipment has not yet been scheduled for OST by APGC with either traffic control or air defense radars. Request your comments on operational acceptability of the AN/GRA-9 equipment, as demonstrated at RADC, and the advisability of procuring this equipment for AC&W use prior to any operational testing or evaluation.

5. If procurement data is available in June 1954 and it is established that this equipment will be operationally and technically satisfactory, action will be taken by this headquarters to establish procurement of this D/F equipment for AC&W purposes within existing fund limitations.

BY ORDER OF THE CHIEF OF STAFF:

Joseph L Laughlin

JOSEPH L. LAUGHLIN
Colonel, USAF
Chief, Air Defense Division
Directorate of Requirements, DCS/D

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[illegible] 4th Ind.

[illegible] TWX, Lt AF, Colorado Springs, Colorado

[illegible] Headquarters USA, Washington 25, D.C.

1. Reference [illegible] 3rd Indorsement: Operation of the AN/ receiver of the AN/GRA 9 in the 130-136 mc frequency range is acceptable to this command.

2. Reference para. 3 3rd Indorsement: The original requirement, as stated in basic letter for a bearing accuracy of 3 degrees is still valid. However, in the interim and on the early production models, a bearing accuracy of 4-5 degrees is acceptable. A development effort should be continued towards the accomplishment of the original requirement as stated in basic correspondence.

3. Reference para. 4 3rd Indorsement: The operational performance of the AN/GRA 9 as demonstrated by AFC on 27 April 1954 is not acceptable to this command. Recommend that an operational test, utilizing air defense type radar be scheduled for representatives of this command. In the event this test indicates a minimum acceptance performance this headquarters will recommend early procurement of the equipment prior to an OOT being performed by AFCC.

[illegible]

FOR THE COMMANDER:

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MTN / Radar 11

Basic letter fr Hq ADC, File ADOPR 413.44, dated 30 Oct 1952, subj: (Uncl) Requirement for Automatic Directional Finding Equipment

FILE NUMBER

AFDRQ-AD/C 5th Ind.

Department of the Air Force, Hq USAF, Washington 25, D. C. 5 [illegible] 1954

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

1. Since the April demonstration of the AN/GRA-9 direction finder malfunctions in the equipment have delayed further tests of the CPN-18/GRA-9 system until approximately 10 Sep 1954.

2. Following are the Rome Air Development Center engineering estimates of the development possibilities to engineer the AN/GRA-9 to such a point that it will satisfy your requirement:

a. The accuracy of the present CPN-18/GRA-9 system is 5°. This is the result of bearing inaccuracies of the AN/GRA-9 of 3½° plus the radar indicator error of 1° and a system tie-in error of ½°. Two methods exist for possible improvement:

(1) Redesign of the AN/GRA-9 with closer tolerances may reduce the error to 2° resulting in a system error of 3½°.

(2) Install a "Wullenwever" antenna (40 ft. diameter dipole array mounted on a 40 ft. tower) which should reduce the AN/GRA-9 error to ½° for a system error of 2°. This would be a large device but is recommended if the present inaccuracies cannot be tolerated.

b. Spoking (multistrobing) can be reduced by integration to require strobing through the sum of a series of impulses rather than many strobes through each of the small impulses. This would cause a sluggish response with a reaction time of 6-8 seconds on a 2-3 second transmission.

c. Blossoming (too much light on PPI scope) is associated with par b above and requires the same action to correct.

3. The information contained in par 2 above consists of engineering estimates. The amount of development time required before the equipment will meet your requirement is uncertain. If the stated 3° accuracy is to be obtained the system will not be instantaneous and will require about a 5 second radio transmission. The utilization of a Wullenwever antenna

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might produce problems of antenna interference which would require remoting of the antenna and additional equipment development.

4. In view of the indicated research and development time involved in meeting your requirement for display on the PPI radar scope of D/F indications, it is recommended that you consider the feasibility of utilizing the AN/URD-2, VHF direction finder, and the AN/CRD-6, UHF direction finder as substitute items of equipment to fulfill your operational requirement.

BY ORDER OF THE CHIEF OF STAFF:

JOSEPH L. LAUGHLIN
Colonel, USAF
Chief, Air Defense Division
Directorate of Requirements, DCS/D

V-70-124

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ZK JWPDV JEDEN JWPDM
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Action: DM
Info: CG, FG
Susp: 12 Oct 54
29247

FM COMWADF HAMILTON AFB HAMILTON CALIF
TO JEDEN/COMDR ADC ENT AFB COLO SPRGS COLO
INFO JWPDV/COMDR 4702D DEF WG GEIGER FLD WASH
JWPDM/COMDR 25TH ADIV (DEF) MCCHORD AFB WASH
JWPOM/COMDR 27TH ADIV (DEF) NORTON AFB CALIF
//S E C R E T//WDMAC-4C1854. AN OPR RQR EXISTS IN 445 FIS GEIGER FLD WASH AND 83 FIS PAINE AFB WASH FOR F-86D ACFT EQPD WITH DRAG CHUTES PRIOR TO THE ARR OF WINTER WEATHER. REVIEW OF INCL NR 5 TO LTR YOUR HQ CLAS SECRET, FILE ADMAC-4 SUBJ: (UNCL) ADC ACFT SKED AND ASGMT PLAN FOR PROJ PULLOUT, DATED 15 JUN 54, REVEALS 445 FIS WILL HAVE RECD 6 ACFT FROM PROJ PULLOUT BY 30 NOV 54. THIS WILL LEAVE 445 FIS WITH 15 ACFT AND 83 FIS WITH 10 ACFT NOT EQP WITH DRAG CHUTES. TO PROVIDE ABOVE UNITS WITH DRAG CHUTE EQPD ACFT BY 30 NOV 54 IT IS REQ (1) 15 OF 16 MOD V ACFT DESTINED FOR 94 FIS DURING OCT AND NOV 54 BE

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PAGE TWO JWPMC 52A

DIVERTED TO 445 FIS. A LIKE NR OF UNMOD ACFT WOULD BE REASGD FROM 445 FIS TO 94 FIS. (2) 10 OF 12 MOD V ACFT DESTINED FOR 317 FIS DURING OCT AND NOV 54 BE DIVERTED TO 83 FIS. A LIKE NR OF UNMOD ACFT WOULD BE REASGD FROM 83 FIS TO 317 FIS. UPON REC OF NEW PDN ACFT IN 83 FIS AND MOD VII ACFT IN 445 FIS MOD V ACFT REF TO ABOVE WOULD BE REASGND TO UNITS ORIGINALLY SKED (317 FIS AND 94 FIS). OPR RQR OUTLINED ABOVE WAS DISCUSSED BY FONECON ON 5 OCT 54 BY COL T. H. BEESON THIS HQ AND LT COL P.E. JOYAL YOUR HQ.
07/1732Z OCT JWPMC

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ADC Hq-O-AG-Form 23
9 April 53
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ADCSM 5-3
Reviewed by
Telephone

ADC HQ Ops 54
Revised 15 July 53.

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12 OCT 1954

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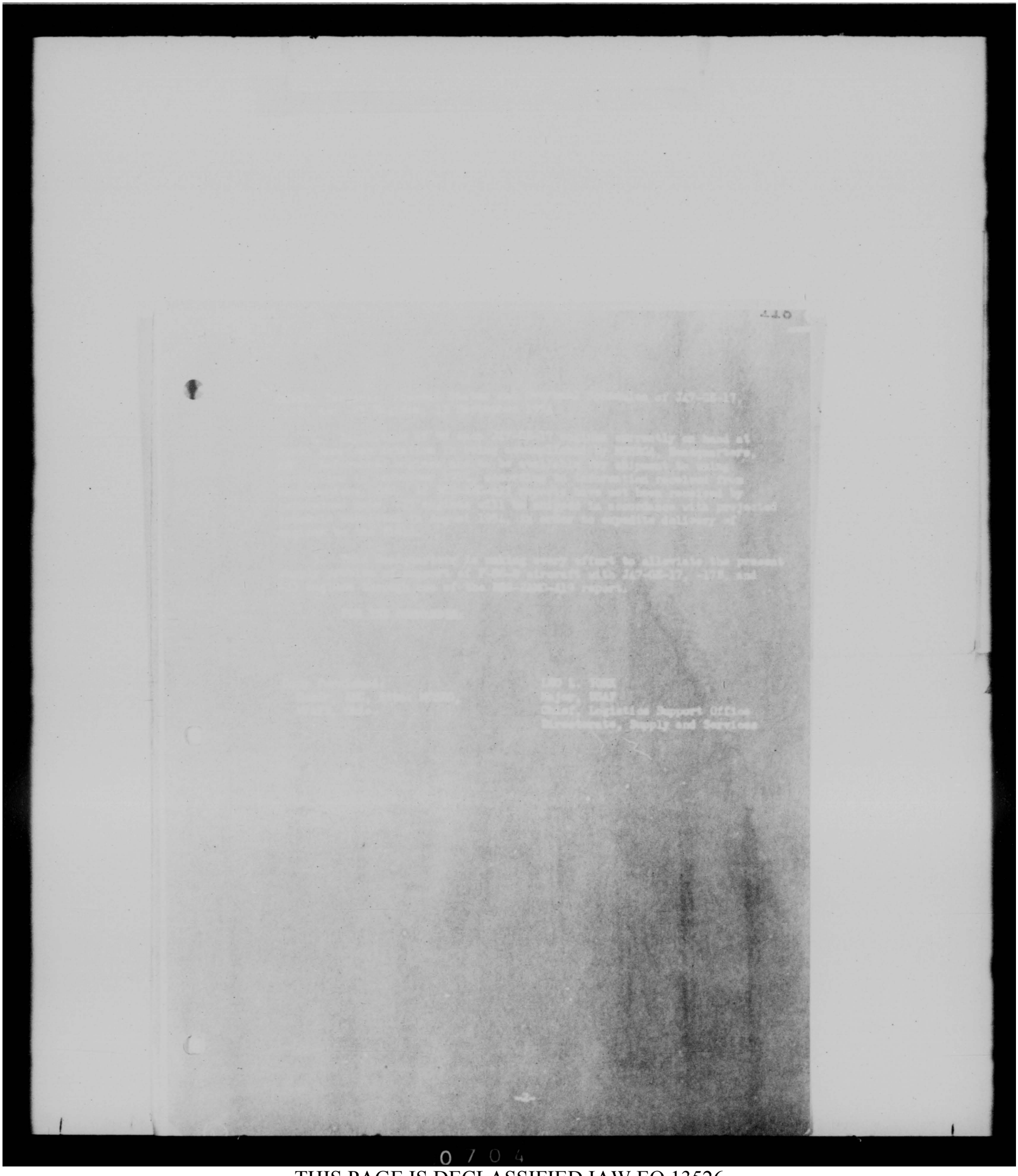

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HEADQUARTERS
SACRAMENTO AIR MATERIEL AREA
McCLELLAN AIR FORCE BASE
McCLELLAN, CALIFORNIA

314.3

IN REPLY
REFER TO: SMMG

5 October 1954

SUBJECT: Project Pull-Out

TO: Commander
Air Defense Command
ATTN: ADMAC, Colonel Hamilton
Ent Air Force Base
Colorado Springs, Colorado

1. Attached are the Minutes and Brochure of the Project Pull-Out Conference held at Sacramento Air Materiel Area on 20 September 1954.

2. When Inclosure #2 is withdrawn or not attached the classification of Secret on this correspondence will be cancelled in accordance with Par 25a, AFR 205-1.

FOR THE COMMANDER:

2 Incls:
1. Minutes (5) (Uncl)
2. Brochure (C1)
Cys #3 & #4

JOHN A. PECHULIS
Colonel, USAF
Director of Maintenance Engineering

M643-1

SMAMA FORM 2 JAN 50

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SMAMA—Oct 53—1551

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Project Pull-Out Conference Minutes, 20 Sep 54

1. The conference was officially opened by Colonel John A. Pechuls, Director of Maintenance Engineering, with an introduction of Brigadier General William T. Hefley, Commander of SMAMA. General Hefley welcomed the conferees and recommended future conferences for Project Pull-Out be called only in the event that a serious problem develops.

2. The Project Pull-Out status was presented and an evaluation of support capability to increase the project was shown and discussed. The limiting factors as presented were Engines, Engine Accessories, and Fire Control Systems. The MAAMA Representative, Mr. Jackson, also stated that MAAMA would not have the capacity to increase autopilot support for Project Pull-Out at this time.

3. In the discussion following the status presentation, Captain McLaughlin, representing WRAMA, announced that WRAMA was experiencing difficulty in obtaining the expected input of unmodified fire control components to Hughes Aircraft Corporation from SMAMA, Fresno, and the LAS Hop-Up Mod Lines. Receipt of spare components to be modified from the Field have also fallen behind the scheduled input requirements. Captain McLaughlin advised this condition was adding to the contract cost of the E-5 modification. Colonel Hamilton, ADC, stated that all spare components for E-5 Fire Control Systems in the Field were being shipped to the Mod Center as required and asked for a further check to determine that all black boxes within the system have been definitely located and are in the process of modification. In a separate conference all affected activities agreed to expedite the input of all black boxes into the Hughes Mod Center.

4. There were no other problems raised in the general conference. Conferees were invited to meet with individual SMAMA activities for any information which they might require. Affected activities met in a separate conference to discuss the critical engine components. Action was agreed upon by all affected activities which should improve the support of these items within the next thirty days.

5. Major J. D. Webb, Hq USAF, gave conferees a general description of the impending electronic modification of the F-86D aircraft inventory. He indicated this type of modification was also planned for F-94C and F-89 aircraft.

6. Conferees expressed general satisfaction with the status of Project Pull-Out. No recommendations were made for future Pull-Out Meetings. There being no objection to Brigadier General Hefley's suggestion concerning future meetings, none will be scheduled unless serious problem areas arise or as may be desired by higher authority.

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Project Pull-Out Conference Minutes, 20 Sep 54

7. At the close of the Project Pull-Out discussions the status of Project Hop-Up was presented to interested conferees. In a discussion following this presentation Mr. Lackey, SMAMA Supply, indicated that difficulty in finalising the overhaul contract with Holly Corporation for modification of main and afterburner fuel control valves may prevent meeting the J-48 P-7 Engine configuration in the first aircraft of Phase II. A suggestion was made that six of the input aircraft for the month of November and four for the month of December have P-7 Engines installed. This would allow SAAMA to establish an uninterrupted J-48 P-7 Engine support for the balance of the program. Captain Gray of the Air Defense Command indicated that they could meet this requirement. Command Workload Division at SMAMA will finalise these arrangements.

8. A separate conference was held by affected parties to establish an in-process pool of modified E-5 Fire Control Systems to be retained at SMAMA for Phase II aircraft.

9. There being no further business, the conference was adjourned at 1200 hours.

JOHN A. PECHULS
Colonel, USAF
Director of Maintenance Engineering

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FM 2415
CRYPTO NR: A-20-23 (DEC 1954)
JEPMQ 71
TO JEDWP
INFO JEPMQ 3SC
R 231514Z
FM HEDQCAF WASHDC
TO JEDEN/COMADC, ENT AFB, COLORADO SPRINGS, COLO.
JEDEN/COMAIRC, SCOTT AFB ILL
JEDWP/COMAMC, WRIGHT-PATTERSON AFB, OHIO
JEDWP/COMWADC, WRIGHT-PATTERSON AFB, OHIO
JEDN/COM SMAMA, MCCLELLAN AFB, CALIF
JEDN/AFPR,NO. AMERICAN AVIATION , L.A. INTL ARPT, L.A.
C O N F I D E N T I A L FROM AFMPE-EL-2 59236 SUBJECT IS PULL OUT.
REFERENCE IS MADE TO INSPECTOR GENERAL REPORT SUBJ: STUDY OF
F-86D RECURRING DEFICIENCIES DTD 15 NOV 1954. SECTION VII OF
REF REPORT INDICATES THERE ARE MAJOR DEFICIENCIES IN F-86D AIRCRAFT
RETURNING FROM THE MODIFICATION CENTERS. THE LATEST ADC PULL OUT
STATUS REPORT DOES NOT VERIFY THIS STATEMENT. IT IS REQUESTED
THAT THIS HQ BE ADVISED OF ANY DEFICIENCIES EXISTING IN MODIFIED
F-86D AIRPLANES AND YOUR RECOMMENDATIONS AS TO ACTION REQUIRED
TO CORRECT THESE DEFICIENCIES.
JEDN/1615Z DEC JEPMQ

ACTION: DN
INFO CG, EG

35706

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DC Hq-O-AG-Form 22
9 April 53
AF - ADC - COLO SPRINGS, COLO
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ROUTINE ROUTINE

AFMPS-SEC/SECRET CONFIDENTIAL

14 JAN 1955

(AM)

(CONFIDENTIAL). AFMSG-SA2 0108. MSMG AFMPS-SE-55252, 23 Dec. This requiring a report of discrepancies on each Fallout PSSD from the receiving to this hq. Many discrepancies are reported but searching analysis majority of total fall into minor classification. Considering over 300 actions being performed on each soft and schedule imposed on and enire this Proj Fallout is successful. The relatively few major discrepancies transmitted by personal letter from Maj Gen Roth this hq to Maj Gen . Immediate corrective action has been initiated in all instances. is considered sufficient.

WB

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Record Evaluation
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Form Under par 3a,
ADC 5-3 NOa
Prepared by
Telephone
Date 27 Dec 54
ADC AFSAC-SA2
Revised 15 Aug 53
MS42-1

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B-10-14 142130Z

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C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

W Berry/AFSAC-SA2/sm

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This correspondence is classified CONFIDENTIAL in accordance with
Par 3g, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

Memo for record not required.

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ADMDM 23 December 1954

SUBJECT: (Unclassified) Research of Future F-86D Fuel Control Configuration

TO: Commander
Air Research and Development Command
P. O. Box 1395
Baltimore 3, Maryland

1. This command has considered the serious nature of the problem that will exist in the future when F-86D aircraft are transferred to the Air National Guard. Primarily our deep concern in this matter has to do with maximum capabilities of Augmentation Forces in support of the Air Defense mission. It is well known that the Electronic Fuel Control has been most difficult and costly to maintain. Some of its components are still sub-standard from an operational reliability point of view. Therefore, the feasibility of using this control in aircraft that will be transferred to the Air National Guard should be investigated.

2. It is the recommendation of this command that Air Research & Development Command study the problem of substituting a hydraulic mechanical fuel control system that can be employed in our J-47GE-17, 17B, and 33 engines. The hydraulic mechanical device would, of course, eliminate such features as variable eyelids, so that the final configuration would be similar to that found on F-94 type aircraft, i.e., the variable feature would be reduced to two positions. Substituting a hydraulic mechanical fuel control system would reduce the efficiency of the J-47 engines contained in F-86D aircraft. However, this loss undoubtedly would be compensated for by higher in-commission rates and more in-flight reliability. If the flight performance is decreased only to a minor extent, the change over would probably be worth the effort.

3. This recommendation to investigate the feasibility of substituting a hydraulic mechanical fuel control system for the presently installed IEC is made because of the maintenance skills

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Hq ADC, ADMDM, Subject: (Unclassified) Research of Future F-86D Fuel Control Configuration

required and the detailed and aggressive supply action necessary to support this complicated device. While this command has successfully met the challenge of the electronic fuel control, we seriously question the practicability of burdening Air National Guard units with the continued problems of its operation. We do not know the exact extent of the skills possessed by Air National Guard units to maintain the J-47GE-17, 17B and 33 engines in their present configuration, nor do we know the capabilities of Air National Guard pilots to safely use this device on a week-end basis. Therefore, we request that Air Research and Development Command research this problem to determine whether the IEC should remain on engines contained in aircraft that will be transferred to the Guard in the future. The initial transfers are scheduled to take place during the first quarter of Fiscal Year 1958.

FOR THE COMMANDER:

MARSHALL S. ROTH
Major General, USAF
Deputy Chief of Staff, Materiel

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AIR DEFENSE COMMAND

History

July - December 1954

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ADC HQ Form 1
Revised 15 Aug 53

121

30 Nov 54

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ADHCR

SUBJECT: (Unclassified) Control of Engine Overtemperature Conditions

FILE NUMBER 313.3 EAA

TO: Commanders
Fighter Interceptor Squadrons

1. I am gravely concerned over the numberof F-86D accidents and indicents involving engine fires and overtemperature conditions. Since July 1954 we have suffered 12 accidents from these causes. This represents a staggering loss in personnel and materiel that seriously reduces our combat potential. In airframe and engine value alone it represents a loss of $5,199,283 to our defense effort. We must constantly strive to eliminate accidents and incidents so that we may continue to maintain an effective air defense team. One large stepin this direction is sound and unhurried maintenance of the weapon we use. We have rapidly departed from the era that permitted rushed maintenance and minor mistakes as we searched for the detailed clues to successful operation. Today's all weather interceptor demands organized effort and studied attention, and is most unforgiving of errors, especially where engine maintenance and temperature control are concerned.

2. For instance, the life span of the turbine wheel of our J-47 engines is but 13 seconds at 1000°C, and only 3 minutes at 870°C! From this, you can readily see that a few unreported hot starts can set up a costly accident for the unlucky but well trained individual who happens to be in the cockpit when engine life-span expires.

3. Do not allow pride to interfere with the prompt reporting of a hot start, for it may mean someone's life and a destroyed aircraft a few days or a few weeks later. This applies to all operating personnel, airmen and officers, alike.

4. Now you may ask, how can hot starts be controlled? The control of hot starts rests with the men whose hands are on the throttles, whether they be ground crewmen in the run-up area or pilots on the flight line. Proper throttle techniques will save lives and aircraft, and will greatly reduce costly and time consuming maintenance repair burdens. The net result is the elimination of a needless drain onour combat effectiveness. If we are to lose aircraft let it be from the heated defense of our country - and not from unreported hot starts. Remember this: unreported hot starts jeopardize the lives of pilots,

Thomas M. Love

Lt Col Thomas M.Love/mtk
2406-2407
16 Nov 54

P 1

EADF-L-2665 6/0071
CADF-A-51478/0453
WADF-L-[redacted]
53078/0643

Memo for record not required

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Thomas M. Love
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ADC HQ Form 1
Revised 15 Aug 53

SUBJECT: (Unclassified) Control of Engine Overtemperature Conditions

precipitate the destruction of costly aircraft, and weaken the air defense of our nation.

5. What else can be done to eliminate the problem of hot starts? We maintain auxiliary power units so that sufficient electrical power is available when needed. APU's, like aircraft, must be properly maintained to be effective. To use a simile, starting an aircraft with a marginal APU is like sending a batter to the plate with two strikes against him - before the first ball is ever pitched. We cannot afford such handicaps. However, properly maintained APU's will add to our effectiveness by reducing the number of engines in repair facilities. This alone, will result in a sizeable contribution to our air defense potential.

6. Over confidence is another deterrent to the success of our mission. Each squadron commander should ask himself: Are my maintenance personnel really qualified to start and operate jet engines? Are my pilots thoroughly familiar with the details of engine operation? Is engine starting and operation repeatedly stressed during daily pilot briefings? In short, I want squadron commanders to make operating personnel thoroughly temperature conscious. This is not a matter to be taken lightly. It is the difference between life and death; the difference between costly, wasted effort and a successful operation.

7. To this end, I desire that engine starts at home bases be made in the presence of qualified observers, airmen or officers. Both the operators and the observers will gain much from this policy. I am confident that the more our personnel observe and discuss the techniques involved the more they will learn. As the appreciation of temperature effects increases, so will the waste of accidents of this nature decrease. I do not desire to expose and punish those who inadvertently allow engine temperatures to be exceeded, but I do seek to have corrected those persons whose faulty techniques might have gone undetected. Aside from the increased reliability of our combat aircraft we will have more resources at our disposal for the air defense of this nation.

B. W. CHIDLAW
General, USAF
Commander

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From: COMMANDER, ADC 3 Sept 1954

To: COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF
COMMANDER, CADF, GRANDVIEW AFB, GRANDVIEW, MO
COMMANDER, 4750TH TW, YUMA COUNTY, YUMA, ARIZ.

(UNCLASSIFIED). ADMAC-2A4 28818 . This message in two parts: Part I. Accident involving a F-86D aircraft indicates that units of this command may be flying some aircraft which have engines installed that may have been subject to over temperatures due to conflicting TO's in which it was not made clear as to what maintenance was required after experiencing 1000° C temperature or 10 hot starts above 870°C. (OCAMA and SMAMA have been notified of conflicting TO's). Part II. To preclude the possibility of turbine wheel failure on the J-47-17 engine which could result in loss of aircraft this headquarters directs that all F-86D units in this command re-inspect all aircraft engine forms to determine if evidence is present of any hot starts of 1000°C, 10 hot starts above 870°C or steady temperature above 720°C which may have occurred prior to the issue of ITO 2J-J47-358 dated 5 April 54. If inspection reveals any turbine wheel which has a history of any of the above conditions the turbine wheel will be removed and replaced.

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

ADMAC-2 22 December 1954

SUBJECT: Turbine Wheel Rim Failures J-47GE-17 and -17B Engines

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

1. Turbine wheel rim failures on engines installed in F-86D type aircraft have been of great concern to this headquarters.

a. In order to reduce these failures, the following action has been taken, and where these Technical Orders have been accomplished, no further wheel failures have been reported.

(1) TO 2J-J47-349 Adjustment of Main and Emergency Fuel Controls - J-47-GE-17 Engines.

(2) TO 2J-J47-208 Recalibration of Exhaust Gas Thermocouple System on All Turbo-Jet Engines.

(3) TO 2J-J47-358 Removal of Overtemperature Turbine Wheels - J-47 Engines.

(4) TO 2J-J47-343 Installation of Adjustable Turbine Wheel Baffle J-47-GE-17 Engines.

(5) TO 2J-J47-503 Inspection of Turbine Wheels - J47 Series Engines.

2. No definite historical record has been kept by field organizations on turbine wheels making it impossible at the present time to determine the condition of either installed or pipe line turbine wheels. Consequently, all turbine wheels in the field will have to be replaced by either new wheels or serviceable turbine wheels that have been inspected in accordance with the applicable TO's listed in paragraph 1a (3) and (4), above.

3. This replacement program will be accomplished in the field by squadrons utilizing field maintenance personnel and OCAMA supervisory teams. OCAMA will furnish necessary wheels, tools, and dolleys, in the following manner:

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Headquarters Air Defense Command, ADMAC-2, Subject: Turbine Wheel Rim Failures J-47GE-17 and -17B Engines.

a. Enough wheels will be airlifted to each squadron to completely replace all wheels that fail to comply with the Technical Orders listed in paragraph 1a. It is estimated this replacement will take not more than three (3) working days per squadron.

b. OCAMA will then pick up all replaced turbine wheels and airlift them to an appropriate depot for thorough inspection. Acceptable wheels will be retained in order to establish a "turbine wheel bank."

c. The target date for implementation of this program is 3 January 1955; completion, 30 May 1955.

4. It is not feasible to establish post emulsification inspection facilities at field installations because of a six to eight month procurement delay in vapor blast machines. Moreover, there are no turbine wheel balancing machines available for field use.

5. Captain Dethman, this headquarters, will personally brief your maintenance directorate before 1 January 1955 on this program.

6. It is requested that the attached turbine wheel historical record be reproduced at your headquarters, distributed to your squadrons and be utilized until an identical AMC form is printed and distributed.

BY ORDER OF THE COMMANDER:

1 Incl
Turbine Wheel Record
(1 cy)

MARSHALL S. ROTH
Major General, USAF
Deputy Chief of Staff, Materiel

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ADMDM 12 August 1954

SUBJECT: EADF Analysis of Difficulties Encountered on the J-47-GE-17 Engine

TO: Commander
Wright Air Development Center
Wright-Patterson Air Force Base, Ohio

1. The inclosed study of J-47GE-17 engine failures prepared by Eastern Air Defense Force is forwarded for your information and corrective action deemed necessary.

2. This analysis contains specific information regarding the causes for J-47GE-17 engine malfunctions over a large number of samples. Hence, it should materially assist your command in getting a reasonably firm picture of our J-47GE-17 maintenance and supply problems. It is our desire that this information be used to increase the effectiveness of material support for the Air Defense Command mission.

3. The inclosed CDP Sensor Study is of great importance. This command considers CDP sensor reliability unsatisfactory, as is the present repair and return program. It is requested that aggressive action be taken to alleviate both aspects of this problem.

4. A copy of this study is being forwarded to the Director of Statistical Services, Headquarters USAF, as a part of the Foreign Object Damage report (AF-54).

FOR THE COMMANDER:

MARSHALL S. ROTH
Brigadier General, USAF
Deputy Chief of Staff, Materiel

1 Incl
Ltr EADC-ACM, Hq EADF, 30 Jun 54, subj: Study of J-47GE-17 Eng Failures, w/5 Encls

IDENTICAL LETTER TO: Commander Oklahoma City AMA
Tinker AFB, Oklahoma City, Okla

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Basic, Hq Air Defense Command (ADMDM) 12 Aug 54 to Comdr WADC,
Subject: "EADF Analysis of Difficulties Encountered on the J47-GE-17 Engine"

1st Ind 30 August 1954

HQ, WRIGHT AIR DEVELOPMENT CENTER, Wright-Patterson Air Force Base, Ohio, 30 August 1954

TO: Commander, Air Defense Command, ATTN: ADMDM, Ent Air Force Base Colorado Springs, Colorado

1. The subject study has been carefully reviewed and is in general agreement with service experience of other activities using J47-GE-17 engines.

2. With regard to the compressor discharge sensor, the contractor is actively pursuing a development program to improve this component. It is estimated that the development of an improved sensor will be completed by October 1954. Air Materiel Command has indicated that every effort is being made to improve the repair and return program for defective sensor elements.

3. It is believed that the engine changes being made as a part of project "Pull Out" will improve the reliability of the engine and decrease the failure rate. Emphasis on redesign and testing to further improve the J47-GE-17 engine will be continued both by Wright Air Development Center and the contractor.

4. An improved version of the J47-GE-17 engine, the J47-GE-33, which incorporates a large number of improvements, is now in production for use in F-86D aircraft.

5. The information contained in the analysis is of benefit to this Center in assessing the service difficulties with the subject engine and is greatly appreciated.

1 Incl:
w/d

ALBERT BOYD
Major General, USAF
Commander

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C

[redacted] Colorado Springs, Colorado

[redacted] Standard Air Force

[redacted] engine failures

[redacted] City Air

[redacted] Air Material Area.

[redacted]

BY ORDER OF THE COMMANDING

MARSHALL E. BOTH
Brigadier General, USAF
Deputy Chief of Staff, Material

PIN 4- Engines

[redacted] for the record not required

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FILE NUMBER 343.7 SL 126

HEADQUARTERS
AIR FORCE FLIGHT TEST CENTER
EDWARDS AIR FORCE BASE
California

FTDTS 15 September 1954

SUBJECT: F-89D "Provisions For" Phase VI Progress Report
Report No. 1

TO: Commander
Wright Air Development Center
ATTN: WCSF-7
Wright-Patterson Air Force Base, Ohio

FILED RDD/FTR

1. This is the first in a series of semi-monthly progress reports which will be submitted for the duration of the test program. A final test report summarizing the progress reports will be submitted at the conclusion of the test program. These reports will contain information on aircraft and component system malfunctions, major maintenance difficulties, maintenance manhours expended, pilots' evaluation comments, and an appendix of Unsatisfactory Reports submitted. Once a month parts consumption will also be included in the appendices of these reports. Two F-89D aircraft, Serial Nos. 52-1873A and 52-1878A, are undergoing Phase VI "Provisions For" testing. The duration of the program will depend on the frequency and seriousness of new deficiencies uncovered. For planning purposes it is estimated that the program will require approximately 100 flying hours.

2. Although the F-89D "Provisions For" aircraft are equipped with the E-6 Fire Control System, "provisions for" retrofitting with the E-9 Fire Control System and a missile carrying capability are incorporated in this aircraft. The F-89D "Provisions For" aircraft differ from earlier F-89D aircraft as the result of the following major changes:

a. E-11 Autopilot.
b. Nose Wheel Steering.
c. WADC Gas Operated Ejection Seat.
d. J35-A-35 Engine.
e. Re-arrangement of the E-6 Fire Control System.
f. New Non-Rip, Non-Self-Sealing Nose and Sump Tanks.
g. Pylons and Pylon Tanks.
h. New Wave Guide Assembly.
i. New Radar Cooling System.
j. Revised Anti-Icing and Air-Conditioning System.
k. Associated Weight Increase.

FROM: ADM AC-241
TO: ADAAG
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Temp-File Mar 55
Action NAR
Signed Dan

3. Both Phase VI aircraft arrived at the Air Force Flight Test Center on 20 August 1954. The first flight on aircraft S/N 52-1873A was accomplished on

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Hq AF Flt Test Center, EAFB, FTDTS, Subject: F-89D "Provisions For" Phase VI Progress Report
Report No. 1

24 August 1954, and on aircraft S/N 52-1878A on 25 August 1954. Test time accomplished on the two aircraft is as follows:

A/C S/N	Test Time
52-1873A	28:25
52-1878A	16:05
Total Project Test Time	44:30

4. Forty flights have been flown on Phase VI missions for a total of 44:30 test hours. Missions flown to date have been primarily familiarization and engine and afterburner evaluation missions. A diversified breakdown of flying time accomplished is shown below:

Type Mission	A/C S/N 52-1873A	A/C S/N 52-1878A
Familiarization	4:40	8:45
E-11 Autopilot	1:45	-
Radar Interception	2:35	-
Engine and Afterburner Evaluation:		
Afterburner Relite	5:55	5:45
Air Starts	5:05	-
Maximum Altitude	4:55	-
Functional Test Flight	3:20	1:35
Miscellaneous	0:10	-

5. The F-89D aircraft have been maintained on a 10-hour day, 6-day week schedule during this initial phase of testing. However, as a basis for computation of in- and out-of-commission status the time during which maintenance flying is being performed will be used as the length of the day. No inactive periods will be included in the report. In-commission time will be that time aircraft is awaiting a pilot or flying. Out-of-commission time will be that used for scheduled maintenance, corrective maintenance, and periodic inspection Computed on this basis the in- and out-of-commission time of the two aircraft as follows:

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	A/C S/N 52-1873A	A/C S/N 52-1878A
In-Commission	29	17
Out-of-Commission:		
Scheduled Maintenance	53	32
Corrective Maintenance	56	48
AOCP	-	24
Modifications E.O. & T.O.C.	-	-
Total Out-of-Commission	109	104
Average In-Commission Rate:	21%	14%

6. The following chart contains a detailed breakdown of the maintenance manhours expended by the maintenance personnel on the line and in the shops. The breakdown of systems is the same as that in the F-89D Maintenance Instruction Handbook.

	A/C S/N 52-1873A	A/C S/N 52-1878A
Scheduled Maintenance:		
Pre-flight Inspection	49	36
Service and Safety of Flight Inspection	46	31
Post-flight Inspection	46	56
1st Periodic Inspection	12	-
Total Scheduled Maintenance	153	123
Corrective Maintenance:		
Airframe	33	4
Hydraulic	-	-
Utility	-	-
Power Plant	54	73
Instrument	-	-
Electrical	-	-
Electronic	1	-
Armament	12	-
Modification E.O. and T.O.C.	-	-
Total Corrective Maintenance	100	78
Total Flying Hours	28:25	16:05
Maintenance Manhours per Flying Hour	9	13

7. Major Malfunctions and Discrepancies:

a. Airframe:

(1) Cracked skin on the pylon fairing was removed and repaired. An Unsatisfactory Report was submitted.

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Hq AF Flt Test Center, EAFB, FTDTS, Subject: F-89D "Provisions For" Phase VI Progress Report
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(2) Two broken canopy chains were repaired by replacing a broken pin and a broken turnbuckle.

(3) A malfunctioning side slip stability augmenter was corrected by realigning and leveling the accelerometer and replacing a defective OB-2 tube in the amplifier.

b. Power Plant:

(1) A malfunctioning afterburner which would not relight between 10,000 and 25,000 feet was repaired by replacing the RC-9 afterburner fuel regulator control assembly.

(2) Fuel leaking from the fuel vent on the right wing was stopped by cleaning a sticking dive valve.

c. Electrical Power Supply and Lighting: A dead battery required replacement.

d. Armament:

(1) An inoperative radar set which gave no scope presentation to the radar operator was repaired by replacing the radar operator's console and indicator.

(2) A malfunctioning radar hand control required replacement of the electrical synchronizer (OS Box).

(3) A new vertical gyro was installed to stop the erratic movement of the pilot's artificial horizon (radar).

8. Engine and Afterburner Evaluation:

a. Ten missions were flown on which emphasis was placed upon afterburner relights and throttle bursts. Afterburner relights were accomplished at all altitudes up to and including 45,000 feet using the "jabbing" technique. This technique is accomplished by actuating the afterburner demand finger lifts before jabbing the throttle forward approximately 1% rpm. This proved to be the most successful procedure for afterburner operation. Throttle bursts were accomplished from idle to 100% rpm at all altitudes from ground to 45,000 feet. No overtemperature conditions or compressor stalls were encountered.

b. Five maximum altitude missions have been flown on aircraft S/N 52-1873A and a maximum altitude of approximately 46,500 feet has been obtained. Flights were made using a combat loading of approximately 42,200 pounds at take-off. Performance of the F-89D aircraft with the J35-A-35 engines installed appears to be approximately the same as the F-89D with the J35-A-47 engines installed.

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c. During four missions air starts were accomplished on both engines of aircraft S/N 52-1873A from 10,000 to 35,000 feet using the procedure outlined in the Flight Handbook (T.O. 1F-89D-1). Successful starts were obtained on all attempts at 10,000, 15,000, 20,000, 25,000, 30,000, and 35,000 feet with a peak exhaust gas temperature of 710°C encountered (900°C maximum allowable).

d. The following chart presents the test flying time and afterburner operating time obtained during the program.

Aircraft	Flying Time	Afterburner Time
52-1873A	28:25	9:49
52-1878A	16:05	6:47

9. Pilots' Comments:

a. The J35-A-35 engines are slow on starting and care must be exercised to prevent overtemperature conditions between 10% and 35% on starting.

b. The location of the UHF radio control panel is objectionable as the pilot must get his head down in the cockpit to see it.

c. The noise level between 70% and 90% rpm is high in both aircraft compared to other jet aircraft. The noise level in aircraft S/N 52-1873A is much higher than in aircraft S/N 52-1878A.

d. It is difficult to tune the radio compass (AN/ARN-6) when there is sunlight reflecting from the frequency tuning dial window.

e. Response of nose wheel steering to pilot control is too slow.

f. The aircraft has considerable nose down trim change from approximately .82 to .88 Mach.

g. Afterburners require a "jabbing" technique of the throttles of approximately 1% rpm after lifting the afterburner demand finger lifts to insure lights at higher altitudes.

h. Longitudinal trim response is slow.

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i. The pilot's cockpit head rest is too far back and puts the pilot in a dangerous position for ejection.

j. Excessive fuel siphons from the over-flow fuel vents in the wings when rolling into or out of turns.

FOR THE COMMANDER:

H. A. HANES
Colonel, USAF
Director, Flight Test
and Development

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APPENDIX I

UNSATISFACTORY REPORTS

The following Unsatisfactory Reports were submitted during the reporting period:

System Affected	Station Serial No.	Subject	A/C S/N
Airframe	54-1680	Pylon Installation, Left Hand	52-1878A
	54-1681	Amplifier Side Slip Stability Augmenter. Fourth Repeat on UR No. 53-1390.	52-1873A
	54-1682	Door Assembly, Wing, Outer Trailing, Station C.15 to 57.00, Right Hand	52-1878A
	54-1686	Pylon Installation, Right Hand	52-1873A
	54-1722	Belt Assembly, Safety Automatic Opening	52-1873A 52-1878A
	54-1749	Quality Control	52-1873A 52-1878A
Airframe and Utility	54-1690	Quality Control	52-1873A 52-1878A
Electrical	54-1750	Light Assembly	52-1873A
NA	54-1685	Unaccomplished Technical Orders	52-1873A 52-1878A

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Report No. 1

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Report No. 1

ADC Installations: (Cont'd)

Hq ADC, Ent AF Base, Colorado:	
Attn: Comdr, Eastern Air Defense Force, Stewart AF Base, N.Y.	1
Attn: Comdr, Central Air Defense Force, P. O. Box 528, Kansas City, Missouri	1
Attn: Comdr, Western Air Defense Force, Hamilton AF Base, California	1
Hq AFFTC, Edwards AF Base, California:	
Attn: FTO	1
Attn: FTDF	1
Attn: FTDFF	1
Attn: FTDM	1
Attn: FTDTS	10
Attn: Northrop Technical Representative	1

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Wright Air Development Center

AIR RESEARCH AND DEVELOPMENT COMMAND

WRIGHT-PATTERSON AIR FORCE BASE,
OHIO

IN REPLY ADDRESS BOTH COMMUNICATIONS AND ENVELOPE TO COMMANDER, WRIGHT AIR DEVELOPMENT CENTER, ATTENTION FOLLOWING OFFICE SYMBOL:

OCT 14 1954

WCSF-7

SUBJECT: (Conf) Recommendations - Northrop J-65 Powered F-89 Proposal

TO: Commander
Air Defense Command
ATTN: ADOPR, Colonel Powell
Ent Air Force Base
Colorado Springs, Colorado

PTLPD R+D / FTR

1. This Centers' comments to Headquarters, Air Research and Development Command on the subject proposal are as follows:

a. Flight tests have been made on the "high altitude operational technique" as proposed by Northrop and a brief summary of the results are contained in the attached inclosure. Results do not appear to warrant the development of a prototype to verify the performance gains due to the installation of J-65 engines, the cambered leading edge and the flap operating technique.

2. This Center is in receipt of a requirement initiated by the Air Defense Command for an electronics configuration study which indicates that the electronics configuration of the F-89D and H do not meet the using commands requirements. Thus a complete electronics modification program similar to the one recently approved for the F-86D will presumably be required for the F-89D and H. Due to the necessary production lead time and the engineering time required for a redesign of this sort, the proposed J-65 F-89 could not possibly be delivered within the quoted time period incorporating these electronic changes. Therefore, any procurement action initiated for this aircraft for delivery within the quoted period would be done with the knowledge that the J-65 F-89 will not meet Air Force requirements which have been established by the using Command.

FOR THE COMMANDER:

H. A. Boushey

H. A. [illegible]
Colonel, USAF
Asst. Director of Weapon Systems Operations

1 Incl:
Incl. 1. Cy Comments on F-89(X)
and summary of F-89D Flight Tests
54WC-25600-C-1

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COMMENTS ON F-89(X) and
SUMMARY OF F-89D FLIGHT TESTS
TO CHECK HIGH ALTITUDE OPERATING TECHNIQUE

1. The flight tests were conducted at AFFTC in August 1954 using two (2) F-89D's with the so-called 50,000 ft afterburner. Flights were made at 40 - 48,000 ft altitude with flaps lowered seven degrees. The gain in aircraft performance during flight test was noted only in the ability to turn tighter with the flaps lowered. At an altitude (approximately 48,000 ft) where the aircraft could maneuver at 1.2g with no flaps, it could maneuver at 1.5g with seven degrees of flaps. Themaneuvering capability was raised from 2.0 to 2.5g by the use of flaps at 40,000 ft. The decrease in drag was not noticeable. A comparison of this performance gain for an area intercept mission with internal fuel only is as follows:

	F-89D	F-89H	F-89X *
Combat ceiling, feet	46,500	45,700	52,500
Combat radius, n.m.	332	320	370

* With J-65 engine and high altitude operating techniques.

2. Based upon the engineering data submitted and flight test reports, there is no apparent reason why the proposed F-89(X) aircraft could not attain the altitude claimed.

3. The model specification for the proposed F-89X has been reviewed and approximately 100 changes are required. A weight increase is indicated by these changes but the extent of the increase is not known at this time. Any appreciable weight increase, of course, will adversely affect the estimated altitude gain. The development of a prototype for the purpose of verifying the performance gain due to the J-65 engine installation, the cambered leading edge, and the flap operating technique is not believed warranted. It appears to this Center that the operational availability of the F-89X is such as to make it undesirable when it is compared with other weapon systems programmed for the same time period.

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SWC-25600-C-1

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Prepared by---
Phone---
Date
7 Sep 54
ADC HQ Form 11
Revised 15 Aug 53

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COMMANDER AIR MATERIEL COMMAND WRIGHT-PATTERSON AFB, OHIO — ROUTINE — Routine

COMMANDER OGAMA, HILL AFB, OGDEN, UTAH — MCMTAF 4752 — CONFIDENTIAL

15 SEP 1954

(CONFIDENTIAL). ADMAC-2A1 1615. Ref MCMTAF 4752 dtd 11 Aug 54.

The F-89 Modification Review Board which convened at Ogden ANA during the month of July approved ECP to equip one F-89D aircraft with radome anti-icing system. Northrop Aviation Inc is to perform tests to determine if such a system is required and feasible. This comd has no reported instances of radome icing interfering with normal operation of radar equipment. Based on the foregoing this comd at present has no requirement for such a system, however if Northrop tests indicate a need for radome anti-icing this subject will be reconsidered and our decision given at scheduled modification board meeting in the future.

MESSAGE TRANSMITTED
WITH FOLLOWING DATE TIME GROUP
151725Z

Not requested, not furnished

Furnished 15/9/54 (Date) (Initials)

B-B-15

Memo for record not required.

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

CONFIDENTIAL

This correspondence is classified Conf in accordance with AFR 205-1, 24 Jul 53, or for the reason (s) stated.

see basic TWX MCMTAF 4752

SIGNATURE

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ADOPR 12 August 1954

SUBJECT: (UNCLASSIFIED) Electronic Configuration of the F-89D/H

TO: Commander
Air Materiel Command
Wright-Patterson Air Force Base
Ohio

1. This Command is programming toward an integrated system of manned interceptors operating on an all-weather concept. The basis of this system will be the Improved Manual System of Ground Control Intercept, followed by the Air Defense Transition System which will require standardization of electronics and allied equipment installed in Air Defense interceptors. This requirement for a standard electronic configuration in the F-89D/H is submitted under the provisions of AFR 57-4. As some of this equipment is presently installed in the aircraft or separate requirements have been established, this requirement is an affirmation of previously submitted requirements as well as a request for new modifications.

2. The modifications required will be performed on all F-89D/H aircraft of this Command. It is highly desirable that F-89D/H aircraft of other commands be modified accordingly as they are to be used as augmentation aircraft or as extended forces using similar ground environment in their operational areas.

3. The equipment to be installed will be that contained in the following list.

SYSTEM	ITEM
Navigation and Instruments	
TACAN	AN/ARN-21
ILAS	AN/ARN-31
Marker Beacon	AN/ARN-12
Identification	
Air-to-Ground SIF	AN/APX-25
Air-to-Air IFF	AN/APX-26 & 27
Command Radio	
UHF R/T	AN/ARC-34
Data Link, Air/Ground	AN/ARR-39

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Hq ADC ADOPR Subj: (UNCLASSIFIED) Electronic Configuration of the F-89D/H

SYSTEM	ITEM
Aircraft Control	
CSTI	(No proposal as yet)
Auto Pilot	E-11
Approach Coupler	MB-1 or MB-3
Fire Control System	
FCS	E-6/E-9
ECCM	Common Synchronizer
	Tuneable Magnetron
Magnetic Scope Recorder	NADAR II
Standby Sighting System	Optical Sight
Identification Pass	Dover Mod.

4. The following special considerations and features should be made in engineering this configuration:

a. The AN/ARN-6, Radio Compass is required in addition to the AN/ARN-21 until such time as TACAN is completely operational in ADC and will meet all navigational requirements of this Command.

b. The optical sight mode should have the capability of portraying lead collision and lead pursuit attack information on the windscreen.

5. The aircraft are to be used as Air Defense Command interceptors before and after modification.

6. The requirements and justification for the greater part of this configuration are outstanding as a result of other correspondence or, in some cases, by direction of Headquarters USAF. Equipments for which requirements have been established by other than standard AFR 57-4 correspondence are listed below with referenced correspondence.

a. Air/Ground Data Link requirement was established by ADC, reference, 1st Indorsement from this Headquarters dated 9 January 1953 to Headquarters USAF letter AFDRQ-AD/C, subject: "Air/Ground Data Link Retrofit Requirements," dated 23 December 1952. This was reaffirmed by letter from this Headquarters ADOPR, subject: (Unclassified) "Data Link Installations in Interceptor," dated 13 May 1954, to Director of Requirements, Headquarters USAF. This equipment will allow all Air Defense interceptors to be compatible to the Improved Manual Systems and the Transition System of G.C.I.

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Hq ADC ADOPR Subj: (UNCLASSIFIED) Electronic Configuration of the F-89D/H

b. Requirement for Control-System-Tie-In in F-89D aircraft was established in letter from this Headquarters, ADOPR 452.11, subject: "Control System Tie-In," dated 30 June 1953 to Director of Requirements, Headquarters USAF. Headquarters USAF 1st Indorsement to this letter, dated 27 July 1953, concurred in the need for this equipment in all Air Defense interceptors.

c. The requirement for NADAR II was established on the basis of one unit per each interceptor aircraft in message from this Headquarters, ADOPR 1060, dated 5 May 1953 to Director of Requirements, Headquarters USAF. This equipment will give each organization the capability of immediately assessing the quality of attacks performed on intercept missions.

7. The materials needed for these modifications will be predicated on the final engineering of the complete configuration.

8. It is requested that the required modifications be made in a single operation at depot level or in production aircraft, where possible. It is requested that this program not be delayed due to the lack of undeveloped and untested equipment. During the modification program, "provisions for" the unavailable equipment should be incorporated in the aircraft in order that the equipment could be installed at squadron or base level at a later date.

9. A total of 563 F-89D and H aircraft will require this configuration.

10. It is considered that this configuration will cause no adverse effect on support equipment, assuming that contracts for the airborne equipment will include complementary special tools, test equipment and ground display equipment.

FOR THE COMMANDER:

MARSHALL S. ROTH
Brigadier General, USAF
Deputy Chief of Staff, Materiel

Info cy
COMDR, NEAC
COMDR, AAC
COMDR, ATRC
COMDR, EADF

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HEADQUARTERS
SACRAMENTO AIR MATERIEL AREA
MCCLELLAN AIR FORCE BASE
MCCLELLAN, CALIFORNIA

SMMTAC-2

21 September 1954

SUBJECT: Installation of Harp Material in F-94C Radome (U)

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

1. Your attention is invited to the attached inclosures regarding the experimental installation of Harp material in F-94C radomes.

2. The desired test is considered a class IV change in accordance with AFR 57-4. Justification for this test, in the form of Unsatisfactory Reports, or other correspondence, is not currently available at this Headquarters. Therefore, request confirmation for this experimental test and the quantity and serial numbers of the F-94C aircraft to be affected.

3. A telephone conversation between personnel of Hamilton Air Force Base and Sacramento Air Materiel Area indicated that the materials required to conduct the test are available in AirForce Supply.

4. Publication of Technical Order instructions is dependent upon Wright Air Development Center's approval of experimental and flight testing results and the establishment of a firm retrofit requirement by your Headquarters.

5. When the above referenced inclosures are withdrawn or not attached, the classification of Confidential on this correspondence will be cancelled in accordance with Paragraph 26g, AFR 205-1.

FOR THE COMMANDER:

s/JOHN A PECHULS
Colonel, USAF
Director of Maintenance Engineering

3 Incls
1 Hamilton AFB Ltr
dt 28 Apr 54
2 SMAMA Ltr dt 10 May
54 w/1st Ind
3 SMAMA Ltr dt 11 Aug 54
w/1st Ind

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Will Be Confirmed in Sv Publication Form ...ider par 3a, ADCSM 5-3--DO--
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phone----2524
Date--7 Oct 54-

ADC HQ Form 1
Revised 15 Aug 53

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R+D / A+P

1st Ind to ltr Hqs SMAMA, SMATAC-2, Subj: Installation of Harp Material in F-94C Radomes (U)

ADMAC-5A (21 Sept 54)

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

TO: Commander Western Air Defense Force, Hamilton Air Force Base Hamilton, California

1. Request you set up a test program to evaluate the use of Harp Material as outlined in attached enclosures.

2. Route all test results through this headquarters.

3. Your attention is invited to Hughes Interdepartmental Correspondence of 9 July 1954, Subject: Harp Material for Radomes.

BY ORDER OF THE COMMANDER:

3 Incls:
1. Hamilton AFB Ltr dtd 28 Apr 54
2. SMAMA Ltr dtd 10 May 54 w/1st Ind
3. SMAMA Ltr dtd 11 Aug 54 w/1st Ind

T.A. Nuckols/ADMAC-5A/laj

Memo for record not required
Reference basic correspondence

T.A. Nuckols
Capt. SIGNATURE

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This correspondence is classified CONFIDENTIAL in accordance with Par 24, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

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Hq SAAMA, SNXTAC-2, subj: Installation of Harp Material in F-94C Radome (U)

WDMAC-5B (21 Sep 54) 2d Ind

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

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

Recommend that this test be cancelled in lieu of the installation of the "Common Synchronizer" which will eliminate the "break-lock" effect being caused by the altitude line. The "Common Synchronizer" is scheduled for retrofit to all aircraft during "Project Hop-Up".

FOR THE COMMANDER:

3 Incls
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Date--5 Nov 54-

AFDC Form 1
Revised 15 Aug 53

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B/Ltr fr Hq SMAMA, SMTAC-2, Subj: Installation of Harp Material in F-94C Radome (U)

ADMAC-5A (21 Sep 54) 3d Ind

HQ AIR DEFENSE COMMAND, nt Air Force Base, Colorado Spri...s, Colorado

TO: Commander, Sacramento Air Materiel Area, McClellan Air Force Base, McClellan, California

1. Your attention is directed to 2nd indorsement.

2. The installation of the "Common Synchronizer" will solve the problem stated in paragraph 1 of 1st inclosure.

3. Request for installation of harp material in F-94C radome is withdrawn.

FOR THE COMMANDER:

3 Incls
n/c

Michael Steele

Capt M. Steele/ADMAC-5A/mld Memo for record not required. Cys of incls unnec for AG file

Michael Steele
Capt USAF

This correspondence is classified Confidential in accordance with Par 24, AFR 205-1, 24 Jul 53, or for the reason (s) stated. Ref basic corresp.

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OCE-3A-18 28 April 1954

SUBJECT: Modifying the E-5 Fire Control System in the F-94C

TO: Commander
Sacramento Air Materiel Area
ATTN: Maintenance Engineering
Services Division (SMMTAC)
McClellan Air Force Base
McClellan, California

1. (Conf) One of the undesirable features of the F-94C Fire Control System is the terrain and sea return reception in the radar. The return, also called the altitude line often causes the radar to "break lock" when in automatic track operation. When the "break lock" condition occurs during an interception, it frequently becomes necessary to re-initiate the "pass" in order to be effective.

2. (Conf) To reduce the effect of the altitude line in the F-86D, T.O. 1F-86D-104 authorizes a modification kit for the radome. As yet no authorization has been received to modify this portion of the F-94C.

3. (Conf) Assistance is requested for the 84th Fighter-Interceptor Squadron at Hamilton Air Force Base, California, for the following purposes:

a. To provide technical help in designing a shield for use with the F-94C radome.

b. To provide supply assistance for procuring materials required for this project.

4. (Conf) Request that this modification be performed on two (2) or three (3) aircraft in the 84th Fighter-Interceptor Squadron on a trial basis. Then if the modification proves feasible, request your headquarters prepare the justification and specifications for a technical order compliance on all F-94C aircraft.

5. (Uncl) This correspondence is classified CONFIDENTIAL because of the classification of paragraphs 1 thru 4, and in accordance with paragraph 24a(2), AFR 205-1.

FOR THE COMMANDER:

s/MARION R MCCANN
Major USAF
Adjutant

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SMMTAC-2 10 May 1954

SUBJECT: Installation of Harp Material in the F-94C Radome (Uncl)

TO: Commander
Wright Air Development Center
ATTN: WCLG
Wright Patterson Air Force Base, Ohio

1. Your attention is invited to Hamilton Air Force Base letter OCE-3A-18, dated 28 April 1954 attached as an inclosure.

2. The inclosure is forwarded for your review and comments relative to installing Harp material in lower portion of radome in F-94C aircraft similar to modification as directed by Technical Order 1F-86D-104 for F-86D aircraft.

3. Request your reply be expedited.

4. When Inclosre 1 is withdrawn or not attached, the classification of CONFIDENTIAL on this correspondence will be cancelled in accordance with paragraph 26g, AFR 205-1.

FOR THE COMMANDER:

s/A. C. PERRY
Colonel, USAF
Director of Maintenance Engineering

1 Encl
Ltr fr Hamilton AFB
28 Apr 54 (cy)

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Basic, Hq SMAMA (SMMTAC-2) 10 May 54 to Comdr WADC Subject: "(Unclassified) Installation of Harp Material in the F-94C Radome"

WCLOF 1st Ind

HQ WRIGHT AIR DEVELOPMENT CENTER, Wright-Patterson Air Force Base, Ohio

TO: Commander, Sacramento Air Materiel Area, ATTN: SMMTAC-2, McClellan Air Force Base, McClellan, California

1. The Armament Laboratory, WADC, has no objections to the 84th Fighter Interceptor Squadron preparing test installations on three (3) aircraft as requested. (Unclassified)

2. No information is presently available as to the optimum installation of Harp material in the F-94C since the location of the Harp is dependent upon the angle of attack of the aircraft and radome configuration. Information from Northrop Aircraft Inc. indicates that with the antenna pointed dead ahead the optimum location is two inches ahead of the antenna dish. Since no other information is available, it is recommended that, as a starting point Harp material of same type and shape as that used in the F-86D (Ref TO 1F-86D-104) be inserted in the radome with its foremost edge 2" forward of the antenna dish. The optimum position and dimensions can then be determined by experimentation and flight testing. (Conf)

3. It is requested that results from any testing be forwarded to this Laboratory for evaluation and used in the preparation of applicable T.O. instructions. (Uncl)

FOR THE COMMANDER:

s/ROBERT W. HOMMEL
Asst Chief, Fighter Systems
Armament Laboratory

Incl:
w/d

This correspondence is classified Confidential inasmuch as the unauthorized disclosure of this defense information could be prejudicial to the defense interests of the nation.

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HEADQUARTERS
SACRAMENTO AIR MATERIEL AREA
McClellan Air Force Base
McClellan, California

SMMTAC-2 11 Aug 1954

SUBJECT: Installation of Harp Material on F-94C Radome (Uncl)

TO: Commander
Air Materiel Command
ATTN: MCMTAF
Wright Patterson Air Force Base, Ohio

1. Your attention is invited to Hamilton Air Force Base letter OCE-3A-18, dated 28 April 1954, attached as Inclosure 1 and Wright Air Development Center 1st Indorsement dated 3 June 1954 to Sacramento Air Materiel Area letter dated 10 May 1954, attached as Inclosure 2.

2. Your comments and recommendations are requested relative to installing Harp material on the radome of F-94C aircraft. This experimental installation will be similar to modification directed by Technical Order 1F-86D-104. Results of this experiment will be forwarded to Wright Air Development Center for evaluation prior to publication of requested Technical Order.

3. Request your reply be expedited.

4. When the above referenced inclosures are withdrawn or not attached, the classification of Confidential on this correspondence will be cancelled in accordance with Paragraph 26g, AFR 205-1.

FOR THE COMMANDER:

s/A. C. PERRY
Colonel, USAF
Director of Maintenance
Engineering

2 Incls
1. Ltr fr Hamilton AFB
28 Apr 54
2. SMAMA Ltr w/1st Ind

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Basic ltr fr SMAMA (SMMTAC-2) Subject: Installation of Harp Material on F-94C Radome (Uncl) dtd 11 Aug 54

MCMTAF 1st Ind

HQ AIR MATERIEL COMMAND, Wright-Patterson Air Force Base, Ohio

TO: Commander, Sacramento Air Materiel Area, Attn: SMMTAC-2, McClellan Air Force Base, California

1. The proposed installation of Harp Material on F-94C Radome is considered a Class IV modification in accordance with Air Force Regulation 57-4, paragraph 4J(4)(b).

2. The decision to incorporate this modification on referenced aircraft is within the functional scope of the prime aircraft Air Materiel Area as pertains to Class IV type modifications; however, the decision to accomplish such modification should be based upon Wright Air Development Center approval and adequate justification by the using Commands.

BY ORDER OF THE COMMANDER:

s/MAURICE L. DYER
Colonel, USAF
Chief, Maintenance Engineering
Services Division
Directorate of Maintenance
Engineering

2 Incls
n/c

Attach to encl 3

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COPY OF INCOMING CLASSIFIED MESSAGE

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FILE NUMBER 314.5 Lm

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SUBJECT: AMC Master Plan for the Modernization of the F-94C

TO:

1. PROJECT DESCRIPTION.

a. Project Number: A-5-7307 SM has been established by SMAMA for the modernization of the total F-94C inventory and its related systems. This program has been authorized by Hq AMC in TWX MCMTAF 94-6-28E, attached as Inclosure No. 2.

b. The F-94C Modernization Program will be implemented in two phases. Phase I: 151 aircraft to be processed at Lockheed Aircraft Services, Ontario, California, commencing June 1954 and continuing through May 1955. Phase II: 220 aircraft to be processed at SMAMA, commencing in October 1954, ending November 1955.

c. Total Quantity and Type Aircraft - Phase I and II: 371 each F-94C aircraft.

2. WORK TO BE ACCOMPLISHED:

a. Phase I: Accomplish 187 modifications as follows: 78 airframe (including cockpit enlargement); 100 fire control systems (E-5); 2 autopilot (W3A); 7 engine (J-48-P-7); and IRAN maintenance. (For details, see Inclosure No. 3).

b. Phase II: Accomplish 164 modifications as follows: 55 airframe, 100 fire control systems (E-5); 2 autopilot (W3A); 7 engine (J-48-P-5); and IRAN maintenance. (For details, See inclosure No. 3)

c. Outstanding field and organizational maintenance beyond the capability of the using command will be accomplished concurrent with the depot level maintenance and modification pro[illegible].

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Subj: AMC Master Plan for the Modernization of the F-94C

d. Using commands are expected to accomplish as many outstanding field and organizational items as time and manpower permit prior to dispatching aircraft to the AMC facilities for modernization.

e. Items of maintenance which cannot be incorporated in the aircraft during the modification program due to non-availability of kits will be provided for in a retrofit program. SMAMA will develop and implement this program to the mutual satisfaction of AMC and the using commands.

3. RESPONSIBILITIES:

a. SMAMA is assigned the overall monitorship of the F-94C Modernization Program and will accomplish the work required on Phase II aircraft. Work required on Phase I aircraft will be accomplished by Lockheed Aircraft Services, Ontario, California. WRAMA, SAAMA, and NAAMA will be required to furnish adequate assistance and maintain functional responsibilities over their prime commodities.

b. WRAMA will:

(1) Determine and provide contractor or AMC depot assistance required to generate modified E-5 Fire Control Systems in accordance with the approved aircraft in and output schedule, Phase I and Phase II.

(2) Provide an adequate Bank of spare components and systems to guarantee uninterrupted production at LAS and SMAMA.

(3) Provide technical guidance required at LAS and SMAMA.

(4) Develop and implement with SMAMA and LAS, the ground rules for removal and transportation of unmodified E-5 systems to the proper modification facility for rework. Transportation costs may be borne by SMAMA.

c. SAAMA will:

(1) Determine and provide contractor or AMC Depot assistance required to generate J-48-P7 engines in accordance with the approved aircraft in and output schedule, Phase I and II. Provide an adequate bank of spare engines or components to guarantee uninterrupted production at LAS and SMAMA.

(2) Provide technical assistance required at LAS and SMAMA.

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SUBJ: AMC Master Plan for the Modernization of the F-94C

(3) Develop and implement, with LAS and SMAMA, the ground rules for removal, modification and transportation of unmodified engines to the proper modification facility for rework. Transportation may be borne by SMAMA.

[illegible] will

[illegible] W-5A autopilots in accordance with [illegible] output schedule. Phase

[illegible] rework.

[illegible] be borne by SMAMA

All other AMA's and Specialized Depots will:

(1) Furnish assistance as required to meet the requirements of the F-94C modernization program.

4. GENERAL PROGRAM DATA:

a. Spares Control:

(1) AMC requires the assistance of all F-94C using organizations to establish rigid control of all critical spares required to support this program.

(2) AMC Depots will take immediate action to determine spare parts requiring modification prior to start and actual production of modified aircraft and to insure that modifications are accomplished.

(3) F-94C using organizations, in coordination with the appropriate AMC depot, will be responsible for the scheduling of spare components for modification concurrent with the aircraft modification program.

b. Funding Instructions:

(1) Funds required by the AMAs directly supporting this program have been authorized by Hq AMC and will be available upon request for each AMA involved. Final release is contingent upon USAF approval of the AMC FY-55 financial program. In this connection, Hq AMC will release the detail (by funds account and amounts) funding program, as applicable to each depot currently involved.

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SUBJ: AMC Master Plan for the Modernization of the F-94C

c. Aircraft Scheduling Data:

(1) Inclosure Number one (1) indicates scheduling information applicable to this program.

Releasing Commands:

(1) Air Defense Command, Air Training Command, Tactical Air Command, Air Research and Development Command, Air Proving Ground Command and Air Materiel Command, Air University

All aircraft dispatched to SMAMA and LAS will be Prepared for "one time flight" in accordance with Technical Order 00-25-4, Section IV, par. 3. All aircraft must be delivered fully equipped.

f. Ferrying of Aircraft:

(1) Commands dispatching aircraft to Sacramento Air Materiel Area and LAS will be responsible for ferrying aircraft into and away from these maintenance facilities. In the event assistance is required in ferrying aircraft, Air Force Regulation 67-37 will be followed. Upon completion of aircraft, availability reports will be submitted in accordance with Air Force Regulation 54-112.

g. Flight Test Pilots:

(1) SMAMA will initiate action to develop mutual agreements with all affected commands on the requirement and utilization of flight test pilots to be assigned to maintenance facilities for flight test purposes and final acceptance of aircraft.

h. Priority:

(1) OPU-1-6 has been requested from Hq USAF. Confirmation will be disseminated by Hq AMC.

(2) Supply Priority

Supply priority will be in accordance with Air Force Manual 67-1, Volume III, Section 2, Par 2.

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Subject: AMC Master Plan for the Modernization of the F-94C

Hq AMC, (Attn: MCSDXG) will be advised immediately of any project delays or contemplated delays that can be attributed to the assigned supply priority.

i. Material Requirements List:

(1) Material Requirements Lists will be prepared and processed in accordance with Air Materiel Command Regulation 70-8, dated 16 December 1953, or Air Materiel Command Regulation 65-6, dated 3 Sep 53, as applicable.

j. Work Specifications:

(1) The development of Work Specifications will be the responsibility of the AMA designated as prime in Technical Order 00-25-115.

k. Purchase Requests:

(1) All purchase requests will be initiated by the prime AMA and processed through established PR-MIPR channels as indicated in AMCM 66-6 and AMCM 172-2.

l. Contractual Coverage:

(1) All Air Materiel Areas, by prime commodity, will negotiate, contract, and administer with their respective contractors relative to such items as airframes, engines, engine accessories, fire control systems, and automatic pilots which will include TOC and ECP kits, material service, and modification and repair of all equipment required to support the F-94C requirement.

m. Transportation:

(1) Premium transportation will be utilized when necessary to insure timely delivery of parts and equipment for this program.

n. Monitorship by Prime Commodity (Maintenance, Supply, Procurement and Transportation):

SMAMA - Lt Col A. G. Lyon, Command Monitor
Ext 4234 - SMMG
Supply - Mr. D. Lackey - Ext 23219, SMSRD
Maintenance - Mr. D. Shilling - Ext 21128, SMMT
Programs - Mr. W. G. Rutland, Ext 4188, SMFW

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Subject: AMC Master Plan for the Modernization of the F-94C

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WRAMA - Programs - Mr. W. Runfola, WRF

SAAMA - Programs - Mr. J. Chavis, SAF

MAAMA - Supply - Mr. A. Breon, MASRD

o. Reporting:

(1) F-94C production progress at Sacramento Air Materiel Area will be reported in the Aircraft Maintenance and Supply Production Report (RCS-3-AMC-K7).

(2) F-94C production status at LAS will be obtained by the Sacramento Air Materiel Area, Directorate of Maintenance Engineering, Command Workload Control Office, from the local responsible procurement agency and furnished Hq AMC, ATTN: MCM.

(3) Kit procurement and line item action pertaining to all supporting phases of this program will be reflected in the AMC K-20 report compiled by the Maintenance Engineering Services Division of all Air Materiel Areas. Initial report will reflect all kit procurement and status. Subsequent reports will reflect only status of kits which are not available in sufficient quantity to support the entire program.

p. Amendments to Master Plan:

(1) Variations from this Master Plan may be required due to unforeseen developments; therefore, all participating organizations are encouraged to submit proposed amendments to Sacramento Air Materiel Area, Attn: SMMC, for official amending action.

q. Classification:

(1) The total aircraft inventory and Inclosures 1 and 4 are secret information. The balance of the information contained in this document is not classified.

William T. Hefley

WILLIAM T. HEFLEY
Brig General, USAF
Commander

54SM 08379

4 Incls
1. LAS Schedule
2. AMC TWX, 17 Jun
3. F-94C Mod Prog, Phases I & II
4. AMC Ltr 17 Jun

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M59-6x

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ADOPR 30 August 1954

SUBJECT: (Unclassified) Electronic Configuration of the F-94C

TO: Commander
Air Material Command
Wright-Patterson Air Force Base
Ohio

1. This requirement for an electronic configuration in the F-94C is submitted under the provisions of AFR 57-4. The equipment requested will provide a compatibility with the Air Defense Transition System, TACAN and the air-to-air and air-to-ground identification requirements. The Fire Control System will be capable of performing its required functions under normal conditions or when ECM is encountered.

2. The modifications required will be performed on all F-94C aircraft of this Command. It is recommended that this modification be performed on F-94C aircraft belonging to ADC augmentation forces and to other Commands using the same ground environment.

3. The equipment to be installed will be that contained in the following list:

SYSTEM	ITEM
Navigation and Instruments	
TACAN	AN/ARN-21
ILAS	AN/ARN-31
Marker Beacon	AN/ARN-12
Identification	
Air-to-Ground SIF	AN/APX-25
Air-to-Air IPF	AN/APX-26 & 27
Command Radio	
UHF R/T	AN/ARC-34
Data Link, Air-Ground	AN/ARR-39

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ADOPR Subject: (Uncl) Electronic Configuration of the F-94C

SYSTEM	ITEM
Aircraft Control	
Auto Pilot	W-3A
CSTI	(Lockheed ECP #LH - F-94C-3108)
Approach Coupler	MB-1 or MB-3
Fire Control System	
FCS	E-5
ECCM	Common Synchronizer Tuneable Magnetron
Magnetic Scope Recorder	NADAR II
Standby Sighting System	Optical Sight
Identification Pass	Dover Mod.

4. The following special considerations and features should be made in engineering this configuration:

a. The AN/ARN-6 - Radio Compass is required in addition to the AN/ARN-21 until such time as TACAN is completely operational in ADC and will meet all navigational requirements of this Command.

b. The optical sight mode should have the capability of portraying lead collision and lead pursuit information on the windscreen.

5. The aircraft are to be used as Air Defense Command interceptors before and after modification.

6. The requirements and justifications for the greater part of this configuration are outstanding as a result of other correspondence or, in some cases, by direction of Headquarters, USAF. Equipments for which requirements have been established by other than standard AFR 57-4 correspondence are listed below with referenced correspondence.

a. Air/ground Data Link requirement was established by ADC, reference 1st Indorsement from this Headquarters, dated 9 January 1953 to Headquarters USAF letter, AFDRQ-AD/C, Subject: "Air/Ground Data Link Retrofit Requirements," dated 23 December 1952. This was reaffirmed by letter from this Headquarters ADOPR, Subject: (Uncl) "Data Link Installations in Interceptors," dated 13 May 1954, to Director of Requirements, Headquarters USAF. This equipment will allow all air defense interceptors to be compatible with the Improved Manual System and the Transition System of GCI.

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ADOPR Subject: (Uncl) Electronic Configuration of the F-94C

b. Requirement for Control-System-tie-in in F-94C aircraft was established in letter from this Headquarters, ADOPR 452.11, Subject: "Control System Tie-In", dated 30 June 1953 to Director of Requirements, Headquarters USAF. Headquarters USAF 1st Indorsement to this letter, dated 27 July 1953, concurred in the need for this equipment in all air defense interceptors.

c. The requirement for NADAR II was established on the basis of one unit per each interceptor aircraft in message from this Headquarters, ADOPR 1060, dated 5 May 1953 to Director of Requirements, Headquarters USAF. This equipment will give each organization the capability of immediately assessing the quality of attacks performed on intercept missions.

7. The materials needed for these modifications will be predicated on the final engineering of the complete configuration.

8. It is requested that the required modifications be completed in a single operation at depot level, or in production aircraft, where possible. It is requested that this program not be delayed due to the lack of undeveloped and untested equipment. During the modification program, "provisions for" the unavailable equipment should be incorporated in the aircraft in order that the equipment could be installed at squadron or base level at a later date.

9. A total of 300 F-94C aircraft will require modification.

10. It is considered that this configuration will cause no adverse effect on support equipment, assuming that contracts for the airborne equipment will include complementary special tools, test equipment and ground display equipment.

FOR THE COMMANDER:

MARSHALL S. ROTH
Brigadier General, USAF
DCS/Materiel

Info cy:
Comdr, ATRC
Dir, Rqmts, USAF

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

AFMSS-AR-2 15 NOV 1954

SUBJECT: (Uncl) Supply Support of E Series Fire Control Systems

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

1. It has come to the attention of this headquarters that there is and will be fore some time, a serious support deficiency for components of the E series Fire Control Systems. Projects "Pull Out" and "Hop Up" for the modernization of F86D and F94C, interim complete dependence on contractor modification facilities, incomplete accountability, and other factors have combined to make this problem extensive.

2. Unusual measures are being taken to overcome the supply difficulties. Even though AMC reports that major commands are cooperating and assisting in such measures, this headquarters believes that the following actions can be taken by major commands to assist further in resolving the support difficulties.

a. Disseminate adequate information on "Pull Out" and "Hop Up" objectives to the lowest affected operating echelons, assuring the understanding of the information.

b. Emphasize improved supply discipline, Strict accounting, reporting, and identification of fire control equipment is essential to the USAF's ability to achieve operational readiness. It appears at this time that lax reporting and hoarding of some critical components, coupled with misidentification of items, are significant factors in the present support situation. Recomputations of requirements balanced against past procurements do not justify significant new procurement to meet current shortages. Therefore, existing components must be recovered to meet the requirements.

c. Direct each echelon concerned to conform promptly and strictly to shipping instructions from the monitoring depot (WRAMA) for movement of Fire Control System components.

d. Expedite the movements of reparable components to depot repair facilities in accordance with Technical Order 16-1E-1, including use of premium transportation where feasible.

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SUBJECT: (Uncl) Supply support of E Series Fire Control Systems

3. WRAMA is sending out inventory teams, to be assisted by major command representatives, in an attempt to recover and establish identification of critical fire control system components. This action has increased considerably the availability of some critical items. This headquarters desires that you continue to fully cooperate in the spirit of this action.

4. Whole hearted support of supply agencies and strict adherence to the above requests should significantly alleviate a serious situation. The USAF cannot condone a status of supply discipline which indicates that poor supply management contributes to such a serious supply shortage. All individuals concerned should be impressed with the fact that mutual benefit will accrue to all elements of the Air Force mission when cooperation in such matters is routine. Although WRAMA reports full cooperation has been given their inventory teams, the necessity for such teams manifests an unsatisfactory situation. The use of these teams is an emergency measure to be discontinued at the earliest possible date.

BY ORDER OF THE CHIEF OF STAFF:

/s/ John G. Duffey
JOHN G. DUFFEY
Colonel, USAF
Chief, Armament Division, D/S&S
Office, Deputy Chief of Staff, Materiel

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	Instl
	Log Plans
	Hq Sq Sec
	FCDA
	CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
S-3 No
Prep by CAPT T. A. FLECK/dd
phone 2632
Date 26 Nov 54

Hqs USAF, AFMSS-AR-2, Subj: (Unsl) Supply Support of E Series Fire Control Systems

9 DEC 1954

ADMAC-1C (15 Nov 54) 1st Ind

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

Request you take necessary action to comply with paragraph 2 of basic letter.

BY ORDER OF THE COMMANDER:

A. P. SMITHEYS
Captain, USAF
Asst Command Adj

IDENTICAL INDORSEMENTS TO:

Comdr, CADF
Comdr, WADF
Comdr, 4750th Def Wg (Wpns)

E-19801/0099
F-7207/0059
L-29600/0657
E-5289
RT

ADMAC-5-

1st Lt Charles F. Carver, Jr
LT COL CHARLES F. CARVER, JR
Adj

9/12/54

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ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified CONFIDENTIAL in accordance with Par ____, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

T. A. Fleck
SIGNATURE Capt.

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DEC 27, 1954

Fire Control System Maintenance Training

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

1. Reference is made to the following:

a. Your classified letter ADPTR-3, dated 3 September 1954, subject: "(Unclassified) Training Film, B-9 Fire Control System Maintenance."

b. Your letter ADPTR-4 dated 10 November 1954, subject: Shortage of Seven Skill Level Airmen in the Fire Control Systems Career Fields.

2. This Headquarters has been aware of the necessity to develop a resource of airmen to meet the initial technician level personnel requirements of the B-9 and MX-3 Fire Control Systems and the CAR-1 missile. In the current United States Air Force Program for Technical Training (AFF 55-3) we have programmed a surplus of airmen through Course AS 322300, Sub, 5, and 6 Series System Mechanic. This surplus is intended to offset initial training losses into the B-9 MX-3, and CAR-1 programs.

3. At the present time we are developing new basic course training requirements projected through Fiscal Year 1956. Careful consideration is being given to the Sub, 5, and 6, B-9, MX-3 and CAR-1 training requirements within the capabilities of the Air Training Command. The Apprentice Course AS 322300 will be programmed at a rate which will produce trained Sub, 5, and 6 personnel being available in sufficient quantity to be a resource of technical skills to fill the initial requirements of these new programs. In addition, basic courses for the B-9, MX-3, and CAR-1 equipments will be established at the earliest possible date consistent with training equipment and instructor availability.

4. This Headquarters is unable to alleviate your shortage of [illegible] presently upon 322710, Sub, 5 and 6 Series System Technician [illegible]. We will continue to program student inputs

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From: COMMANDER, ADC 21 Dec, 1954

To: COMMANDER, WRAMA, ROBINS AFB, GA.

COMMANDER, WADF, HAMILTON AFB, CALIF
COMMANDER, CADF, GRANDVIEW AFB, MO
COMMANDER, EADF, STEWART AFB, N. Y.
COMMANDER, SMAMA, McCLELLAN AFB, CALIF
COMMANDER, OOAMA, HILL AFB, UTAH

(UNCLASSIFIED) ADMAC-1E_____. Personal from Maj Gen Roth, by Lt Col Carver, to Maj Gen Tibbetts. Subject is: Support of the E Series Fire Control System for ADC Fighter Interceptors. This message in three parts. Part I. Currently the average gross number of ADC fighter interceptors not combat ready for Class 11B spares is about 85 which shows a net reduction over the past months. I appreciate your sustained successful efforts to improve the supply of E Series Fire Control System parts and increase the ADC combat potential. Part II. More than 50% of those 85 aircraft are not combat ready for 5 only frequently recurring AMFE Class 11B items. Those are S/N 5200-20 3265 computer, S/N 5200-221380 control (and suitable substitutes), S/N 5200-241189-35 detent, S/N 5200-374405 indicator, and S/N 5200-928897 xmtr part of complete assembly S/N 5200-628631-75. Part III. Request that an immediate special review be made again of those 5 items and that we, and the info addressees be advised of the dates when the items will be available for (A) limited base stockage to eliminate ANFS condition (B) normal base stockage.

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From: COMMANDER, CADF, GRANDVIEW AFB, MO. 3 Nov 1954

To: COMMANDER, ADC, ENT AFB, COLORADO

(UNCLASSIFIED) CDMAC-5 2137. Your message ADMAC 1E 34613, 26 Oct 54. A slight improvement in the support supply of E-Series Fire Control Systems has been shown. It is believed that with the action being taken as indicated in your message every possible source is being exploited to continue to improve this situation. Therefore, a negative report is submitted. This headquarters is appreciative of the aid rendered in obtaining critical items and feels that units of this command have been materially aided in the 14 day base stockage of critical items.

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From: HQ ADC 28 Oct. 1954

To: CHIEF OF STAFF, HQ USAF, WASHINGTON 25, D. C. (AIRMAIL)

Info: COMMANDER, AMC, WPAFB, OHIO (AIRMAIL)
COMMANDER, WRAMA, ROBINS AFB, GA (AIRMAIL)
COMMANDER, SAAMA, KELLY AFB, TEX (AIRMAIL)
COMMANDER, OCAMA, TINKER AFB, OKLA (AIRMAIL)

(UNCLASSIFIED) ADMAC-1E 34977 . Your message C1E52741 dated 22 Oct. This message is in two parts.

Part I. The supply support of Class 11B parts for the E Series Fire Control Systems on ADC aircraft has been the subject of numerous communications and personal visits between ADC and WRAMA and Hq AMC during the past months. From April through July an average gross total of 217 ADC aircraft were AOCP/ANFE for Class 11B parts. From August through September the gross average dropped to 138 aircraft. Currently the following action is on hand by WRAMA and ADC, in close harmony, to further reduce the number of ADC fighter interceptors incapable of performing their mission.

(A) On an ADC list of 45 Class 11B items (see attachment) prepared in September, which had recurred frequently as AOCP/ANFE requirements during the six month period March through August, WRAMA is (1) investigating the need for additional procurement and (2) is re-examining depot stocks to give special 14 day base stock levels, against ADC specified quantitive requirements, to prevent AOCP/ANFE conditions. Requisitions to meet 14 day

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requirements of 23 of the 45 items are new in course of issue. This is a temporary measure until depot stocks will allow normal base stockage.

(B) Four joint WRAMA-ADC teams were formed one week ago to search certain ADC bases and AMC depots for Class 11B items lost to the supply distribution system through lack of identification, excess holdings, or any other reason.

(C) ADC bases are being checked constantly to insure that reparables are evacuated immediately. It is now mandatory that ADC AOCP/ANFE requisitions for components and sub-assemblies listed in TO 16-1E-1 show the shipping details of relative reparable items.

Part II. Class 03D Amplifiers valves and sensors for the Electronic Fuel Control System on F-86D aircraft have been the subject of numerous communications between ADC and Hq AMC, SAAMA and OCAMA during the past months. SAAMA message SASCDC-10-9268-M dated 18 October (copy attached) to Hq AMC giving a summary of their recent important messages is the latest supply information available. Our message ADMAC-1E 34104 dated 21 October referred the above SAAMA message to the personal attention of General Dau, Hq AMC, and stated that the sensor problem has existed for about one year and that in addition to the cost of pilot pick-up on a serviceable for reparable basis there had been, and still is, the constant adverse affect on the ADC combat potential. As for other critical items ADC bases are being checked constantly to insure that serviceable and reparable amplifiers valves and sensors in excess of requirements are evacuated immediately. Copy of attachment for Hq USAF only.

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From: HQ ADC, ENT AFB, COLO SPRINGS, COLO. 13 October 1954

To: COMMANDER, EADF, STEWART AFB, NEWBURGH, N.Y.
COMMANDER, CADF, GRANDVIEW AFB, GRANDVIEW, MO.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF.
COMMANDER, 4750TH TNG WG (AIR DEF) YUMA COUNTY AIRPORT, YUMA, ARIZ.

COMMANDER, WRAMA, ROBINS AFB, GEORGIA
AFPR HUGHES AIRCRAFT CO, CULVER CITY, CALIF

(UNCLASSIFIED) ADMAC-5A_____. For WRSWF, WRAMA. For Major Winkel, Hughes Aircraft Co.

Fire Control Systems inventory teams composed of WRAMA and ADC personnel will visit all bases on which ADC units are stationed, Within the next 60 days. The purpose of this visit is to effect the physical inventory and redistribution of FCS components. This inventory and redistribution is vital and necessary if Project Pull-Out and Hop-Up are to be successfully completed. Inventory teams are authorized to give on-the-spot shipping instructions on FCS components determined to be in excess to the requirements of ADC units. Teams will be in possession of a list of quantities of FCS components which have been determined as the minimum level required for operation of the ADC Fighter-Interceptor Squadrons. This list has been agreed on by ADC and WRAMA. It supersedes all previous levels and authorities and will be used in lieu of Table XVI quantities for effective components for the duration of Pull-Out and Hop-Up. It is realized that in some instances, that

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quantities reflected on this minimum level list will be less than desired, however, it is believed that by reducing the level in some units that the critical shortages in others can be eliminated. Quantities of this list represent total quantities in the squadrons and in the base supply. Copies of these minimum levels lists will be forwarded to your headquarters as soon as reproduced at this headquarters. It is requested that the utmost cooperation and assistance be given to personnel of the inventory teams by all personnel of your Command. Compliance with shipping orders of your inventory teams is mandatory.

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AF PLANT OFFICE
HUGHES AIRCRAFT COMPANY
Culver City, California

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6 October 1954

SERCQ

SUBJECT: Evaluation of Failed Parts of Hughes Fire Control Systems

TO: Commander
Air Defense Command
ATTN: ADMAC
Ent Air Force Base
Colorado Springs, Colorado

1. Transmitted herewith is Hughes Aircraft Company letter dated 28 September 1954, subject: "Evaluation of Failed Parts of Hughes Fire Control Systems."

2. The Air Force Plant Representative concurs with the Contractor's request in the Feedback I program. Reliability of tactical equipment is recognized in the Air Force as mandatory in the performance of its mission.

3. The Hughes Aircraft Company has recently launched a major program in the reliability of E Series Fire Control Systems. This is a result of a request received from Headquarters Air Materiel Command to consider inclusion of a 200 life hour test prior to Air Force acceptance of this type of equipment.

4. Cooperation and assistance in this program by the Air Defense Command is respectfully requested.

FOR THE AF PLANT REPRESENTATIVE:

/s/ HARRY G COOK
Chief, Quality Control Division

1 Incl:
HAC ltr dtd 28 Sept 54
w/Incl

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B/ltr AF Plant Office, Hughes Acft. Co., SHNCQ, Subject: Evaluation of Failed Parts of Hughes Fire Control Systems

ADMAC-5A (6 Oct 54) 1st Ind 3 Nov. 54

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

TO: Commander, Western Air Defense Force, ATTN: WDMEL, Hamilton Air Force Base, Hamilton, California

1. Your attention is invited to the preceeding correspondence; this headquarters concurs in the reliability program proposed by Hughes Aircraft Company. This headquarters is of the opinion that the results of this program will be of benefit to organizations of this Command and interposes no objection to visits by Hughes Aircraft Company personnel to the 94th Fighter-Interceptor Squadron, George AFB, Calif. If your headquarters or the Commander of the 94th Fighter-Interceptor Squadron objects to these visits it is requested that this headquarters be so advised.

2. With reference to paragraph 6b of the letter by Mr. E. M. Boykin (Incl. #1), Headquarters AMC interposes no objection to the release of non-recoverable Fire Control System parts to Hughes Aircraft Company personnel. (See Incl. #2). Hughes Aircraft Company has been advised of AMC's concurrence in this portion of the reliability program.

3. It is requested that the Commander of the 94th Fighter-Interceptor Squadron be advised of the contents of the preceeding correspondence and that his cooperation in this program be requested.

BY ORDER OF THE COMMANDER:

2 Incls:
1. HAC ltr dtd 28 Sept 54, w/incl.
2. AMC msg MCSFPQ-10-312-E

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HUGHES AIRCRAFT COMPANY
Culver City, California

28 September 1954

TO: Commander, Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado
ATTN: ADMAC

THRU: Air Force Plant Representative
Hughes Aircraft Company
ATTN: SBRCA
Culver City, California

SUBJECT: Evaluation of Failed Parts of
Hughes Fire Control Systems

1. By careful attention to engineering and manufacturing details, the Hughes Aircraft Company is able to produce fire control systems in which the reliability has remained essentially constant even though the system sizes and complexities have increased greatly. However, the ultimate goal is to improve over-all system reliability regardless of complexity. As an important step in achieving this goal, Hughes Aircraft Company is hereby requesting the concurrence of Air Defense Command in a program of failed parts evaluation.

2. As advances are made in the techniques and materials used in the manufacture of parts which are used in a fire control system, the reliability of these parts may be expected to increase. However, without an indication of the long term reliability of a part when used under actual Air Force conditions, the part manufacturer does not have sufficient information to permit him to make further advances in reliability. Therefore, Hughes Aircraft Company is proposing a program which will permit the evaluation of parts which failed under field operating conditions.

3. A detailed description of the proposed program is contained in the enclosure. In brief, this program proposes that Hughes Aircraft Company send an engineering representative to each of several Air Force bases which utilize E-Series Fire Control Systems. This representative will be under the jurisdiction of the resident Hughes Field Engineer and will have as his sole duty the collection of data on failures which occur in the fire control systems. It is also proposed that any non-recoverable parts involved in the failure be obtained by the representative for return to Hughes Aircraft Company for future study. These parts may either be sent directly from the base or by way of the Western Electronic Maintenance Depot. Upon receipt the parts will be transmitted to the appropriate manufacturer for investigation while at the same time the application of

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the part in the fire control system will be reviewed for possible causes of the failure. It is felt that in this way the parts manufacturer will be able to make the most worth-while improvement in the reliability of parts.

4. The basic program has been divided into two phases identified as Feedback I and Feedback II. The first phase of the program, Feedback I, will be primarily a test period to permit evaluation of the methods and procedures, rate of return of parts, estimated man-hours required and any other related problems. It is planned that this portion of the program will take place at George Air Force Base and will require approximately three months for completion. It is anticipated that only one engineer will be required to support this phase of the program. After an evaluation of the results of Feedback I, it is expected that a more extensive evaluation program will be indicated. In this case, the second phase of the program, Feedback II, will be instituted to cover a larger number of Air Force bases.

5. While any data gathered during this program will be submitted to Air Defense Command as desired, it should be noted that any program intended to improve reliability will only show results in improved reliability on a long term bases. The final objective of the programs would be that each fire control system type would be more reliable than its predecessor.

6. Initial contacts have been made with George Air Force Base to determine if the proposed program could operate successfully in the environment of an Air Force base. While initial indications are that the program can be successful, Air Defense Command concurrence is required in two areas:

a. Permission is required for the representative to function as an observer in collecting data.

b. It is further requested that any non-recoverable parts which are removed from the fire control systems at the Air Force base be released immediately to the representative for return to Hughes Aircraft Company with no continuing accountability.

A parallel request for release of non-recoverable parts from the Western Electronic Maintenance Depot has been sent to Warner Robins Air Materiel Area. It is requested that rapid approval of the proposed plan be made and transmitted to George Air Force Base in order that the initial phase of the program may begin as soon as possible.

Very truly yours,

/s/ EDWARD M BOYKIN
Director
Field Service and Support

EMB:RCR:eb

Enclosure

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PROPOSAL FOR FAILED PART EVALUATION

I SUMMARY

A system is proposed for the return of electronic parts which were primary field failures in Hughes fire control systems. These parts will be returned to their manufacturers for analysis as to the causes of failure with the objectives of improving the reliability of the parts, their applications, and specifications.

II INTRODUCTION

Hughes Aircraft Company is incorporating into its systems the most reliable available parts of which it is aware, and is specifying these parts in the most definitive manner it has yet devised. Design engineers are becoming increasingly aware of the importance of careful and proper parts application. Certain reliable, ethical vendors are producing for the military equipment market the highest quality parts which they know how to make, consistent with the quantities required.

The results of these advances have not been more reliable systems, however. Rather, the reliability has remained essentially constant as the system sizes and complexities have increased - a very real accomplishment.

Hughes is now developing and proposing larger systems, or systems requiring higher reliability. Further efforts along the lines described above probably will no longer produce comparable improvements in parts, their application, or their specifications. The limitation is that the better vendors are now making essentially the best parts they know how to produce, considering the compromises they must make to turn out general use parts, but therein lies the factor which may yield better parts in the shortest time. Advances will continue to be made in materials and techniques, but this is a long-term program. If the vendor is to supply a more useful, reliable part in a short time, it is essential to return to him those parts which have failed in the field, together with as much information as practicable on the part's application, history, and acceptability criteria. The present system of reporting field failures is neither accurate nor useful to vendors. It has been adjudged that not all failures are reported and those which are reported do not represent a random sampling. Further, it is not sufficient for the vendor to know merely that, over a certain period of time, a number of his parts have failed. He must be able to determine what percentage, how, and why they failed. To accomplish the objectives, the following program is proposed.

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III FAILED PARTS EVALUATION PROGRAM

Because of uncertainties as to the quantity and usefulness of the data to be obtained, the program is divided into two steps or programs. Program 2 depends upon the outcome of Program I.

A. Program 1 (Also see B: Appendix)

1. A tactical Air Force Base having an adverse environment during the trial period is to be selected. This should preferably be as close to Culver City as possible for easy liaison. George AFB appears to satisfy both of these requirements.

2. An engineer will be stationed at the Base for the sole purpose of acquiring every non-recoverable part which is removed from a Hughes fire control system. Those parts which fail, but are returned with a unit to the Western Electronic Maintenance Depot are to be logged in with the part and unit serial number for later attention at the Depot.

3. Each part which is removed will be entered on a log (for statistical purposes) and categorized as well as the engineer is able, as:

a. Primary failure - those parts which apparently failed of themselves for no obvious external electrical reason.

b. Secondary failure - those parts which probably failed as a result of the failure or malfunction of another part of the system.

c. No failure - those parts which were removed for access to another, a failed part, or for preventative maintenance.

4. Each primary failure part is tagged (or numbered and referenced to a report number) with its system type, unit type and number, circuit symbol number and history. The parts are sent to Culver City.

5. Units to be returned to the Western Electronic Maintenance Depot are:

a. Tagged to insure that certain designated parts are sent to Culver City upon removal, or

b. A request form is sent to the Depot requesting that certain designated parts are sent to Culver City upon removal from specified units.

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6. Upon arrival at Culver City, parts are:

   a. Examined and analyzed

   b. Examined and discarded

   c. Transmitted to their manufacturers with pertinent histories and application data.

7. The parts manufacturers will analyze the failed parts and:

   a. Report to Hughes Aircraft Company on their findings

   b. Report to Hughes Aircraft Company on the failures as a possible result of the applications

   c. Recommend changes in the parts and/or their specifications.

8. Hughes Aircraft Company will treat the data and reports as new engineering information and act accordingly. Possible actions include:

   a. Encouragement to the vendor to improve the part

   b. Refinement of specifications

   c. Re-examination of applications

   d. Communication of findings to other interested parties

   e. Seeking changes in military specifications, where the data indicates the need.

B. Program 1 (Appendix)

As the steps set down above are examined, numerous questions arise. This section answers certain of them. The numbering corresponds to that in A.

1. Before proceeding to a full program encompassing several Bases, certain questions need be answered. For example:

   a. How many parts will be covered?

   b. How many Bases should be included?

   c. How long should the program take?

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d. Is the information useful (quantity and quality)?

e. What rules or guide-lines are needed? For example, should all temperature-sensitive parts be clipped out rather than unsoldered? Are short-cuts possible in procedures, forms, etc.?

2. It is absolutely essential that Hughes secure from Air Defense Command the understanding that non-recoverable primary failure parts will become the property of Hughes and are not to be accounted for, and will not be sold or reused. Accountability could become such a clerical burden as to make the program unfeasible.

3. The presence and aid of the Hughes field engineer will be provided for technical systems advice and as a liaison between the parts engineer and certain Air Force personnel initially.

4. Certain capable, ethical parts manufacturers have been contacted with regard to this program. On a no-charge, no-obligation basis, they have agreed to participate in the program and to assign engineers to analyze the failures and submit reports. These agreements were received from the following organizations (a partial list):

a. Sprague (capacitors, resistors)

b. Gudeman (capacitors)

c. Helipot (potentiometers)

d. Littlefuse (fuse holders)

e. Allied Controls (relays)

f. Filters, Inc. (relays)

g. Vitramon (capacitors)

h. G. E. (tubes)

i. RCA (tubes)

j. Sylvania (tubes)

k. Daven (resistors)

Tubes will be covered only to a limited extent. Cornell University and ARINC are now engaged in a similar program on tubes. Their data is available to Hughes. Hughes and/or tube manufacturers will establish whether

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a correlation exists between the types of tube failures in Hughes equipment and the average equipment. If so, Hughes can do no more than what is being done by Cornell and ARINC. If not, the equipment reasons for tube failure should be looked into.

C. Program 2

This is an extension of Program 1 to other Bases. It would be desirable to conduct the test at cold bases, humid bases, and to provide other variations, as indicated by experience.

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ADMDM

6 December 1954

SUBJECT: Maintenance Stand for E-4 Fire Control System, F-86D Aircraft

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. In accordance with AFR 57-3, 28 May 1951, the following operational requirement is submitted:

a. Standard AF maintenance stands are not adequate or efficient for maintenance on the E-4 Fire Control System as installed in the F-86D type aircraft. The standard stands require excessive movement of stands and personnel, and do not offer protection for installed equipment, test equipment or maintenance personnel in inclement weather.

2. The maintenance stand in the attached drawing will correct the conditions cited in paragraph 1a.

a. It will enable maintenance personnel to move on either side of the aircraft from the cockpit to the radome without climbing down to the ground. The stand is such height as to enable the maintenance personnel to work on various components with ease.

b. With the addition of a canopy, lighting and storage space, the attached radar workstand would have flexibility in its use as a maintenance item.

3. Description:

a. Stand, maintenance, E-4 Fire Control System (F-86D), similar to attached Drawing #16044-29B.

b. Drawing #16044-27B shows the storage racks for the work stand, and Drawing #10044-30B shows the canopy for the F-86D radar work stand. These items may be constructed with slight variations, but the following should be kept in mind:

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Hq ADC, ADMDM, Subject: Maint Stand for E-4 Fire Con Sys, F-86D Acft

(1) Should be constructed to maintain portability of the stand; but should be capable of being placed in a secure position.

(2) Sufficient height to enable the top to clear the canopy in the raised position.

(3) Attachment point for a small hoist to change E-4 FCS. Transmitter and Receiver units.

(4) It should be wired for lights and electrical outlets for test equipment.

(5) Storage racks should also be built for holding test equipment and tool boxes in order to prevent the walkway from being cluttered with boxes and tools.

(6) The casters should allow for easy towing and adequate truck locks for stowed position.

c. The advantages of this stand over standard items are that it may be used in inclement weather, easier to move, enables personnel to have access to all components of E-4 Fire Control System, to remove and replace components such as the transmitter, receiver and antenna during adverse weather conditions without the use of a hangar, and is readily disassembled for shipment or squadron movement.

d. The proposed basis of issue should be two (2) each per F-86D squadron.

e. Recommend the adoption of a commercial item.

4. Request this headquarters be advised of action taken to procure and authorize a suitable standard radar maintenance stand for all F-86D units.

FOR THE COMMANDER:

MARSHALL S. ROTH
Major General, USAF
Deputy Chief of Staff, Materiel

3 Incls
1. NAA Dwg #16044-27B
2. NAA Dwg #16044-29B
3. NAA Dwg #16044-30B

Info Coy:
Comdr ARDC
ComdrAMC

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Asm Asgmt	
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Log Plans	
Hq Sq Sec	
FCDA	
CAA	

Will be Confirmed in Std Publication Form Under par 3a, ADCSM 5-3

Prepared by Maj.V.E.Chandler/bb

Telephone 2727/2739

Date

301.2

ADOCT-C

SUBJECT: (Uncl) Chester Switch Installation

TO: Commander
Wright Air Development Center
Wright-Patterson Air Force Base
Ohio

1. A project was assigned to the Standardization and Development activity of the 4750th Air Defense Wing (Weapons) at Yuma, Arizona on 19 February 1954 to study all aspects of a Chester Switch installation in interceptors equipped with E-series Fire Control Systems. This installation will enable the aircrew to determine the presence of any FCS malfunction which will place the interceptor on a true collision course while in flight; further, it will provide them with the capability of checking the attack display while en route to the target area without obtaining a lock-on. Inclosed are two copies of the final report submitted by this activity. This headquarters concurs with the recommendations of paragraph V of subject report.

2. The Chester Switch installation is less complex than the Automatic Warning modification preffered by Hughes Aircraft and is more useful and flexible. We therefore request that action on the Automatic Warning modification be terminated. A proposal for installation of Chester Switches on applicable ADC interceptors is being formulated for submission to WRAMA for a Class IV modification.

FOR THE COMMANDER:

Capt Nuckols

2 Incl
Rept (2 cys)

(NOT NEC FOR AG FILE)

NO MEMO FOR [illegible] COORD REQUIRED

RECEIVED
25 OCT 1954
ADMEL

E-3697

J. E. Chandler 11/4

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified ____ in accordance with Par 29, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

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AF-ADC-COLO. SPRINGS, COLO

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ADMAC-5A

5 October 1954

SUBJECT: (Uncl.) Modification of E-4, 5 and 6 Fire Control Systems

TO: Commander
Warner-Robins Air Materiel Area
Attn: WRMT
Robins Air Force Base
Georgia

1. In accordance with paragraph 7, AFR 57-4, 10 June 1954, request approval of the installation of the "Cheater Switch" modification on the E-4, 5 and 6 Fire Control Systems. A detailed description of this modification is included as inclosure 1.

2. In forwarding this request the following information is submitted:

a. This modification is applicable to all E-4, 5 and 6 Fire Control Systems.

b. The use of the "Cheater Switch" will enable flight crews and maintenance personnel to determine if certain malfunctions exist which will place the interceptor on a collision course.

c. Diagrams and descriptions are contained in inclosure one.

d. Materials required for installation of this modification may be obtained from Air Force stock.

e. The proposed modification may be accomplished at organization level.

f. This Command presently possesses 465 F-86D's, 225 F-94C's and 137 F-89D type aircraft.

g. It is requested that all the above aircraft be modified.

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ADMAC-5A, Subj: (Uncl) Modification of E-4, 5 and 6 Fire Control Systems

h. There will be no effect on related equipment.

3. If additional technical information is required it is requested that the 4750th Training Wing (ADC) Yuma, Arizona be contacted direct.

FOR THE COMMANDER:

1 Incl:
2 cys of ADC Proj
YAB/FCS-3 Cheater
Switch

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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301.2

21 JUL 1954

HAOPR-5

SUBJECT: (Secret) Use of E-4 Fire Control System for Aircraft Identification on Active Air Defense Missions

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

1. Reference: Paragraph 2, 7th Indorsement, your headquarters, subject as above, 11 June 1954.

2. The "Dover Modification" requires an additional modification for the E-4 fire control system over and above that required for the same end result on the E-5 system. The DC antenna - elevation - positioning voltage is available on the E-5 but not on the E-4. Therefore, the attack display as proposed by the 46th Fighter-Interceptor Squadron (when the error dot, when modified, gives antenna - position information in both elevation and azimuth) is not deemed feasible on the E-4 system without further modification.

3. This headquarters does not consider the proposal to modify E-4 systems at unit level advisable. Request this plan be reconsidered for the following reasons:

a. In the past this command has experienced difficulty in locally procuring necessary parts and equipment to accomplish modifications at unit level. The necessity to substitute parts and deviate from engineering drawings results in non-standard "Rube Goldberg" devices.

b. The existing command-wide shortage of 32271Ds presents a supervisory problem that could very well effect the quality of a complex modification.

c. The present workload of fire control systems personnel is taxed to capacity. Any increase in this workload will result in time

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RAOPR-5 21 JUL 1954

SUBJECT: (Secret) Use of E-4 Fire Control System for Aircraft Identification on Active Air Defense Missions

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

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HAGFB-5 Subject: (Secret) Use of E-4 Fire Control System for Aircraft Identification on Active Air Defense Missions (Cont'd)

lost to maintenance and as a result will reduce unit operational effectiveness.

4. This document is classified Secret in accordance with paragraph 23b(6), AFR 205-1.

FOR THE COMMANDER:

JAMES R. WORLINE
Captain, USAF
Asst Adjutant

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[illegible] (SECRET) Use of E-4 Fire Control System for Aircraft Identification on Active Air Defense Missions

[illegible] (28 Jul 54) 1st Ind

FILED R+D 2-1

27 AUG 1954

[illegible] Air Defense Command, Ent Air Force Base, Colorado Springs, Colorado

[illegible] Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. The following is submitted for your information.

a. Reference is made to paragraph 2 herein letter. The "Hughes Modification" kits are designed for each of the three (3), E-4 and E-5 fire control systems. The kit designed for the E-4 system will include the cable necessary therein to give the same presentation [illegible] E-4 and E-5 fire control systems during a visual.

b. [illegible] is made to paragraph 3.

(1) This headquarters in cognizant of the shortage of [illegible] and the interest in the workload that the installation of this kit would impose upon the [illegible]. It was in the interest of providing interceptor crews a visual identification [illegible] capability at the earliest possible date, that this headquarters recommended that these kits be installed at field level.

(2) Headquarters USAF has informed this headquarters that the "Hughes Modification" kits will be issued complete with all the necessary parts, engineering drawings and changes in technical orders.

c. This headquarters will be advised of any further action taken [illegible].

BY ORDER OF THE COMMANDER

L-35 031/0569

U. F. HUMPHREYS
Captain, USAF
Asst Command Adj

COMEBACK COPY

Not requested, not furnished —

Furnished 27/8/54 (Date) (Initials)

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SEE CRYPTO SECTION BEFORE
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ACTION: P-1-R
INFO: C, D, I, M, DO
Sup: 9 Dec 54

A-17-25

FM JEDOP JEPVB 333

TO JEPIC 1636

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INFO USAF WASH DC

CINCADC/COMAIRDEFCOM ENT AFB COLO

CINCJEDWP/COMARC WRIGHT-PATTERSON AFB OHIO 33303

COMARDC BALTIMORE MD

CONFIDENTIAL REFTWX AFDRO-AD/C. 94025 REUGAD ADOPR 2-025 DTD 14 NOV 54 AND UPLET ADOPR 412.3 DTD 28 NOV 54. PART I. STATUS OF NAVIGATION AIDS CONFIGURATION FOR F-86D IS IN ACCORD WITH REFERENCED LETTER ABOVE. THE INSTALLATION OF ARR-39, APX-25, CSTI REQUIRES THAT SPACE BE MADE AVAILABLE IN THE AIRCRAFT. THIS ADDITIONAL SPACE IS ACHIEVED BY DELETION OF ARN-14, ARN-18, SUBSTITUTION OF ARN-24 FOR ARC-27 AND INSTALLATION OF ARN-31 FOR ILAS CAPABILITY. THE ADDITIONAL SPACE COULD HAVE BEEN ACHIEVED BY DELETION OF ARN-6 IN LIEU OF ARN-14, HOWEVER YOUR HEADQUARTERS CHOSE TO RETAIN THE ARN-6 DUE TO INSUFFICIENT VOR TERMINAL AIDS. PART II. WITH REGARD TO

Action taken by ADOPR Message 2 Dec 54 File in Room Adj. files until 1 Jan 1956
John F. Acee Capt USAF PTR

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FROM JEDOP JEPVB 1636

RECOMMENDATIONS CONTAINED IN REFERENCED TWX: (1) "PROVISIONS FOR F-86D DO NOT UTILIZE ANY OTHER USABLE SPACE IN AIRCRAFT. IT IS CONSIDERED ESSENTIAL THAT THIS WORK BE ACCOMPLISHED AT THIS TIME TO FORWARD FUTURE LARGE MODIFICATION PROGRAMS ON THIS AIRCRAFT. ARN-6 WILL BE INSTALLED IN SPACE RESERVED FOR ARN-21, HOWEVER INSTRUMENT PANEL AND COUSCLE MODIFICATION WILL BE ACCOMPLISHED. (2) THE ARN-14, ARN-12 AND ARN-6 CANNOT BE RETAINED IF THE MODIFICATION PROGRAM IS TO BE ACCOMPLISHED, HOWEVER, YOU MAY STILL CHOOSE TO RETAIN ARN-14 AND DELETE ARN-6 IF YOU DESIRE. SHOULD YOU MAKE THIS CHOICE, THERE IS NO ASSURANCE THAT TERMINAL AND ENROUTE VOR NAVIGATION AIDS WILL BE PROCURED AND INSTALLED THROUGHOUT CONTINENTIAL U. S. OR EVEN AT ALL ADC FACILITIES. SUCH A PROGRAM IS SUBJECT TO AIR STAFF REVIEW AND WOULD REQUIRE CONSIDERABLE TIME TO MAKE A FIRM DECISION. (3) THE HEADQUARTERS CONSIDERS THAT THERE ARE 3 POSSIBLE CHOICES AND THAT AN ADDITIONAL CONFERENCE WILL SERVE NO USEFUL PURPOSE. (A) CONTINUE AS PRESENTLY DIRECTED; (B) SUBSTITUTE ARN-14 FOR THE ARN-6 AND INSTALL IN SPACE ENGINEERED FOR ARN-21; (C) CANCEL THE MODERNIZATION ENTIRELY AND UTILIZE F-86DS IN THEIR PRESENT CONFIGURATION. THE INSTALLATION OF ANY SINGLE ITEM SUCH AS APX-25 CSTI OR ARR-39 WILL REQUIRE DELETION OF EITHER ARN-14 OR ARN-6. PART III. REQUEST YOUR HEADQUARTERS WHICH COURSE YOU

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ADC Hq-O-AC-Form 22
9 April 53

This document consists of ____ pages.

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DCS/M
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Hq Sq Sec
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Will be Confirmed in Ltr Publication Form Under par 3e, ADCSM

S-3 _____
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ADC HQ AFSC

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ROUTINE ROUTINE

[redacted] HQ USAF WASH DC

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[redacted] ADC BALTIMORE MD ATTN: [redacted] CONFIDENTIAL

[redacted] ADC WRIGHT PATTERSON AFB OHIO

28 DEC 1954

(CONFIDENTIAL) ADOOT-C 3180. FOR ATTN. REF MSG ATTN: [redacted] 50th Sqdn. It is POLICY of this Hq that MAP modification of all air DEF interceptors to be compatible with improved GCI environment is mandatory. Retention of AN/APX-6 is not considered an improvement of ADFT DEF from either tactical navigational HQR or MAP safety PT of view. Informal highly technical INFO received this Hq indicates 1 JAN 1957 REF. date of continental TRAIN SYS is optimistic. In view of the facts that (1) USA has in being a CNPN and integrated VOR navigational SYS the usability of which can be extended to all ADC bases at reasonable and nominal cost by additional TVOR installations and (2) that F-106A ADFT are designed to be equipped with AN/APX-34, and because this command desires a compatible navigational SYS throughout ADC, Hq all ADC interceptors including

2 2

MAJ. E. A. [redacted]

ADOOT-C

This correspondence is classified CONFIDENTIAL
Per 24(c)(2), AFR 205-1, 15 Dec 53, or for the reason (s) stated.

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ADOOT-C
69TH

F-86D, F-89B/H and F-94C be modernized with AN/ARN-14 as interim to TACAN. Since VOR will be a continuing SYS in continental US it is foreseen that present ADC interceptors retrofitted or equipped with AN/ARN-14 may not RQR further retrofit of AN/ARN-21 during their service life. Retrofit of AN/ARN-21 would only become NEC when these ACFT are TRF to an area where TACAN is PRIN aid to navigation and recovery. In consistency with ADC tactical MSN it is further REQ that NEC action be taken to INSTL required TVOR installations to PROV low approach capability under adverse WEA COND at all bases where ADC interceptors are deployed prior to the referenced modernization program. If installation of the AN/ARN-14 is APPRD and to PROV the capability of utilizing STD broadcast STA frequencies for PROJ Broficon, a requirement will exist for installation of a small, light weight low FREQ RCVR as an adjunct to the ARC-34 UHF RCVR in ACFT listed above.

B-15-28 282357
OAT

This correspondence was retyped to correct errors, with no change being made in basic content.

JAMES S. PURDUM
Major, USAF
Asst Comm

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Will be Confirmed in
Std Publications Page
Under par 3a, ADCSM

S-3
Prepared by Capt J. P. Acre/mm
Telephone 2852
Dec 54
No Postbold No

ADC HQ AFB, Ill

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John P. Acre
Capt USAF

C.763
M526-1

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FILED Mgt 4-2

11 AUG 1954

ADCOM-C

SUBJECT: (Unclassified) Airborne WEP Program

TO: Air Officer Commanding
Air Defense Command
RCAF Station
St. Hubert, Province of Quebec
Canada

1. Reference your message S-618, dated 19 July.

2. At the present time, all interceptors in this command are WEP equipped. F-86D, F-94C, and F-89H aircraft are equipped with AN/ARC-27 equipment. F-86A, F-86E, and F-89F are AN/ARC-33 equipped. Starting at the second quarter of FY-55, all new production interceptors available to this command will be AN/ARC-34 equipped. Ultimately, all AN/ARC-27 and AN/ARC-33 equipped interceptors will be retrofitted with AN/ARC-34 equipment.

3. The majority of the maintenance problems with the ARC-27 have been associated with tube failures. Whenever a tube is replaced in the RF or IF section, the set should be re-aligned and re-calibrated. The 6J6 tube has been most troublesome in the ARC-27. It is recommended that 6J6A tubes be used whenever possible in place of the 6J6 type. Another common complaint is that when the set is pulled from the cockpit, it is usually necessary to replace the cooling gasket. Numerous coolant problems were traced to the antenna coaxial cable, RG/U. It was found that coolant leak from the engine and tail pipe actually caused the polyethylene inside the cable to melt and the inner conductor shorted to the other conductor resulting in a shorted cable rendering the equipment inoperative. This condition is being rectified by replacing this RG/U cable with type RG58/U which is a moisture insulating cable. This problem was encountered on the F-86, F-94, F-86, F-89, F-94, and F-94 type aircraft.

4. Operational range of WEP has proven to be somewhat greater than WOP. This increase in range is mainly due to increased power of ground equipment, more sensitive receivers, and new equipment, rather than to different propagation characteristics in the WEP and WOP [illegible].

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Under par 3a, ADCSM
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Prepared by_____
Tel--hone_____
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ADC HQ Form 11
5 Feb 54 Revised

M120-2X

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ATDCR-C Subj: (Unal) Airborne UHF Program

5. The main operational difficulty to date has been due to lack of adequate airborne channels available to the pilots of our interceptors. Since usually 10 to 14 channels must be used for non-tactical communications, only 6 to 8 channels remain for tactical communications. This fact extremely limits our flexibility of operation in areas where interceptors must operate with numerous ACSW sites. A UHF Plan consisting of specific frequency assignments to ACSW sites must be used since a common channel system would saturate communications in a given area with only a limited number of interceptors airborne. This problem will be averted with the conversion of all aircraft to AN/ARC-34 airborne equipments which have 1750 channels available to the pilot versus the 18-20 channels presently available with AN/ARC-27 and AN/ARC-33 equipped interceptors.

FOR THE COMMANDER:

Comeback copy requested

COMEBACK COPY

_____ Not requested, not furnished

C&E Furnished 11/8/54 (Date) (Initials)

This correspondence is classified SECRET in accordance with Par_____, AFR 205-1, 24 Jul 53, for the reasons (a) stated. _____
SIGNATURE

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AF--ADC - 0010, 0000, 0010

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CONFIDENTIAL

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Easy reading copy made

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From: COMMANDER, ADC 30 Oct 1954

To: COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF
COMMANDER, GRANDVIEW AFB, GRANDVIEW, MO.

(CONFIDENTIAL) ADMAC 1898. For AFOMO and AFMME, Hq USAF. Reference message your headquarters, AFOMO-M-2 31009, 21 October 54. This message in 6 Parts. Part I. On 28 September, representative from this headquarters briefed AFOMO and AFMME personnel regarding increased capability for electronic maintenance of ADC tactical aircraft. No objections to the proposed increased maintenance capability were voiced at that time, and our message ADMAC-5 32563, dated 8 October 54, and ADOMO 32479, dated 7 October 54, were confirmation of the concept presented in Hq USAF. Further, the ADC combination electronic shop for all ADC tactical squadrons is in consenance with the increased maintenance capability required. Part II. Prior to receipt of your message AFOMO-M-2 31009, 21 October 1954, this headquarters contacted AFMME by telephone relative to this airborne electronic maintenance concept for tactical aircraft. AFMME advised verbal approval of this concept for those ADC tactical squadrons operating at isolated locations, such as municipal airports. In addition, AFMME advised informal approval of the expanded electronic maintenance concept as it concerns installing electronic equipment peculiar to ADC tactical aircraft, in this case, the F-86D.

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(CONFIDENTIAL) ADMAC 1898 . (CONT'D)

The delineation of installation equipment peculiar to the F-86D was made by AFMME to prevent duplication of test equipment at those stations were adequate field maintenance should be available for support of communication and navigation equipment common to both both tactical and support aircraft. However, these conditions are not stated in message AFOMO-M-2 31009, dated 21 October 1954. Part III. Five additional items of test equipment would be required in order ADC fighter interceptor squadron to accomplish the additional maintenance capability. This additional capability will represent a monetary savings to the AF due to reduced processing and handling of component in electronic systems, and will increase the combat potential at every fighter interceptor squadron. The five items required are as follows:

TS-497/URR - Sig Genr
TS-375A/U - Vacuum Tube Voltmeter
TS-382D/U - Sig Genr
AN/PSN-6 - Multimeter
J-229/ARN-14 - Junction Box

It is noted that no increase in personnel or in skill levels of personnel presently authorized is necessary or sought in the event this electronic maintenance concept is approved and implemented. By increasing the maintenance capability within our fighter interceptor squadron, we will not reduce the adverse affects of parent wing deployments during the crucial period when such support would be vital to the air defense of this

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(CONFIDENTIAL) ADMAC 1898 . (CONT'D)

country. The possibility of field support being withdrawn coupled with the need for rapid maintenance in the event of hostilities must be considered, since many of our tactical squadrons operate on TAC and SAC Bases. Part IV. Support under provisions of AFR 11-4, is good at some bases and poor at others. This headquarters and the Air Defense Force Headquarters are constantly trouble shooting tenant squadron support problems. Regardless of the regulation, it is most difficult to cope with the human nature aspects of the parent base supporting, i.e., no command cares as much about ADC as ADC, itself. A survey of all bases would result in a prolonged research of a problem that is tangential to the basic need for increased maintenance capability. Sufficient to say that troop carrier organizations have the fewest clues concerning maintenance of F-86 D aircraft. As a result, such systems as the Electronic Fuel Control, VOI, F-5 Auto Pilot, etc., do not receive proper field maintenance support, and it is relatively easy to place this responsibility where it can best be handled - in the squadron. All ADC Squadrons will benefit from this concept. Part V. AMC concurs with this increased electronic maintenance concept. The Equipment Authorization Division, Hq AMC, approved the placement of electronic test equipment in the squadron, and fully appreciates the ADC position in this matter. Part VI. Request that the ADC requirement be reconsidered as soon as possible. Further, request comments from AFMTE on this matter.

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AFR 5-3
Prepared by
Telephone
Date

SUBJECT: (Uncl) Field Maintenance Sup ort of Aircraft Gas Turbine Engines

Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Reference AAW 1st Indorsement dated 18 October 1954 to Secret ADC letter ADMAC-2 dated 20 September 1954, Subject: (Uncl) Field Maintenance Support of Aircraft Gas Turbine Engines. The following information submitted as requested:

a. Reference Paragraph 1: Noted.

b. Reference Paragraph 2: Noted.

c. Reference Paragraph 3: Noted.

d. Reference Paragraph 4: Information contained in A ADMAC-2Ah 1F005, 4 June 1954, was changed as a result of the conference held at Continental ARD 12 and 13 August 1954. Policy is that all three (3) phases M&O will be physically on hand prior to starting construction.

e. Reference Paragraph 5: Units listed were deleted because the number of engines which they support will decrease materially by the time test stand is available. Program stated in referenced letter is firm and every effort will be made to follow same.

f. Reference Paragraph 6:

(1) The current policy of this Command is that units scheduled for deployment will be fully equipped. This will include an OCAMA run-up stand where possible. We feel that resources within ZI are such that repair of Jet engines will not present an insurmountable problem. Units deploying to an overseas theater are confronted with many problems in the repair and return to service of parts and equipment; therefore, from the standpoint of economy and in the interest of sound Air Force policies, this headquarters feels that an OCAMA run-up stand should be issued to deploying units where possible.

AEC 1 Form 11
Revised 15 Aug 53

This correspondence is classified ____ in accordance with Par ____, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

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Headquarters Air Defense Command, AIMAC-SAL, Subject: (Unsl) Field Maintenance Support of Aircraft Gas Turbine Engines

(2) Reference assignment of OCAMA run-up stand at bases where a Shaw-Nelms facility becomes operational on same base. Reassignment of this stand will be at the discretion of the Defense Force concerned; however, care must be exercised to assure control and relocation of programmed stands when they become available, at which time provisions of ADC letter AIMAC-2, dated 20 September 1954, will hold true regarding assignment. It is requested that this headquarters be informed of these reassignments so that a current status may be maintained during the interim period while we are getting an adequate number of OCAMA stands.

g. Reference Paragraph 7:

(a) (1): Noted.

(a) (2): This headquarters is aware of this change.

(b) (1): This headquarters has no objection to your recommendation; however, Paragraph 1f(2) of this letter, must apply.

h. Reference Paragraph 8: Noted. Provisions of Paragraph 1f(2), this letter, will apply.

i. Reference Paragraph 9: Noted.

BY ORDER OF THE COMMANDER:

DM

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Hq ADC ADMAC-2 Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Uncl)

7. Reference paragraph 5 b, basic letter. Records of your Headquarters and Gentile Air Force Depot should be amended to read as follows:

(a) Stands Delivered:

(1) Item (12) Stand is not possessed by 500th Materiel Squadron, Greater-Pittsburgh, as subject stand was transferred to 95th Fighter Interceptor Squadron, Andrews Air Force Base, in March, 1954.

(2) 568th Materiel Squadron, McGuire Air Force Base, received one stand and it is now possessed by 1611th Air Transport Wing, (MATS), Squadron since change in command at McGuire Air Force Base.

(b) Recommend following changes in stands programmed and scheduled for delivery list:

(1) Item (2) Since 519th Materiel Squadron, Suffolk County Air Force Base has a Shaw-Estes Facility assigned and operational, request stand be assigned to 97th Fighter Interceptor Squadron, Wright-Patterson Air Force Base, or the 27th Fighter Interceptor Squadron, Griffiss Air Force Base.

8. The information contained in this correspondence sets forth a definite program and ultimate goal of our JEMR Facilities and clearly defines our responsibility. Recommend letters of this type be prepared periodically to keep personnel in the field cognizant of the progress and planning concerning program. Request authority be granted to permit movement of OCAMA run-up stand from O'Hare Air Force Base to Wurtsmith Air Force Base, as the Shaw-Estes Facility at O'Hare can adequately handle support of squadrons on station.

9. This indorsement is classified Secret in accordance with paragraph 23c, Air Force Regulation 205-1, 15 December 1953.

FOR THE COMMANDER:

Leo D. Bradley

1 Encl
w/d

FROM: ADM AC-24 41
TO: ADAAG
Non-Record
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Action: Ar & EADF
Signed

(1) Copy pulled and attached to Combat Copy. (Request returned to ADMAC-244 Des/ms)

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Hq AEC AD/AC-2 Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Encl)

BAMAC-ADM (20 Sep 54) 1st Ind

HQ ARTIC AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, New York

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

1. Comments and recommendations concerning the adequacy of jet engine minor repair program in conjunction with proposals set forth. This correspondence is forwarded as requested.

2. Reference paragraph 1, 2, basic letter. Concur.

3. Reference paragraphs 3 a, and b, basic letter. The present agreements for field maintenance support of our JEMR requirements to squadrons which are tenants on bases of other commands are being reviewed by this headquarters to insure that all necessary support is being received in accordance with AFR 11-4, 7 July 1952. In the event satisfactory agreements cannot be worked out, the problem will be presented to higher headquarters.

4. Reference paragraph 4 a, basic letter. Your attention is invited to message, ADMAC-2A4 18005, 4 June 1954, which suggested Phase I construction be initiated at Ethan-Allen, New Castle, Stewart, Greater-Pittsburgh and Truax Air Force Bases. This information now conflicts with concept Gentile Air Force Depot has requiring all three phases to be on hand prior to initial construction for any phase of the Shaw-Estes Test Stand installation. Request clarification on this subject.

5. Reference paragraph 4 b, basic letter. The list submitted to Gentile Air Force Depot does not agree with our original programing for units scheduled to receive a Shaw-Estes Test Facility. Formerly your headquarters proposed that Ethan-Allen, New Castle, Stewart, Greater-Pittsburgh and Truax Air Force Bases receive the next facilities. Your present listing deletes Ethan-Allen and Greater-Pittsburgh from listing and includes Wurtsmith Air Force Base. Request information if program as stated in this letter is firm, in order that units can be advised of change in program.

6. Reference paragraph 5 a, basic letter. This headquarters concurs with factors listed for computation of requirements for the OCAMA run-up stand, but recommends that, until such time as sufficient stands are available the OCAMA run-up stand not be assigned units deploying. In addition the OCAMA run-up stand should be assigned one per base for the present commitments, and if a Shaw-Estes Facility becomes operational on a base where a OCAMA stand is available, the stand be re-assigned to another base within the command as required.

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

302.9
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ADMAC-2

Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Uncl)

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. The recent publication of Technical Order 00-25-145, dated 30 June 1954, and the results of a conference held at Gentile Air Force Depot on 12 and 13 August 1954 have necessitated a restudy of the Jet Engine Minor Repair Program.

2. First, we must change our line of thinking that Jet Engine Minor Repair is a special project, and think of this function in terms of routine field maintenance support. As such, JEMR becomes a responsibility of every field maintenance and materiel squadron in Air Defense Command. Therefore, it is the desire of this headquarters to put ADC field maintenance echelons in the business of JEMR and to see that the necessary equipments are made available for this function.

3. This JEMR concept is, in many cases, made difficult because of the tenant status of ADC tactical squadrons. Generally speaking, there are two conditions that prevail in "landlord" field maintenance support of our JEMR requirements. One condition concerns the field maintenance support of JEMR for ADC tenant squadrons by the landlord wing or depot. The other condition concerns the lack of such support for our tactical squadrons.

a. If landlord wings of other commands are satisfactorily supporting the JEMR requirements of our tactical squadrons (in accordance with AFR 11-4) the ADF concerned must determine if such support will continue in the event of war emergency deployments. For example, if a TAC "landlord" wing presently supporting an ADC tenant squadron deploys we must insure that our JEMR field maintenance support functions will not be unattended. Special agreements must be made by the ADF concerned to cover such contingencies.

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Headquarters Air Defense Command, ADMAC-2; Subject: Field Maintenance Support of Aircraft Gas Turbine Engines

b. If a landlord wing of another command refuses to support the JEMR requirement of an ADC tenant squadron (in violation of AFR 11-4) the ADF concerned should refer the matter to this headquarters for indorsement to Headquarters USAF. In some cases it may be best for the ADF to seek a compromise agreement with the landlord command. In such instances, it may be necessary for the landlord to delegate the JEMR function from his field maintenance echelon to the ADC squadron. Such agreements should explore the placement of logistics support responsibilities for our JEMR, and the use of the landlord base shops to accomplish the JEMR function. In any event, it is the responsibility of the ADF concerned to effect the best possible solution to the field maintenance support of JEMR for ADC tenant squadrons. Headquarters ADC should be advised if assistance is needed at command level.

4. This paragraph will concern the Shaw-Estes Test Stand and ADC requirement for this stand. At a conference held at Gentile Air Force Depot 12 and 13 August 1954 it becsme apparent that the availability of this stand is at least one (1) year away. Only a limited number will be made available to units of Air Defense Command. Further, the complete ADC requirement cannot be satisfied for at least two years.

a. Planning and construction for the Shaw-Estes installation should be very carefully considered prior to actual programming. The programmed stands which we expect in approximately one year will require preparatory construction. However, due to the fact that the three (3) phases have to be matched, Gentile has directed that no Phase I construction be accomplished until all three (3) phases are physically on hand at the installation. Phase I consists of reinforcing steel, wire mesh, mastic joint, fuel tank, fuel pipe, conduit, pipe trench, anchor bolts and all miscellaneous fittings which are imbedded in concrete. In the past this material was furnished as a kit.Gentile AFD now advises that Phase I equipment and materials for future facilities will be purchased by the major Air Command. Phases II and III parts will be furnished by Gentile AFD. Those stands scheduled for delivery two (2) years hence may be of the type that do not require preparatory construction.

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Support of Aircraft Gas Trubine Engines

b. Due to the slow delivery of the Shaw-Estes equipments and the limited number available it can readily be seen that we must take a closer look at our requirements. We must keep in mind that the number of engines supported will vary to a great extent by the time the stand is available. In some cases the number of engines will not justify a Shaw-Estes facility when it is erected. For this reason, the following total requirement for Shaw-Estes Test Stands was submitted to Gentile Air Force Depot, up to and including FY 57.

Installations programmed for Shaw-Estes Stand to be delivered approximately September 1955

(1) Yuma County Municipal Airport

(2) Paine Air Force Base

(3) New Castle County Airport

(4) Stewart Air Force Base

(5) Minn-St Paul International Airport

(6) Wurtsmith Air Force Base

(7) Truax Air Force Base

Installations proposed for a Shaw-Estes Facility to be delivered in approximately two (2) years.

(1) McGhee Tyson Municipal Airport

(2) Grandview Air Force Base

(3) Duluth Air Force Base

(4) Oxnard Air Force Base

(5) Minot Air Force Base

(6) Benzie County Municipal Airport

(7) Glasgow Air Force Base

(8) Grand Fork Air Force Base

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Aircraft Gas Turbine Engines

5. This paragraph will concern the OCAMA run-up stand. In many cases, where workloads are of such nature that it seems feasible and economically sound, Field Maintenance repair of aircraft Gas Turbine Engines in accordance with TO 00-25-145 will be accomplished through the use of an OCAMA run-up type stand. In order to make this stand acceptable for this usage Gentile Air Force Depot will prepare a TO (with applicable drawings) covering the modification of the run-up stands to include vibration equipment. For those OCAMA type stands already delivered, these parts will be furnished as a TO modification kit. Also furnished to make this stand acceptable is a Console Assembly Engine Test, P/N 1C1596, Appl: J-47-17 S/N 7CAC-NSL to enable complete testing of the fuel systems.

a. Factors for computation of requirements for the OCAMA run-up stand are as follows:

(1) On those stations belonging to ADC, the field maintenance activity will be provided one (1) control house and one (1) dolly, with the Fighter-Interceptor Squadron or Squadrons on that base receiving one (1) dolly each.

(2) On those bases where ADC Fighter-Interceptor Squadrons are tenants, the single Fighter-Interceptor Squadron will be provided with one (1) control house and one (1) dolly. Where two (2) squadrons are tenants, one (1) control house and two (2) dollies will be utilized by both Squadrons.

(3) For those Fighter-Interceptor Squadrons scheduled to deply, one (1) control house and one (1) dolly will be provided.

b. Records of this headquarters and Gentile Air Force Depot indicate the status of the OCAMA run-up stand in Air Defense Command is as follows:

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

Stands Delivered

(1) 521st Materiel Squadron, Sioux City

(2) 520th Materiel Squadron, Truax

(3) 525th Materiel Squadron, New Castle

(4) 501st Materiel Squadron, O'Hare

(5) 530th Materiel Squadron, Geiger

(6) 517th Materiel Squadron, Ethan Allen

(7) 516th Materiel Squadron, McGhee-Tyson

(8) 534th Materiel Squadron, Kinross

(9) 514th Materiel Squadron, Minn-St Paul

(10) 503rd Materiel Squadron, Portland

(11) 4700th Materiel Squadron, Stewart

95FIS (12) 500th Mat Squadron, Greater-Pitt

(13) 533rd Materiel Squadron, Oxnard

(14) 4750th Materiel Squadron, Yuma

568 McGuire to 1611 ATW.

Stands Programmed and Scheduled for Delivery Approximately November 1954.

(1) 4676th Materiel Squadron, Grandview

(2) 519th Materiel Squadron, Suffold

(3) 31st FIS, Larson

(4) 29th FIS, Great Falls

(5) 520nd Materiel Squadron, Youngstown

(6) 85th FIS, Scott

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

(7) 518th Materiel Squadron, Niagara

(8) 94th FIS George

(9) 515th Materiel Squadron, Duluth

(10) 60th FIS Westover

(11) 529th Materiel Squadron, Paine

Stands Proposed for ADC Units

Units not appearing on this list for a dolly will obtain one (1) each dolly from activity indicated in inclosed ADC brochure.

STATION & ORGANIZATION	Control House	Dollies	SEE NOTE
527th Materiel Squadron, Wurtsmith AFB	1	2	A
567th Materiel Squadron, McChord AFB	1	1	
317th FIS, McChord AFB		1	
465th FIS McChord AFB		1	
528th Materiel Squadron, Presque Isle AFB	1	2	B
575th Materiel Squadron, Selfridge AFB	1	1	
43th FIS Selfridge AFB		1	
56th FIS, Selfridge AFB		1	
564th Fld Maint Sq, Otis AFB	1	1	
58th FIS, Otis		1	
437th FIS, Otis		1	
42nd FIS, O'Hare AFB		1	
456th FIS, Truax		1	
539th FIS, Stewart		1	
11th FIS, Duluth	1	1	Deploys 1/56

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

STATION & ORGANIZATION	Control House	Dollies	SEE NOTE
63rd FIS, Wurtsmith	1	1	Deploys 1/56
84th FIS, Hamilton	1	1	Deploys 1/57
82nd FIS, Presque Isle	1	1	Deploys 2/57
445th FIS, Geiger	1	1	Deploys 4/56
318th FIS, Presque Isle	1	1	Deploys 2/57
469th FIS, McGhee Tyson	1	1	Deploys 4/57
58th FIS, Otis	1	1	Deploys 4/57
96th FIS, New Castle		1	
322nd FIS, Geiger		1	
5th FIS, McGuire		1	
2nd FIS, McGuire		1	
331st FIS, Suffolk		1	
27th FIS, Griffis	1	1	Move 3/56
~~95th~~ FIS, Andrews	1	1	
444th FIS, Charleston	1	1	
48th FIS, Langley	1	1	
46th FIS, Dover	1	1	
49th FIS, Dow	1	1	
54th FIS, Rapid City	1	1	
97th FIS, Wright-Patterson	1	1	
15th FIS, Davis-Monthan	1	1	
93rd FIS, Kirtland	1	1	
413th FIS	1	1	

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

STATION & ORGANIZATION	Control House	Dollies	SEE NOTE
323rd FIS, Larson	1	1	
336th FIS, Perrin	1	1	C
538th FIS, Castle	1	1	D
522nd Materiel Squadron, Klamath Falls	1	1	D
98th FIS, Klamath Falls		1	D
319th FIS, San Diego Area	1	1	E
321st FIS, Walker	1	1	E
329th FIS, Griffis	1	1	E
498th FIS, Griffis		1	E
535th Materiel Squadron, Marquette	1	1	E
327th FIS, Marquette		1	F
538th Materiel Squadron, Minot	1	1	G
324th FIS, Minot		1	G
540th Materiel Squadron, Glasgow	1	1	G
536th Materiel Squadron, Grand Fork	1	1	G
302nd FIS, Lockbourne	1	1	H
541st Materiel Squadron, Benzie County	1	1	H
304th FIS, Portland		1	H
303rd FIS, Griffis		1	H
Total	37	59	

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Aircraft Gas Turbine Engines

Note:

A. The second dolly to be assigned to the 74th FIS upon return from overseas 2/56.

B. The second dolly to be assigned to the 335th FIS when moved from Geiger 3/57.

C. Not required prior to 2/56.

D. Not required prior to 3/56.

E. Not required prior to 4/56.

F. Not required prior to 1/57.

G. Not required prior to 2/57.

H. Not required prior to 4/57.

6. In order to clarify the responsibilities and proposed capability of the 4750th Maintenance Squadron, Yuma County Airport, Arizona, we must realize the importance of this activity and its responsibility, not only to support aircraft assigned, but those aircraft which will be TDY at Yuma during rocketry training. It is the desire of this headquarters that the capability at Yuma be developed to support all ADC prime engines (J-33, J-35, J-48, J-47-17). As a step toward this responsibility a Shaw-Estes facility plus an OCAMA type facility is being authorized. Sufficient dollies will be authorized to enable TDY Squadrons to perform engine test before installation in aircraft and for checking engine malfunction, utilizing the OCAMA type run-up stand.

7. The inclosed ADC brochure is provided for your information and indicates Shaw-Estes and OCAMA run-up stand data, engine support data up to and including FY 57. It will be noted that specific type engines have been indicated. However, this Command's interpretation of T.O. 00-25-145 is that all types of jet engines should be supported by the base Field Maintenance activity regardless of type, provided capability for repair exists. Our ultimate aim should be to give full support of all base assigned aircraft and engines regardless of type.

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Aircraft Gas Turbine Engines

8. It is felt that a program such as indicated herein is more realistic and sound than any program previously set forth. It will result in great savings for the USAF through the reduction of costly shipments of aircraft engines, to and from distant facilities. In addition it will assure ADC organizations of reliable and thoroughly tested engines prior to installation in an aircraft. Your comments and recommendations concerning the adequacy of this program are solicited.

BY ORDER OF THE COMMANDER:

G Humphrey

1 Incl
ADC Brochure

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

ADMAC-2 20 September 1954

Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Uncl)

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. The recent publication of Technical Order 00-25-145, dated 30 June 1954, and the results of a conference held at Gentile Air Force Depot on 12 and 13 August 1954 have necessitated a restudy of the Jet Engine Minor Repair Program.

2. First, we must change our line of thinking that Jet Engine Minor Repair is a special project, and think of this function in terms of routine field maintenance support. As such, JEMR becomes a responsibility of every field maintenance and material squadron in Air Defense Command. Therefore, it is the desire of this headquarters to put ADC field maintenance echelons in the business of JEMR and to see that the necessary equipments are made available for this function.

3. This JEMR concept is, in many cases, made difficult because of the tenant status of ADC tactical squadrons. Generally speaking, there are two conditions that prevail in "landlord" field maintenance support of our JEMR requirements. One condition concerns the field maintenance support of JEMR for ADC tenant squadrons by the landlord wing or depot. The other condition concerns the lack of such support for our tactical squadrons.

a. If landlord wings of other commands are satisfactorily supporting the JEMR requirements of our tactical squadrons (in accordance with AFR 11-4) the ADF concerned must determine if such support will continue in the event of war emergency deployments. For example, if a TAC "landlord" wing presently supporting an ADC tenant squadron deploys we must insure that our JEMR field maintenance support functions will not be unattended. Special agreements must be made by the ADF concerned to cover such contingencies.

b. If a landlord wing of another command refuses to support the JEMR requirement of an ADC tenant squadron (in violation of AFR 11-4) the ADF concerned should refer the matter to this headquarters for indorsement to Headquarters USAF. In some cases it may be best for the ADF to seek a compromise agreement

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with the landlord command. In such instances, it may be necessary for the landlord to delegate the JEMR function from his field maintenance echelon to the ADC squadron. Such agreements should explore the placement of logistics support responsibilities for our JEMR, and the use of the landlord base shops to accomplish the JEMR function. In any event, it is the responsibility of the ADF concerned to effect the best possible solution to the field maintenance support of JEMR for ADC tenant squadrons. Headquarters ADC should be advised if assistance is needed at command level.

4. This paragraph will concern the Shaw-Estes Test Stand and ADC requirement for this stand. At a conference held at Gentile Air Force Depot 12 and 13 August 1954 it became apparent that the availability of this stand is at least one (1) year away. Only a limited number will be made available to units of Air Defense Command. Further, the complete ADC requirement cannot be satisfied for at least two years.

a. Planning and construction for the Shaw-Estes installation should be very carefully considered prior to actual programming. The programmed stands which we expect in approximately one year will require preparatory construction. However, due to the fact that the three (3) phases have to be matched, Gentile has directed that no Phase I construction be accomplished until all three (3) phases are physically on hand at the installation. Phase I consists of reinforcing steel, wire mesh, mastic joint, fuel tank, fuel pipe, conduit, pipe trench, anchor bolts and all miscellaneous fittings which are imbedded in concrete. In the past this material was furnished as a kit. Gentile AFD now advises that Phase I equipment and materials for future facilities will be purchased by the major Air Command. Phase II and III parts will be furnished by Gentile AFD. Those stands scheduled for delivery two (2) years hence may be of the type that do not require preparatory construction.

b. Due to the slow delivery of the Shaw-Estes equipments and the limited number available it can readily be seen that we must take a closer look at our requirements. We must keep in mind that the number of engines supported will vary to a great extent by the time the stand is available. In some cases the number of engines will not justify a Shaw-Estes facility when it is erected. For this reason, the following total requirement for Shaw-Estes Test Stands was submitted to Gentile Air Force Depot, up to and including FY 57.

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Support of Aircraft Gas Turbine Engines

Installations programmed for Shaw-Estes Stand to be delivered approximately September 1955

(1) Yuma County Municipal Airport

(2) Paine Air Force Base

(3) New Castle County Airport

(4) Stewart Air Force Base

(5) Minn-St Paul International Airport

(6) Wurtsmith Air Force Base

(7) Truax Air Force Base

Installations proposed for a Shaw-Estes Facility to be delivered in approximately two (2) years.

(1) McGhee Tyson Municipal Airport

(2) Grandview Air Force Base

(3) Duluth Air Force Base

(4) Oxnard Air Force Base

(5) Minot Air Force Base

(6) Benzie County Municipal Airport

(7) Glasgow Air Force Base

(8) Grand Fork Air Force Base

5. This paragraph will concern the OCAMA run-up stand. In many cases, where workloads are of such nature that it seems feasible and economically sound, Field Maintenance repair of aircraft Gas Turbine Engines in accordance with TO 00-25-145 will be accomplished through the use of an OCAMA run-up type stand. In order to make this stand acceptable for this usage Gentile Air Force Depot will prepare a TO (with applicable drawings) covering the modification of the run-up stands to include vibration equipment. For those OCAMA type stands already delivered, these

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Aircraft Gas Turbine Engines

parts will be furnished as a TO modification kit. Also furnished to make this stand acceptable is a Console Assembly Engine Test, P/N 1C1596, Appl: J-47-17 S/N 7CAC-NSL to enable complete testing of the fuel systems.

a. Factors for computation of requirements for the OCAMA run-up stand are as follows:

(1) On those stations belonging to ADC, the field maintenance activity will be provided one (1) control house and one (1) dolly, with the Fighter-Interceptor Squadron or Squadrons on that base receiving one (1) dolly each.

(2) On those bases where ADC Fighter-Interceptor Squadrons are tenants, the single Fighter-Interceptor Squadron will be provided with one (1) control house and one (1) dolly. Where two (2) squadrons are tenants, one (1) control house and two (2) dollies will be utilized by both Squadrons.

(3) For those Fighter-Interceptor Squadrons scheduled to deply, one (1) control house and one (1) dolly will be provided.

b. Records of this headquarters and Gentile Air Force Depot indicate the status of the OCAMA run-up stand in Air Defense Command is as follows:

Stands Delivered

(1) 521st Materiel Squadron, Sioux City

(2) 520th Materiel Squadron, Truax

(3) 525th Materiel Squadron, New Castle

(4) 501st Materiel Squadron, O'Hare

(5) 530th Materiel Squadron, Geiger

(6) 517th Materiel Squadron, Ethan Allen

(7) 516th Materiel Squadron, McGhee-Tyson

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

(8) 534th Materiel Squadron, Kinross

(9) 514th Materiel Squadron, Minn-St Paul

(10) 503rd Materiel Squadron, Portland

(11) 4700th Materiel Squadron, Stewart

(12) 500th Mat Squadron, Greater-Pitt

(13) 533rd Materiel Squadron, Oxnard

(14) 4750th Materiel Squadron, Yuma

Stands Programmed and Scheduled for Delivery Approximately November 1954.

(1) 4676th Materiel Squadron, Grandview

(2) 519th Materiel Squadron, Suffold

(3) 31st FIS, Larson

(4) 29th FIS, Great Falls

(5) 520nd Materiel Squadron, Youngstown

(6) 85th FIS, Scott

(7) 518th Materiel Squadron, Niagara

(8) 94th FIS George

(9) 515th Materiel Squadron, Duluth

(10) 60th FIS Westover

(11) 529th Materiel Squadron, Paine

Stands Proposed for ADC Units

Units not appearing on this list for a dolly will obtain one (1) each dolly from activity indicated in inclosed ADC brochure.

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

STATION & ORGANIZATION	Control House	Dollies	SEE NOTE
527th Materiel Squadron, Wurtsmith AFB	1	2	A
567th Materiel Squadron, McChord AFB	1	1	
317th FIS, McChord AFB		1	
465th FIS McChord AFB		1	
528th Materiel Squadron, Presque Isle AFB	1	2	B
575th Materiel Squadron, Selfridge AFB	1	1	
13th FIS Selfridge AFB		1	
56th FIS, Selfridge AFB		1	
564th Fld Maint Sq, Otis AFB	1	1	
58th FIS, Otis		1	
437th FIS, Otis		1	
42nd FIS, O'Hare AFB		1	
456th FIS, Truax		1	
539th FIS, Stewart		1	
11th FIS, Duluth	1	1	Deploys 1/56
63rd FIS, Wurtsmith	1	1	Deploys 1/56
84th FIS, Hamilton	1	1	Deploys 1/57
82nd FIS, Presque Isle	1	1	Deploys 2/57
445th FIS, Geiger	1	1	Deploys 4/56
318th FIS, Presque Isle	1	1	Deploys 2/57
469th FIS, McGhee Tyson	1	1	Deploys 4/57
58th FIS, Otis	1	1	Deploys 4/57
96th FIS, New Castle		1	

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Headquarters Air Defense Command, ADMAC-2M, Subject: Field Maintenance Aircraft Gas Turbine Engines

STATION & ORGANIZATIONS	Control House	Dollies	SEE NOTE
322nd FIS, Geiger		1	
5th FIS, McGuire		1	
2nd FIS, McGuire		1	
331st FIS, Suffolk		1	
27th FIS, Griffis	1	1	Move 3/56
95th FIS, Andrews	1	1	
444th FIS, Charleston	1	1	
48th FIS, Langley	1	1	
46th FIS, Dover	1	1	
49th FIS, Dow	1	1	
54th FIS, Rapid City	1	1	
97th FIS, Wright-Patterson	1	1	
15th FIS, Davis-Monthan	1	1	
93rd FIS, Kirtland	1	1	
413th FIS	1	1	
323rd FIS, Larson	1	1	
336th FIS, Perrin	1	1	C
538th FIS, Castle	1	1	D
522nd Materiel Squadron, Klamath Falls	1	1	D
98th FIS, Klamath Falls		1	D
319th FIS, San Diego Area	1	1	E

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Headquarters Air Defense Command, ADMAC-2A4, Subject: Field Maintenance Aircraft Gas Turbine Engines

STATION & ORGANIZATION	Control House	Dollies	SEE NOTE
321st FIS, Walker	1	1	E
329th FIS, Griffis	1	1	E
498th FIS, Griffis		1	E
535th Materiel Squadron, Marquette	1	1	E
327th FIS, Marquette		1	F
538th Materiel Squadron, Minot	1	1	G
324th FIS, Minot		1	G
540th Materiel Squadron, Glasgow	1	1	G
536th Materiel Squadron, Grand Fork	1	1	G
302nd FIS, Lockbourne	1	1	H
541st Materiel Squadron, Benzie County	1	1	H
304th FIS, Portland		1	H
303rd FIS, Griffis		1	H
Total	37	59	

Note:

A. The second dolly to be assigned to the 74th FIS upon return from overseas 2/56.

B. The second dolly to be assigned to the 335th FIS when moved from Geiger 3/57.

C. Not required prior to 2/56.

D. Not required prior to 3/56.

E. Not required prior to 4/56.

F. Not required prior to 1/57.

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Headquarters Air Defense Command, ADMAC-2, Subject: Field Maintenance Aircraft Gas Turbine Engines

G. Not required prior to 2/57.

H. Not required prior to 4/57.

6. In order to clarify the responsibilities and proposed capability of the 4750th Maintenance Squadron, Yuma County Airport, Arizona, we must realize the importance of this activity and its responsibility, not only to support aircraft assigned, but those aircraft which will be TDY at Yuma during rocketry training. It is the desire of this headquarters that the capability at Yuma be developed to support all ADC prime engines (J-33, J-35, J-48, J-47-17). As a step toward this responsibility a Shaw-Estes facility plus an OCAMA type facility is being authorized. Sufficient dollies will be authorized to enable TDY Squadrons to perform engine test before installation in aircraft and for checking engine malfunction, utilizing the OCAMA type run-up stand.

7. The inclosed ADC brochure is provided for your information and indicates Shaw-Estes and OCAMA run-up stand data, engine support data up to and including FY 57. It will be noted that specific type engines have been indicated. However, this Command's interpretation of T.O. 00-25-145 is that all types of jet engines should be supported by the base Field Maintenance activity regardless of type, provided capability for repair exists. Our ultimate aim should be to give full support of all base assigned aircraft and engines regardless of type.

8. It is felt that a program such as indicated herein is more realistic and sound than any program previously set forth. It will result in great savings for the USAF through the reduction of costly shipments of aircraft engines, to and from distant facilities. In addition it will assure ADC organizations of reliable and thoroughly tested engines prior to installation in an aircraft. Your comments and recommendations concerning the adequacy of this program are solicited.

BY ORDER OF THE COMMANDER:

1 Incl
ADC Brochure

/s/ C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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Hq ADC ADMAC-2 Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Uncl)

EAMAC-ACM (20 Sep 54) 1st Ind 18 Oct 1954

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, New York

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

1. Comments and recommendations concerning the adequacy of jet engine minor repair program in conjunction with proposals set forth. This correspondence is forwarded as requested.

2. Reference paragraph 1, 2, basic letter. Concur.

3. Reference paragraphs 3 a, and b, basic letter. The present agreements for field maintenance support of our JEMR requirements to squadrons which are tenants on bases of other commands are being reviewed by this headquarters to insure that all necessary support is being received in accordance with AFR 11-4, 7 July 1952. In the event satisfactory agreements cannot be worked out, the problem will be presented to higher headquarters.

4. Reference paragraph 4 a, basic letter. Your attention is invited to message, ADMAC-2A4 18005, 4 June 1954,which suggested Phase I construction be initiated at Ethan-Allen, New Castle, Stewart, Greater-Pittsburgh and Truax Air Force Bases. This information now conflicts with concept Gentile Air Force Depot has requiring all three phases to be on hand prior to initial construction for any phase of the Shaw-Estes Test Stand installation. Request clarification on this subject.

5. Reference paragraph 4 b, basic letter. The list submitted to Gentile Air Force Depot does not agree with our original programing for units scheduled to receive a Shaw-Estes Test Facility. Formerly your headquarters proposed that Ethan-Allen, New Castle, Stewart, Greater-Pittsburgh and Truax Air Force Bases receive the next facilities. Your present listing deletes Ethan-Allen and Greater-Pittsburgh from listing and includes Wurtsmith Air Force Base. Request information if program as stated in this letter is firm, in order that units can be advised of change in program.

6. Reference paragraph 5 a, basic letter. This headquarters concurs with factors listed for computation of requirements for the OCAMA run-up stand, but recommends that, until such time as

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sufficient stands are available the OCAMA run-up stand not be assigned units deploying. In addition the OCAMA run-up stand should be assigned one per base for the present commitments, and if a Shaw-Estes Facility becomes operational on a base where a OCAMA stand is available, the stand be re-assigned to another base within the command as required.

7. Reference paragraph 5 b, basic letter. Records of your headquarters and Gentile Air Force Depot should be amended to read as follows:

(a) Stands Delivered:

(1) Item (12) Stand is not possessed by 500th Materiel Squadron, Greater-Pittsburgh, as subject stand was transferred to 95th Fighter Interceptor Squadron, Andrews Air Force Base, in March, 1954.

(2) 568th Materiel Squadron, McGuire Air Force Base, received one stand and it is now possessed by 1611th Air Transport Wing, (MATS), Squadron since change in command at McGuire Air Force Base.

(b) Recommend following changes in stands programmed and scheduled for delivery list:

(1) Item (2) Since 519th Materiel Squadron, Suffolk County Air Force Base has a Shaw-Estes Facility assigned and operational, request stand be assigned to 97th Fighter Interceptor Squadron, Wright-Patterson Air Force Base, or the 27th Fighter Interceptor Squadron, Griffiss Air Force Base.

8. The information contained in this correspondence sets forth a definite program and ultimate goal of our JEMR Facilities and clearly defines our responsibility. Recommend letters of this type be prepared periodically to keep personnel in the field cognizant of the progress and planning concerning program. Request authority be granted to permit movement of OCAMA run-up stand from O'Hare Air Force Base to Wurtsmith Air Force Base, as the Shaw-Estes Facility at O'Hare can adequately handle support of squadrons on station.

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Hq ADC ADMAC-2 Subject: Field Maintenance Support of Aircraft Gas Turbine Engines (Uncl)

9. This indorsement is classified Secret in accordance with paragraph 23c, Air Force Regulation 205-1, 15 December 1953.

FOR THE COMMANDER:

1 Encl
w/d

BEN D. MOORHEAD
1st Lt, USAF
Asst Adjutant

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ADMAC-2A4 29 October 1954

SUBJECT: (Uncl) Field Maintenance Support of Aircraft Gas Turbine Engines

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Reference EADF 1st Indorsement dated 18 October 1954 to Secret ADC letter ADMAC-2 dated 20 September 1954, Subject: (Uncl) Field Maintenance Support of Aircraft Gas Turbine Engines. The following information submitted as requested:

a. Reference Paragraph 1: Noted.

b. Reference Paragraph 2: Noted.

c. Reference Paragraph 3: Noted.

d. Reference Paragraph 4: Information contained in ADMAC-2A4 18005, 4 June 1954, was changed as a result of the conference held at Gentile AFD 12 and 13 August 1954. Policy is that all three (3) phases will be physically on hand prior to starting construction.

e. Reference Paragraph 5: Units listed were deleted because the number of engines which they support will decrease materially by the time test stand is available. Program stated in referenced letter is firm and every effort will be made to follow same.

f. Reference Paragraph 6:

(1) The current policy of this Command is that units scheduled for deployment will be fully equipped. This will include an OCAMA run-up stand where possible. We feel that resources within ZI are such that repair of Jet engines will not present an insurmountable problem. Units deploying to an overseas theater are confronted with many problems in the repair and return to service of parts and equipment; therefore, from the standpoint of economy and in the interest of

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sound Air Force policies, this headquarters feels that an OCAMA run-up stand should be issued to deploying units where possible.

(2) Reference assignment of OCAMA run-up stand at bases where a Shaw-Estes facility becomes operational on same base. Reassignment of this stand will be at the discretion of the Defense Force concerned; however, care must be exercised to assure control and relocation of programmed stands when they become available, at which time provisions of ADC letter ADMAC-2, dated 20 September 1954, will hold true regarding assignment. It is requested that this headquarters be informed of these reassignments so that a current status may be maintained during the interim period while we are getting an adequate number of OCAMA stands.

g. Reference Paragraph 7:

(a) (1): Noted.

(a) (2): This headquarters is aware of this change.

(b) (1): This headquarters has no objection to your recommendation; however, Paragraph 1f(2) of this letter, must apply.

h. Reference Paragraph 8: Noted. Provisions of Paragraph 1f(2), this letter, will apply.

i. Reference Paragraph 9: Noted.

BY ORDER OF THE COMMANDER

JAMES S. PURDUM
Major, USAF
Asst Command Adj

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Hq CADF CDMIS F-5 Subj: Jet Engine Minor Repair Facility

CDMAC (25 Oct 54) 2nd Ind

HQ CENTRAL AIR DEFENSE FORCE, Grandview Air Force Base, Grandview, Mo.

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

1. Request reconsideration of the proposal expressed in basic letter.

2. Present field maintenance hangars, including those completed and in use, and programmed but not constructed, do not provide adequate space for the performance of field maintenance of aircraft gas turbine engines. These hangars were constructed or programmed prior to the implementation of TO 00-25-145 dated 30 June 1954, and revised 30 September 1954. Engine build-up sections do not contain sufficient space to include JEFM. Approximately 1400 square feet have been provided by Air Force approved designs for engine build-up sections, and it can be assumed that such space was fully justified for its intended use. The addition of minor repair of jet engines is a function not included in these basic designs.

3. It is the understanding of this headquarters that future planning of field maintenance hangars will provide an area of approximately 3800 square feet that can be divided between JEFM, airborne electronics and the aircraft instrument shop (ADC drawing #ADC-E-005, 26 July 1954). This area is not considered adequate to support one fighter-interceptor squadron; 5000 square feet is considered suitable for one F-88D squadron and 8000 square feet for two F-88D squadrons or one F-89D squadron. Any consideration of space criteria should also include the support of the F-102 and similar aircraft. All bases within CADF, except Sioux City Air Base, Iowa, have inadequate space provided or programmed for JEFM.

4. In a telephone conversation between representatives of your headquarters and this headquarters, it was stated by your representative that Selfridge Air Force Base, Mt Clemens, Michigan, had 1850 square feet for JEFM. In order to aid in our study, the Group Deputy for Materiel at Selfridge Air Force Base was contacted and provided the information contained in Inclosure #2. It will be noted that 4936 square feet is being utilized; further, that this is inadequate, according to Selfridge. The following is quoted in part, from the Selfridge message, "Present allocation inadequate. Require additional 4000 square feet".

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Hq CADF CDMIS P-5 Subj: Jet Engine Minor Repair Facility

5. In view of the critical shortage of serviceable jet engines, which will continue for some time, and the considerable saving to the Air Force in having adequate engine repair facilities, request complete review be made by your headquarters of this vital program.

FOR THE COMMANDER:

2 Incl
Added 1 Incl
2. Selfridge JEFM

C. D. BURLESON
Major, USAF
Comd Adjutant

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Headquarters Central Air Defense Force, CDMIS P-5, Subject: Jet Engine Minor Repair Facility.

ADMAC-2A5 (25 Oct 54) 3rd Ind 28 Dec 54

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

TO: Commander, Central Air Defense Force, Grandview Air Force Base, Grandview, Missouri

1. This headquarters is well aware of the advantages and monetary savings derived from the Jet Engine Field Maintenance Program and will continue to assist Air Defense Forces and subordinate activities in every manner possible to achieve our ultimate goal of a well established jet engine field maintenance facility at each ADC base possessing the required number of engines. The requirement for space imposed by the JEFM Program, in addition to that originally required for jet and reciprocating engine buildup, is recognized; however, it does not necessarily follow that new construction of additional shops, buildings, or hangars is required. In many instances, available space can be adapted for use as a JEFM and Engine Buildup Shop. It is necessary, therefore, to determine the requirement for new construction in support of this program only after surveying the available space at each affected installation.

2. Reference paragraph 3, 2nd Indorsement. The space criteria proposed in this paragraph is considered excessive. The original 10,000 square feet recommended by OCAMA in the JEMR Implementation Manual was proposed for support of a normal wing with 75 or more engines installed. A large number of JEFM activities are operating successfully with less than a proportionate share of this space. No definite standard has been established by this headquarters, pending more complete data on space required to perform the additional functions proposed under the expanded scope of minor repair. However, it is believed that valid requirements will be approximately 3500 square feet per 25 installed jet engines to be supported. The field maintenance hangar most recently proposed by this headquarters to USAF contains approximately 3450 square feet of interior shop space allocated for engine buildup, JEFM, and prop shop in support of one squadron. An additional 360 square feet of covered exterior space adjacent to this shop and connected by a monorail has been proposed to be used for installing and removing engines from shipping containers.

3. Reference par 4, 2nd Indorsement. The total of 4936 square feet provided by Selfridge is misleading in that 1800 square feet of this total is an outdoor storage area and only

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Headquarters Central Air Defense Force, CDMIS P-5, Subject: Jet Engine Minor Repair Facility

3136 square feet are actually utilized for buildup, maintenance, and interior storage. The requirement for additional space at that installation is largely due to their responsibility for support of approximately 100 jet engines installed in aircraft possessed by an Air Force Reserve unit tenant on Selfridge and by two (2) ADC units located at Niagara Falls and Wurtsmith, in addition to the approximate 50 engines installed in the two F-86D equipped squadrons at Selfridge.

4. This headquarters is currently planning a JEFM conference to include representatives from the three Air Defense Forces. This conference is tentatively planned for February 1955 and will follow a visit to OCAMA and AMC by representatives of this command. Space requirements will be discussed during this conference. In the interim, it is strongly urged that your headquarters encourage all CADF JEFM activities to perform the maximum amount of maintenance possible in the area available.

BY ORDER OF THE COMMANDER:

2 Incl
n/c

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ADMAC-2A4 17 December 1954

SUBJECT: Aircraft Jet Engine Field Maintenance

TO: Commander
Air Materiel Command
Wright-Patterson Air Force Base
Dayton, Ohio

1. Due to problems arising with other commands regarding JEFM support for ADC tenant organizations, this headquarters wishes to re-affirm its requirement for necessary support of these units.

2. When JEFM was phased into this command action was taken to support ADC tenant organizations from an ADC parent facility located on a nearby base. This was intended as an interim measure to provide support only until the landlord bases of other major commands could assume the responsibility in accordance with AFR 11-4.

3. Requirement for support was indicated to Headquarters, OCAMA, to include programming of OCAMAtype run-up stands for all tenant organizations; however, requirements for Shaw-Estes stands and tools were reflected only for those minor repair activities authorized or programmed within ADC since the authorization and requirements for these items is peculiar to a JEFM activity. Since JEFM is a field maintenance function, ADC squadrons tenant on other command bases are not authorized to accomplish this function and therefore cannot requisition the necessary equipment, spares and special tools. It is the opinion of this command that those tools and items of equipment peculiar to JEFM can only be programmed by and furnished to the major command possessing the minor repair authorization. This position is believed consistent with the provisions of Paragraph 3b(1) Technical Order 00-25-145, 30 September 1954.

4. Although this headquarters feels that AMC agencies are cognizant of the ADC deployment program a current listing of ADC deployments on non-ADC bases is submitted:

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Hqs Air Defense Command, ADMAC-2A4, Subject: Aircraft Jet Engine Field Maintenance

	ADC Tenant Unit	Command and Location	Type Engine to be Supported
1.	31st FIS) 323rd FIS)	TAC Larson AFB, Wash	J-47-17-17B-33
2.	413th FIS	SAC Travis AFB, Calif	J-47-17-17B-33
3.	94th FIS	TAC George AFB, Calif	J-47-17-17B-33
4.	29th FIS	SAC Great Falls AFB, Mont	J-48-P5,5A,7
5.	15th FIS	SAC Davis Monthan AFB, Ariz	J-47-17-17B-33
6.	93rd FIS	ARDC Kirtland AFB, N.M.	J-47-17-17B-33
7.	54th FIS	SAC Ellsworth, S. D.	J-47-17-17B-33
8.	85th FIS	ATRC Scott AFB, Ill	J-47-17-17B-33
9.	97th FIS	AMC WPAFB, Ohio	J-47-17-17B-33
10.	444th FIS	MATS Charleston AFB, S. C.	J-47-17-17B-33
11.	48th FIS	TAC Langley AFB, Va.	J-48-P5, 5A, 7
12.	95th FIS	MATS Andrews AFB, Md.	J-47-17-17B-33
13.	46th FIS	MATS Dover AFB, Del.	J-48-P5, 5A, 7
14.	2nd FIS) 5th FIS)	MATS McGuire AFB, N. J.	J-47-17-17B-33
15.	60th FIS	MATS Westover AFB, Mass	J-47-17-17B-33
16.	27th FIS	AMC Griffiss AFB, N. Y.	J-48-P5,5A, 7
17.	49th FIS	SAC Dow AFB, Maine	J-47-17-17B-33

5. This information is forwarded for utilization by the prime AMA's in conjunction with affected Major Air Commands to

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Hqs Air Defense Command, ADMAC-2A4, Subject: Aircraft Jet Engine Field Maintenance

determine if the ADC deployment program will necessitate further procurement of spares, equipment and special tools in support of the JEFM program. It is recommended that a comparison check be made between the ADC tenant deployment program and the JEFM program of the Landlord Major Air Command with Field Maintenance Support responsibility to assist the prime AMA concerned in determining whether the procurement of additional special tools, spares and equipment is required.

FOR THE COMMANDER:

Copies Furnished:

OCAMA, NAAMA, SAAMA,
Gentile AFD

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HEADQUARTERS

313.6

[illegible] AIR FORCE DEPOT

17 Aug 195[illegible] 153

MDMPLS TL.MM/DAPK[illegible]/rk

SUBJECT: Minutes of Conference, Implementation of Jet Engine Field Maintenance Program

TO: Commander
Air Defense Command
ATTN: [illegible]-2, Mr. H. L. Swaim
Ent Air Force Base
Colorado Springs, Colorado

1. The attached copies of minutes of the conference held at Gentile Air Force Depot, 12 and 13 August 195[illegible] are being forwarded your Headquarters for coordination, concurrence and/or non concurrence.

2. Requirements, distribution and priorities as established in this conference for the Command's not represented, ([illegible], AMC, [illegible]) were approved by Headquarters Air Materiel Command, [illegible], and SAAMA.

3. It is requested that this Headquarters Attention [illegible] be immediately advised of any errors or discrepancies which may inadvertently appear in the document. Non receipt of information to this letter on or before 10 September 195[illegible] will be interpreted as acceptance of the minutes in their entirety.

FOR THE COMMANDER:

1 Incl
Minutes of Conference

/s/t/ A. [illegible]. Waldorron
for M. [illegible]
Capt, [illegible]
Acting Dir, Maint Engrng

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4. Information indicates the possibility that a Shaw and Estes stand will not be required at Fairbanks Air Force Base. Negotiations are under way to permit the use of MADC cold weather stand at Ladd AFB by MAC. Gentile AFB will check on this requirement and will take necessary action. One Janke stand is presently in use at Elmendorf AFB.

5. Discussions have indicated that although future requirements may exist for dual capability, firm requirements do not exist at this time MTAC will require OCAMA run-up stands at Luke, Langlen, Moody, Tyndall and Nellis Air Force Bases due to cancellation of dual kits on present procurement by Gentile. Records indicate that shipment has been made of a dual facility to Nellis Air Force Base. Cancellation of dual kits will be effected by Gentile Air Force Depot.

6. Commands will submit new criteria to Hq MAC for possible revision to paragraph policy sub-paragraph (2)c of T.O. 00-25-145.

7. Gentile will coordinate with MADC on equipment requirements for conversion of existing test cell. Source of supply, existing items or from provisioned spares.

8. TAC requested dual installation at George AFB. Gentile will determine location of dual kits and refer to Hq MAC for final order.

9. Any changes to quantity will be forwarded Gentile AFB attention

10. Finalized list as determined by this meeting will be the authority for expenditure of shipment for Gentile AFD regardless of CFU.

11. MAC entered objections to Foster and Blytheville AFB's not being included in distribution of 41 stands presently on procurement.

12. MAC will review requirements for stands included in program of 51 additional and forward results of review to Gentile AFD.

13. Command priorities of receipt were not established on 51 programmed stands. It was indicated at the Conference that the 51 stands on the OCAMA program may be fully portable units in lieu of the Shaw and Estes type. It was recommended that no action be taken by any of the Commands for installation of Phase I at any of the activities listed therein.

14. Phase I will be cancelled at Barksdale due to Engineering changes on new production items and instructions from Hq USAF that Phase I will be procured from MAP funds available to base.

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15. [illegible] to change capability from 10,000 to 20,000 lb capacity was firm for 35 test stands. ATRC requested that 6 be delivered without [illegible], however, due to estimate of increased cost of $4,500 per stand and possible 90 day delay in delivery of stands ARDC will confirm by 10 August 1954 if [illegible] can be applied to all 41 stands.

16. A review of the OCAMA run-up stand requirements [illegible] recommended by OCAMA (page 61 Brochure) indicates the following [illegible] factors for computation of requirements:

COMMAND	OCAMA RUN-UP STANDS		LIFE	
	Corp	Field		
SAC	[illegible]	1	[illegible]	[illegible]
TAC	0	1	[illegible]	1
ADC	0	1	[illegible]	1
ATRC	0	1	[illegible]	[illegible]
NEAC	0	1	[illegible]	[illegible]
USAFE	0	1	[illegible]	1
FEAF	0	1	[illegible]	[illegible]
AAC	0	1	[illegible]	1

All Commands are requested to review total run-up stand requirements thru FY 56 within 10 working days after receipt of [illegible] and forward to Centile. Immediate requirements exist for run-up stands for the following bases to which first deliveries will be made: (1) Brady AFB, (2) Ernest Harmon AFB, (3) Clovis AFB, (4) [illegible] AFB, (5) [illegible] AFB. Inasmuch as delivery of the 50 [illegible] run-up stands will be within sixty days from the date of initial dispatch [illegible] other priorities would need to be established. [illegible] instructions immediately to OCAMA in order that [illegible] of control houses may be expedited.

17. The fifty stands presently being manufactured by OCAMA and the fifty previously delivered consisted of 1 control house and 2 dollies. Additional quantities of dollies will be required in view of criteria established in paragraph 16. Control houses and dollies should have separate Air Force Stock Numbers. Centile will [illegible] any action for stocklisting and authorization of the dolly [illegible] fully for run-up stands may be [illegible] configurations to make the dolly adaptable to all current type turbo jet engines.

18. It was agreed by all conferees that all correspondence pertaining to the jet engine test stands referred to herein will be forwarded thru Command Headquarters to reduce as much as possible the workload on all concerned. Command Headquarters will disseminate all information to the interested Activities.

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19. Operation of afterburners at field maintenance was discussed and it was generally accepted that determination of the necessity for the operation of afterburners would be the responsibility of the using Activity. Gentile will include in the revision of the T.O. covering operation of the test stand the precautions necessary if afterburners are operated, and describe the limitations and capabilities of the thrust stand and thrust measurement equipment.

20. Maintenance data was discussed and although it has no direct relation to the proposed agenda of the conference it was indicated by NEAC that a requirement exists for a jet engine field maintenance repair implementation manual. It was generally agreed, however, that considerable assistance could be obtained by visits to the supporting area AMA's and that assistance had also been obtained from visiting teams from the engine prime AMA's.

21. It was indicated that no requirement exists for a handbook of operation and service instructions for the run-up stands. OCAMA have furnished two sets of drawings with each shipment of the run-up stands and will continue to maintain this procedure for the remainder of the stands presently being fabricated. Additional drawings may be obtained from Gentile upon request.

22. The T.O.'s 17-15A-1 and 17-15A-2 covering the 7CAD-732515 stand have been proven to be very inadequate. T.O. 17-15A-6 which covers the calibration kit, (7CAD-459700) that is used in the Chaw and Estes Stand, may be used to supplement T.O. 17-15A-1 for calibration procedures of the thrust measuring equipment. Gentile are in the process of revising the referenced T.O.'s and anticipate completion of the preparation of the text within thirty days. Data will be procured for overhaul of component instruments of the test stand which are peculiar to the test facility and which will require special training for calibration and overhaul. Repairs of test stand and equipment may also be accomplished in accordance with T.O. 00-25-60.

23. Special training will be available to civilian and/or military personnel assigned to jet engine field maintenance bases, upon request to this Depot by the Headquarters of any of the Major Commands. Since the Commands must develop the capability for calibration and maintenance of the Chaw and Estes Stands, it is recommended that a training program be immediately established and that civilian and/or military personnel with experience on instrument repair and a good basic working knowledge of electronics be selected for this responsibility. Factory technical representatives from Brown Instrument Company, Minneapolis Honeywell and Baldwin Lima Hamilton have offered their services to Chanute in their training program and will also render assistance to any of the Air Force Bases if possible, upon written or verbal request from any of the Commands.

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24. Spare parts have been provided to support the test stands. However, due to the complex stocklisting and cataloging system, the parts are not all available to date. Additional items will be included in the selection of spares to support the additional quantities of stands currently on order and the T.O. covering the parts section will be revised accordingly.

25. An adapter set will be procured from General Electric to furnish the engine aircraft component items necessary to connect the console assembly to the J47-17 engine. Commands will be advised of the part number and stock number as soon as available. A parts breakdown of the set will be available in approximately 15 days.

26. It is recommended that depot projects be established for manufacture of the quantity of run-up stand required, due to the urgency of the requirements.

27. Gentile will prepare a T.O. which will be furnished with applicable drawings covering the modification of the run up stands to include vibration equipment. Action will be taken immediately to procure the necessary parts to accomplish the modification of the run up stands now in use for those presently being manufactured and any additional quantity as required to meet the current program. The parts will be furnished as a T.O. modification kit. Unless otherwise notified by the various Commands, modification kits for the original 50 delivered CCMA run up stands will be shipped to the activities listed in CCMA Brochure pages 53 and 54 as organizations that have received the run up stands.

28. For immediate issue to support J47 engines field maintenance, a quantity of 72C-03611 ... lifters are available for use with the CCMA stand which are satisfactory as an interim item. 7360-621794 pickup may also be obtained by requisition on special issue where an emergency exists. Status of vibration equipment for engines other than the J47 will be forwarded the Headquarters of all Commands on or before September 1954.

29. For information purposes only the new design Shaw and Bates stand will not incorporate the use of a fuel measuring system, which will eliminate the flowmeter and interconnecting lines from the test cell.

30. The majority of the items in the proposed agenda were discussed, although some were covered very briefly. It was the consensus of opinion that the conferees were well prepared to discuss all the problems presented during the conference. The cooperative manner in which all phases of discussions were effected resulted in a satisfactory solution to the major problems of requirements, priority and distribution. The Commander of Gentile wishes to express his appreciation for the assistance given by all the conferees and in turn has guaranteed the full cooperation of all of the facilities at ____ Command to support ... may possibly provide adequate support for implementation of the ... Engine Field Maintenance Program.

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Hq Gentile Air Force Depot, MEWTS Flight, Subject: Minutes of Conference, Implementation of Jet Engine Field Maintenance Program

ADMAC-2 (17 Aug 54) 1st Ind 27 AUG 1954

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

TO: Commander, Gentile Air Force Depot, ATTN: AMME, Dayton, Ohio

1. This Command has restudied its Shaw-Estes test stand requirements, in the light of current test-stand programming information and certain changes are recommended. Due to the peculiarities of this Command's organization, where many ADC squadrons operate as tenants on bases of other commands, it was necessary to review the entire 82 Shaw-Estes test stand program. This included the 51 additional Shaw-Estes stands proposed by OCAMA. It is obvious that the ADC requirement is greatly influenced by the distribution of stands to other major Commands. Therefore, any changes to the USAF station lists in paragraph 2 or 3, Inclosure #1, may alter the ADC requirement.

2. With reference paragraph 2, Inclosure #1, the ADC stations listed from 35 through 41, inclusive should be changed to read:

a. Yuma County Municipal Airport
b. Paine AFB
c. New Castle County Airport
d. Stewart AFB
e. Minneapolis-St Paul International Airport
f. Portsmith AFB
g. Truax Field

3. With reference paragraph 3, Inclosure #1, the list of ADC stations proposed by OCAMA to receive Shaw-Estes test stands should be changed to read:

a. McGhee-Tyson Municipal Airport
b. Grandview Air Force Base
c. Duluth Air Force Base
d. Cannard Air Force Base
e. Minot Air Force Base
f. Bennie Co. Municipal Airport
g. Glasgow Air Force Base
h. Grand Fork Air Force Base

51 avail FY-56 latter

4. The changes recommended in paragraphs 2 and 3, will update the total ADC requirement for test stands by six. There remain, however, several bases where the number of jet engines operated by tenant ADC organizations would justify a Shaw-Estes test stands. These particular bases have not been proposed or programmed to receive a test stand. This Command recommend test stand installations at the following bases of other commands so that these bases may furnish jet engine, Field maintenance support to our squadrons:

Mar [illegible] No. 2043 25 Aug 54

a. Larson Air Force Base, [illegible] correspondence

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b. George Air Force Base, TAC
c. Dover Air Force Bases, MATS
d. McGuire Air Force Base, MATS
e. Griffis Air Force Base, ANC

5. It is apparent that the Shaw-Estes test stand program has languished due to the lack of guidance and coordination between commands. Each Command has submitted its individual requirements; and the sum total is most likely in excess to the total Air Force requirements. This becomes a particularly confused problem when a large number of tenant organizations are to be supported. Another facet of the problem of total USAF support is the presence of a large number of ANG jet squadrons. These ANG aircraft must also be supported, and it is doubtful ANG support was considered in establishing command-wide test stand requirements. It appears that Headquarters, USAF, should formulate the total USAF Shaw-Estes test stand requirement, after receiving the requirements of each USAF Command, including the ANG. Such action would reduce costly duplications and provide a more thorough support program.

6. With reference paragraph 16, Inclosure #1, the factors for computation of OCAMA run-up stand requirements are not as agreed upon by the conferees. The factors used by this Command to compute requirements were as follows:

a. On those stations belonging to ADC, the field maintenance activity will be provided one (1) control house and one (1) dolly, with the Fighter-Interceptor Squadron or squadrons receiving one (1) dolly each.

b. On those bases where ADC Fighter-Interceptor Squadrons are tenants, the Fighter-Interceptor Squadron will be provided one (1) control house and one (1) dolly.

c. For those Fighter-Interceptor Squadrons scheduled to deploy, one (1) control house and one (1) dolly will be provided.

7. It is this Command's intention to have a jet engine run-up capability either operated solely by the Fighter-Interceptor Squadron, or operated by the field maintenance organization, and available for use by the Fighter-Interceptor Squadron. In addition, certain field maintenance activities will be able to accomplish minor repair using the OCAMA run-up stand rather than wait the 18 to 24 months for a Shaw-Estes facility.

8. This Command concurs in the distribution of OCAMA stands presently delivered. We recommend that the station list for the assignment of 50 OCAMA stands now being manufactured be amended to delete Oxnard and in its place add the 518th Materiel Squadron, Niagra Air Force Base. Also, we request that the number of dollies to be shipped to Great Falls AFB and Scott AFB be reduced to one each.

9. To complete this Command's requirements for OCAMA stands, in view of the criteria outlined in paragraph 6a, b, and c we recommend that previous lists of ADC stations proposed to receive these stands be voided and that

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Hq Gentile AF Depot, Subj: Min of Conf, Implementation of Jet Eng Fld Maint Program

the following list be accepted:

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Station & Organization	Control House	Dollies	See Note
527 Mat. Sq., Wurtsmith AFB	1	2	A
567 Mat. Sq., McChord AFB	1	1	
317 F.I.S., McChord AFB		1	
465 F.I.S., McChord AFB		1	
528 Mat. Sq., Presque Isle AFB	1	2	B
575 Mat. Sq., Selfridge AFB	1	1	
13 F.I.S., Selfridge AFB		1	
56 F.I.S., Selfridge AFB		1	
564 Fld. Maint. Sq., Otis AFB	1	1	
58 F.I.S., Otis		1	
437 F.I.S., Otis		1	
42 F.I.S., O'Hare AFB		1	
456 F.I.S., Truax		1	
539 F.I.S., Stewart		1	
11 F.I.S., Duluth	1	1	Deploys 2/56
63 F.I.S., Wurtsmith	1	1	Deploys 2/56
84 F.I.S., Hamilton	1	1	Deploys 2/57
82 F.I.S., Presque Isle	1	1	Deploys 2/57
445 F.I.S. Geiger	1	1	Deploys 4/56
318 F.I.S. Presque Isle	1	1	Deploys 2/57
469 F.I.S. McGhee Tyson	1	1	Deploys 4/57
96 F.I.S. New Castle		1	
322 F.I.S. Geiger		1	
5th F.I.S. McGuire		1	
2nd F.I.S. McGuire		1	
331 F.I.S. Suffolk		1	
27 F.I.S. Griffis	1	1	Move 3/58
95 F.I.S. Andrews	1	1	
444 F.I.S. Charleston	1	1	
48 F.I.S. Langley	1	1	
46 F.I.S. Dover	1	1	
49 F.I.S. Dow	1	1	
54 F.I.S. Rapid City	1	1	
97 F.I.S. Wright-Patterson	1	1	
15 F.I.S. Davis-Monthan	1	1	
93 F.I.S. Kirtland	1	1	
413 F.I.S. Travis	1	1	
336 F.I.S. Perrin	1	1	
538 F.I.S. Castle	1	1	
522 Mat. Sq., Klamath Falls	1	1	
98 F.I.S. Klamath Falls		1	
321 F.I.S. Walker	1	1	

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Hq Gent le AF Depot, Subs Min of conf, Implementation of Jet ne Old Paint Program

Station & Organization	Control House	Dollies	See Note
329 M.I. . Griffis	1	1	
498 M.I. . Griffis		1	
535 Mat. Sq., Marquette	1	1	
327 M.I.S. Marquette		1	
538 Mat. Sq., Minot	1	1	
324 M.I. . Minot		1	
540 Mat. Sq., Glasgow	1	1	
536 Mat. Sq., Grand Fork	1	1	
302 M.I.S. Lockbourne	1	1	
541 Mat. Sq., Pennie Co.	1	1	
304 M.I.S. Portland		1	
303 M.I.S. Griffis		1	
Total	34	56	

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10. As you will note in paragraph 9, many ADC and TAC bases are listed where this Command will operate tenant Fighter-Interceptor Squadrons requiring a jet engine run-up capability. These same stations have received, or have been programmed (or proposed) to receive CONUS run-up stands for the land-lord organizations. These land-lord organizations are in most cases a wing complement. Hence it is doubtful that one run-up facility operated by a land-lord base will accomodate all jet engine run-up requirements. In addition, this Command has been advised by SAC and TAC that in the event their wings deploys a major portion of the field support personnel and equipment will also deploy. These are the basic reasons why this Command has established an additional tennant requirement (at such stations) for jet engine run-up capabilities within the tennant ADC Fighter-Interceptor Squadrons.

11. Request that all run-up stand equipment shipped to tennant ADC organizations be conspicuously marked to indicate the ultimate organization of assignment. This will preclude a run-up stand being detained at base level when it is intended for a tennant Fighter-Interceptor Squadron.

Note:

A. The second dolly to be assigned to the 74th FIS upon return from overseas 2/56.

B. The second dolly to be assigned to the 335th FIS when moved from Geiger 3/57.

C. Not required prior to 2/56.

D. Not required prior to 3/56.

E. Not required prior to 4/56.

F. Not required prior to 1/57.

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Hq Gentile AF Depot, Subj: Min of Conf, Implementation of Jet Eng Field Maint Program

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AFMAC-2 (17 Aug 54)(cont) 1st Ind

G. Not required prior to 2/57.

H. Not required prior to 4/57.

FOR THE COMMANDER:

1 Incl
Minutes of Conference

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CONFIDENTIAL

SASRDE

30 Nov 54

SUBJECT: Aircraft Engine Reporting Service Test - RCS-2AMC-A19

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

1. Forwarded herewith are copies of the quantitative and intransit report of engine distribution for the J-48 engine as reported under subject procedure. Your Headquarters has been added to the distribution list of this report.

2. Since 20 September 1954, the implementation date for the J-48, all except 72 engines have been located and entered into the system. Continued effort is and will be exerted until all engines have been located by serial number.

3. As a note of explanation, the report is broken out by engine configuration. In order to obtain the total number of spare engines in the system, the "total spares" and the "intransit" columns must be added. Likewise, in order to obtain a complete inventory of J-48 engines in the system the total spares, intransit, installed and lost columns must be totaled.

4. In order to provide for a more equitable distribution of engines, Headquarters, Strategic Air Command, has established operating levels for R 4360-41/41A/53 engine bases and this depot has been providing engines for the past several months based upon this level and utilizing reports obtained from subject system. This automatic supply system has alleviated the requirement for the AF Form 713 "Allocation" Report. It is felt that a like system could be applied to the J-48 engine, contingent upon concurrence of your Headquarters. Levels should be based upon Flyaway Kit and normal peacetime operating requirements.

5. It is, therefore, requested your Headquarters determine the quantity of engines necessary to be on hand at all times at each Base or location under your Command in support of the F-94C aircraft and advise this depot at an early date.

FOR THE COMMANDER:

1 Incl:
Subj Rept Parts I & II
for J48P7, J48P5 & J48P5A
engines

H. R. LINDSEY
Deputy Chief
Deputy for Rqmts & Distr

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	Elect
	Gn Sup & Svs
	Instl
	Log Plans
	Hq Sq Sec
	FCDA
	CAA

Will be Confirmed in Std Publication Form

Under par 3a, ADCSM-3 No

Prepared by CAPT H.W. HARMAN/dd

Telephone 2828

20 Dec 54

Hqs SAAMA SAMTEN Subj: Aircraft Engine Reporting Service Test - MCS-SAMD-A19

AEMAC-1A 1st Ind 22 DEC 1954

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

TO: Commander, San Antonio Air Material Area, Kelly Air Force Base, Texas

1. This headquarters concurs in your proposal to establish an automatic resupply system for the J-48 engine based on the MCS-SAMD-A-19 report as outlined in paragraph 4 of basic correspondence.

2. Request that tentative stock levels for bases listed below be established in the quantities indicated.

	PSA	PT
Dover AFB	4	4
Griffiss AFB	4	4
Hamilton AFB	0	4
Otis AFB	11	8
Oxnard AFB	2	5
Yuma Co Aprt	4	2
Great Falls AFB	0	8
New Castle Co Aprt	8	8
Langley AFB	6	2

3. Since this command prefers that all organizational aircraft be equipped with the latest configuration engine, a requirement for the P-5 engine has not been included. If stock position on the P-5A engine will not permit satisfying the above levels, the P-5 engine will be accepted until sufficient P-5A are made available.

4. As indicated in paragraph 2 levels furnished are subject to change as a result of aircraft being transfered to and from Project Hop-Up overhaul activities. Therefore request you advise method desired in amending stock levels as requirements fluctuate.

FOR THE COMMANDER:

LT COL CHARLES F. CARVER, JR

JAMES S. PURDUM
Lt Col, USAF
Deputy Comd Adj

Incl w/d

COMEBACK COPY

Not requested, not furnished

Furnished 22/12/54 (Date) (Initials)

Incl not nec for AAG file.

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ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified CONFIDENTIAL in accordance with Par _____, AFR 205-1, 24 Jul 53, or for the reason (s) stated

SIGNATURE

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ADMAC 20 September 1954

SUBJECT: (Unclassified) J-47GE-33 Engine Summary

TO: Commander
Central Air Defense Force
Grandview Air Force Base, Mo.

1. The following information is submitted in answer to your message, CDM 6972, dated 31 August 54:

a. I dispatched a message (ADMAC-2 1353) on 3 August to the Commander, Sacramento Air Materiel Area, with an information copy to the Commander, Oklahoma City Air Materiel Area, to determine the technical support status of these new J-47GE-33 engines. (See Inclosure No. 1).

b. On 9 Aug 54, I received a reply from the Commander, Sacramento Air Materiel Area. (See Inclosure No. 2). This reply was discouraging, as it adds up to a situation that is not unusual these days; i.e., new equipments are often delivered to the field long before technical publications and logistics support items are available to the user.

2. I addressed the action copy of my message to Brigadier General Hofley, the Commander, Sacramento Air Materiel Area in an effort to put his Air Materiel Area in the business of insuring complete support of his product, the F-86D. Air Materiel Command property class decentralization complicates the overall logistics support of our aircraft and lends to situations where the prime aircraft Air Materiel Area may not know the support status of equipments used in their products. I want the prime aircraft depot to more closely scrutinize such details that have been previously overlooked. This J-47GE-33 engine situation is a good example.

3. We in Headquarters Air Defense Command knew nothing of this situation until F-86D's were delivered with J-47GE-33 engines installed. We had been advised that J-47GE-33 engines were to be installed in new production F-86D's starting in February 1955.

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ADMAC Subject: (Unclassified) J-47GE-33 Engine Summary

However, it appears that the present installation of these engines in F-86D's "jumped the gun," so to speak. We are continuing to pressure Headquarters Oklahoma City Air Materiel Area and Headquarters Sacramento Air Materiel Area into a shorter period of void, so far as technical publications and engine spare parts are concerned. However, the supply status of complete engine spares for these new engines is good at the present time.

4. To insure that as much information as possible was available to the Air Defense Forces, I had a letter prepared, subject: Installation of J-47GE-33 and J-47GE-17B Engines in F-86D aircraft, dated 23 Aug 54. This letter contains all the information known and available from contractor sources to date on the new engine.

5. We will immediately forward new information as soon as it is made available to us.

BY ORDER OF THE COMMANDER:

2 Incls
1. Msg Hq ADC, ADMAC-2 1353, 3 Aug 54
2. Msg Hq SMAMA, SMMTAA 1090, 9 Aug 54

MARSHALL S. ROTH
Brigadier General, USAF
Deputy Chief of Staff, Materiel

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From: COMMANDER, ADC 28 Oct. 1954

To: COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF
COMMANDER, CADF, GRANDVIEW AFB, GRANDVIEW, MO
COMMANDER, 4750TH AIR DEFENSE WING (WEAPONS)
YUMA COUNTY AIRPORT, YUMA, ARIZONA

(UNCLASSIFIED). ADMAC-2A2_____. Subject is Preservation of Engines for Overhaul. This message in two parts. Part I. Information furnished by Air Force Plant Representatives, General Electric Company, indicates provisions of Technical Order 2J-1-18 are not being complied with pertaining to the preservation of engines received for overhaul. Failure to comply with preservation requirements has resulted in the reported necessity for immediate represervation of about 50% of those engines recently received by the General Electric Company. In order to prevent unnecessary expenditures, resulting from deficiencies described, it is requested that the attention of all activities processing engine shipments be directed to the necessity for strict compliance with Technical Order 2J-1-18. Part II. Request the above information be disseminated to all activities under your Command jurisdiction as deemed necessary.

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From: HQ ADC, ENT AFB, COLORADO SPRINGS, COLO 8 Nov 1954

To: COMMANDER, CADF, GRANDVIEW AFB, MO

COMMANDER, 29TH AIR DIVISION, GREAT FALLS AFB, MONT
DIG NORTON AFB, CALIFORNIA

(SECRET) ADMAC-5 1937. Reference CADF message, Commander 884th, Classification SECRET, to General F. H. Smith and message, 29th Air Division DIG 3020302, Classification SECRET. Actions as indicated by inclosures hereto have been taken on the power problem experienced in above messages. The culmination of the unsatisfactory conditions expressed in these inclosed messages, letters and briefing notes resulted in certain modifications to the VGI as contained in the F-94C, F-86D and F-89D aircraft. Following is comment upon corrective procedures as instituted by 29th Air Division for correction of what were considered certain operational deficiencies. These will be treated subjectively by equipment. J-2. Certain of the corrective procedures instituted by the 29th Air Division are not correct in that they compound by mismanipulation of switches and aircraft breakers certain errors that could happen to the equipment through malfunction. Specifically, their local corrective action concerning the J2 gyro wherein they attempt to have the pilot phase the AC and DC into the instrument through the use of circuit breakers is worse and wrong. In the F-94C aircraft the action of the instrument inverter relays will prevent DC power

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(SECRET) ADMAC-5 1937.

being applied to the J2 compass system without AC power being available, therefore the J2 will have both AC and DC power applied simultaneously and there is no use for the pilot attempting to place the switch in normal after the indicator light goes out. The 29th Air Division should understand that the J2 compass system is in continual slow slave at all times during normal operation, after initial warm-up. The airborne procedure of pulling these gyro compass DC circuit breaker is correct, only if the pilot requires fast slave condition after aerobatic maneuvers. In the event of an inverter failure, or switching of instrument inverters, DC is automatically interrupted causing the J2 to go into fast slave condition, however, it is not necessary to wait the 3 to 7 minutes for the thermal relay to cool as it began to cool immediately after the last fast slave cycle was completed. VGI. As with the J2 compass, it is not necessary for the pilot to attempt to phase AC and DC into the VGI circuitry upon starting the aircraft. The DC drop has nothing to do with the so-called slow slaving action on the instrument (actually 29th Air Division should have said fast slave) as the slaving action and erect action is entirely an AC voltage function. In both the F-89D, F-86D and F-94C aircraft it is unnecessary to consider the circuit breaker as a switch for the operation of these instruments. On the F-94C and F-86D aircraft there are times that the pilot could damage the VGI system by improper manipulation of the DC circuit breaker.

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On any and all of these gyro systems it should be considered that they are in a condition of slow slave during periods of normal operation. Slow slave calls for gravity electrolytic erection at all times during normal operation and when normal deviations have not exceeded zero degrees to three degrees. Fast slave conditions are automatically instituted when deviations for precessional errors have culminated in errors of over three degrees. Slow slave erects at a rate of around one degree per minute; fast slave erects at a rate of approximately 60 degrees per minute. Most modifications instituted as a result of unsatisfactory reports has corrected VGI circuitries for any discontinuities brought about by inverter changeover circuitry power interruptions or inverter failure. It is not known whether 29th Air Division performed their tests with modified or unmodified VGI systems, however this information will be obtained. Zero Reader. The Zero Reader Quick Erector, which governs fast or slow erection, is dependent on AC power only. Fast erection occurs only during the first two minutes that AC power is applied to the Zero Reader. Action of the thermal relay in this system prevents recycling of the Quick Erector, should there be a momentary power interruption as in the case of switching inverters. At any time the Quick Erector is cycling, putting the system into fast erection, the "Off" flag will appear on the face of the indicator.

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HEADQUARTERS
AIR MATERIEL COMMAND
Wright-Patterson Air Force Base
Ohio

MCS

15 September 1954

SUBJECT: The Engine Manager Phase of the Weapons System Concept

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

1. The primary objective of the Weapons System Concept is to manage the Air Force inventory by making a "package" of a "Weapon" and all of its spares, and control each "package" separately. On the other hand, the primary objective of the Federal Cataloging Program is to control the inventory by commodity classification, with no more than one stock number for one item of supply.

2. In an effort to achieve the basic objective of the Weapons System Concept, without violating the purpose or intent of the Federal Cataloging Program, this Headquarters developed a proposed procedure which, once implemented, could be used as a testing grounds for the subject concept and as a base from which to expand the operation to other areas.

3. Basically the proposed procedure involves the use of management codes to relate all engine spares (02's), all fuel metering accessories (03-D), and all ignition accessories (03-H), to a specific engine model. A copy of the proposed procedure is attached for ready reference. The plan was presented in detail to personnel from AMC Depots and Major Commands at two conferences - Western Zone activities met at Kelly Air Force Base on 3 and 4 August 1954, and Eastern Zone activities met at Olmsted Air Force Base on 26 and 27 August 1954. Reports on these conferences including recommendations submitted are attached.

4. If you concur with the proposed procedures as attached, request this Headquarters be advised. If not, request your recommendations for changes to the procedure, or proposed alternate procedures, be furnished this Headquarters. When submitting recommendations, it should be kept in mind that proposed changes must achieve the following objectives.

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Ltr from MCS, Subj: "The Engine Manager Phase of the Weapons System Concept"

a. Enable one point in the Air Force Supply System to have a knowledge of

(1) Materiel <u>available</u> to support a given end item.

(2) Materiel <u>already consumed</u> to support a given end item.

b. Insofar as possible, prevent material procured for one end item being used to support another end item.

c. Enable the central point responsible for a given end item to compute its requirements for that item.

d. Enable one point in the Air Force Supply System to control the procurement of, and exercise distribution control over, a given component which may be used on several end items.

5. Request reply to this letter reach this Headquarters no later than 15 October 1954.

FOR THE COMMANDER:

F. J. DAU
Brigadier General, USAF
Director, Supply and Service

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B/L from MCS AIR MATERIEL COMMAND, SUBJECT: The Engine Manager Phase of the Weapons System Concept

ADMC (15 Sept. 1954) 1st Ind 13 Oct 54

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

TO: Commander, Air Materiel Command, Wright-Patterson Air Force Base, Ohio

1. This Headquarters agrees in principle to the engine-manager phase of the weapons system concept provided it is limited at this time to the classes indicated and warehousing procedures are not revised. The number of common items in these particular classes, i.e., 02's, 03D and 03H, should not cause any great increase in workload at base supply. However, expansion of this procedure to other property classes such as the Fire Control System would place a greatly increased workload on each base supply.

2. It is felt that the proposed system should be incorporated in AFM 67-1 rather than as a separate publication.

3. This command has been advised that all bases will be mechanized from a base supply standpoint within the next 18 to 24 months. Obtaining consumption data by the weapons system concept could easily be a by-product of mechanization without increase in personnel strength. It is therefore recommended that expansion of the proposed system be withheld until such time as base mechanization has been fully implemented.

FOR THE COMMANDER:

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of new procedures should be phased into the supply system over an appreciable period of time to insure that the increase workload will not result in a possible mission failure.

4. New major programs should be implemented into our system so that one complete program is set up, implemented, personnel trained, and operating efficiently prior to the commencement of a new program. If this were possible, then I would concur with the Air Force when they say that no additional personnel are required. I cannot concur with that statement now when they foresee some of these problems at MC in less than one year. All seven programs are still in what may be considered the training phase. There is not one single program that I consider 100% operational.

5. In the event that the Weapons System Concept is implemented, Property Accounting Branch will have an add requirement for a 20% increase in personnel. This would be due to the tremendous increased workload. There would be an increase in the number of stock record cards maintained. This would be brought about because interchangeable items would have two or more identical stock record cards. Each would be cross referenced against the other but filed with their respective system. An illustration of this possible increase would be the Mk, Mk, and Mk Fire Control Systems. These three systems are now interchangeable. We now have a total of 1500 line items applicable to these systems. If the Weapons Systems Concept were to be placed in operation for these systems then these 1500 cards would immediately increased by 80%. 3100 cards minimum - - - this is better than a 100% increase and this is just one of many systems which would be effected. As we increase the cards we would increase the time spent on cards and maintenance, stock level review and setting, stores cards, shelving prices, units of issue and all other related work which increase stock record cards or correct up to date, and accurate. This increased workload cannot be readily measured, but let's look at the illustration above. If we double the number of cards that we maintain then we double the number of control records that we perform and not the number of cards we must check against (2) documents and price changes, and all other related work, hence once again a 100% increase.

6. The number of items also received for processing by the Property Accounting Branch would be greatly increased. Using back to my illustration, the Mk, Mk, and Mk Fire Control Systems all have their own stock numbers and the Weapons Systems Concept would require that these three systems be combined by one stock number and by work unit code. A requirement such as this would increase our workload by [illegible]. A requirement such as this would increase our workload by [illegible] per month. [illegible] would increase our workload by [illegible] per month. [illegible] would increase our workload by [illegible] per month. [illegible]

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...would by necessity be cross referenced. Given a balance of an item ...in one system and no balance in another system but a request for same then ...an IAV would have to be processed to effect the change of balances. This ...increased workload can only be approximated but I feel safe in assuming ...that our system would reflect about 500 IAV's each month just for these ...transactions. Net result: Increase workload demands increased ...personnel. Increased personnel required more money, more fixtures, more ...space, more supervision, and more training.

7. Material Facilities Branch of Base Supply would require additional ...personnel and additional warehouse space. Where they now have one location ...for an item, possibly three they would in the future have to have two or ...more locations for the same item. Now the illustration E-4, E-5, and E-6 ...Fire Control Systems, the warehouses presently locate 1500 line items for ...these systems. Implement Weapons Concept and you immediately have 3100 ...locations, 3100 inventory records, and a more complex operation. The input ...of paper work would be greater, hence it would require more people to ...process. Therefore, implement Weapons Concept and Materiel Facilities ...requires additional people and additional warehouse space. A complete ...survey would have to be made to give you realistic figures on the amount ...of increase, but common sense tells you that there would be an assurable ...increase of 5% or more personnel.

8. This location presently supports nine different aircraft engines. ...Under Weapons Concept, this activity would ...maintain control card and location by end item. Issues would be ...processed and IAV's utilized to transfer balances. The ...increased amount of vouchers processed, increased ...more complex operation, additional personnel require-

9. In order to make the Weapons Concept work, requisitions would ...have to order one line item of property and ...submit all applicable systems. Given ...submit two or more line items requests ...of today, hence the Receiving and ...have to process, through their receiving ...more line items than they presently do. This ...more people and more space for intransit ...receiving lines and more material handling ...of property. Commercial Transportation ...perform their functions. More facilities ...but one failure of the operation ...Weapons Concept were implemented. ...B-47, and B-52 Fire Control Systems! ...For this number, 80 of these line items ...presently [illegible] are requisitioned one line ...quantitatively. Under Weapons ...requisitions would increase to 260 line ...[illegible] increase in line items ...Receiving and Classification Section.

10. The Inventory people must maintain three inventory schedules

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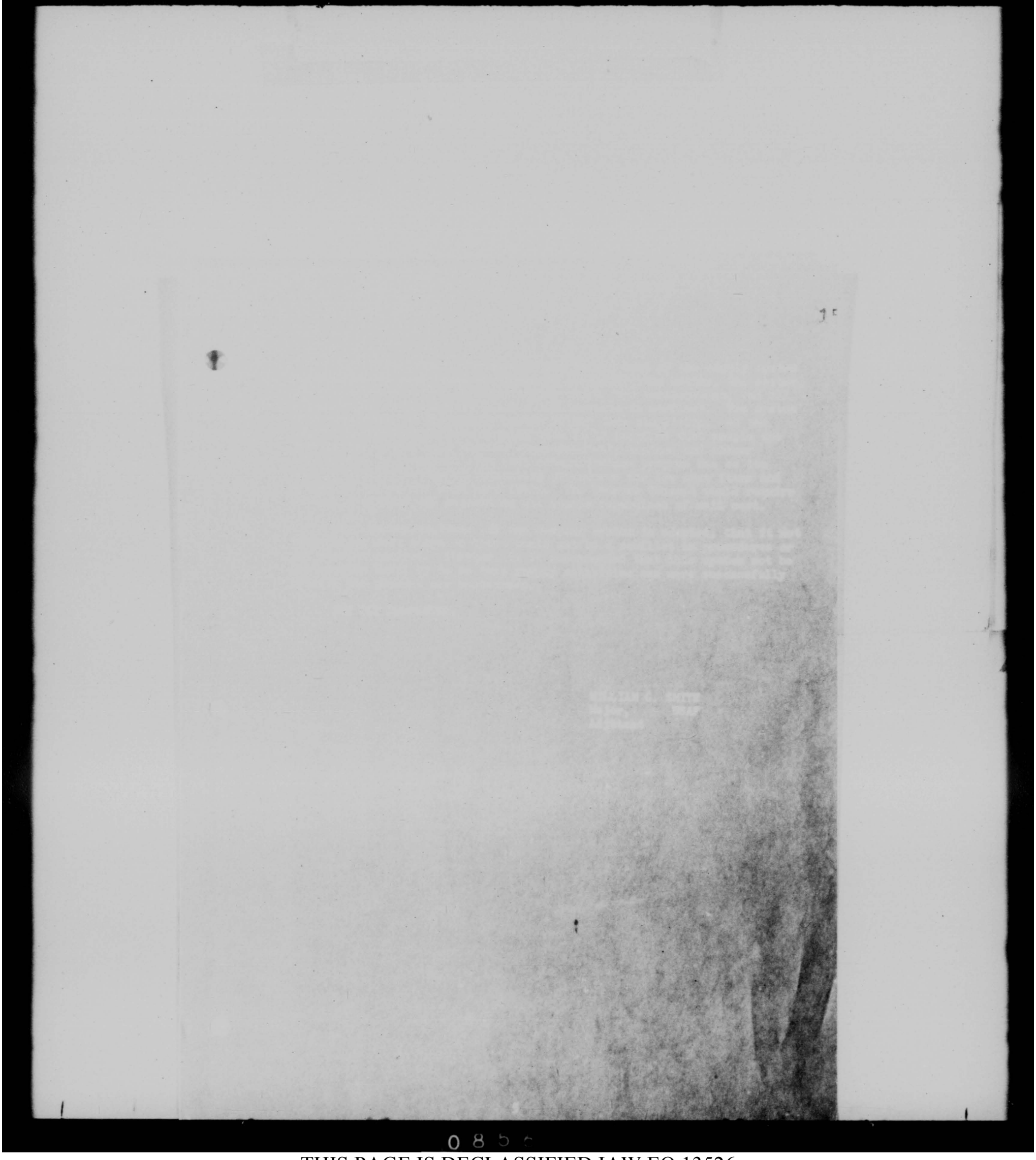

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MCMAC-1

SUBJECT: Engine Manager Concept

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

1. In compliance with request contained in your message MCMAC-1A 25919, 11 August 1954 and AEMAC-1I 30674, 23 September 1954, [illegible] herewith comments in regard to the Air Material Command proposal on Engine Manager Phase of the Weapons System Concept.

2. Reference is made to Appendix A, Warehouse Procedures, Sub-section "A" - Supply, proposed Air Force Letter 65-. Paragraph 4 of this appendix requires the physical segregation of supplies by engine code. It is felt this requirement should be reconsidered in view of the limited storage space available at the majority of active Air Force installations. This is not considered to be an immediate problem, but it is envisioned that as the proposal is expanded to include the aircraft, armament and communications systems the requirement for additional warehouse space, personnel and storage bins is generated. Considering this factor from an austere standpoint it is felt the Air Force as a whole could realize a considerable monetary saving by permitting the base to commingle this property regardless of [illegible] code. Adequate control can be exercised through the stock control cards.

3. Reference paragraph 7, Appendix 3, Preparation and Publication of USAF Aircraft Engine Management Control lists, proposed Air Force Letter 65-. During the presentation of the proposal, representatives of Strategic Air Command recommended the frequency of the publication of addenda to the control lists be limited to each 30 days. It is felt that if the requirement for publication of interim notifications of additions, changes or deletions will serve the best interests of the using commands that the proposal as presently written should remain.

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HEADQUARTERS
CENTRAL AIR DEFENSE FORCE
GRANDVIEW AIR FORCE BASE
GRANDVIEW, MISSOURI

CDMAC-1

SUBJECT: Engine Managers Concept

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

1. The objective of Engine Managers Concept, as written in AFL 65-Proposed and as outlined at a conference held at San Antonio Air Materiel Area, would group Class 02A, engines, Class 02, engine parts, Class 03D, carburetor and maintenance parts, Class 03H, ignition system, accessories and maintenance parts, under one code, designating a particular type engine, i.e., type J47 engine would be identified by the code QA and also all Class 03D and 03H parts applicable to this particular engine. The code will follow the stock or part number. A dash will not be used following a number as the code will be used only to identify a type of engine but will not become a part of the stock or part number. The control of a particular type of engine will be placed at a designated "Engine Depot" for both supply and maintenance. This would simplify requisitioning procedures and increase efficiency in that all engines, or 03D or 03H parts, pertaining thereto would be obtained from one supply point, the "Engine Depot."

2. Under the Engine Managers Concept as outlined in AFL 65-Proposed, a very elaborate accounting system would be necessary. This concept would require a separate stock record card for the same item for each different engine code (different type engine) supported at a base; for example, AF-2352-SC currently is carrying 911 line items supporting nine (9) different type engines. Under the Engine Managers Concept, it would require, at a maximum, 8199 stock record cards where only 911 is presently maintained. Further, if an item is required for an engine but there is no stock for that particular code but the same item is available under a different code, an inventory adjustment document must be processed in order that proper charge can be made against the appropriate engine code. All parts and materiel must be charged to the particular engine code for which they are used, including bench stock items.

3. Storage of property, as required under this Engine Managers Concept, requires that property must be stored by engine code rather than by a property class, which in the case of AF-2352-SC where nine (9) different

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types of engines are supported, it would require nine (9) different locations in the warehouse instead of three (3) under the present procedure.

4. Accountable officers of this command cannot accomplish the additional workload this proposed procedure would impose without additional personnel. Stock record sections are currently operating [illegible] under categorization, hi-value, monetary inventory and the conversion of Federal Cataloging System. These procedures have generated a staggering backlog in the preparation of inventory adjustments to [illegible] from stock list number to Federal Catalog number in the preparation of new stock record cards. Further, warehouse facilities are not adequate for such storage as this proposed procedure would require.

FOR THE COMMANDER:

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TRANSLATION. TO REMOVE ITEMS FROM THE INVENTORY CONTROL SYSTEM. IT IS SUGGEST THAT CONSIDERATION BE GIVEN TO SIMPLIFICATION OF ISSUES AT BASE LEVEL INSTEAD OF COMPLICATING THE PRESENT CUMBERSOME CLEARING CONCEPT AND ACCOUNTING PROCEDURES. THIS COULD BEGIN BY INCLUDING SUCH ITEMS IN THE REGULAR STOCK LIST AND CHANGES. THIS WILL REDUCE THE CLERICAL REQUIREMENTS, PERSONNEL PRESSURING AND HANDLING. THIS SAVE TIME AND FACILITATE CLARIFICATION. FURTHER SUGGEST IF THE OBJECTIVE IS TO IDENTIFY QUANTITY AND ITEMS REQUIRED TO SUPPORT A GIVENEND ITEM CONSIDER ASSIGNING A FIND CODE TO END ITEMS AND REQUIRE ALL MATERIAL REQUIREMENTS BE IDENTIFIED. THIS WOULD PROVIDE INFO DESIRED TO AID SUPPLY AND ALLOW CONSOLIDATION AND ACCUMULATION OF STATISTICAL DATA WITHOUT ADDITIONAL TIME. IT IS CONSIDERED THAT THE ATTEMPT TO SIMPLIFY SUPPLY OPERATION BY INVENTORY CONTROL FACILITIES CAPABILITIES AND REQUIREMENTS AVAILABLE BY LOCATION. /LOS/

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HEADQUARTERS
SACRAMENTO AIR MATERIEL AREA
McCLELLAN AIR FORCE BASE
McCLELLAN, CALIFORNIA

IN REPLY
REFER TO SLF

AUG 18 1954

SUBJECT: New Logistics Concepts

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

1. Inclosed for your information is a copy of a presentation on new logistics concepts which outlines the present S.A.A.M.A. concepts in support of your Command.

2. The brief has not been given official clearance by Headquarters Air Materiel Command, but has been widely circulated throughout the Army Air Materiel Command.

3. When all inclosures, No. 1 thru [illegible], No. 4, are withdrawn or not otherwise, the classification of S.E.C.R.E.T. on this letter will be cancelled.

FOR THE COMMANDER:

[signature]
[illegible]

Inclosures:
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

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"MORE AIR FORCE PER DOLLAR"

SMAMA Feb 54 175M

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Secret

NEW LOGISTICS CONCEPTS

Presentation given by Mr. Frank L. Grow, Chief, Plans Division, Assistant for Programming, SMAMA, McClellan AFB, California.

SPECIAL REFERENCES:

At the AMC Commanders' Conference of 26 Apr 54 the Commanders were given a presentation by General Brown on the "New Look" and new concepts of logistics. At this conference the Commanders were requested to study these new concepts of logistics as might apply specifically to their command.

On 24 May 54, General Rawlings gave a talk to the USAF Commanders and forwarded copies of his talk to each AMC Commander. This speech indicated a need for all AMC Commanders to give particular attention to the new concepts of logistics that are presently developing.

What I am to present to you in this presentation will represent the initial work of SMAMA in studying the application of new concepts of logistics to the mission of SMAMA.

INTRODUCTION:

In the past the Air Force has planned its wartime operations around what might be called the conventional concept or one that has been built up by experience factors from previous conflicts that this country participated in. This concept generally concluded that the buildup phase would start on E-Day and would be one of holding actions by United States forces until our active forces and industrial capability could be built up. The initial phase would further be one of deployment and getting ready for what might be termed the decisive phase.

The buildup phase was to be followed by a decisive phase which was considered to be the time when large scale air, sea, and land action would take place. This decisive phase was generally planned to start about D+18 months and continue for at least 12 months. The decisive phase was then to be followed by the exploitation phase which was a follow-up action to get the greatest advantages from the decisive phase.

The concepts under which SMAMA has studied its future mission are that the initial or buildup phase is a phase that we are in today. It is a phase where we prepare for D-Day and take all actions that are necessary to carry out a war prior to D-Day or declaration of hostilities. Thus, SMAMA has concluded that we are at the present time in our build-up phase and that the present time is the only time that we will have for build-up or for preparation for the mission we will have to accomplish immediately on D-Day. The decisive phase will begin with the declaration of hostilities, or on D-Day. It will be followed immediately by large scale air attacks on military and industrial installations with all types of weapons. The decisive phase may decide the outcome of the war within a matter of weeks. The decisive phase is generally assumed to be from E-Day to E+180 days. The

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SMAMA ... and stockpiles the material reserves ...

SMAMA ...

SMAMA ... major Air Force depot which employs approximately ... and next in support of the United States Air Force.

... the degree which the ADC mission and the mission of ... will affect operations at SMAMA we have prepared a chart on ... flying hours for the types of aircraft that are primed at SMAMA based ... (SAF WPM ...) (See Chart ... Reference Flying Hour Chart)

... Flying Hour Chart indicates our flying hour program with the ... of D-Day is ... within a period of a month and due to attrition ... aircraft drops off sharply by ... days and continues a gradual decline ... months when it starts to increase again and go back past the ... flying hour level. This chart is not meant to depict accuracy but ... to give you an impression of how the new concepts of warfare will affect SMAMA. Instead of the old idea of a gradual buildup in flying hours and a level which gradually increases and continues to increase as the war goes on we have here a picture which indicates an immediate support requirement for support following E Day and one which declines sharply by D+60 days. Only after an extended period does it start to climb again as we start to support tactical air forces which are in support of deploying ground forces.

CONCLUSIONS (Reference Chart No. ...)

In these assumptions and facts which I have shown you, we have generally concluded the following things:

A. SMAMA should prepare for an all-out effort to support ADC F-86s and F-[illegible]s. I believe that the assumptions and facts presented previously will support this conclusion. Of the forces which SMAMA will be supporting as of D-Day, the defensive forces represents the major increment. SMAMA does not have prime aircraft which will be used by the Strategic Air Command in carrying out their mission during the decisive phase. Since SMAMA primes approximately 85% of the ADC aircraft, we feel that it is our duty to insure support of these aircraft so that the decisive phase may be decisive.

B. That SMAMA prepare for a transition to support the Tactical Air Command after E+180. This conclusion is a theoretical one based on the conclusion that the decisive phase will have terminated within 180 days following E Day. This is of importance to SMAMA because the aircraft which we prime are used by TAC and are different aircraft than those used by ADC for the decisive phase. We generally conclude that during this period we would be supporting F-86F and H and F-100C aircraft.

C. Conclusions reached in regard to Maintenance are:

1. That SMAMA should concentrate on support of ADC and that this support will include repair of battle damage during the period E to E+180.

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The ADC will need all the aircraft they can get their hands on. Aircraft that are damaged will be required for use as soon as possible, and during this period the ADC will be concentrating on operations. They will have little time and few people to use in repairing aircraft that are damaged to the extent that they are not flyable.

3. That SMAMA should emphasize the training of traveling maintenance teams to support the combat T. O.s. Most combat organizations are presently operating under peacetime type T. O.s and will be under great stress to maintain the programmed flying hour level with the personnel that they have. They will need to use all of their personnel in operations and on immediate type maintenance. SMAMA feels that it is part of our mission, as prime depot for F 86D and F 94C, to provide maintenance to the extent possible as required and needed by the ADC during the decisive phase.

3. That SMAMA return all F 86D and F 94C aircraft that are in our depot IRAN lines to the users immediately, if possible, or by E+30. We conclude that any aircraft that are not torn down will be immediately returned, if they are flyable, and that we will reassemble aircraft that have not been torn down to an extended degree. Aircraft that are torn down will continue on through the IRAN lines on a stepped up basis by putting the depot on an increased weekly work program.

4. The priority support of tactical types may be expected starting at E+15.

5. We will give all other aircraft a low priority, our mission being one of supporting the ADC and the aircraft that a decisive phase.

[illegible] in regard to supply and overhaul.

2. We must make every effort to speed [illegible] activities. We feel that we have accomplished much to a great degree in our overseas monitoring where we handle requisitions received from the Far East in a very speeded manner. We still have improvements to make within our internal depot system in providing materiel that comes from SMAMA.

3. That [illegible] be kept in a serviceable condition and that they not be positioned [illegible] locations. The presentation given by General Brown at the AF Commanders Conference brought out the point that transportation will be on a very high priority basis in the event of war and this has [illegible] to be continued that if these reserves are to be required to support this tremendous flying program starting on, E-Day that potential reserves must be positioned as near as possible to the using organizations.

3. That all the [illegible] should be used and that the potential for air resupply should be built up. We realize that Hq AMC and Hq USAF have been trying for a considerable period now to gain an airlift potential for the AMC. However, the adoption of these new concepts of logistics and of

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...are further point up the necessity of airlift. SMAMA will be studying the use of trucks as a rapid means of resupply and the use of flying stockrooms where we would stock certain types of supplies that we feel that our prime aircraft may require and that are needed to keep the aircraft operational.

E. Conclusions reached in regard to Procurement Area (Reference Chart No. 8)

1. That overall aircraft industrial expansion may be reduced.

a. This may reduce the necessity for such a broad production base.

2. Machine tool programs may be reduced. If we are to rely on the defensive and strategic forces in being on E-Day and if production is to shift to tactical types on E-Day, it would seem that in the particular areas where SMAMA is interested it will be possible to reduce the overall expansion program.

That this would result in interruption, or complete stoppage and merging production that is kept in business to provide a potential could be eliminated.

That the stockpiling of raw materials, including that of easy change in composition. Our stockpile raw materials as pertain to aircraft would be those that are required to service the tactical type aircraft.

That the emphasis of defensive weapon production would decrease following E-Day.

That certain weapons would require increased production rates following relative peace.

That the Procurement Area would increase following E-Day.

...Procurement Area would be used by TAC...

...That if we are to meet the immediate requirement for support of the ADC, that our industrial base need be of a heavy type that will...

...General conclusions are that we will be required to use the personnel that we have on E-Day to accomplish our mission and that reserves can play only a minor role in helping to carry out this mission.

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c. That in order to carry out these missions we have concluded it to be that civilian personnel will participate and be employed in such activities which might normally be considered as that type civilian personnel will be exempt by [illegible] participation in carrying out this mission.

b. That Civil Defense is a very important part of our preparation. That our civilian personnel represent a potential for supporting the ADC and the USAF and that we must make every effort to insure that this potential continues to exist.

ACTIONS PROPOSED OR TAKEN BY SMAMA (Reference Circular No.)

The actions which SMAMA has taken or is preparing to take on the basis of the conclusions reached are as follows:

A. We are carrying out close coordination with ADC requesting that they advise us of their anticipated requirements under wartime conditions.

B. SMAMA will [illegible] on the use of the F-84D and F-86D. At present we are scheduling F-86D and F-84G through the SMAMA IRAN lines and are building up our ability and potential for handling these types of aircraft. We are further making direct contact with ADC using bases and are sending representatives to ADC bases [illegible] to determine how and the extent to which SMAMA can aid ADC.

C. SMAMA will study and discuss with ADC the part that SMAMA can play in the repair of battle damage to ADC aircraft [illegible] D+15 days.

D. SMAMA proposes to [illegible] & maintenance teams which are composed of a spread of skills that can handle jobs at base level and generally supplement the T. O. of the combat organizations.

E. SMAMA will [illegible] as a part of our EWP to return IRAN aircraft belonging to ADC to ADC by E+30.

F. SMAMA will continue to indoctrinate personnel on their E-Day mission by inclusion of articles in all publications which reach the personnel of McClellan AFB. This indoctrination is considered of particular importance and one which Hq AMC personnel people can help SMAMA in. The realization by our personnel of the importance of this installation and its vulnerability to enemy attack handicap our efforts in insuring that personnel will remain on their jobs and carry out the E-Day mission.

G. SMAMA will place increased emphasis on resupply by air and use of base assigned aircraft for this purpose. At the present time we are, upon every occasion that presents itself, making our requests for airlift known to Hq AMC and are making use of the Mercury Service. We have experimented with the use of base assigned aircraft for interdepot service, but since Mercury Service has come into being we have dropped this type of service. We are now planning to use our base assigned aircraft for feeder

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Aircraft Auxiliary Fuel Tanks (Reference Chart No. 7.)

We see our problem as being one of having transportation facilities saturated in the event of war. Our general solution to this problem is to locate our stocks of aircraft auxiliary fuel tanks as near the user as possible. We would propose to locate as many tanks as possible at the using base so that they will be available for immediate use. Those tanks which cannot be stored at base we would propose to locate in the geographical area, or the zone, in which they will be used. In our study we have developed the following facts and conclusions:

1. That the location of present tank storage is out of

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proposed distribution of aircraft as outlined in the USAF WEW and have found that as we presently have our tanks stored they are out of balance percentage wise.

2. East Zone quantities are lower than desirable.

3. Overseas stocks are lacking in some cases and are below the level considered advisable in other cases.

The specific examples which I would like to show you are in the 120 gallon tip tank, the 1710 gallon tank, and the 300 gallon tank. (Refer to Charts No. 8 and 9 on tanks.)

The [illegible] gallon tank fits on the F-84F, F, D and H. Starting from the right side of the [illegible] we would see that in the East Zone, which includes Eastern United States and Europe, that 30% of the aircraft using the 120 gallon tank will be located in the European theater. 10% of the tanks available or programmed for these aircraft are presently programmed or available in Europe. We would propose that this percentage remain as it presently is. In the ZI portion of the Eastern Zone 7% of the aircraft using the 120 gallon tank are programmed. Presently there are available in the Eastern Zone of the ZI 18% of the tanks and we would propose locating 12% of the tanks in that zone. In the West Zone of the U.S. 63% of the aircraft are programmed. 10% of these are presently in the ZI West Zone. We would propose reducing this to 7%. In FEAF 3% of the aircraft are programmed; 0% of the tanks are presently in FEAF and we would propose 3%.

The 1710 gallon tank is used in the F-84F, E, and H. Europe has 50% of the aircraft programmed. 15% of the tanks are presently in Europe. We would propose 40% of the tanks in Europe. 57% of the tanks are presently located in the ZI East Zone and we propose locating [illegible]% of the tanks in the Eastern Zone to the West. We would propose no changes in FEAF and Alaska positions.

The 200 gallon tank is used in the F-84F and H. 70% of the aircraft using this tank are programmed for Europe. We presently have 30.8% of our 200 gallon tanks in Europe and we would propose no change. In the ZI East Zone we have 7% of the aircraft using the 200 gallon tank programmed we presently have 2.8% of the tanks located in this zone. We would propose locating 5.2% of the tanks in this zone. In the West Zone of the ZI we have 7% of the aircraft programmed and we presently have located 0.8% of the tanks in this area. We would propose locating 6.2% of the 200 gallon tanks in the Western Zone. In FEAF and Alaska there are 3% of the F-84F and H programmed; we presently have 7% of the 200 gallon tanks located in this area. We would propose locating 8.8% of the 200 gallon tanks in FEAF and Alaska. In regard to the 200 gallon tank a special situation exists. There are stocks of 200 gallon tanks located in FEAF. However these tanks are not designated as external reserve but as a heavy stock for FEAF. If the present stocks at

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locations in FEAF were designated as materiel reserves, it would change our FEAF and Alaska proposal and reduce our overall requirements for this tank.

The 120 gallon, 1700 gallon, and 200 gallon tanks are only representative types. Our studies have included all types of tanks presently stored in materiel reserve quantities under SMAMA's jurisdiction.

The first action that SMAMA feels should be taken to correct the aircraft auxiliary fuel tank situation is for Hq AMC to contact Hq USAF and the using commands to see if the using commands can't store more tanks at base level. We feel this is the only sure way that using bases can have tanks available. A study will probably bring about the redistribution of tanks and the base levels of tanks increased. Following the redistribution of base level stocks, SMAMA would propose to readjust the depot level stocks. As indicated in the above examples, this would generally mean a movement of tanks from the Western ZI to the Eastern ZI and buildup of stocks in FEAF and USAFE.

SMAMA has forwarded a letter to Hq AMC requesting that action be taken to bring about adjustment of the base stocks in tanks. Upon indication from Hq AMC as to what action they will take, SMAMA will start the readjustment of tanks between zones in accordance with the availability of space to store tanks.

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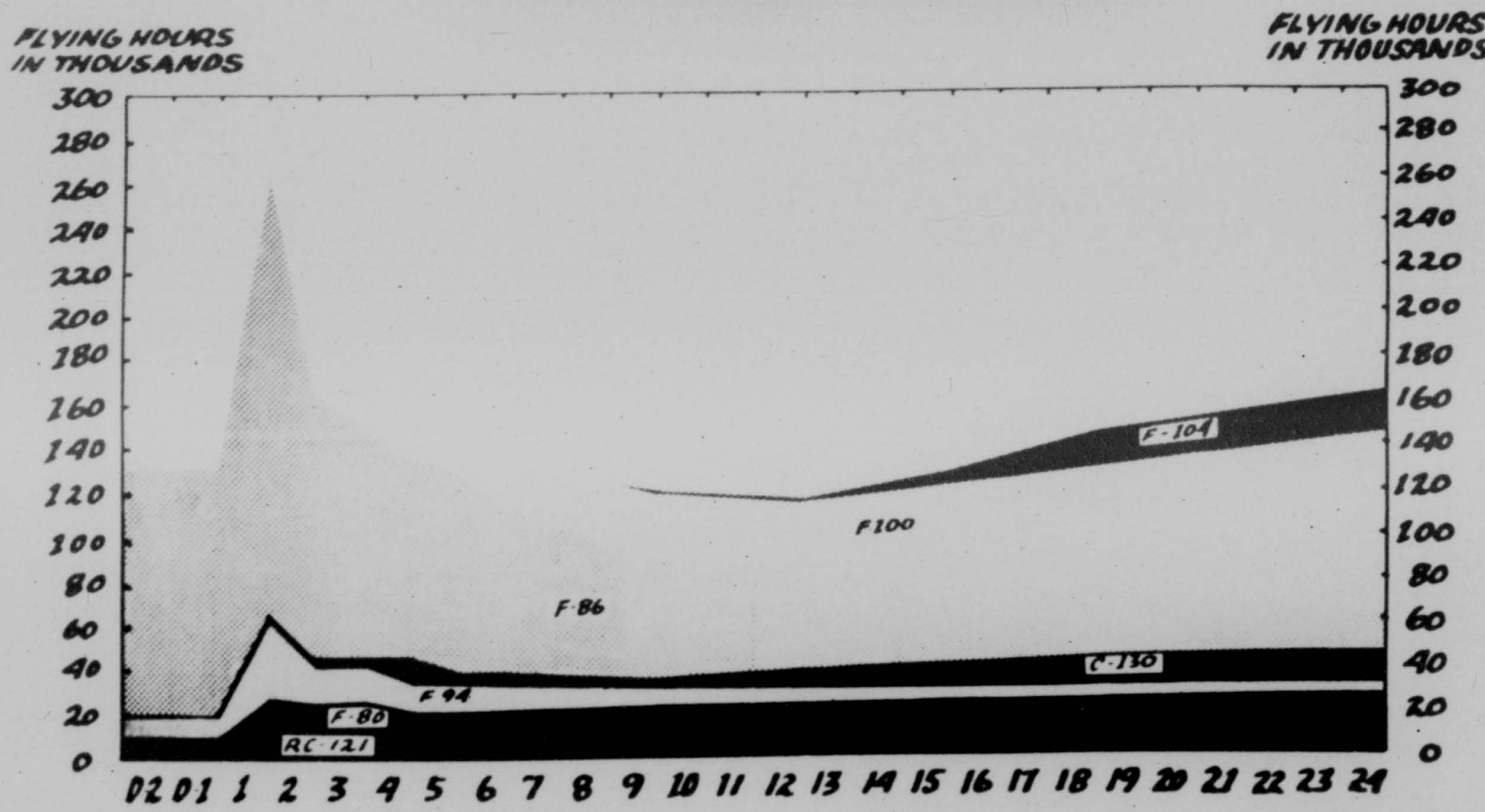
FLYING HOURS



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AMAC-ID

SUBJECT: Combat Ammunition Levels

TO: Commander
Strategic Air Command
Offutt Air Force Base
Nebraska

1. It is advised that the combat ammunition levels for Air Defense Command Fighter Interceptor Squadrons have been revised. The new thirty (30) day levels are based on Air Defense Command approved estimated sortie and expenditure rates as published in the Air Defense Command Capabilities Mobilization Plan 1-54, 15 March 1954, a copy of which has been furnished your Headquarters.

2. The new levels are as follows: 4,000 each 2.75" H.E. FFAR per F-86D Squadron; 7,500 each 2.75" H.E. FFAR per F-94C Squadron; and 18,000 each 2.75" H.E. FFAR per F-89D Squadron. Caliber .50 API M8 levels are: 273,000 rounds per squadron possessing aircraft armed with Cal. .50 machine guns; 11,000 rounds per fighter interceptor squadron for the three (3) T-33 aircraft authorized; and 4,000 rounds per T-33 aircraft assigned other organizations and equipped to five.

3. It is requested that quantities of rockets over and above the new levels be retained to cover normal attrition, present augmentation force requirements and possible future augmentation force requirements. It is further requested that any action to dispose of excesses be coordinated with this Headquarters. At certain installations present facilities are not adequate to store the required levels. Close liaison will be maintained with your Headquarters on this matter so that as additional space becomes available shipments may be effected to bring the concerned units up to the newly established level.

4. The position of this command relative to excess Cal. .50 ammunition on hand at your bases earmarked for Air Defense Command Squadrons will be contained in forthcoming letter on Augmentation Force requirements.

5. It is requested that the concerned activities of your command be apprised of the new levels inasmuch as they will affect your several

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No

LT COL CHARLES F. CARVER, JR

Prepared by F.K.FORSEY/dd
Telephone 2529
Date 27 Jul 54

B-52-1

IDENTICAL LETTERS TO:

AMC
ARDC
ATRC
MATS
TAC

Hq Sq Sec
FCDA
CAA
Mat Anlys
Plat
Mil Pers
Ammo Maint
Off Maint
Cable & Radio
Msg Actions
SR
Pers Div
PIO
WAF
Doc
DOS/T
OT
R & E
S & T
DOS/O
C C A
O & E
M & O
O C D
Ops Anlys
O & T
P & E
Wea O
DOS/M
Acft
Elect
Gn Sup & Drs
Instl
Log Plans

ADC HQ Form 11
5 Feb 54 Revised

This correspondence is classified _____ in accordance with Par 2 f a, AFR 205-1, 24 Jul 53, or for the reason (s) stated. _____
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Subject: Combat Ammunition Levels

based differently because of the various type aircraft assigned Air Defense Command tenant squadrons.

FOR THE COMMANDER:

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ADMSV-3C

23 June 1954

SUBJECT: (UNCLASSIFIED) Bulk Storage Facilities FY 56 PWP

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Reference your message EAMSS-SOG 18943 dated 16 June 1954. Following data forwarded as requested in above message.

Requirements for five days WAR are computed as follows:

Standard wartime planning factors for ADC Forces

FACTORS						
TOTAL SORTIES	F-86F	F-86H	F-86D	F-89D	F-94C	F-102A
1st Day (D-Day)	3	3	3	3	3	3
2d Day and ea day thereafter	1	1	1	1	1	1
Flying hours per sortie	1.5	1.5	1.5	2.	1.5	1.3
Gal fuel expended per hour	500	615	510	730	485	730

Squadrons are assumed to possess or are programmed for 25 each aircraft and the computations are based upon that number.

Considering above factor, the 5 day WAR time formula follows:

1st day - 75 Sorties x Length of Sortie x Fuel Consumption= gallons ÷ 42 results in requirement in barrels.

2nd Day - Sorties x Length of Sortie x Field Consumption x Number of days (4) = gallons ÷ 42 results in requirement in barrels. Adding the results of above two formulas indicates a 5 day WAR time requirement.

Peacetime requirements for 10 day period are computed by Hq USAF for a 30 day period. These 30 day totals were divided by three (3) to arrive at a ten day requirement.

10 Day Peace Time Requirements

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Hq ADC, ADMSV-3C "(Uncl) Bulk Storage Facilities FY 56 PWP"

TYPE	REQUIREMENT
F-86D	9300 ÷ 3 = 3100
F-89D	19700 ÷ 3 = 6567
F-94C	8000 ÷ 3 = 2667
F-102A	15500 ÷ 3 = 5167

NOTE: a. Unless otherwise stated or indicated, all requirements are in barrels of 42 U. S. gallons.

b. An authorized construction Factor 11.1% is applied to the totals.

c. Due to the remote area in which Kinross AFB is located, this headquarters recommends an additional 5,000 barrels storage over and above indicated requirement to insure an adequate supply of fuel on hand at all times.

d. Requirements for Presque Isle AFB are not considered adequate due to additional storage required in order to fully realize the benefits and savings which will result when the above base is connected to the Limestone Searsport Pipeline. Hq, MAAMA has recommended a minimum construction of two 10,000 barrels storage tanks which this headquarters concurs with.

e. Aircraft assignments end position FY 57 were used.

f. Inclosure #1 is requirements as computed by this headquarters.

g. Inclosure # 2 - Formulas for ADC Figiter Aircraft.

BY ORDER OF THE COMMANDER:

CECIL F. HUMPHREYS
Captain, USAF
Asst Command Adj

2 Incls
1. Rqmt by this comd
2. Formulas for ADC Ftr Acft

Info Cys:
Comdr CADF
Comdr WADF

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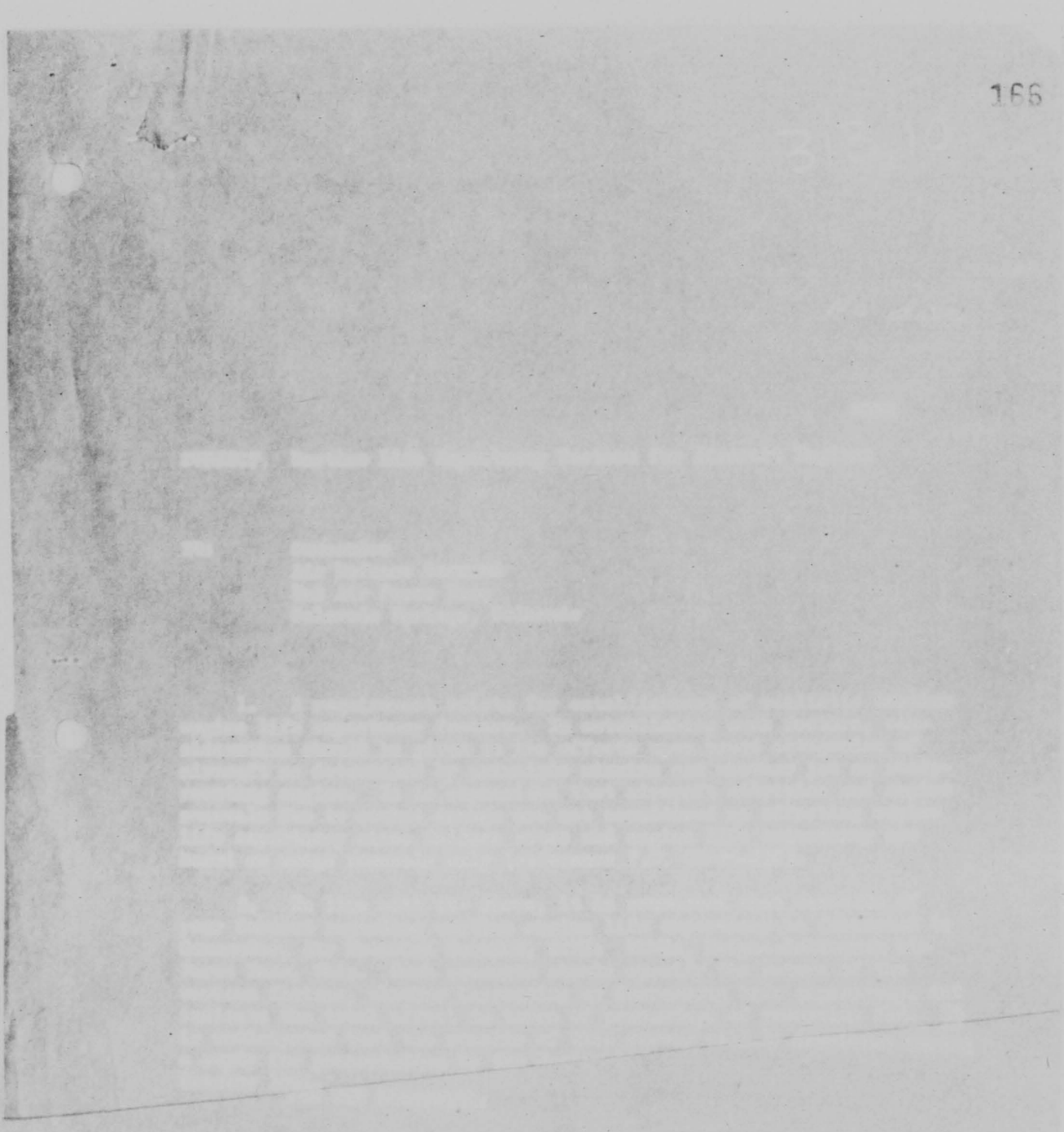

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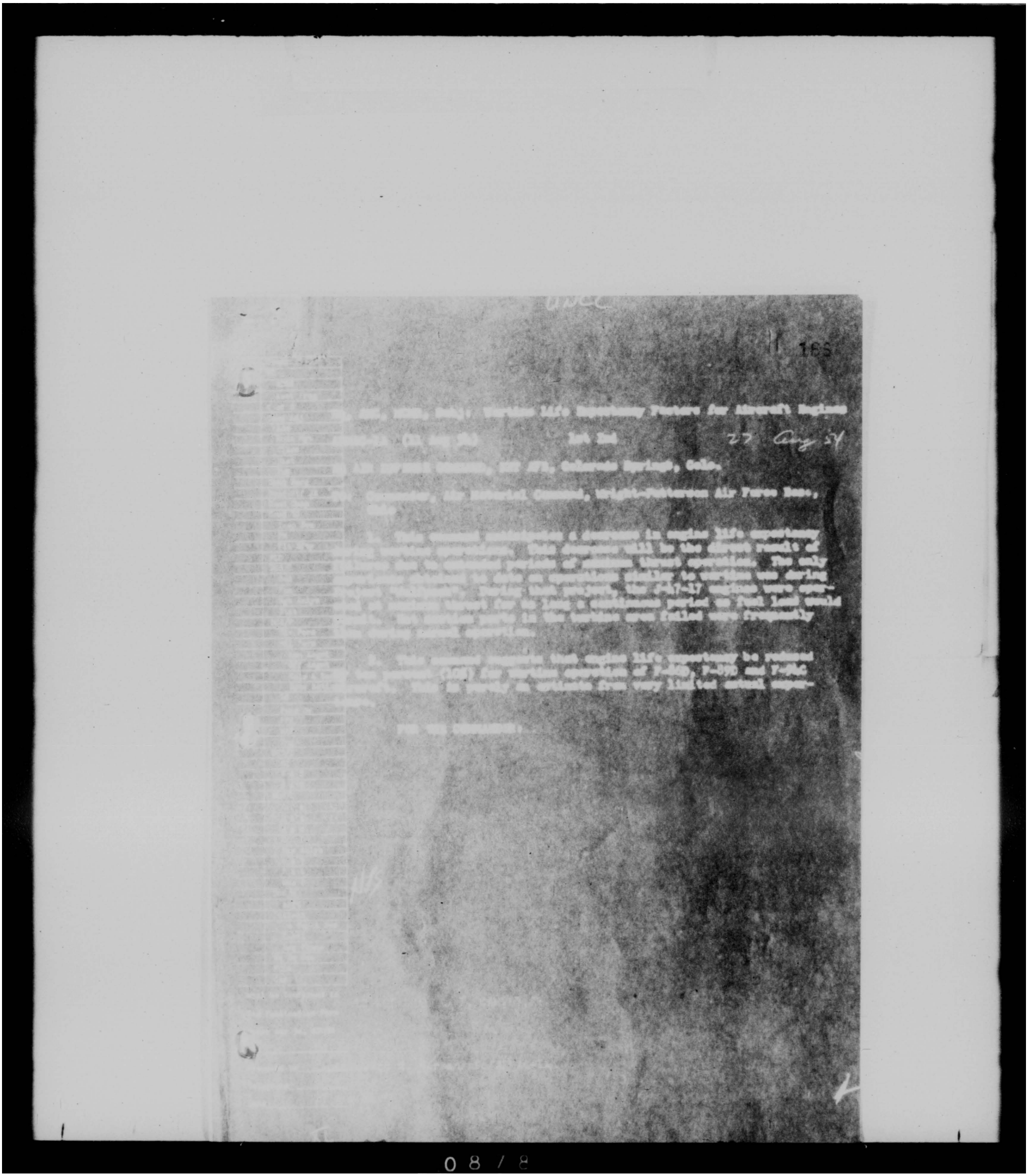

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EAMDM 3 December 1954

SUBJECT: On-Base Bulk Storage Facilities

TO: Commander
Air Defense Command
ATTN: ADMSV-3C
Ent Air Force Base
Colorado Springs, Colorado

1. Reference is made to message, your headquarters, ADMSV-3C 31859, dated 4 October 1954.

2. Authority is requested to reduce by 50% the JP-4 fuel requirements at the following bases of this command. Storage capacity for other types of aircraft fuel and oil is adequate.

a. 500th Air Defense Group, Greater Pittsburgh Airport, Coraopolis, Pennsylvania:

(1) Total on-base storage for JP-4 fuel is 290,000 gallons.

(2) Reserve requirements are 250,000 gallons. This includes the requirement for Air National Guard aircraft currently assigned this facility and refueling requirements for augmentation forces deployed through this base.

(3) The difference, 40,000 gallons, is considered insufficient storage to support normal operations.

b. 528th Air Defense Group, Presque Isle AFB, Presque Isle, Maine:

(1) Total on-base storage for JP-4 fuel is 399,500 gallons.

(2) Reserve requirements are 384,500 gallons.

(3) The difference, 15,000 gallons, is insufficient storage to support normal operations.

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c. 534th Air Defense Group, Kinross Air Force Base, Michigan:

(1) Total on-base storage for JP-4 fuel is 310,000 gallons.

(2) Reserve requirements are 301,000 gallons.

(3) The difference, 9,000 gallons, is insufficient storage to support normal operations.

d. 4700th Air Defense Group, Stewart AFB, Newburgh, New York:

(1) Total on-base storage for JP-4 fuel is 175,000 gallons.

(2) Reserve requirements are 304,750 gallons.

(3) It will be noted that it is currently impossible to meet fuel reserve requirements.

3. The information requested by your message has been furnished in consolidated form by this headquarters since some of the units reported by radio message and others by letter. Upon receipt of your approval for maintaining reduced reserve requirements, a copy of this letter and your approving indorsement will be forwarded each unit affected.

4. This correspondence is classified Confidential in accordance with provisions of AFR 205-1.

FOR THE COMMANDER:

BEN D. MOORHEAD
1st Lt, USAF
Asst Adjutant

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Hq EADF, "On-Base Bulk Storage Facilities"

ADMSV-3C (3 Dec 54) 1st Ind 15 Dec 1954

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. Authority is granted to assess 50% of the total on base storage capacity and assign that amount to the storage of War Emergency Fuel levels for bases indicated in basic letter. Totals maintained will be in lieu of those indicated by ADCR 67-20A.

2. For your information, this headquarters will include sufficient on base tankage in the FY 57 PWP to provide sufficient tankage for all operational requirements.

BY ORDER OF THE COMMANDER:

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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DOCUMENT NO. 168

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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	Comd Stf JA
	Comd Chap
	Comd IG
	Insp Svs
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	Flt Sfty
	PIO
	DCS/C
	Bud
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	Mgt Anlys
	Stat
	DCS/P
	Civ Pers
	Mil Pers
	Asm Asgmt
	Off Asgmt
	Cols & Rec
	Spec Actions
	GS
	Pers Sv
	PPR
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	DCS/I
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	C C A
	C & E
	M & O
	O C D
	Ops Anlys
	O & T
	R & R
	Wea O
	DCS/M
	Acft
	Elect
	Gn Sup & Svs
	Instl
	Log Plans
	Hq Sq Sec
	FCDA
	CAA

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 No
Prepared by for Maj.M.C.Johansen/bb
Telephone 2727/2739
Dr Maj.M.C.Johansen/bb

ADOOT-C 2727/2739

ADC HQ Form 11
5 Feb 54 Revised

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ROUTINE ROUTINE

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CDR ADC

CDR AMC WRIGHT-PATTERSON AFB OHIO

CG HQ USAF WASH DC

ADOOT-C 2189 CONFIDENTIAL
AFDRQ-CE/C 41012 UNCLASSIFIED
ADMAC-5D 38974 UNCLASSIFIED

(CONFIDENTIAL) ADOOT-C 3040. The rqr estbd by MYCLASSMSG ADOOT-C 2189 dtd 3 Nov 53 is cancelled herewith. USAF msg AFDRQ-CE/C 41012 dtd 29 Nov 54 advises: "Engineering data on instl of AN/ARN-14 in T-33 states that removal of guns is nec. Req immed statement fr your comd if this is acceptable. Establishment of firm mod rqr being held in abeyance wtg your answer." MYMSG ADMAC-5D 38974 dtd 2 Dec 54 to Hq USAF concurs in removal.

MEMO FOR COMD:
Msg ADOOT-C 2189 dtd 3 Nov 53 establishes a requirement for guns and gunsights to be installed in all T-33's to augment our Air Defense mission. Hq USAF msg advised that it is impossible to install guns and ARN-14 Omni Receiver. We are cancelling our requirement for guns.

ADMAC-5 ASE

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This correspondence is classified Conf, in accordance with Par 24, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

Van E Strandberg
SIGNATURE

AF-ADC-COLO. SPRINGS, COLO

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1 September 1954

From: COMMANDER, HQ ADC, ENT AFB, COLORADO SPRINGS, COLORADO

To: COMMANDER, OCAMA, HILL AFB, UTAH

Info: COMMANDER, CADF, GRANDVIEW AFB, MO.
COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF.
COMMANDER, 4750TH TRAINING WING (AIR DEFENSE) YUMA COUNTY AIRPORT, YUMA, ARIZONA

(UNCLASSIFIED) ADMAC-5D 28257. During Phase I rocket firing of 3 F-89D aircraft at Portland International Airport a portion of the rocket tubes collapsed inward. The number of tubes affected varied from 10 to 12. Preliminary information indicates pressure from the rocket blast escapes around the rocket retaining detents. This pressure builds up under the rocket heating blankets and collapses the tubes. Limited tests indicate removal or venting of the heating blankets will prevent this tube collapse. Unsatisfactory Repots 54-188, 169 and 190 were submitted by the 497th FIS on 24 Aug 54. This problem affects the combat capability of this command. Request a solution be found as soon as possible.

HOWARD K. BEADE
1st Lt., USAF
Asst. Command Adj

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From: HQ OOAMA 9 Sept 54

To: AAC:ADC:APGC:ARDC:ATRC:NEAC:
MAAMA:MOAMA:OCAMA:SAAMA:SBAMA:SMAMA:
WRAMA:WADC:AFPR NAI HAWTHORNE CALIF:

Info: AMC: DIC NORTON AFB

For MCMR MCMT WCOF. Subject is: Suspected Deficiency on F-89D series Aircraft Rocket Pod Tubes. Reports have been received by this headquarters from activities on collapsing of tubes in wing tip rocket pods, caused by excessive pressures during firing of rockets. A 1-B priority project is established at this headquarters to correct this deficiency by a permanent engineering measure. Until such time as the permanent correction can be implemented, it is recommended that the rocket firing be limited to Phase III only, except in cases of emergency or because of combat necessity. We are working on an interim fix which is removal of center cluster and tube blankets. Any activities having local fixes which have proven beneficial are requested to furnish information to this headquarters. Request all commands notify subordinate activities accordingly. This information is furnished AMA Commanders for dissemination to contractors having bailed aircraft of type affected. Directorate Maintenance Engineer.

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From: COMMANDER, HQ ADC, ENT AFB, COLO SPRINGS, COLO 9 Sep 1954

To: COMMANDER, CADF, GRANDVIEW AFB, MO
COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF
COMMANDER, 4750TH TRAINING WING (AIR DEFENSE) YUMA
COUNTY AIRPORT, YUMA, ARIZONA

(CONFIDENTIAL) ADMAC-5D 1573 . Reference your message ADMAC-5D 26257 pertaining to collapse of rocket tubes during F-89D aircraft firing. OCAMA advises they are working on an interim fix which consists of removal of the center cluster and tube blankets. Any activities having local fixes which have proven beneficial are requested to inform OCAMA. Until such time as this deficiency is corrected rocket firing will be limited to Phase 3. This restriction does not apply to emergency or combat conditions.

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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in Std Publication
Form Under par 3a,
ADCSM 5-3-No--
P yed by---Maj J R Bell/ADMAC-5D/mld
T e--2500-
Date---23 Sep 54

ADC HQ Form 1
Revised 15 Aug 53
M98-1x

CONFIDENTIAL

FILE NUMBER 301.8 3 Glen

173

27 SEP 1954

AFMAC-5D

SUBJECT: F-89D Aircraft Rocket Pod Failure (UNCL)

TO: Commander
Ogden Air Materiel Area
Attn: OCMEA (Mr. Moore)
Hill Air Force Base
Utah

FILED R+D/A+P

1. Reference is made to the proposed test of 4 F-89D Aircraft Rocket Pods with the rocket heating blankets removed.

2. The attached U.S. indicates that venting of the affected area is also required. The photograph clearly indicates that excessive pressure is causing the damage. This pressure is in all probability the result of rocket blast or possibly a "gun gas" type explosion. Vents in this area would relieve any excessive pressure and prevent the accumulation of rocket gases.

3. Request venting be included in the modification of the 4 rocket pods.

FOR THE COMMANDER:

C. F. [illegible]
Captain, USAF
Asst Comdr

1 Incl
U.S. F-89D Rkt Pod

Furnished (Date) (Initials)

27/9/54

E-2904

John R Bell

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Memo for record not required. Cy of incl unnec for AG file.

This correspondence is classified CONFIDENTIAL in accordance with Par 24 AFR 205-1, 24 Jul 53, or for the reason (s) stated. Incl is Confidential

John R Bell
SIGNATURE

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HEADQUARTERS
Ogden Air Materiel Area
Hill Air Force Base, Utah

OOMTAF 29 Sep 54

SUBJECT: Maintenance of Rocket Pod F-89 Aircraft

TO: Commander
Air Defense Command
ATTENTION: DCS/Operations
Colorado Springs, Colorado

1. The inclosed information is forwarded to your headquarters for review.

2. Mr. R. J. Russell, OOAMA, will arrive at your headquarters approximately 29 September 1954, to discuss inclosed correspondence.

FOR THE COMMANDER:

3 Incls
1. WCOSS-14 cmt 3
14 Sep 54 w/cmt 1
and cy cmt 2
2. Cy WCLGP-5 cmt 1
24 Aug 54
3. Cy charts (2)

/s/ CHARLES L. MOOR, Chief
Aircraft Branch
Maint Engr Ser Division
Maint Engr Directorate

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Form Under par 3a,
ADCSM 5-3-no---
Prepared by---Maj J R Bell/ADMAC-5/mld Memo for record not required. Cys of incls unnec for AC file.
Telephone---2589
Date----- 6 Dec 54

ADC HQ Form 1
Revised 15 Aug 53

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8 Inc
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B/Ltr fr Hq OOAMA, OOMTAF, Subj: Maint of Rocket Pod F-89 Acft

ADMAC-5 (29 Sep 54) 1st Ind

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

TO: Commander, Ogden Air Materiel Area, Hill Air Force Base, Utah

1. Until definite fixes can be accomplished to correct the deficiencies in the F-89D aircraft rocket pods, the maximum number of rocket tubes that may be inoperative when firing various phases are listed as follows:

a. Phase I, (104 rockets), 10 tubes per pod may be inoperative.

b. Phase II, pass 1, (62 rockets), 6 tubes per pod may be inoperative.

c. Phase II, pass 2, (42 rockets), 4 tubes per pod may be inoperative.

d. Phase III, pass 1, (42 rockets), 4 tubes per pod may be inoperative.

e. Phase III, pass 2, (32 rockets), 3 tubes per pod may be inoperative.

f. Phase III, pass 3, (30 rockets), 3 tubes per pod may be inoperative.

2. Rockets are fired from F-89D aircraft in pulses spaced 50 milliseconds apart. From three to six rockets are fired per pulse per pod. It is possible using the criteria outlined in Paragraph 1 above, for all the tubes in one or two pulses to be inoperative and the pod would still be considered serviceable. This condition would result in a "hole" in the rocket dispersion pattern reducing the kill probability significantly. To preclude this possibility a minimum of two tubes per pulse must be operational.

FOR THE COMMANDER:

John R Bell
2

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John R Bell Maj USAF
SIGNATURE

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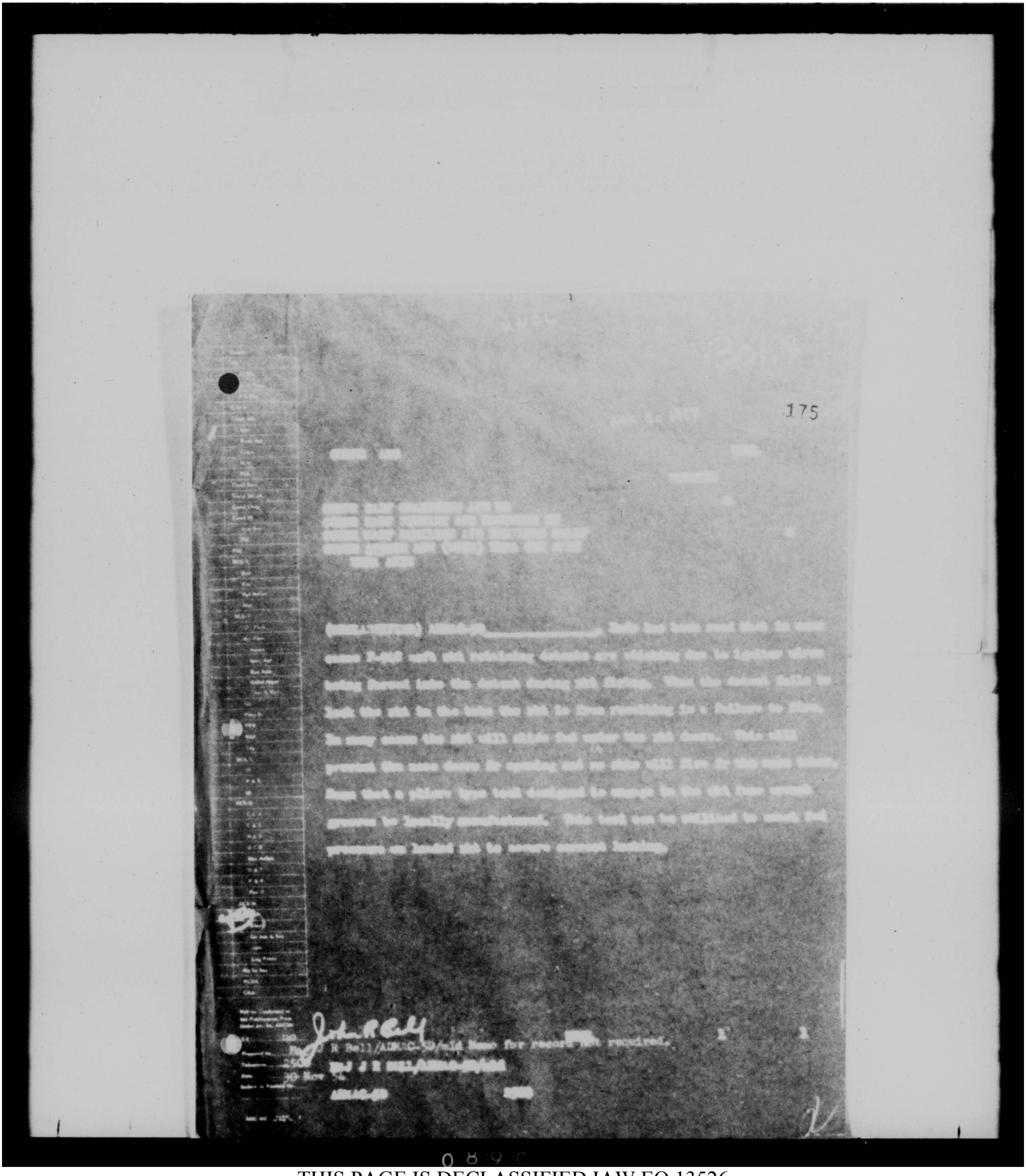

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HEADQUARTERS
4706TH DEFENSE WING
O'HARE INTERNATIONAL AIRPORT
Park Ridge, Illinois

DATE: 22 MAR 1954

SUBJECT: Qualitative Operational Requirement for Self Destroying 2.75 Inch FFAR

CLASSIFICATION CHANGED TO SECRET By Auth: CMDR. EADF
DATE (NAME & RANK)

FROM: Commander
30th Air Division (Defense)
Willow Run Air Force Station
Belleville, Michigan

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Authorization. Initiated by Major Harold H. Burton, Headquarters 4706th Defense Wing.

2. a. A large number of fighter-interceptor aircraft assigned to ADC Squadrons are equipped to launch the 2.75 inch FFAR. This rocket contains a high explosive war head with the approximate destructive capability of the .75 MM artillery shell.

b. Most fighter-interceptor Squadrons within ADC are based near large industrial areas and as a result a great share of the operational and training flying is performed over heavily populated areas.

c. Accidental launching of the present 2.75 inch rocket could cause a considerable amount of property damage and probably many civilian casualties.

3. Objective. To insure that rockets launched from aircraft in flight are destroyed before they reach the ground. 2.75 inch rockets now in use explode only upon contact. Reference CO. 3rd-50-7.

4. Description.

a. Nomenclature - War Head Mk Mk 2, fuze XX 100, Mod 0 (PD)

b. Operational use of the 2.75 inch FFAR will remain unchanged.

c. Performance characteristics - Rockets should destroy themselves at a set period of time after launching even though no contact has been made with the war head fuze.

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Hq 4706th DW DWOOT Subj: Qualitative Operational Requirement for Self Destroying 2.75 Inch FFAR

d. Design features cannot be furnished by the originator. Suggest a mechanical timing device be incorporated in the detonator.

e. Proposed basis of issue - normal combat stock level of 10,000 rockets for each Fighter-Interceptor Squadron.

f. Method of meeting requirement - modification of existing equipment.

FOR THE COMMANDER:

WILLIAM A. JONES
Major, USAF
Adjutant

This correspondence is classified Secret in accordance with Par 23c, AFR 205-1.

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Hq 4706th Def Wg ENOCF Subject: Qualitative Operational Requirement for Self Destroying 2.75 Inch FFAR

DOFOR (22 Mar 54) 1st Ind 30 MAR 1954

HQ 30TH AIR DIVISION (DEFENSE), Willow Run Air Force Station, Belleville, Michigan

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

For evaluation.

FOR THE COMMANDER:

MERLE A. HOOTMAN
Major

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SEC

[redacted] AFDAH Ref No. [redacted] Subject: [redacted]
Ltr Hdqtrs Reclassifying 2.75 [redacted]

EACOR (22 Mar 54) [redacted]

HQ EASTERN AIR DEFENSE FORCE, [redacted]

TO: [redacted]
Springs, Colorado

1. Forwarded in accordance with AFR [redacted]

2. This headquarters [redacted]

3. Information available in this headquarters [redacted]
problem of self-destruction or self-[redacted] of [redacted]
given considerable attention by the Naval Ordnance Test [redacted]
Lake, California.

4. This correspondence is classified Secret in accordance with
paragraph 23e, AFR 205-1.

FOR THE COMMANDER:

J. W. FOUNTAIN, JR.
Major, USAF [redacted]
Asst Adjutant

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[redacted] Qualitative Operational Requirement
[redacted] Self Destroying 2.75 Inch FFAR

[redacted] (12 Nov 54) 3d Ind 4 MAY 1954

[redacted] Air Defense Command, 4th Air Force Base, Colorado Springs, Colorado

[redacted] Director of Requirements, Headquarters USAF, Washington 25, D. C.

1. This headquarters concurs with the need for a self-destroying [redacted] on Folding Fin Air Rockets.

2. As pointed out in paragraph 1 basic requirement, the need for self-destruction feature is quite urgent from a property as well as [redacted] standpoint.

FOR THE COMMANDER:

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

FILED RYD 2-2

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in Std Publication
Form Under par 3a,
ADCSM 5-3_____
Prepared by Lt Col VM Mahr/rm
Telephone 2851/2852
Date 26 Apr 54

ADC HQ Form 11
Revised 15 Aug 53
M122-5

This correspondence is classified [redacted] in accordance with Par 23a, AFR 205-1, 28 Jul 53, or for the reason (s) stated. 15 Dec 53

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B/Ltr fm Hq 4706th Def Wg, Subj: Qualitative Operational Requirement for Self Destroying 2.75" FFAR, dated 22 March 1954

AFDRQ-AD/F 4th Ind

DEPARTMENT OF THE AIR FORCE, HQ USAF, Washington 25, D.C., 2 JUN 1954

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

1. This headquarters concurs with the need for a self-destructive fuse in air-to-air rockets. A Firm Qualitative Operational Requirement to develop a self-destructive fuse which can be incorporated into the 2.75" FFAR has been in existence for some time.

2. Both the Air Force and the Navy have development projects on this type fuse. Indications are that a self-destructive fuse for the 2.75" FFAR should be sufficiently developed for production in about one (1) year.

3. Your command will be informed when additional information on development progress of self-destructive 2.75" FFAR fuse becomes available.

BY ORDER OF THE CHIEF OF STAFF:

J. L. Laughlin
Colonel USAF

JOSEPH L. LAUGHLIN
Colonel, USAF
Chief, Air Defense Division
D/Requirements, DCS/D

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23 JUN 1954

CECIL P. HUMPHREYS
Captain, USAF
Asst Command Adj

R+D 2

3rd Ind ltr 4 may 54

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P&R furnished 23 June JRS
(Date) (Initials)

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Will Be Confirmed
in Std Publication
Form Under par 3a,
ADCSM 5-3 V. M. MAHR
Prepared by Lt Col [redacted]/rm
Telephone 2851/2852
Date 18 June 54

ADC HQ Form 11
Revised 15 Aug 53

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Victor M. Mahr

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From: COMMANDER, HQ ADC, ENT AFB, COLO SPRINGS, COLO. 24 Jun 54

To: COMMANDER, CADF, GRANDVIEW AFB, MO
COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF
COMMANDER, 4750TH TRAINING WING (AIR DEF) YUMA
COUNTY AIRPORT, YUMA ARIZONA

(CONFIDENTIAL) ADMAC-5D 1070. This message in two parts. Part I. Reference is made to operation Check Point. To prevent any accidental rocket firings during this operation it is imperative that all safety precautions associated with rocket loading and firing be followed. There is a tendency for personnel to neglect normal safety precautions in the interest of speed when working on "pressure problems" such as the requirement to "turn around" a large number of aircraft in a limited period of time. This command desires that "turn around" requirements be met if possible, but not at the expense of ignored safety precautions and consequent accidental rocket firings. Part II. Commanders are responsible to assure that all safety precautions are taken including the following: (A) Weapons mechanics are utilized to load and unload rockets and check aircraft rocket circuits. Other personnel may be utilized to furnish non-technical assistance. (B) The rocket intervalometer circuit check is performed immediately prior to rocket loading regardless of previous checks. (C) Rocket fire circuit breaker is pulled and a safety clip installed until such time as firing is to take place. (D) That

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(CONFIDENTIAL) ADMAC-5D 1070 . (Cont'd)

when the aircraft is to be taken into the hangar or when a ground rocket firing check is to be accomplished all rockets are unloaded from all tubes. (E) That regardless of TO's no rocket continuity checks are performed on the flight line. (F) That rockets are not fired from the nose of F-94C aircraft prior to SN-51-5513 unless the rocket firing intervalometer retrofit has been accomplished. (G) That salvos of 24 Mrk II rockets are not fired from F-86D aircraft above 30,000 feet. (H) That salvos of 24 Mark I Mod 3 or Mark II rockets are not fired from F-94C aircraft above 25,000 feet unless a "Throttle Chopper" retrofit has been accomplished. (I) That rocket firing from the F-86D aircraft is accomplished with the intake duct screen in the extended position. (J) That rocket heads are taped to the motors when utilized in F-94C aircraft wing pods.

LEWIS E. SMITH
Captain, USAF
Asst Command Adj.

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ADOOT-C 2 August 1954

SUBJECT: Accidental Rocket Discharge

TO: Director of Operations
Headquarters USAF
ATIN: AFOOP-OC-F
Washington 25, D. C.

1. Confirming telephone conversation between Col. Konosky, this headquarters, and Col. Mobbs, your headquarters, 20 July 1954. The role of the Air Defense Command in protecting the United States from air attack requires rocket-firing interceptors for maximum effectiveness. All-weather interceptor squadrons must be situated for maximum strategic advantage commensurate with maximum economy. This has resulted in basing fighter-interceptor squadrons at fourteen joint civilian-Air Force operated airfields. Every effort has been made and will continue to be made to ensure safe handling of the munitions carried by these interceptors.

2. A very few instances of accidental rocket discharge have been reported since the initial delivery of rocket-bearing interceptors to this command in February 1953. Every incident involving accidental discharge of munitions has been carefully analyzed at this headquarters to determine the cause. Methods are then devised to eliminate the cause. Experience has indicated that there are only two possible causes of accidental rocket discharge:

a. Rocket-firing system malfunction. System malfunction encompasses any possible improper functioning of the system which might fire a rocket. Test equipment and techniques for system analysis have been developed which completely confirm proper system operation before any rockets are placed in the aircraft. The effectiveness of this test equipment and these techniques is proven by the fact that not one accidental rocket discharge has been attributed to system malfunction.

b. Human error. The human error factor is being continually reduced by several means. In addition to published Technical Orders which establish safe handling procedures and testing techniques, this headquarters issues supplementary directives which disseminate information on new procedures and techniques as they are developed or found necessary. These directives and publications are augmented by continuing on-the-job training programs so that these techniques may be distributed and exercised. The extreme

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complexity of present weapons systems and the rapid turnover of personnel necessitates the conduction of these continuing programs. Capable supervision is provided for junior mechanics when rockets are loaded or removed from an interceptor or when the system is being tested. These supervisors are senior non-commissioned officers with long experience in handling all types of munitions.

3. On 1 June 1954, one rocket was accidentally discharged at Minneapolis-St. Paul International Airport from an F-89D aircraft during a check on the rocket-firing circuitry. The rocket hit the ramp 225 feet forward of the aircraft, at which point the warhead separated from the rocket body. The rocket had not traveled sufficient distance to be armed, and therefore could not explode. It was later detonated without incident. There were no casualties and no property damage as a result of this discharge.

a. The F-89D normally carries a load of 104 of these rockets. There had been 103 rockets removed from the aircraft. The armament man inadvertently overlooked one rocket, which fired when the circuitry was being checked. As a result of this accident, one man was court-martialled on 23 July 1954 and charges are pending on another.

4. On 18 February 1954, one rocket was discharged at O'Hare Field, Illinois. Investigation revealed that two cannon plugs had been interchanged. Armament mechanics attempting to remove a loaded pod from an F-86D caused the rocket in tube #22 to be discharged. The rocket hit the foundation of a building causing some damage. No casualties were reported.

a. On 10 March 1954, following analysis of the accident, a message was sent from this headquarters to all air defense forces whose context was as follows:

> "Under no circumstances will rockets be loaded in aircraft prior to performing a complete rocket intervalometer test. This test will be accomplished immediately prior to each rocket loading regardless of the results of previous tests. It is suggested that the test on F-86D aircraft also include a test of the grounding of each rocket tube circuit by the use of an Ohmmeter or simple locally fabricated continuity tester."

b. Another message was sent directing all tactical units in possession of this particular series of F-86D aircraft to modify cannon plugs so that they could not be interchanged.

c. Both of these messages were issued as a result of the O'Hare incident and a detailed analysis of the causes of the accident.

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ADOOT-C, Subject: Accidental Rocket Discharge (Contd)

5. This command will continue to analyze all munitions accidents and is making every possible effort to eliminate such incidents. As new munitions are developed, safe handling procedures will be devised to preclude possible future incidents.

FOR THE COMMANDER:

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HEADQUARTERS
575TH AIR DEFENSE GROUP
SELFRIDGE AIR FORCE BASE, MICHIGAN

GO 5 August 1954

SUBJECT: Report of Inadvertent Rocket Firing (RCS: 4-AF-X9)

TO: Commander
4708th Defense Wing
Selfridge Air Force Base
Michigan

1. In accordance with AFR 136-9, the following letter report of an inadvertent rocket firing is submitted.

2. The incident occurred 11 July 1954 at approximately 09:10 EST, involving F-86D SN 52-3879, piloted by 2d Lieutenant Carl E. Sandmeyer, AO 3 004 521, 13th Fighter-Interceptor Squadron, Selfridge Air Force Base, Michigan, when twenty-three 2.74 F.F.A. Rockets, lot #RTCA-93-S-53, were inadvertently fired in the vicinity of Adair, Michigan. Adair, Michigan is located in St. Clair County, approximately midway between Selfridge Air Force Base and Port Huron, Michigan.

3. The pilot stated that while enroute to the gunnery range at 15,000 on heading of due east, he was attempting to set up the rocket firing system for manual firing. All armament circuit breakers were pushed in except for the "Rocket Fire" circuit breaker. The pilot placed the "Armament Master Switch" in the "Jettison Ready" position. The "Jettison Ready" lamp illuminated and due to some malfunction, the rocket package came down. The pilot then moved the "Armament Master Switch" to the "Package Only" position (this is the "Camera" position on - 35 and earlier model aircraft) and attempted several times to raise the pod by using the rocket package "Over-ride Switch"; however, the rocket package remained down. Considering the possibility that all switches were not in the correct position the pilot then moved the "Armament Master Switch" to one of the firing positions. The pilot does not remember which of the three positions he chose: fire 6, 12 or 24. He then pushed the Rocket Fire Circuit Breaker in and placed the "Automatic Manual" Rocket Selector in the "Manual" position. As the "Automatic Manual" switch was placed in the manual position, all rockets (23) fired. The firing trigger on the stich grip had the safety pin installed and the trigger had not been depressed at any time.

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GO Subject: Report of Inadvertent Rocket Firing (Contd)

4. Immediately after the incident occurred, the pilot requested that GCI give him a fix, however, he received no reply from the station which he called.

5. Farmers in the area of Meldrum and Lindsey Roads, 2 miles southwest of Adair reported that they witnessed the firing.

a. Mrs. Fred Gordon of 6824 Belle River Road, Marine City, Michigan, reported that "something" struck her house. No evidence of fragments or damage could be found.

b. An extensive search was made by personnel of this base, and the local State Police. The point at which the rockets contacted the ground could not be located, further; as of this date no other reports have been received regarding this incident.

6. Armament Systems Officers and Factory Technical Representatives, were unable to locate any deficiency in the aircrafts' firing system. The aircraft was flown and the rockets fired normally, no malfunctions occurred.

7. In that no deficiency could be located in the aircraft system, it is considered feasible, that a similar incident may occur at a later date on this or other aircraft. This possibility has prompted this headquarters to require all pilots to perform system checks and arming of rockets over the gunnery range where an inadvertent firing could cause no loss of life or damage to property.

8. Fighter pilots have been rebriefed on the arming of rockets and associated systems in an attempt to reduce the possibility of inadvertent firing through pilot error.

/s/t/ WILLIAM A. TOPE
Colonel, USAF
Commander

1 Incl:
Map of area surrounding Selfridge AFB

Info cy:
Comdr, AMC, Wright-Patterson AFB, Ohio

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179

Hq 575th Air Defense Gp, GO, Subject: Report of Inadvertent Rocket Firing (RCS: 4-AF-X9)

ADOOT-C (5 Aug 54) 4th Ind 18 Sept 54

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. The report submitted by the 575th Air Defense Group, Selfridge Air Force Base, Michigan is incomplete and inconclusive and this headquarters desires that an amended report be submitted. The report neither substantiates the theory of system malfunction, nor does it preclude the possibility of pilot error. Analysis of the report and the F-86D circuitry does not reveal any single malfunction which could cause the indicated results. At least two malfunctions would be required to cause the effects noted:

a. For the pod to extend and remain extended with the Armament Master Switch in "Jettison Ready," the override switch would have to be thrown to the "Extend" position, or the manual extend relay would have to stick in the closed position. However, if this relay had stuck, the pod would not retract after the rockets fired. The ground loading switch would have to be actuated to retract the pod.

b. To fire 23 rockets, the PT-2 relays must be energized. Because of the unreliability of trigger safety pins, it is quite feasible that the trigger switch was inadvertently closed, and the rockets fired in a normally functioning circuit. It must be noted that if these PT-2 relays had stuck, the pod would have extended in "Jettison Ready", but would have retracted automatically when the Armament Master was thrown to "Package Only."

2. Because of the extreme hazard associated with such an incident, every possible effort must be made to establish the exact cause. To determine the exact cause of this incident, the following information is desired:

a. What were the positions of the armament switches and circuit breakers on take-off?

b. What evidence did the pilot have for believing the pod was extended and did not retract after the override switch was actuated?

c. Did the pod retract after the rockets fired?

d. What are your conclusions as to the specific cause of the incident?

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ADOOT-C, Subject: Report of Inadvertent Rocket Firing (Contd)

3. The SOP outlined in message, COMDR 575-V, dated 21 July 1954, from the 575th Air Defense Group is presently considered satisfactory, except for the use of trigger safety pins. ADC Regulation 55-11 states that all aircraft equipped with rocket-firing circuit breakers, which are accessible to the aircrew, must have these breakers pulled and a safety clip with red streamer will be installed until it is desired to fire the rockets. All ADC rocket-firing interceptors are so equipped and strict compliance with this regulation is desired. Trigger safety pins in rocket-firing aircraft are considered unreliable and their use is not recommended.

BY ORDER OF THE COMMANDER:

1 Incl
n/c

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From: COMMANDER, ADC

22 Nov 1954

To: COMMANDER, AMC, WRIGHT-PATTERSON AFB, OHIO

Info: COMMANDER, ARDC, P. O. BOX 1395, BALTIMORE 3, MD.
COMMANDER, WADC-WRIGHT-PATTERSON AFB, OHIO
COMMANDER, NOTS, INYOKERN, CALIF

(UNCLASSIFIED) ADMAC - 5D _____. For MCSONF at AMC.

Reference is made to 4750th Air Defense Wing message ADR-ADS 4495 and previous unsatisfactory reports and correspondence pertaining to aircraft damaged by colliding with rockets and/or rocket components during firing. In some cases the damage was of a nature that could result in the loss of the aircraft and pilot. Under certain conditions the cause of an accident of this type would be very difficult, if not impossible, to determine. In order to prevent rocket firing accidents the following action is required: (A) Rockets are provided with fins that do not break off in flight. (B) Rockets are inspected before delivery to assure that the head seats properly. (C) A solution to the problem of rocket tumbling is provided.

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HQ COMDT

Record Evaluation
Permanent------
Temporary
Until------
Will Be Confirmed
in Std Publication
Form Under par 3a,
AFM 5-3-No--
Prepared by-Maj J R Bell
Telephone--2500--
Date-18-Oct-54--

ADC HQ Form 1
Revised 15 Aug 53

13

"B1"
202.13
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CONFIDENTIAL

ADMAC-5D

SUBJECT: Rocket Temperature Monitors

TO: Commander
Sacramento Air Material Area
McClellan Air Force Base
McClellan, California

FILED. R+D 2

1. The following information is furnished as requested in your message SSMTAC-3-10-479-E.

2. This command is stocking two types of rocket motors. They are the Mark I Mod 3 and the Mark II Mod 0.

a. The Mark I Mod 3 motor may be safely fired from -65 to +130 degrees Fahrenheit. Due to changes in the rate of propellant burning the speed of the rocket varies at different temperatures. For this reason it is necessary that the correct propellant temperature be furnished the flight data computer. This is accomplished by a manual setting prior to take off.

b. The Mark II Mod 0 motor may be safely fired from -65 to +165 degrees Fahrenheit. The changes in the rate of propellant burning are very small and the speed of the rocket is fairly constant over the entire temperature range. When utilizing the Mark II Mod 0 rocket the aircraft temperature setting unit should be set at +80 degrees Fahrenheit regardless of the ambient temperature. It is not necessary to heat this rocket unless there is danger of the rocket propellant going below -65 degrees Fahrenheit.

3. There is no equipment available for conditioning rockets to any specific temperature. Magazine temperatures should be maintained below 90 degrees Fahrenheit. Storage at higher temperatures will reduce the normal service life of the rocket. In many cases the storage temperature will go below 0 degrees Fahrenheit. This does not make the rocket unsafe to fire. Because of the hazards associated with cracked propellant grain, special care must be taken not to drop motors at low temperatures.

4. To determine the correct propellant temperature when using Mark I Mod 3 rockets portable monitors are being procured. These monitors are made of plastic and contain a bi-metallic type thermometer. This plastic has the same temperature characteristics as the rocket propellant. The monitor will include a removable case which simulates the rocket when installed in an aircraft.

F-341 3 1-7

J R Bell/ADMAC-5D/mld Memo for record not required.

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This correspondence is classified Confidential in accordance with Par 24, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

John R Bell Maj USAF
SIGNATURE

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Hq ADC ADMAC-5D, Subj: Rocket Temp Monitors (Cont'd)

5. These portable monitors will be utilized as follows with the F-86D, F-94C and F-89D aircraft.

a. Monitors will be placed in the rocket storage area with the case removed.

b. The monitors will stabilize at the rocket propellant temperature in approximately six (6) hours.

c. When aircraft are to be loaded a monitor will be taken from the storage area with the rockets. The monitor will be placed in its case.

d. After the rockets are loaded the monitor will be placed in such a location as to be readily available and subjected to approximately the same temperature as the rocket pod.

e. When the aircraft are being prepared for immediate take off a temperature reading will be obtained from the monitor. This reading will be approximately the temperature of the installed rocket propellant.

f. As the F-86D aircraft does not have a rocket heating system eight degrees Fahrenheit should be subtracted to allow for propellant temperature drop during flight.

g. As the F-94C and F-89D aircraft have an internal rocket heating system it is not necessary to allow for any propellant temperature drop during flight. In the event the rocket heating system is not utilized subtract eight degrees Fahrenheit to allow for propellant temperature drop during flight.

h. The temperature reading is set into the aircraft.

i. In the event the temperature is below the lowest possible setting the lowest setting will be used.

6. Until such time as these monitors are available the Mark I Mod 1 rocket propellant temperatures will be estimated.

FOR THE COMMANDER:

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FILE NUMBER 302.12

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	Flt Sfty
	PIO
	DCS/C
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	Mgt Anlys
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	Civ P (SECRET) ADMAC-1B 3187 . Per WDMAC-5A. This msg in 2 parts. Reviewing
	Mil Pers
	Asm Actvt
	Off Actvt WDMAC-5A&C-11078 interim storage of 2.75" rkt in barricade bldg 2-3509 is appr.
	Cols & Rcds
	Spl Warfare this hq on deduction of qty dis of rkt storage. Part II. It should
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MESSAGE TRANSMITTED
WITH FOLLOWING DATE TIME GROUP
29 2025Z DECEMBER

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RETURN TO COMEBACK COPY

Not requested, not furnished
Furnished 29 Dec 54 (Initials)
(Date)

Charles Carver
LT COL CHARLES F CARVER

Will be Confirmed in
Std Publication Form
Under par 3a, ADCSM
5-3 NC
Prepared by
Telephone 29 Dec 54
Date
M/Sgt V. L. Helverton/fo

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BEFORE DECLASSIFYING.

JAMES S. PURDUM
Major, USAF
Asst Command Adj

ADMAC-1B 2529 SECRET

ADC HQ Form 11
5 Feb 54 Revised
M 37-1

This correspondence is classified Secret in accordance with Par 2 c, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

Charles Carver
SIGNATURE

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HEADQUARTERS
528TH AIR DEFENSE GROUP
Presque Isle Air Force Base
Presque Isle, Maine

193

DM-A

22 September 1954

SUBJECT: Inadvertent Firing of Rockets by Radar

TO: Commander
4711th Air Defense Wing
ATTN: Director of Materiel
Presque Isle Air Force Base
Presque Isle, Maine

1. Informal information received by this Headquarters indicates that the 2.75 FF rockets may be inadvertently fired if a loaded pod is placed directly in front of the E-6 radar during ground or air operation.

2. This Headquarters has found no information to substantiate the theory. If it were feasible, formation flying would be unsafe.

3. Desire you indicate if the E-6 radar will fire loaded rockets if the pod is placed in front of the radar set during operation.

FOR THE COMMANDER:

/s/ HAROLD H. MARQUIS JR.
1st Lt, USAF
Adjutant

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Hq, 528th ADG, DM-A Subject: Inadvertent Firing of Rockets by Radar.

DN-Arn (22 Sep 54) 1st Ind 30 Sep 1954

HQ, 4711TH AIR DEFENSE WING, Presque Isle AFB, Maine

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York, ATTN: EAMAC-ARN

Request any information pertaining to basic request be forwarded to the 4711th Air Defense Wing.

FOR THE COMMANDER:

/s/ KENNETH A. FULLER
1st Lt, USAF
Adjutant

EAMAC-ARN (22 Sep 54) 2nd Ind No date

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, New York

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

1. Latest information available this headquarters is contained in 1st Indorsement, 16 July 1953, to letter, this headquarters, RAMAC-ARN 471, 10 July 1953, subject: Request Clarification of C.O. 39B-50-7. The indorsement indicates that more current data may now exist as a result of tests by ARDC.

/s/ BEN D. MOORHEAD
1st Lt, USAF
Asst Adjutant

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B/Ltr fr Hq Presque Isle AFB, DM-A, Subj: Inadvertent Firing of Rkts by Radar

ADMAC-5D (22 Sep 54) 3d Ind 13 Oct 1954

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. This Headquarters has no information that indicates rockets installed in aircraft can be accidentally fired by RF energy. The metal of the rocket motor, fin protector, rocket tubes and aircraft skin provide an almost perfect shield against RF energy.

2. On 21 Sept 51 APG conducted tests to determine the possibility of firing rockets by RF energy beamed from an AN/APS-20E radar set. Rockets with fin protectors removed were exposed to the radar beam at various distances and in numerous positions. Attempts to fire rockets under the most dangerous conditions, as outlined in the "Blasters Handbook" (Du Pont di Memours and Co) were unsuccessful. Complete test procedures and results will be forwarded when received.

3. Based on all present information the possibility of firing rockets installed in aircraft by RF energy is considered remote. The remote possibility of firing rockets by RF energy can be eliminated by following standard safety precautions prescribed for rocket handling.

BY ORDER OF THE COMMANDER:

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FILE NUMBER 301.8

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85TH FIGHTER INTERCEPTOR SQUADRON
Scott Air Force Base, Illinois

21 October 1954

SUBJECT: Radiation Hazards

TO: Commander
33rdAir Division (Defense)
Tinker Air Force Base
Oklahoma City, Oklahoma

1. This organization has been contacted by the Chief, Plans and Programs, 3310th Technical Training Wing, Scott Air Force Base, in regard to the possible hazard created by exposure of destructors and/or 2.75" Folding Fin Aircraft Rockets to high intensity radio-frequency-energy radiation.

2. The attached correspondence, furnished by the 3310th Technical Training Wing, includes a guide to safe operating distances for transmitters of various frequencies.

3. It has been determined that the following listed transmitters are now in operation at Scott Air Force Base:

FREQUENCY	POWER EQUIPMENT		DISTANCE FROM TRANSMITTER TO ROCKET LOADING AREA
"C" 1182MC	5KW	AN/URN-3	Less than ½ mile
5575 KC	2KW	AM-141/MRC-2	Less than ½ mile
10205KC	2KW	AM-141/MRC-2	Less than ½ mile
X-Band	25KW	AN/UPN-1	Approximately 1 mile
S-Band	85-100KW	AN/UPN-1	Approximately 1 mile
X-Band	45-82.4KW	AN/FPN-16	Approximately 1 mile
S-Band	560-750KW	AN/CPN-18	Approximately 1 mile

4. All of the transmitters listed apparently violate the guide to safe operating distances. Although the attached correspondence deals directly with blasting caps, it is pointed out that rockets and destructors are fired electrically, as are blasting caps.

5. It is requested that Headquarters, 33rd Air Division:

a. Determine the validity of the guide to safe operating distances as applied to destructors and rockets.

b. Determine the applicability of the guide to the radiations listed in paragraph 3 above. Special attention should be paid to differences between peak power, maximum power and average power, and to their respective effects on the munitions in question.

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Ltr, 85th FIS, Scott AFB, Ill, Subject: Radiation Hazards

DMK (21 Oct 54) 1st Ind 9 Nov 54

HQ 33D AIR DIVISION (DEFENSE) Tinker AFB, Oklahoma

TO: Commander, Central Air Defense Force, Grandview Air Force Base, Grandview, Missouri

1. This headquarters does not have access to information required. It is believed that there is an Air Proving Ground Report dealing with this subject on file at your headquarters.

2. Request information required in basic letter be furnished this headquarters.

FOR THE COMMANDER:

2 Incls
n/c

/s/C.J. BILLION
Major USAF
Adjutant

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Ltr, 85th FIS, Scott AFB, Ill,, Subject: Radiation Hazards

CDMAC-5 (21 Oct 54) 2e Ind 24 Nov 54

HQS CENTRAL AIR DEFENSE FORCE, Grandview AFB, Grandview, Mo

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

1. Information available at this headquarters regarding accidental ignition of rockets and destructors by high intensity radio-frequency energy is contained in the following correspondence.

a. Letter classified confidential, Subject: Minutes of Conference on Air Defense Command Operational Problems concerning 2.75" FFAR, dated 2 February 1954 from Naval Ordnance Test Station, China Lake, California.

b. Second indorsement from your headquarters to 33d Air Division letter file DMM471, Subject: Request for Rocket Advisor for 85th Fighter-Interceptor Squadron, dated 30 September 1953.

c. Message from your headquarters, ADMAC-5D 27/94 dated 20 November 1954.

2. Although the above reference correspondence offers limited information, no conclusive facts can be gathered as to the actual hazard effects radio frequency has on 2.75" inch rockets and destructors.

3. It is the opinion of this headquarters that safety precautions as outlined in CADF letter 136-2, Subject: Interim Readiness Storage of Turn-Around Ammunition (2.75" Inch Folding Fin Aerial Rockets) as amended, contains adequate safety methods for handling and storage of rockets. Letter from this headquarters ACFT 5-471, Subject: Storage of MK2 Mod 0 Destructors, dated 15 September 1953 covers the safe storage of destructors. (See attached inclosures number 3 and 4.)

4. Request your headquarters assist in obtaining copies of all tests conducted relative to effects of radio frequency on 2.75" inch rockets and destructors. Further request your opinion regarding the hazards existing at Scott Air Force Base, Illinois, as outlined in basic correspondence.

FOR THE COMMANDER:

/s/MILTON A. HE[illegible]ON
Capt, USAF
Asst Adjutant

4 Incls
Added two inclosures
3. CADF Ltr, Storage of MK2 Mod 0 Destructors
4. CADF Ltr, 136-2 as amended

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From: COMMANDER, ADC 19 November 1954

To: COMMANDER, CADF, GRANDVIEW AFB, MO

COMMANDER, 4750TH ADW (WEAPONS), YUMA COUNTY AIRPORT, YUMA, ARIZONA

(UNCLASSIFIED) ADMAC-5D_____. Following information furnished as per telephone conversation with Captain Eckols your headquarters. This headquarters has no information that indicates rockets installed in aircraft can be accidentally fired by RF energy. The metal of the rocket motor, rocket tubes, aircraft skin and fin protector cap when installed provides an almost perfect shield against RF energy. On 21 September, APG conducted tests to determine the possibility of firing rockets by RF energy beamed from an AN/APS-20E radar set. Rockets with fin protectors removed were exposed to the radar beam at various distances and in numerous positions. Attempts to fire rockets under the most dangerous conditions as outlined in the "Blasters Handbook" were unsuccessful. Complet test procdres and results will be forwarded when received. Based on all present information the possibility of firing rockets with the fin protectors on, or when installed in aircraft, is considered remote. This remote possibility can be eliminated by following standard safety precautions prescribed for rocket handling.

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From: COMMANDER, ADC 6 Dec 1954

To: CHIEF OF STAFF, USAF, WASHINGTON 25, D. C.

Info: COMMANDER, AMC, WRIGHT-PATTERSON AFB, OHIO
COMMANDER, ARDC, P. O. Box 1395, BALTIMORE 3, MD.
COMMANDER, APC, Eglin AFB, Florida
COMMANDER, EADF, STEWART AFB, NEWBURGH, N. Y.
COMMANDER, CADF, GRANDVIEW AFB, MO.
COMMANDER, WADF, HAMILTON AFB, HAMILTON, CALIF.
COMMANDER, 4750TH A DIV (WEAPONS) YUMA COUNTY AIRPORT
YUMA, ARIZONA

(UNCLASSIFIED) ADMAC-5_____. Since the receipt of 2.75 inch rockets this headquarters has been attempting to determine the possibility of an accidental firing resulting from exposure to an RF energy source. There has been considerable correspondence and limited tests to determine if and/or what hazards exist. The information obtained as of this date is not conclusive enough to be utilized to determine what safety precautions should be taken. The present safety precautions as pertain to RF energy consist of the following: (A) Keeping the fin protector installed until immediately before rocket loading. (B) Not storing rockets in or near radio or radar apparatus. In the event a rocket can be accidentally fired by RF energy, additional safety precautions are required. This headquarters has no information indicating any rockets have ever been fired by RF energy. However, considerable information is available on accidental explosions of electric blasting caps exposed to RF energy from radio transmitters of various power outputs and radar. Commercial concerns utilizing

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(UNCLASSIFIED) ADMAC-5D_____. Cont'd.

electric blasting caps utilize a chart indicating safe distances from various sources of RF energy. These distances depend on the power output of the equipment. As the rocket ignitor squibs contain a bridge wire that is almost identical to the circuit in an electric blasting cap it appears that the squib may possibly be expected to ignite under certain conditions when exposed to RF energy. Request a priority project be established to determine the following: (A) If a rocket can be fired by any known source of RF energy (1) with the fin protector installed (2) with the fin protector removed (3) when installed in aircraft. (B) In the event it is determined that a rocket can be fired (1) Safety distances from all RF energy sources (2) Additional safety precautions required.

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Elect
Gn Sup & Svs
Instl
Log Plan
HQ COMDT

Record Evaluation
Permanent------
Temporary
Until--1 July 55
Will Be Confirmed
in Std Publication
Form Under par 3a,
AFM 5-3--no
Prepared by--Maj J R Bell
Telephone--2589
Date--10 Jan 55

ADC HQ Form 1
Revised 15 Aug 53
M549-1x

CONFIDENTIAL 187

22

301.8

AMAC-5

19 JAN 1955

SUBJECT: Effects of RF Energy on 2.75 Inch Rockets (UNCL)

TO: Commander
Wright Air Development Center
ATTN: WCLSH-3, Lt. Majane
Wright-Patterson Air Force Base
Ohio

1. Following is a list of equipment that may be installed in aircraft, control towers, MARS stations and ACAW squadrons on or near bases utilized by this command.

32V2-3	MPS-6	CPS-6B
KM-1	ARC-3	18S-4
Globeking	SCR-522	APX-6
BC-640	ARC-27	APS-20
Wilcox 99A	ARC-34	APS-45
FRT-15	BC-375	APG-37
CRC-27	ART-13	APG-40
CRT-3	ARC-21	FPS-3
FPS-6	618S-1	MPS-7
MPS-14	FPS-5	TPS-8
FPS-4	MPS-4	MPS-11
TPS-10D	FPS-7	FPS-10

2. This list does not include the equipment that may be installed in commercial facilities on or near the base.

3. As much of this equipment has the same power output and frequency it will not be necessary to conduct tests on all listed equipment.

4. Sufficient types of equipment are available at Stewart AFB and nearby ACAW squadrons to conduct tests on at least one item of a given power output and frequency with the exception of the APS-20 and APS-45. Tests utilizing this equipment may be conducted at McClellan AFB.

FOR THE COMMANDER:

COMEBACK COPY
Not reported, not furnished

John R Bell

Maj J R Bell/ADMAC-5/mld Memo for record not required. 13/1/55 (Initials)

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E-6389

Confidential

This correspondence is classified in accordance with Par 24, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

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From: COMMANDER, ADC 11 September 1954

To: COMMANDER, EADF, STEWART AFB, N. Y.
COMMANDER, CADF, GRANDVIEW AFB, MO.
COMMANDER, WADF, HAMILTON AFB, CALIF.
COMMANDER, 4750 TRAINING WING, YUMA COUNTY AIRPORT, ARIZONA

(UNCLASSIFIED) ADOOE-C 29256 . Desire the following changes made to UFD 10-4, 1 Sept 53. Under Part 1, a. Paragraph 4d (5) add an additional sub-paragraph (c) "Scoring Firing Interception: A training interception on which 6 or more rockets are fired at the target and the results assessed." b. Under Part 2, "Flying Training Summary, delete "Aerial Rocketry" mission and change totals accordingly. Under Interception Missions, add an additional type mission "OCI-AI rocketry" with 24 interceptions under head of weather and one night intercept. Change total accordingly. Delte paragraph at bottom of page 6 which requires 320 rockets to be fired annually and substitute the following: "A minimum of 24 scored firing and one night familiarization firing intercept will be flown at an ADC Weapon Employment Center." c. On page 9, change paragraph 6 to read "Aerial Rocketry: Each pilot will be required to fire a minimum of 24 scored air to air intercepts per year. In addition, one night familiarization intercept will be flown on which 24 rockets will be fired simultaneously.

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DOCUMENT NO. 189

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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190

ADOOT 31 Dec 1954

SUBJECT: (Unclassified) Flying Hour Utilization

TO: Commander
Central Air Defense Force
Grandview Air Force Base
Grandview, Missouri

1. My attention has been drawn to the fact that this command used only sixty-three percent of its flying hour allocations for fighter interceptor aircraft in FY '54. It is not our intent to overburden the Defense Forces with an unrealistic flying hour program; therefore, this command has based its flying hour allocation program on the minimum requirements for our squadrons to maintain a combat capability.

2. Underflying of our allocated hours, as we did in FY '54, will make it extremely difficult to justify our requests for the required hours in the following programmed years. Since we have not fully utilized our allocated flying hours, which were slightly less than those requested, it becomes evident that we did not accomplish even the minimum requirements of our Unit Proficiency Directives. We believe these requirements-approximately 20 hours per aircrew per month-are sound and should be flown. Further, unit commanders are encouraged to provide aircrews with hours over and above these requirements to bring units to a maximum state of proficiency.

3. I believe the majority of the difficulties which we encountered in FY '54 have been overcome by this time. Consequently, we should make every effort to comply with the UPDs during FY '55. In this respect I believe 700 hours per month per squadron on UE aircraft, or 20 hours per available aircrew, whichever is the larger, is a reasonable requirement. There are two ways of approaching this requirement: one by staging an all out "flying time war", and the other by efficient management. We have learned by bitter experience that "time wars" inevitably produce substandard effectiveness and high accident potential over the long haul. In General Chidlaw's letter of 27 August 1954, his views on this subject were made clear, i. e., we must avoid at all costs the "time war" approach. Fulfillment of the UPDs rather than flying time, per se, is the criterion.

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Successful UPD accomplishment is predicated on several factors, most important of which is the maintenance capability of the squadron. The squadron commander must find the practical limit of this capability, design his UPD scheduling around the unit's sustained pace, and then utilize to the maximum the flying time at his disposal.

4. In order to pinpoint our deficiencies and give command assistance in overcoming them, I desire that squadrons forward a report through channels to this headquarters when a quarterly figure of 2100 hours, or 60 hours per available aircrew, has not been achieved. This report should give complete and substantiated reasons for the underflying and should be submitted in the format shown in Attachment 1. Reports Control Symbol ADC-F8 will apply to this report.

1 Attachment
Example, Flying
Time Deficiency
Report

FREDERIC H. SMITH, JR.
Major General, USAF
Vice Commander

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EXAMPLE

190

FLYING TIME DEFICIENCY REPORT - JAN THRU MARCH 1954

479TH SQUADRON

a. Total hours inclement weather reduced or precluded flying: 78

(30 hours below IFR minimums
11 for strong crosswind
37 for snow and/or ice on runway)

b. Total hours runway was closed due to aircraft accidents, construction, ect.: 101

(96 for runway light repairs
5 for B-29 accidents)

c. Directives which have resulted in a limitation on flying:

TO 1 F-86D 109 grounding of F-86Ds due to malfunction of auto-pilot

TO 1 F-86D 114 grounding of F-86Ds due to leak in A/B fuel line

Letter Hq 37th ADiv, Subject: Preparation for Exercise Blue Nose, 3 July 1954. All aircraft except alert commitment stood down in preparation for subject exercise.

d. Other pertinent comments:

This squadron's flying schedule is based on the availability of 10 fighter aircraft per day for an average of 20 days per month. By flying these aircraft 40 hours per day we normally complete the month with 800 hours in UE. The non-flying periods shown in Item "a" above resulted in the reduction of 78 flying hours. Two hundred twenty-three (223) hours were lost due to T. O. groundings and forty hours (40) were lost due to preparation for Exercise Blue Nose.

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From: COMMANDER, ADC 31 August 1954

To: COMMANDER, CINCUSAFE, WIESBADEN, GERMANY

(unclassified) ADOOT-C_____. For Director O&T, DCS/ OPNS. Your classified message _____6133, 26 Aug 54. Following is proposed requirements for alert qualified pilots of this command. a. Ground training: 10 hours radar work in flight simulator, 1 hour lecture on cruise control, 2 hours on armament, 4 hours fire control system, 4 hours airborne intercept, 3 hours VOR, ILAS, and zero reader, 1 hour UHF, IFF, and radio compass, 4 hours tactics and techniques. b. Flying training. 1½ hours basic instruments, 1½ hours radio range procedures, 3 hours VOR and ILAS, 3 hours penetration and recovery procedures for home station (scramble and normal), 10 hours alternate basic recovery procedures, 3 hours OCA, 10 stern attacks (zero degrees plus or minus 30 degrees), 15 quartering stern attacks (45 degrees plus or minus 15 degrees) 15 beam attacks (90 degrees plus or minus 30 degrees) for a total of 40 day attacks. c. Night. 3 hours transition, 5 hours airborne intercept consisting of 5 stern attacks, 5 quartering stern attacks, 5 beam attacks, for a total of 15 night attacks.

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HEADQUARTERS
534TH AIR DEFENSE GROUP
KINROSS AIR FORCE BASE
Kinross, Michigan

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KROT

18 Oct 54

SUBJECT: Waiver on UPD Requirements

TO: Commander
4706th Air Defense Wing
O'Hare International Airport
Park Ridge, Illinois

1. It is requested that the 438th Fighter-Interceptor Squadron be granted a waiver for flying training requirements regarding "Simulated Flame-out Landings" as directed in the ADC Unit Proficiency Directive 10-4.

2. The above request is based upon the fact that simulated flame-out landings are not considered necessary operational training requirements for a twin-engine jet aircraft. The loss of an engine in flight, which may be considered in a comparative light between single and twin engine jet type aircraft, does not always result in similar type emergencies. As a result, the single engine jet aircraft would necessitate a dead stick landing and, therefore, would necessitate proficiency and practice in simulated flame-out landings. However, the F-89D which is the U/E type aircraft presently utilized by 438th FIS, under similar incidents of loss of one engine, would not result in the same type emergency. Pilots of F-89D's would be required to execute routine single-engine procedure, thereby resulting in safe landings. Therefore, proficiency and practice in simulated flame-out landings are not considered as necessary operational training requirements.

3. It is recommended that in lieu of the requirements pertaining to simulated flame-outs, pilots should be proficient in and should perform 24 simulated single-engine landings per fiscal year.

FOR THE COMMANDER:

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DWOOT (18 Oct 54) 1st Ind 27 Oct 54

HQ 4706TH AIR DEFENSE WING, O'Hare International Airport, Park Ridge,Ill.

TO: Commander, 30th Air Division (Defense), Willow Run Air Force Station, Belleville, Michigan

1. This Headquarters concurs with the Commander, 534th Air Defense Group. However, it is believed that some requirement exists for practice flame-out landings. In event of total fuel exhaustion, no power would be available from either engine.

2. Recommend that ADC Unit Proficiency Directive 10-4 be amended to require one (1) simulated flame-out landing and one (1) single engine landing per month for pilots in F-89D equipped units.

FOR THE COMMANDER:

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Hq 534th ADG KROT Subj: Waiver on UPD Requirements

DOTFT (18 Oct 54) 2d Ind 4 Nov 54

HQ 30TH AIR DIVISION (DEFENSE), Willow Run Air Force Station, Belleville, Michigan

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

Recommend the change to Air Defense Command Unit Proficiency Directive requirements contained in paragraph 2 1st Indorsement, be adopted.

FOR THE COMMANDER:

EAOOT-TW (18 Oct 54) 3d Ind 12 Nov 54

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, New York

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

Concur with provisions of Second Indorsement.

FOR THE COMMANDER:

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B/L Hq 534th ADC, KROT, Subj: Waiver on UPD Requirements

ADOOT-C (18 Oct 54) 4th Ind 6 Dec 54

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. This headquarters concurs with recommendation contained in paragraph 3, basic letter. "Simulated flame-out landings" as directed in ADC Unit Proficiency Directive 10-4 will be changed to read, "Simulated single engine landings", for F-89D aircraft.

2. Reference recommendation in 1st Indorsement to the basic letter. This headquarters is studying the requirement for simulated flameout UPD 10-4 will be revised accordingly and an F-89 flameout landing pattern published.

BY ORDER OF THE COMMANDER:

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

ADOOT-C

8 Sep 1954

SUBJECT: (Uncl) Qualitative Revisions to Flying Training Program

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. The attached copy of a USAF letter on the above subject is forwarded for your information, action and comments.

2. It is requested that replies to the specific questions asked in paragraphs 3.a. and 3.b. be sent to this headquarters not later than 1 October 1954.

BY ORDER OF THE COMMANDER:

1 Incl
USAF ltr

/S/ C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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Hq ADC ADOOT-C Subject: (Uncl) Qualitative Revisions to Flying Training Program

EAOOT-TW (8 Sep 54) 1st Ind 30 Sep 1954

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, N. Y.

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

1. In accordance with paragraph 2 of basic letter, the following areas of deficiency in aircrew member products of the Air Training Command are outlined with recommendations to improve and alleviate these problem areas:

a. Deficiency: Pilots lack the instrument proficiency required to accomplish the all-weather mission and have received little or no actual weather experience during formal training. This is by far the most prevalent and serious deficiency command-wide.

Recommendations: More emphasis should be placed on basic instrument procedures, radio range flying and actual weather training. Each pilot should receive a minimum of 5 hours actual weather time prior to assignment to a tactical unit. This should be accomplished in an interceptor aircraft, if possible, during the Applied Phase. Take-offs, climb-outs and landing should be accomplished under marginal weather conditions (800-1000 feet ceilings).

b. Deficiency: Pilots lack competence in formation flying.

Recommendations: Added emphasis on formation flying to include formation take-offs, formation tactics and techniques and formation discipline.

c. Deficiency: Aircrews lack aerial discipline and the desired degree of judgment.

Recommendations: Aerial discipline must be emphasized during all phases of training. Students should not be controlled to such an extent that individual initiative and a normal development of judgment is inhibited.

d. Deficiency: Aircrews lack a thorough and complete indoctrination concerning ADC functions, equipment and organization particularly the role and functions of an ADC fighter-interceptor

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EAOOT-TW Subject: (Uncl) Qualitative Revisions to Flying Training Program (Contd)

squadron. This has resulted in a negative mental attitude toward the type flying involved to accomplish the air defense mission.

Recommendations: Prospective AI crews should be given an indoctrination by ADC fighter-interceptor crews during the basic stage of pilot training. All aircrews chosen for assignment to ADC interceptor squadrons should satisfactorily complete the instrument and interceptor schools should be drawn from ADC resources and such personnel should be highly capable of imparting a desire to become a skilled all-weather interceptor crew. In short, newly graduated aircrews must be thoroughly "sold on the product".

e. Deficiency: Pilots and radar observers are very weak in crew coordination.

Recommendations: Each student pilot and RO should be required to fly a minimum of three flights with an instructor pilot or radar observer prior to permanent crew assignments. This action would give each crew member a better idea of what is expected of them as individuals and how to coordinate their actions to obtain better teamwork. Each pilot and RO team should complete interceptor training and be assigned to and transferred between tactical units as a team rather than as individuals.

f. Deficiency: Radar observers are very limited in navigational experience.

Recommendations: Navigation training and the use of interceptor aircraft radio and navigational equipment should be made more detailed and comprehensive.

g. Deficiency: Newly graduated crews have demonstrated considerable apprehension and nervousness during initial assumption of alert duties and lack confidence in themselves and the aircraft.

Recommendations: Emphasis be placed on physical set-up of squadron alert, actual scrambles, periodic alert duty, intercept procedures and aircraft identification during the interceptor phase of training and aircrews should be given the opportunity to fire aerial rocketry missions. Of particular importance is a thorough indoctrination in the duties and functions of the ACW director.

h. Deficiency: Radar observers are arriving from ATRC with a minimum of actual airwork using UE aircraft radar. In some cases ROs have not even seen a UE fire control system.

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EAOOT-TW Subject: (Uncl) Qualitative Revisions to Flying Training Program (Contd)

Recommendations: Aircrews should not be assigned to ADC interceptor squadrons until they have completed all of the interceptor crew course.

2. In general it is recommended that the "tiger" concept of training be abandoned for those pilots earmarked to fill cockpit requirements within the Air Defense Command. A great deal of time and effort is being expended indoctrinating pilots in the fact that as interceptor pilots they must be professionally higher qualified.

3. Another problem which exists within this command relative to newly assigned aircrews can be solved by action at Headquarters ADC level. This concerns the assignment of newly graduated officers to tactical squadrons with primary duty as Training Officer, AFSC 7524. This action places a burden on the squadron concerned and tends to adversely affect the morale of the pilot. The position can be more adequately filled by one of the experienced interceptor squadron pilots and the new pilot can be sent to a formal course of training in the UE aircraft for subsequent reassignment as a 1124B or C.

4. This indorsement is classified Confidential in accordance with paragraph 24a (8) of AFR 205-1.

FOR THE COMMANDER:

1 Encl
n/c

/S/ JAMES R. WORLINE
Captain, USAF
Asst Adjutant

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Hq ADC, ADOOT-C, Subject: (Uncl) Qualitative Revisions to Flying Training Program

WDOTN-2 (8Sep 54) 1st Ind 28 Sep 1954

HQ WESTERN AIR DEFENSE FORCE, Hamilton AFB, Hamilton, California

TO: Commander, Air Defense Command, Ent AFB, Colorado Springs, Colorado

1. This headquarters recently completed a study to determine training deficiencies of air crews newly graduated from the various ATRC flying schools. The study considered approximately 250 ATRC aircrew products received during the past 18 months. Nearly all individuals lacked one or more specific flying training accomplishments such as jet qualified instrument cards, instrument training, GCA practice in jet aircraft, etc. In general, the new graduate is completely unfamiliar with the basic ADC mission and the functions of an ADC interceptor squadron.

2. Specific areas of deficiency in aircrew members arriving from the training system are:

a. Instrument training, both simulated and actual.

b. Night flying in tactical jet aircraft.

c. Knowledge of maximum performance operation of tactical aircraft. This includes operation at maximum altitude, range and radius of action and high speed interceptions.

d. Lack of familiarity with the airborne radar equipment.

e. Lack of knowledge of GCI-Interceptor procedures.

f. Radar observers are graduated without any jet flying time.

3. Recommendations to improve deficiencies noted above (pilot)

a. Instrument training should include the following minimums:

1. 20 hours of hood time in jet aircraft.

2. Qualification for and issuance of a jet instrument card.

3. Be proficient in making GCAs in jet aircraft.

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4. Have working knowledge of all approach systems-range, ADF, ILAS, GCI-GCA.

5. Accomplish at least one flight, including departure and approach, under actual instrument conditions prior to graduation.

b. Require complete proficiency in night operation of tactical jet aircraft prior to graduation.

c. A reasonable percentage of training flights be conducted at maximum altitude and include long range and maximum radius of action problems. At least 50% of interceptions be made at high speed (.78 to .95 mach).

d. Require proficiency in ground mapping and beacon operation of the airborne radar system.

e. Require proficiency in GCI-Interceptor procedures and techniques.

4. Recommendations to improve deficiencies in radar observer training (reference paragraph 2f above).

a. Require radar observers to have graduated from the all-weather interceptor school and be proficient in jet tactical aircraft.

5. It is further recommended that the ground school include sufficient instruction to insure a thorough knowledge of the ADC mission and the function of an interceptor squadron in the Air Defense Command.

FOR THE COMMANDER:

/S/ P. E. HAUPT
CWO, USAF
Asst Adjutant

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DEPARTMENT OF THE AIR FORCE
Headquarters United States Air Force
Washington 25, D. C.

AFPTR

18 August 1954

SUBJECT: Qualitative Revisions to Flying Training Program

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

1. Immediately following the United States participation in the Korean conflict, the pilot training program was expanded rapidly to support increased pilot requirements for both the Korean effort and the programmed buildup of the Air Force. The problems (base development, equipment, personnel) which have affected other elements of the Air Force have also dictated over-all training capability.

2. Because of shortages of aircrew personnel, flying training programs were developed to satisfy quantitative requirements first, and qualitative requirements, secondly. This has resulted in the production of some marginally qualified aircrew members from the training system, even though the majority of the flying training graduates have been able to proceed to tactical units and perform duties in unit equipment with a minimum amount of additional training. As the new weapon systems, with their increased demands on aircrew skills, are introduced into the Air Force inventory the gap between the ATRC product and the aircrew skills necessary to efficiently operate tactical unit equipment will widen. This problem has been recognized and remedial action is already being initiated. The major actions which will have the most immediate effect are:

a. Immediately adjust the output from the Crew Training Air Force schools to the number required to support cockpit seat requirements.

b. Establish a long range program of modernizing the trainer aircraft in the pilot program.

c. Plans are being developed to adjust the new pilot production to a long range sustaining rate as the 137 Wing Force objectives are met. The immediate implementation of a. and the future adjustment of the training rate will permit the allocation of additional flying hours to trainees and will result in a greatly improved product from the flying training system.

3. ATRC has been directed to study the entire pilot training program to determine those areas where improvement is needed. In order that ATRC may be provided with all assistance possible in this study, request that your command analyze the qualifications of the new aircrew product you have received in the past and provide this headquarters with your comments and recommendations for improving aircrew qualifications in the flying training program. Your comments and recommendations, although not limited to the

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following, will include specific consideration of the following:

a. Identify areas of deficiency in aircrew members arriving your command from the training system.

b. Provide specific recommendations to improve identified deficiencies in order of priority by type aircrew member (Fighter Pilot, Interceptor Pilot, Navigation-Bombardier, etc).

4. Your recommendations will be evaluated along with those received from other major commands and will be accomplished within the resources and equipment available.

BY ORDER OF THE CHIEF OF STAFF:

/s/t/ N. B. HARBOLD
Major General, USAF
Director of Personnel Procurement
and Training, DCS/P

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Hq ADC ADOOT-C, Subj: (Uncl) Qualitative Revisions to Flying Training Program

310.9

PC&R-F (8 Sep 54) 1st Ind 18 OCT 1954

HEADQUARTERS CENTRAL AIR DEFENSE FORCE, Grandview Air Force Base, Grandview, Missouri

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

1. Specific information requested as outlined in paragraph 2 of basic letter is furnished as follows:

a. Areas of Deficiency in Air Crew Members Arriving From Training System:

(1) Pilots are not being sufficiently screened by Air Training Command as to their quality and timber. They are not all able to perform a safe and industrious job - which is definitely required by all-weather pilots assigned to an air defense interceptor unit.

(2) Much more stress should be placed upon actual weather and instrument flying.

(3) Serious lack of navigational experience in unit-equipped aircraft - associated with navigational experience is cruise control technique. Graduate pilots from Training Command have not been exposed to enough cruise control - possibly due to lack of navigational flights. They know how long an airplane can stay aloft, but they have little knowledge of the best "miles per pound of fuel" which can be obtained by proper altitude and power settings.

(4) More GCI intercepts and let-downs during actual weather conditions.

(5) Pilots are not combat ready.

(6) Lack of total flying experience.

b. Recommendations:

(1) Air Training Command should establish at the very beginning of a pilot's career a system whereby his quality, timber and desire for all-weather intercept type flying

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Hq CADF PO&R-R 1st Ind to ltr Hq ADC ADOOT-C, Subj: (Uncl) Qualitative Revisions to Flying Training Program

can be determined. When pilots have been screened as indicated above, additional emphasis should be placed on their all-weather and GCI training prior to graduation and during subsequent assignment to further air defense training. If it can be determined early enough, a cadet's training should be slanted toward all-weather type flying and should also include specialized ground school training.

(2) Greater emphasis should be placed on the techniques of cruise control, and to obtain this cruise control experience, more long distance navigation flights should be made in tactical type aircraft.

(3) Air Training Command should establish an air defense "OTU" to complete the final training phase of chosen graduate interceptor pilots prior to their assignment to an air defense tactical unit. This OTU should be located in an area of frequent bad weather, near a good rocket range, and possess full air defense type radar and facilities. When graduated from this OTU, the pilots should be well-qualified in all-weather flying in tactical aircraft, have fired rockets and be combat ready or combat capable in air defense first line tactical aircraft.

(4) All-weather pilots should have more flying time and experience prior to being assigned to air defense units.

(5) If it is possible to accomplish within the Training Command those factors mentioned above, a final and obvious recommendation would be to hand-pick the most qualified pilots for assignment to areas of the United States known to have the most severe weather conditions. It is anticipated that if the above recommendations were carried out, we would realize the following advantages:

(a) More "capable and combat ready" all-weather pilots for ADC.

(b) The most qualified all-weather pilots will be assigned to severe weather areas.

(c) Anticipate a marked reduction in flying accidents.

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Hq CADF PC&R-R 1st Ind to ltr Hq ADC ADOOT-C, Subj: (Uncl) Qualitative Revisions to Flying Training Program

(d) Higher unit integrity and esprit de corps.

FOR THE COMMANDER:

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HEADQUARTERS WESTERN AIR DEFENSE FORCE
Hamilton Air Force Base
Hamilton, California

WDOTN-1

23 Oct 54

SUBJECT: Qualitative Revisions to Flying Training Program

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

1. It has become increasingly apparent that pilots graduating from Advanced Flying School-Interceptor are not receiving sufficient indoctrination in the mission and structure of the Air Defense Command, the operations of GCI stations, and procedures employed in the utilization of interceptor attack positioning. In addition, graduates of the Aircraft Controllers' School are not familiar with the fire control systems utilized in our fighter-interceptor aircraft and have many erroneous ideas concerning the capabilities of these systems.

2. Conversations with recent graduates of Advanced Flying Schools-Interceptor indicate that the only indoctrination presented concerning the Air Defense Command is a forty to fifty minute lecture on the organizational chart of the Command. Visits to GCI stations are hurried affairs during which students are afforded the opportunity to observe the operations, but are not required to spend a specified amount of time observing practice intercepts, ect. It is requested that the following training requirements be established with the Air Training Command for student pilots in Advanced Flying Schools-Interceptor.

a. A minimum of ten hours of lectures on the missions, procedures, problems, etc. of the Air Defense Command. At least five of the hours should be spent on Air Mass Positioning techniques presented from both the pilot's and controller's viewpoint.

b. A minimum of six hours spent in a GCI station to include a thorough briefing on communications and operations procedures. A minimum of three hours should be spent in watching controllers conduct practice intercepts with students required to observe a minimum of twenty intercepts and, if possible, to control five intercepts.

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Hq WADF, WDOTN-1, Subject: Qualitative Revisions to Flying Training Program

3. It is further requested that the following training requirements be established for students undergoing training in the Aircraft Controllers' School.

a. A minimum of two hours of lectures and movies on each of the E-series fire control systems, stressing system capabilities and limitations.

b. A minimum of five practice intercepts per student controller as observer in the back seat of a T-33 or interceptor aircraft.

4. It is believed that the inclusion of these requirements in the training programs would greatly enhance the value to Air Defense Command of newly graduated students from subject schools, and would shorten appreciably the amount of time spent in getting new graduates indoctrinated into our present Air Defense System.

FOR THE COMMANDER:

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ADOOT-C 29 Nov 54

SUBJECT: (Uncl) Qualified Revisions to Flying Training Program

TO: Director of Personnel Procurement and Training
Headquarters USAF
Washington 25, D. C.

1. Reference is made to your letter AFPTR, subject as above, dated 18 August 1954, and letter, this headquarters, subject as above, dated 8 September 1954. Following comments and recommendations are submitted concerning those deficiencies in the flying training program affecting this command.

a. Fighter-Interceptor Pilots.

(1) Instrument Training.

(a) Deficiency: Pilot graduates lack the instrument proficiency required to accomplish the all weather mission. Only a limited amount of actual weather experience is gained during formal training.

(b) Recommendation: More emphasis should be placed on basic instrument procedures, radio range, omni, where applicable, and actual weather flying, prior to assignment to the Air Defense Command. Preferably the actual weather experience should be gained in an interceptor aircraft during the Applied Phase and should include take-offs, penetration and recovery when weather ceilings of 800 to 1,000 feet exist.

(2) Performance Training.

(a) Deficiency: Pilot graduates lack a thorough knowledge of maximum performance operation of interceptor aircraft. This deficiency includes operation at high altitude, range and radius of action problems, and high speed interceptions.

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ADOOT-C, Subj: (Uncl) Qualified Revisions to Flying Training Program

(b) Recommendations: A reasonable percentage of training flights should be conducted at maximum altitudes and include long range navigation and radius of action problems. At least fifty per cent of interceptions should be made at high speeds (.78 to .95 mach).

(3) ADC Indoctrination Training.

(a) Deficiency: Aircrews lack a thorough and complete indoctrination concerning the Air Defense Command mission, organization, functions, and capability of equipment. Failure on the part of instructors to instill a high regard for the Air Defense Command concept has resulted, at times, in a negative mental attitude toward the type flying and mission importance.

(b) Recommendations: Prospective Air Defense Command crews should be given continuous indoctrination in the Air Defense Command concept. Most important, however, the instructors should instill in the student confidence in his equipment and the importance of his assignment to the Air Defense Command.

b. Radar Observers (Aircrew).

(1) Practical Application.

(a) Deficiency: Radar Observers are arriving from Air Training Command with a minimum of actual airwork using UE radar during flight in interceptor aircraft. In some cases Radar Observers have received no training in jet aircraft of any type.

(b) Recommendations: Require more adequate training in actual utilization of UE radar during flight in interceptor aircraft.

(2) Navigation.

(a) Deficiency: Radar Observers are limited in navigational experience.

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ADOOT-C, Subj: (Uncl) Qualified Revisions to Flying Training Program

(b) Recommendation: Navigation training and the use of interceptor radio and navigational equipment should be made more detailed and comprehensive.

2. During recent months a definite improvement in the quality of fighter-interceptor aircrews has been realized. Inclusion of the above, however, will substantially reduce time required to train newly graduated aircrews to the status of combat ready.

FOR THE COMMANDER:

Info Cy: ATRC

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

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AIR FORCE REGULATION
NO. 53–6

DEPARTMENT OF THE AIR FORCE
WASHINGTON, *11 JANUARY 1955*

SCHOOLS

USAF Interceptor and Fighter Weapons School

	Paragraph
Purpose and Scope	1
Policy	2
Mission	3
Authorization	4
Eligibility Requirements	5
Administrative Procedures	6

1. Purpose and Scope. This Regulation announces the mission, student eligibility requirements, and administrative procedures of the USAF interceptor and fighter weapons schools and provides for research and development of interceptor and fighter weapons training methods, procedures, and techniques. This Regulation applies to all Air Force activities.

2. Policy. The policy is to maintain interceptor and fighter weapons proficiency at a high standard throughout the Air Force. Interceptor and fighter weapons training and research and development in weapons training methods and techniques will be conducted within the Air Training Command.

3. Mission. The USAF Interceptor and Fighter Weapons School will:

a. Train instructors in all phases of interceptor and fighter weapons employment to provide replacements for Air Force operational interceptor and fighter units and schools conducting interceptor and fighter weapons training. Student quotas to using commands from Headquarters USAF will designate the type of aircraft in which training will be given. The number of students for each type of aircraft will be in agreement with the equipment assigned to the school.

b. Continuously conduct research to develop, evaluate, and standardize interceptor and fighter weapons techniques and training methods, starting with the initial delivery of interceptor and fighter aircraft and auxiliary supporting equipment to operational units.

c. Conduct continuous liaison visits to Air Force interceptor and fighter units worldwide to disseminate and obtain information concerning interceptor and fighter weapons training and employment.

d. Training instructors in all phases of interceptor and fighter weapons training for intra-service and interservice, Air National Guard, Air Force Reserve, and foreign nations as directed by Headquarters USAF.

e. Evaluate the effectiveness of the interceptor and fighter weapons training course by periodic monitoring of graduate instructors.

f. Indoctrinate senior Air Force officers in the employment of interceptor and fighter weapons as directed by Headquarters USAF.

g. Review and initiate changes to AFM 335–25 as required to provide Air Force interceptor and fighter units with current training data.

h. Publish a periodic "Newsletter" and distribute it to all Air Force interceptor and fighter units and other agencies concerned with interceptor and fighter weapons training to keep those units and agencies informed of the activities of the USAF interceptor and fighter weapons schools.

4. Authorization. Personnel assigned to the USAF interceptor and fighter weapons schools are authorized to visit the following units and agencies in connection with the mission as outlined in paragraph 3 when authorized by the unit or agency:

a. Air Force, Army, Navy, and Marine units and agencies.

b. Civilian educational agencies.

c. Industrial agencies.

d. Civilian study and advisory groups.

5. Eligibility Requirements:

a. Applicants must be either Regular officers or Air Force Reserve officers serving on an indefinite service statement and meet the following qualifications prior to entry:

(1) *Interceptor:*

(a) *Pilot.* Applicant must:

1. Possess AFSC 1124B or 1124C.

* **This Regulation supersedes AFR 53–6, 29 September 1953.**

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2. Have a total of not less than 300 hours' jet fighter, jet trainer, and/or jet interceptor aircraft flying time.
3. Have a total of not less than 50 hours in the aircraft to be flown in interceptor weapons training, at least 20 hours of which have been obtained in the 90 days preceding course entry date.
4. Be of flight commander caliber.

(b) *Radar Observer.* Applicant must:
1. Possess Primary AFSC of 1564.
2. Have 3 years' rated service and 500 hours of total flying time.
3. Have 50 hours' flying time in type of aircraft in which training will be received, 20 hours of which will be in the previous 60 days.

(c) *Controller.* Applicant must:
1. Possess AFSC 1641.
2. Have a minimum of 6 months' experience in the field as a controller.

(2) *Fighter.* Applicant must:
(a) Possess AFSC 1124A.
(b) Have a total of not less than 200 hours' jet fighter aircraft flying time.
(c) Have at least 30 hours' jet fighter time in the previous 90 days.
(d) Be of flight commander caliber.

b. Requests for waivers to the criteria prescribed in a above will be forwarded to the Director of Personnel Procurement and Training, Headquarters USAF, Washington 25, D. C.

6. Administrative Procedures:

a. *Quotas.* Headquarters USAF will furnish quotas and starting dates of classes to major air commands.

b. *Crew Composition:*
(1) Dual place interceptor weapons training is conducted for a crew of pilot, radar observer, and GCI director. Application for training will be made as a crew.
(2) Single place interceptor weapons instructor training is conducted for a crew of pilot and GCI director. Application for this training will be made as a crew.

c. *Orders.* Orders will be issued in accordance with AFM 30–3 and the current USAF Training Prospectus. Five copies of orders will be mailed to reach the commandant of appropriate USAF interceptor or fighter weapons school 5 days prior to starting date of the course. Student will attend the course on a temporary duty status.

d. *Programing.* Aircraft, supporting equipment, and personnel will be programed separately for:
(1) Interceptor weapons training.
(2) Interceptor weapons research and development.
(3) Fighter weapons training.
(4) Fighter weapons research and development.

BY ORDER OF THE SECRETARY OF THE AIR FORCE:

N. F. TWINING
Chief of Staff, United States Air Force

OFFICIAL:

E. E. TORO
Colonel, USAF
Air Adjutant General

DISTRIBUTION:
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☆ U. S. GOVERNMENT PRINTING OFFICE: 1955

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CONTINENTAL AIR DEFENSE

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History

July - December 1954

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From: COMMANDER, ADC 18 Nov 54

To: COMMANDER, EADF, STEWART AFB, NY
COMMANDER, CADF, GRANDVIEW AFB, MO
COMMANDER, WADF, HAMILTON AFB, CALIF
COMMANDER, 4750 AIR DEF WING (WPNS) YUMA CNTY APRT, ARIZ
COMMANDER, 4600 AIR BASE GP, ENT AFB, COLO, /COURIER/

(UNCLASSIFIED) ADOOT-C_____. Subject is Psychological Training. Reference paragraph 5a, AFR 50-27, "Training During Actual Flight at High Altitude." Except in aircraft where physical access to trainee by instructor is possible (B-29, etc.) refresher training by actual high altitude flight, in lieu of a low pressure chamber flight, is not authorized.

MORNING REPORT: Central Air Defense Force indicated that high altitude flights are being used in lieu of low pressure chamber flights, to provide refresher psychological training. Since close observation of the pilot is impossible in T-33 or fighter aircraft, this office does not consider this practice safe or adequate, nor is the instructor always qualified to conduct such training. In B-29 type aircraft such training is feasible, if properly supervised.

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ADOOT-C

SUBJECT: Flight Simulator Delivery Programs (Unol)

TO: Commander
Western Air Defense Force
Hamilton Air Force Base
Hamilton, California

Forwarded for your information and guidance are copies of Air Defense Command's flight simulator delivery programs.

BY ORDER OF THE COMMANDER:

3 Incls:
1- F-86D F/S (Conf) 40 cys
2- F-89D F/S (Conf) 40 cys
3- F-102 F/S (Secret) 40 cys

Identical ltrs to CADF, EADF, and 4750th AIW

30 cys of Incls - CADF
60 cys of Incls - EADF
3 cys of Incls - 4750th

M/R: Not necessary

Capt Ridley/gjl
2811
10 Dec 54

This correspondence is classified _____ in accordance with Par _____, AFR 205-1, 24 Jul 53, or for the reason (s) stated.

SIGNATURE

AF-ADC-Ltr-0 Spanner, Colo

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F-86D FLIGHT SIMULATOR ALLOCATIONS AS OF 1 DEC 1954

(This Schedule Supersedes all Previous Schedules)

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Part I. Operational Units Assigned F-86D Flight Simulators.

Station	Accountable Unit	Type	Mfg
George AFB, Calif	94 Ftr-Intcp Sq	S2-A-5	ERCO-10
O'Hare Intl Aprt, Ill	501 Air Def Gp	S2-A-5	ERCO-12
Westover AFB, Mass	60 Ftr-Intcp Sq	S2-A-5	ERCO-13
Andrews AFB, Md	95 Ftr-Intcp Sq	S2-B-5	Westh-1
McChord AFB, Wash	567 Air Def Gp	S2-B-5	Westh-2
Duluth AFB, Minn	515 Air Def Gp	S2-B-5	Westh-3
Scott AFB, Ill	85 Ftr-Intcp Sq	S2-B-5	Westh-4
Selfridge AFB, Mich	575 Air Def Gp	S2-B-5	Westh-5
Yuma Co Aprt, Ariz	4750 Air Def Wng	S2-B-5	Westh-6
Wright-Patterson AFB, Ohio	97 Ftr-Intcp Sq	S2-B-5	Westh-7
Truax Field, Wis	520 Air Def Gp	S2-B-5	Westh-8
Larson AFB, Wash	323 Ftr-Intcp Sq	S2-B-5	Westh-9
Suffolk Co AFB, NY	519 Air Def Gp	S2-B-5	Westh-10
Davis-Monthan AFB, Ariz	15 Ftr-Intcp Sq	S-2A-35	ERCO-20
Geiger Fld, Wash	530 Air Def Gp	S-2B-5	Westh-11
McGuire AFB, NJ	568 Air Def Gp	S-2A-35	ERCO-22
Burlington Aprt, Vt	517 Air Def Gp	S-2B-5	Westh-12
Sioux City Muni Aprt, Iowa	521 Air Def Gp	S-2B-5	Westh-13
Grandview AFB, Mo	4676 Air Def Gp	S-2B-5	Westh-14
Hamilton AFB, Calif	566 Air Def Gp	S-2B-5	Westh-15
Kirtland AFB, NM	93 Ftr-Intcp Sq	S-2B-5	Westh-16
McGhee Tyson AFB, Tenn	516 Air Def Gp	S-2A-35	ERCO-23
Travis AFB, Calif	413 Ftr-Intcp Sq	S-2C-5	Westh-17
Niagara Falls Muni Aprt, NY	518 Air Def Gp	S-2C-5	Westh-18

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Part I. Operational Units Assigned F-86D Flight Simulators (Cont'd)

Station	Accountable Unit	Type	Mfg
Ellsworth AFB, S.D.	54 Ftr-Intcp Sq	S-2C-5	Westh-19
Paine AFB, Wash	529 Air Def Gp	S-2C-35	Westh-24
Youngstown Muni Aprt, Ohio	502 Air Def Gp	S-2C-35	Westh-25
Stewart AFB, NY	330 Ftr-Intcp Sq	S-2C-35	Westh-27
Gtr-Pittsburgh Aprt, Pa	500 Air Def Gp	S-2C-35	Westh-30

Part II. Units Scheduled to Receive F-86D Flight Simulators.

Station	Accountable Unit	Del Dt	Type	Mfg & Pri
Charleston, S.C.	444 Ftr-Intcp Sq	May 55	S-2C-35	Westh-31
Hanscom AFB, Mass	49 Ftr-Intcp Sq	Jun 55	S-2C-35	Westh-32*
Walker AFB, N.M.	321 Ftr-Intcp Sq	3/56		
Castle AFB, Calif	538 Ftr-Intcp Sq	3/56		
Griffiss AFB, NY	329 Ftr-Intcp Sq	3/56		
Palmdale AFB, Calif	322 Ftr-Intcp Sq	3/56		
Lockbourne, Ohio	484 Ftr-Intcp Sq	3/57		

*Simulators will, in all probability, be stored until simulator housing facilities become available at location.

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F-89D SIMULATOR As of 1 Dec 1954

(This Schedule Supersedes all Previous Schedules)

Mfg Priority	Station	Accountable Unit	Date of Delivery Simulator	Acft
5-	Minneapolis-St Paul	514 Air Def Gp	Delivered	O/H
8-	Presque Isle AFB	528 Air Def Gp	Dec 54	O/H
9-	Portland AFB	503 Air Def Gp	Dec 54	O/H
12-	Wurtsmith AFB	527 Air Def Gp	Jan 55	3/55
13-	Duluth Muni Aprt	515 Air Def Gp	Feb 55	4/55
10-	Kinross AFB	534 Air Def Gp	Apr 55	O/H
15-	Otis AFB	564 Air Def Gp	Apr 55	1/56
17-	Paine AFB	529 Air Def Gp	May 55	1/56
19*	Yuma Cnty Aprt	4750 Air Def Wng	Sep 55	____
20*	Griffiss AFB	27 Ftr-Intcp Sq	Nov 55	3/56
21*	Hamilton AFB	566 Air Def Gp	Jan 56	4/56
22*	Oxnard AFB	533 Air Def Gp	Mar 56	4/56
	Glasgow, Mont	545 Ftr-Intcp Sq	3/57	4/57
	Grand Forks, N.D.	544 Ftr-Intcp Sq	3/57	4/57
	Geiger Fld	520 Ftr-Intcp Sq	4/57	1/58

*F-89-H Flight Simulator

-To be modified to E-9 system

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F-102 SIMULATOR — As of 1 Dec 1954

(This Schedule Supersedes all Previous Schedules)

Station	Accountable Unit	Date of Delivery Simulator	Acft
George AFB	94 Ftr-Intcp Sq	3/56	1/57
Klamath Falls, Ore	98 Ftr-Intcp Sq	3/56	1/57
Otis AFB	58 Ftr-Intcp Sq	4/56	2/57
Wurtsmith AFB	63 Ftr-Intcp Sq	4/56	2/57
Yuma Cnty Aprt	4750th Def Wng (Tng)	4/56	____
Suffolk Cnty AFB	75 Ftr-Intcp Sq	4/56	3/57
Truax Fld	432 Ftr-Intcp Sq	1/57	3/57
K. I. Sawyer, Mich	327 Ftr-Intcp Sq	1/57	3/57
Griffiss AFB	329 Ftr-Intcp Sq	1/57	3/57
Hamilton AFB	63 Ftr-Intcp Sq	1/57	3/57
Truax Fld	456 Ftr-Intcp Sq	2/57	4/57
Benzie Cnty, Mich	546 Ftr-Intcp Sq	2/57	4/57
Minot AFB	483 Ftr-Intcp Sq	2/57	4/57
Seymour Johnson AFB	482 Ftr-Intcp Sq	2/57	4/57
Portland Intl Aprt	497 Ftr-Intcp Sq	3/57	4/57
Suffolk Cnty AFB	331 Ftr-Intcp Sq	3/57	1/58
Otis AFB	437 Ftr-Intcp Sq	3/57	1/58
McChord AFB	317 Ftr-Intcp Sq	3/57	1/58
Travis AFB	413 Ftr-Intcp Sq	4/57	1/58
Dover AFB	46 Ftr-Intcp Sq	4/57	2/58
Langley AFB	48 Ftr-Intcp Sq	4/57	2/58
McGuire AFB	5 Ftr-Intcp Sq	4/57	2/58
New Castle AFB	96 Ftr-Intcp Sq	4/57	2/58

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Station	Accountable Unit	Date of Delivery Simulator	Acft
Wurtsmith AFB	324 Ftr-Intcp Sq	1/58	2/58
McChord AFB	465 Ftr-Intcp Sq	1/58	2/58
Ft Meyers, Fla	4756 Tng Gp (Def)	1/58	___
Andrews AFB	95 Ftr-Intcp Sq	1/58	3/58
Dover AFB	76 Ftr-Intcp Sq	1/58	3/58
New Castle AFB	332 Ftr-Intcp Sq	2/58	3/58
Bunker Hill, Ind	498 Ftr-Intcp Sq	2/58	3/58
Great Falls AFB	29 Ftr-Intcp Sq	2/58	3/58
McGuire AFB	2 Ftr-Intcp Sq	2/58	4/58
Kansasville, Wis	42 Ftr-Intcp Sq	2/58	4/58
Niagara Falls Muni Aprt	47 Ftr-Intcp Sq	3/58	4/58
K. I. Sawyer, Mich	519 Ftr-Intcp Sq	3/58	4/58
Larson AFB	31 Ftr-Intcp Sq	3/58	4/58

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ADOOT-C

26 Jul 1954

SUBJECT: (Uncl) Simulators vs. TF-102's

TO: Commander
Air Materiel Command
Wright-Patterson Air Force Base, Ohio

1. It is the understanding of this Command that some question has been raised concerning the need for both the F-102A Flight Simulators and TF-102's, from a monetary savings standpoint.

2. The Air Defense Command has a definite requirement for both the TF-102 and the F-102A Flight Simulator. This position was established with due consideration given to the need for economy, as well as to the requirements of the air defense mission. It was concluded that the extra cost of supporting both the TF-102 and the simulator would be more than compensated for by the resultant savings in materiel which would have been lost in aircraft accidents. This, coupled with the fact that the quality of training is greatly increased, outweighs any disadvantages involved in operating both types of equipment.

3. In support of the above position, outlined in this paragraph are important training functions of the TF-102 and the F-102A Flight Simulator. These functions cannot be adequately duplicated by the other.

a. Flight Simulator. The simulator is a procedure trainer and is extremely valuable in teaching aircraft operating procedures, both normal and emergency.

(1) The prime consideration at this point is the important contribution to safety. Emergency procedures, to include those for flame-outs, engine fires, engine malfunction, hydraulic failures, electrical failures, bail-out procedures, etc., can be duplicated and practiced until the pilot is thoroughly familiar with them. This results in pilot confidence and skill which will enable him to bring an aircraft down safely under conditions which otherwise might result in an aircraft accident. These emergencies cannot be adequately or safely duplicated in the aircraft for training purposes.

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(2) Normal operating procedures can be taught at a substantial savings in superviser and student time, as well as in the cost of operating the equipment. The simulator will permit more effective utilization of students' training time for familiarization and teaching of basic procedures.

(3) In combat readiness training, the student can be taught basic operating procedures of the fire control system in the simulator. With this background his radar training in the TF-102 can begin with practical application, thus resulting in a savings in operating costs of the TF-102.

b. TF-102. Although the value of the simulator is realized, it cannot substitute for airborne practice under hooded conditions nor the checking of student pilots in practical application. TF-102's are needed in addition to simulators for the following reasons.

(1) The pilot must receive realistic training under supervised hooded conditions. The simulator provides familiarization and teaches procedures but does not provide the realism necessary to duplicate actual flight. Also, in an F-102, the necessity of having to keep a visual check on the target precludes attaining the proficiency necessary to complete a combat attack under conditions of zero visibility. It is a requirement that pilots have practical supervised training in the proper utilization of the system to include attacks against targets employing ECM, chaff, and evasive action.

(2) From a safety standpoint, a pilot may develop considerable skill in procedures in a simulator but lack the skill and confidence necessary to safely fly the interceptor. In the interest of economy, as well as safety, this phase of training should be checked, taught, and developed in the TF-102. To allow a pilot to go directly from a simulator to an F-102 would be to invite accidents which the Air Force can ill afford.

4. Attached hereto (Attachment #1) are copies of a TF-102 staff study which was presented to Headquarters USAF on 15 Feb 1954 by Major General F. H. Smith, and, also, copies of a message (Attachment

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#2) which was dispatched to Headquarters USAF on 14 April 1954, as further justification for our requirement for TF-102's. The TF-102's flying requirement specified in paragraph 5 of Attachment #2 was based on the assumption that simulators would be available. If simulators were deleted from the program, the following would result.

a. A requirement for additional flying time in TF-102's in order to accomplish combat readiness training.

b. An increase in accident potential due to the lack of the ideal emergency procedures training afforded by the simulator.

c. A substantial increase in the length of calendar time required to accomplish combat readiness training.

5. In summary, it is the Air Defense Command position that the F-102A Flight Simulator will be needed as a procedure and familiarization trainer, and the TF-102 will be needed as an application trainer. Each is required to supplement the other in the interests of economy, as well as quality of air defense.

FOR THE COMMANDER:

2 Incls
1- Staff Study
2- Msg to USAF

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

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ADCOT-C 6619. For Dir of Rqmts, Air Def Div, and Dir of Opns. Info Dir of Mgmt, Analysis Sv. 1. IAW par 4, AFL 150-10, 2 Feb 53, req Part B, Table II, AFL 150-10, 27 Sep 51, be amnd to auth 4 TF-102 two place advance tnrs per ADC F-102 interp sq. 2. This comd has recognized the need for a tnr whereby the plt can be instr and obsr while practicing and have the safety of flt prov by a qual supv in the same acft. In the past the T-33 has been a valuable tnr but w/the advent of lead collision cmbt fire con sys and supersonic acft the T-33 tnr no longer can satisfactorily meet our rqmts. Our primary need now and in the future is for a transition and sys tnr w/characteristics and performance comparable to that possessed by the acft such as w/b offered by the TF-102. The need for a sys tnr has been very conclusively substantiated by the recent look-on tests conducted on F-94C and F-86D sqs. The value of simulators is not being overlooked as they are excellent for familiarization and teaching basic pro but cannot sub for abn practice under hooded cond. This abn practice is essential to

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give plts confidence in their equip and the ability for proper utilization of the sys against tgts employing ECM, chaff and evasive action. 3. The rqmt for 4 TF-102 acft per F-102 sq is primarily two-fold. They are first needed during the F-102 conversion program as outlined in the TF-102 stf study presented to Hq USAF on 15 Feb 54 by Maj Gen F. H. Smith, VC, ADC. Secondly there are the continuing yearly rqmts after the unit has converted. 4. W/ref to unit conversion, experience has proven, as in the case of the F-86D, that ATRC cannot prov the large no of plts needed for mass conversion. F-86D plts were not rec in any quantity fr ATRC until acft had been in this cmd for 6 mo and even this was at the expense of quality. At no time during the entire first yr was the rqmt of 1 F-86 ATRC trnd plt per auth and aval F-86D, met by ATRC. To prov an eff air def and at the same time convert units to a newer and more advanced type intcp, the ADC has no alternative but to handle this mass conversion w/i its own structure. The stf study

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referred to in par 3 above outlines the rqmnt pro for this conversion. Basically the pro would be as fols: a. En fltr intcp sq would rec 16 TF-102 prior to the receipt of the first F-102. During this pd the sq being converted would concentrate on bringing every aval plt up to a degree of tng whereby the step into the cmbt version would be effortless. b. Upon receipt of the F-102s in the using orgn, 12 of the TF-102s would be moved into another sq scd to convert and 4 TF-102 would be retained by the original sq. 5. Subsequent to compl unit conversion our rqmts for TF-102 tng will amount to a min of 1926 hrs of indoc and cmbt ready tng per yr based upon 37 plts per sq. This rqmt includes transition and cmbt ready tng, sys proficiency tng, sys proficiency ck and instr pro ck. The fol progrm is based upon a continuing yearly rqmt after the unit has converted. a. Unit indoc and initial cmbt ready tng. A min of 150 hrs per yr w/b utilized in unit indoc and initial cmbt readiness tng. This is based on a conservative

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CONFDR ADC

CFHL DNGD

ABCDT-C 6619.

estimate of a sq repl rate of 10 plts per yr. Ea plt will require a min of 15 hrs in a TF-102 in the case of checking out in the unit pro and training and becoming cmbt ready. This rqmt is substantiated as follo: (1) Due to the increased complexity of the equip and flt characteristics of delta wg acft, it is nec to insure that the plt possesses the capability of safely handling the acft. This can only be done in a tng w/the same configuration as the UE aqft and is essential to avoid costly acft accidents. This necessity is pointed up by the extremely difficult situation which now faces our F-86D sq comtrs. (2) W/ref to initial cmbt readiness tng, our regn hold unit confrs resp for such tng since ADC does not have the capability of meeting these rqmts. Considerable add fly time is required over and above that given by ADC. Experience has proven that, in the case of becoming cmbt ready, plts must be given demonstrations in the use of the equip and in add his progress must be checked periodically. The present

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CONDR ADC

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day method, w/o the two place trr, is both costly and time consuming.

b. Sys Tng. 3 hrs per mo per plt for an over-all total of 1332 hrs per

yr w/b required to keep the proficiency of plts at an acceptable level. This

trng is nec to enable plts to practice intcps through Phase III while under

the hood against varying tgt conditions such as chaff, ECM, evasive action

and multiples. The nec of having to keep a visual ck on the tgt, while fly

single place intcp, precludes attaining the proficiency nec to compl a cabt

attack under conditions of zero visibility. c. Sys Proficiency Ck. In

order to maintain the level of cabt eff required of a cabt unit, the level

of proficiency must be constantly checked. A min of 1.5 hrs per plt every

2 mo for a total of 333 hrs per yr is required. This mgmt is over and above

the sys tng mgmt and is essential to insure std and also to insure that an

accepted level of cabt proficiency is being maintained. d. Instr pro ck

in UE acft. 1.5 hrs per plt bi-annually is required for a total of 111 hrs

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OPNL INSTR

AFOCT-C 0619

per yr. Since the plt must be able to get the F-102 to the tgt and back to base during all wea conditions, it fol that his ability to do so should be checked in a TF-102. The gap between the flt characteristics and performance of a delta wg A aft and present day J turs is too great to allow for a comparable instr ck to be given in a straight wg J tur. 6. The ADC over-all rqmt for TF-102 remains as outlined in our stf study ref above. However as stated in our study this comd is agreeable to any plan which prov 16 TF-102s 2 no prior to conversion w/4 turs remaining in an sq after receipt of subt article. In this respect plan II presented to this hq by Col A. S. Kelly, Air Def Div, AFDRQ, is acceptable w/minor changes, in view of increased deals of his alternative Plan 'I'. Based on production costs whereby 5 F-102s can be purchased in place of 3 TF-102s recommend that Plan II be changed as fol: a. Reduce 1 Qtr FY 57 TF-102s fr 10 to 8 and increase F-102s fr 15 to 22. b. Reduce 2 Qtr FY 57 TF-102s fr 9 to 6 and increase

Mem a-6

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0619

R-102s fr 96 to 148. c. Reduce 3 Otr FY 57 TF-102 fr 148 to 132 and increase F-102 fr 255 to 282. d. Reduce 4 Otr FY 57 TF-102 fr 198 to 164 and increase F-102 fr 400 to 457. This plan delays the equip of the first F-102 sq for aprox 2 mo and builds our tac units to full UE at a slower pace. Units however have 19 or more F-102s at all times. FY 58 equip cannot be fwd at this time as this hq has not rec programming guidance on no of F-102 sq to be assgd ADC during this time pd.

Paraphrase not required
see crypto section
before declassifying

M/R: Not required

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ADC HQ Form 1

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OFFICE OF ADC PROJECT OFFICER
EDWARDS AIR FORCE BASE
Edwards, California

205

9 September 1954

SUBJECT: Proposed TF-102A Production Schedule

TO: Commander, ADC
ATTN: Director of Plans & Requirements
Ent Air Force Base, Colorado

1. The following production schedule has been proposed by Weapons System Project Office (F-102), Headquarters AMC, for the TF-102A. As of this date, the proposal is unofficial and has not been approved. Included also is the presently approved TF/F-102A schedule from January 1955 to March 1957 for a comparison with the proposed trainer schedule.

	1954	1955											
	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Present F-102A	2	1	1	1	1	2	3	3	3	3	3	3	3
Present TF-102A									1			1	1
Proposed TF-102A									1			1	1

	1956											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
F-102A	3	3	3	3	3	5	8	12	17	23	30	38
TF-102A	2	3	3	3	3	3	5	8	12	16	16	16
Proposed TF-102A	1	1	1	2	2	2	2	2	2	2	3	5

	1957			
	Jan	Feb	Mar	Apr
F-102A	48	58	62	
TF-102A	16	16	16	
Proposed TF-102A	8	12	16	

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Office of ADC Proj Off, Edwards AFB, Calif., Subj: Proposed TF-102A Production Schedule

2. As of the present time no FY 1955 procurement money has been released for the TF/F-102A program. It is understood that the FY 1955 monies will not be released until the flight data from the "Hot rod" F-102A with the improved nose, improved canopy, "coke bottle" fuselage, aft body (yellow canary) fillet and synthetically reduced weight, has been received. As the "Hot rod" is scheduled to be flown sometime in late 1954, it is the opinion of the AMC side of the Weapons System Project Office (F-102) that the FY 1955 monies will be released about February 1955.

3. Due to the fact that the TF-102A utilized most of the basic configuration of the F-102A, it is felt that the FY 1955 monies cannot be released on the TF-102A prior to the release of funds for the F-102A. From a continuity standpoint on both programs, funds for both aircraft will be released at the same time.

4. Convair requires at least 19 months lead time on the F-102A and 21 months lead time on the TF-102A. A quick look at the calendar shows you that the FY 1955 funds would have to be released immediately if the production buildup (July 1956) of the TF-102A is to be met on the presently approved TF production schedule. If the FY 1955 funds are not released until February 1955, then a production gap of four (4) months will result in the production of TF-102's. In order to eliminate this gap, AMC has proposed the stretch-out of the production schedule as presented in Par. 1, above.

5. The presently approved production schedule for TF/F-102A aircraft fits nicely into the plans for conversion of ADC Squadrons to F-102A aircraft. This is due to the fact that TF-102A's will be received at least concurrently with the buildup and receipt of F-102A's. If the proposed TF-102A schedule is approved, our present conversion plan will suffer since a substantial number of F-102A's will be manufactured and received prior to the production buildup of the TF-102A and receipt of this trainer into our inventory.

6. This office has requested the Weapons System Project Office (F-102), Headquarters WADC and AMC to re-examine the TF-102A production problems in an effort to keep the TF-102A production schedule as presently approved. Your Headquarters will be kept advised of any new developments in regards to this subject.

/S/ ROYAL N. BAKER
Colonel, USAF
ADC Project Officer

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From: COMMANDER, ADC, ENT AFB, COLORADO SPRINGS, COLO 16 Jun 54

To: CHIEF OF STAFF, HQ USAF, WASHINGTON 25, D. C.

Info: COMMANDER, EADF
COMMANDER, 30TH ADIV

ADODO 1027. Your message AFOOP-OP-D 5717, dated 7 May 1954. Part I. It should be carefully pointed out to the Secretary that our recommended Fighter Interceptor Squadron deployments are the result of long planning and any radical change of plan inevitably starts a chain reaction which may well degrade the whole system. Also, it is anticipated that a concession in the Chicago area will bring about demands from other localities, such as Madison, Minneapolis, Portland, and Wilmington. Part II. Detailed planning and war gaming by this Headquarters and JADB indicates that the FIS strength in the northeast U. S must be maintained at a ratio to rest of U. S. at least as high as now exists. This dictates retaining the two O'Hare squadrons in the Great Lakes area. From a purely tactical viewpoint the two FIS at O'Hare are for defense of Chicago-Gary. They are the last ditch intercepts in defense of these critical targets. FIS at K. I. Sawyer, Traverse City, Kinross, etc., are periphery defenses to provide depth to the defense for the northeast U. S. Detailed war gaming shows most probable routes of attack to Chicago are from NW quadrant. Thus, if we are forced from O'Hare the movement of these

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ADODO 1027.

two units should be in a northwesterly direction but close enough to provide protection against attack on Chicago-Gary from any direction. A movement in any other direction, such as to Muskegan, or doubling up on existing or programmed ADC Bases, will degrade defense of Chicago-Gary to an unacceptable degree. Part III. It is therefore recommended that: a. the decision to evacuate the FIS from O'Hare be reconsidered. b. If decision to evacuate remains unchanged, a new two squadron base be built within a northwesterly quadrant from Chicago not to exceed 70 nautical miles distance.

COMMANDER, ADC

Copies to:
General Crabb
General Roth
General Macrum
Colonel Horton
Colonel Oldfield
Colonel Maxwell

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

207

1 October 1954

AIR DEFENSE COMMAND COUNCIL MEETING REPORT

I. Subject considered.

A. FIGHTER PROGRAM.

1. A meeting of the Air Defense Command Council was held at 1000, 1 October 1954, in the Air Room.

2. The following members were present:

Major General George F. Smith, Chief of Staff
Brigadier General Kenneth P Bergquist, DCS/Operations
Brigadier General Marshall S. Roth, DCS/Materiel
Brigadier General Robert S. Macrum, DCS/Comptroller
Colonel John H. McCann, representing DCS/Intelligence
Colonel John C. Horton, DCS/Personnel
Colonel Delbert H. Hahn, representing the Inspector General

The following interested persons were present:

Colonel Charles R. Bond, Jr., Asst DCS/O
Colonel H. H. Green, O&T
Colonel D. M. Hamilton, D/M
Colonel B. I. Mayo, O&T
Lt Colonel H. J. Mazur, Asst for Programming
Lt Colonel S. T. O'Dell, Asst for Programming
Major B. E. McKenzie, Asst for Programming
Major R. D. Littlejohn, O&T

3. Fighter Program. Colonel Mayo explained to the Council that this was one of a series of presentations which are made to the council on the Fighter Program conversions and movements into new bases. He stated that the last briefing was held last March and since that time, certain changes have been dictated by Hq USAF and other considerations, thus necessitating presentation of the revised program for council approval. He went on to state that the approved program must bein Washington next week for

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inclusion in the new programming documents. For information of the Council members, it was pointed out that the program being presented was extended one year further into the future (through FY 58) than programs heretofore presented. At this point, Colonel Mayo turned the formal presentation over to Major Littlejohn. As a prelude to the briefing, Major Littlejohn explained that the factors, over which we have no control, but which form the foundation for programming actions, were:

a. Number of aircraft programmed by USAF.

b. Availability of base facilities.

c. Deployment of ZI units to and from overseas.

d. Special projects, such as "Pull Out," "Hop Up," etc.

By the use of a large map of the United States, Major Littlejohn gave a running account of new activations, conversions, deployments and equipping of squadrons from the current time period through FY 1958. A number of these programming actions were discussed as follows:

a. While going through the actions for the 2d Qtr, FY 55, Major Littlejohn stated that we had been directed to prepare to move one squadron out of O'Hare by 1 November and that EADF had recommended Wurtsmith for the proposed move. Further, that we concurred in EADF's recommendation. In this connection, General Bergquist stated that we had not yet received a directive from USAF ordering us to make such a move, and that we should not include this action in our programming data. He went on to state that the original idea was to merely prepare a plan for this action in the event we are forced to do it. He emphasized that we must remain constant in our position that any move out of O'Hare will seriously degrade the defense of the Chicago-Gary area. Council members agreed that a move from O'Hare should not be reflected in the program at this time.

b. The council approved activation of the 716th Sq at Sioux City in lieu of Perrin during 3d Qtr, FY 55.

c. At the end of FY 55, Air Defense Command will have:

41	86D Squadrons
7	89D Squadrons
10	94C Squadrons
58	Total ADC Fighter-Interceptor Squadrons

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d. At the end of FY 56, Air Defense Command will have:

44	86D Squadrons
5	89D Squadrons
8	89D/H Squadrons
9	94C Squadrons
1	F-102 Squadron
67	Total ADC Fighter-Interceptor Squadrons

e. The following recommended changes in the FY 56 program were approved by the Council:

(1) Activate 324th at Ethan Allen in lieu of Minot, since Minot will not be ready for occupancy until 4th Qtr, FY 57.

(2) Activate 498th at Bunker Hill in 3d Qtr, FY 56 instead of activating at Griffiss and moving the 27th Sq to Bunker Hill.

(3) Reverse activation sequence of Geiger and Ethan Allen to preclude having three squadrons at Geiger for one quarter.

(4) Convert Wurtsmith to F-89D/Hs in 3d Qtr, FY 56.

One Otis Sq to F-89D/Hs in 3d Qtr, FY 56.

Griffiss to F-89D/Hs in 3d Qtr, FY 56.

Oxnard and Paine to F-89D/Hs in 4th Qtr, FY 56.

Kinross to F-89D/Hs in 4th Qtr, FY 56.

Minneapolis-St Paul to F-89D/Hs in 4th Qtr, FY 56.

f. During the 3d Qtr, FY 57, Major Littlejohn showed the F-102 Sq (331st) at Suffolk being deployed to Alaska and ADC receiving a squadron (18th) back from Alaska which we equip with F-102s at Suffolk. General Smith voiced disapproval of this action, stating that Suffolk would be left with an insufficient air defense capability in view of the amount of training which would be going on at that station. In reviewing the FY 57 portion of the program, the following actions were scheduled for Suffolk:

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1st Qtr, FY 57 - 75th Sq converts to F-102s.
2nd Qtr, FY 57 - 75th Sq deploys to NEAC.
2nd Qtr, FY 57 - 59th moves from NEAC to Suffolk and is equipped with F-102s.
2nd Qtr, FY 57 - 331st converts to F-102s
3rd Qtr, FY 57 - 331st deploys to Alaska
3rd Qtr, FY 57 - 18th moves from Alaska to Suffolk and is equipped with F-102s

General Smith went on to state that with the amount of training involved in the above actions, there would not be a single squadron at Suffolk qualified for air defense. He emphasized that this was an extremely important air defense base and that he could not approve that portion of the program. General Bergquist stated that the reason for this programmed action was because Hq USAF directed that we deploy F-102 squadrons to Alaska and NEAC. The comment was made that deploying F-102 squadrons overseas so soon might result in the same problems we had with the F-86D. Col Bond suggested that we propose to Hq USAF that we not deploy F-102 units to NEAC and Alaska and deploy F-89 units instead. Council members agreed that this point should be taken up with Hq USAF next week. It was also agreed that if we must send F-102s overseas, it would be better to take a squadron out of Otis first.

g. At the end of FY 57, Air Defense Command will have:

36	86D Squadrons
1	89D Squadron
10	89D/H Squadrons
7	94C Squadrons
15	102 Squadrons
69	Total ADC Fighter-Interceptor Squadrons

h. The following recommended changes in FY 57 program were approved by the Council:

(1) Deploy Hamilton to Spain instead of Larson, thereby saving a move from Hamilton to Larson.

(2) Activate at Glasgow, Grand Forks, and Benzie County in lieu of Portland, Griffiss, and Wurtsmith, respectively, thereby saving three moves of established squadrons.

(3) Move 470th from George to Palmdale in 1st Qtr, FY 57.

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(4) Convert following bases to F-89D/Hs:

Portland in 1st Qtr, FY 57.

Langley in 2d Qtr, FY 57.

Otis in 2d Qtr, FY 57.

Glasgow in 4th Qtr, FY 57.

Grand Forks in 4th Qtr, FY 57.

Benzie County in 4th Qtr, FY 57.

i. At the end of FY 58, Air Defense Command will have:

23	86D Squadrons
10	89D/H Squadrons
36	102 Squadrons
69	Total ADC Fighter-Interceptor Sqs

j. Considering the fact that numerous changes will undoubtedly be necessary in the FY 58 program, the Council approved that portion of the presentation.

4. There being no further business to come before the Council, the meeting adjourned at 11:45.

GEORGE F. SMITH
Major General, USAF
Chief of Staff
(Actg Chairman, ADC Council)

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From: HQ EADF, STEWART AFB, N. Y. 14 July 1954

To: COMMANDER, ADC, ENT AFB, COLORADO SPRINGS, COLORADO

/CONFIDENTIAL/ EAOPR-2 C774. Report of EADF Air Base Review Committee on Air Base Suitability. This message in two parts. Part I. EADF Owned Bases. Reference following list, it is recommended that future UPN deployment incorporate withdrawal from the first five listed bases but retention of the remaining listed bases.

O'Hare International Airport, 1 mile from Des Plaines, 16 miles from Chicago. Transfer of two Air National Guard Squadrons equipped with Jet aircraft to O'Hare and diversion of portion of Chicago Midway civilian traffice to O'Hare will increase the total number of takeoffs and landings to 700 daily. This will create over-saturation of EFC control facilities and possible conflict between Civilian Agencies, Air National Guard, and Air Force Units. Additionally four small civilian airports are located within two to four miles of O'Hare resulting in overlapping traffic patterns with resultant hazards. Quit Claim Deed between the Air Force and City of Chicago states that Air Force has right to use the airport at all times in common with others, but that the CAA can limit this use to not more than 25 percent of airport capacity. Nothing in the deed requires USAF to pay proportionate share of cost or maintenance. Airport is presumably maintained to CAA standards which are acceptable for conventional aircraft

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EAOPR-2 C774 .

but not for Jet aircraft. City will not sign a formal document permitting the Air Force to maintain the field at its own expense but so far has not objected to the performance of such maintenance when it is necessary to eliminate a hazard. CAA proposal for handling additional civilian and military traffic at O'Hare is to install additional navigation aids to the northwest and west. This action will close the uncontrolled area which is now used for IFR scramble and recovery at O'Hare. Airport facilities granted in Quit Claim Deed are being utilized to the maximum by ADC Units and programmed arrival of ANG Units, 20 C-46 aircraft of AFRCTC and 5 C-47 aircraft of Air Transport Squadron will require additional space and facilities rendering the provisions of the Quit Claim Deed inadequate.

Greater Pittsburgh Airport, four and one-half miles from Coraopolis, ten miles from Pittsburgh. High noise level exists during runup and takeoffs which if continued may cause deterioration of relations with division users of the airfield. Aerial congestion around the field is extremely heavy with little or no local air space available for instrument flights, test flights or acrobatics. Traffic is of course particularly heavy during IFR. Only minimum instrument training is possible. Continued increase in civilian and military traffic is expected with resultant pressure on the part of civilian operators and local residents to have Air Force move from field.

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Niagara Falls Municipal Airport, five miles from Niagara. Jet instrument let down for Niagara is complicated due to maze of civilian airways directly over and surrounding the base. In addition there is a radio tower 951 feet high directly west of the runway 27R/only Jet runway available which is a hazard to all weather flying. Plans call for the construction of a TV antenna 941 feet high south of the airfield. Niagara Defense Group had offered no objection to construction of this tower except those listed in AF Reg 86-3. Station WGR in Buffalo is the applicant for the tower and is very influential in the Buffalo vicinity. Due to local influence of Station WGR and desirability of maintaining good relations in the area the Defense Group is withdrawing their objection to the proposed construction and recommending waiver of AFR 86-3 to allow construction to proceed. A serious potential hazard exists in the location of the alert hangars which directly face the Bell Aircraft Corporation plant. Several thousand employees will be concentrated in the direct line of fire when the aircraft are in the alert hangars, starting up and taxiing straight ahead to the scramble runway. Even though all precautionary measure known are taken the possibility of rockets firing accidentally must inevitably be realized by the Bell Corporation and may eventually have some effect on the morale and efficiency of that organization.

New Castle County Airport, five miles from Wilmington, Del. The primary instrument approach runway is over a highly congested

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highway intersection and a filling station is in a position that is presently interfering with the ILS glide path. Other runway approaches pass over densely populated areas and in one instance so close to civilian houses that red obstruction lights have had to be placed on their roofs to facilitate night operations. To combat adverse opinion traffic patterns are designed as much as possible to avoid populated areas and an aggressive campaign of civilian indoctrination is pursued. However, the basic problems of operating from a civilian airport in a congested housing area will continue to exist.

Truax Field, two miles from Madison, Wisc. Complaints have been received in the past regarding noise of Jet aircraft over Madison. Problem was resolved for present by indoctrination program through newspapers, luncheons, meetings at service clubs and conducted tours of the base for civilian VIP. Operations conducted from a civilian field near a major city will continue to be a problem as at other similarly located bases. Additional problem at Truax involves approach ends of runways 22, 27 and 31 being too close to highway 51. Problem again temporarily solved by closing runways to Jet aircraft except for emergency.

Ethan Allen AFB, three miles from Burlington. ILS and ground controlled approach brings aircraft over Winooski, Vt. at an altitude of 400 feet. This presents a hazard, however,

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EAOPR-2 C774.

relations have been excellent with local community. A recent protest by a small group of people was quickly suppressed by Mayor of Winooski. Mayors and civilians of all surrounding communities have been briefed on Jet operations from field and have expressed desire for continued operation of Air Force from Burlington.

Youngstown Municipal Airport, eleven miles from Youngstown. Excellent relations exist with local community and no particular hazard, noise, joint use of air space problems exist at the present.

Selfridge AFB, three miles from Mt. Clemens, eleven miles from Detroit. Takeoff to the west necessitates low altitude climb over Mt. Clemens jeopardizing operation of mink farms in area. Pilots have been instructed to make right turn as soon as practicable after takeoff.

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HEADQUARTERS
500TH AIR DEFENSE GROUP
Greater Pittsburgh Airport
Coraopolis, Pennsylvania

209

OT

30 July 1954

SUBJECT: Operational Restriction of Flying Facility

TO: Commander
4708th Defense Wing
Selfridge Air Force Base
Michigan

1. Under provisions of paragraph 5b, AF 60-23, it is requested that transient military jet traffic at Greater Pittsburgh Airport be restricted to those jet aircraft on official business only during IFR conditions between the hours of 1600 EST and 2100 EST daily.

2. Justification for this request is as follows:

a. Greater Pittsburgh Airport has experienced incidents reflecting adversely on the United States Air Force due to the arrival of transient IFR jet aircraft at this base during peak periods of civil air traffic, e.g., on 19 March 1954, seven transient T-33 aircraft consumed more than one hour in accomplishing IFR letdowns to the airfield. This resulted in a recorded eleven hours, 49 minutes of delay to other aircraft in the Pittsburgh area. This occurrence is adequately contained in a letter Headquarters USAF, AFOOP-OC-FL, dated 19 May 1954, subject: "Military Jet Training Activity," which was forwarded from your headquarters.

b. A permanent method of identifying peak civil air traffic periods at this base would be provided by publishing the requested restriction in Radio Facilities Charts.

c. It is considered that the air traffic at this base is peculiar in that it is not analogous to that at any other joint/use installation, i.e., a high density of civil air traffic combined with all weather jet operation. With this situation existing, the imposition of transient IFR jet traffic during peak traffic loads should be avoided to prevent recurrence of dangerous incidents.

d. Repetition of an incident similar to that referred to in paragraph 2a above would subject the United States Air Force to

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criticism which could be avoided in addition to presenting an undesirable accident potential.

3. It is recognized that the imposition of any restriction is undesirable; however, it is felt that the restriction requested would prove to be in the best interest of the United States Air Force and would represent a minimum decrease in the transient service presently provided.

WALLACE B. FRANK
Lt Colonel,
Commander

WC (30 Jul 54) 1st Ind 6 August 1954

HEADQUARTERS, 4708TH DEFENSE WING, Selfridge Air Force Base, Michigan

TO: Commander, 30th Air Division (Defense), Willow Run Air Force Station, Belleville, Michigan

1. I concur with the request contained in paragraph 1, basic letter.

2. Although this headquarters is cognizant of the Air Force policy concerning "Official Business Only" restrictions, the traffic problem peculiar to Greater Pittsburgh Airport is believed to be of sufficient magnitude to warrant reconsideration.

3. Recommend approval of the requested restriction at Greater Pittsburgh Airport.

G. R. GREENE, JR.
Colonel, USAF
Commander

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Hq 500th ADGp OT Subject: - Operational Restriction of Flying Facility

DOOFO (30 Jul 54) 2d Ind 16 August 1954

HQ 30TH AIR DIVISION (DEFENSE), Willow Run Air Force Station, Belleville, Michigan

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. Greater Pittsburgh Airport is in a high density traffic area of such proportions that IFR scramble and recovery training in accordance with ADCR 55-28 is affected normally, and is practically curtailed during peak periods of traffic.

2. Recommend approval of the restrictions as requested.

FOR THE COMMANDER:

RICHARD A. HOKELAHHT
WOJG USAF
Asst Adjutant

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Hq 500th ADGp OT Subject: Operational Restriction of Flying Facility

EAOOT-SF (30 Jul 54) 3d Ind 23 August 1954

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, New York

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

1. Forwarded as a matter for your consideration.

2. In view of the incident of 19 March 1954, paragraph 2a, basic letter, and the conditions known to exist at Greater Pittsburgh Airport insofar as traffic density is concerned, it is not deemed unreasonable to effect, during IFR conditions, an "official business only" period for the five hours of peak traffic density. Such action would minimize the accident potential of the Pittsburgh Area during this peak density period and eliminate undue criticism from civilian agencies because of traffic delays.

3. This headquarters recommends approval of request outlined in paragraph 1, basic letter.

FOR THE COMMANDER:

J. W. FOUNTAIN, JR.
Major, USAF
Asst Adjutant

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Hq 500th ADGp, OT, Subject: Operational Restriction of Flying Facility

ADOOT-G (30 Jul 54) 4th Ind 11 September 1954

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

TO: Director of Operations, Headquarters USAF, Washington 25, D. C.

1. Recommend approval.

2. The curtailment of jet traffic between the hours of 1600 EST and 2100 EST daily, if IFR conditions prevail, to "Official Business Only" will improve the control of air traffic in this dense area.

FOR THE COMMANDER:

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18 October 1954

General Thomas D. White
Vice Chief of Staff, USAF
Headquarters USAF
Washington 25, D. C.

Dear Tommy:

Several months ago Secretary Talbott visited this Headquarters. During a discussion of some of our more critical airbase problems, the Secretary stated that he had firmly decided that the Air Force would evacuate its fighter-interceptor squadrons from O'Hare (Chicago) at some time in the future -- the quicker the better. Our arguments on the defense side of the picture failed to sway his decision. During a visit of Mr. Douglas, the Under Secretary, earlier this week, this question again came up for discussion, so it occurred to me that I should give you and Nate a brief report on actions we have taken toward implementing the Secretary's decision.

Your message, AFOOP-OP-D 5717, dated 7 June 1954, directed a study to determine the possibility of locating our fighter-interceptor units at existing bases outside the Chicago Metropolitan area. A very thorough study by this Headquarters determined that this proposal was not operationally feasible without seriously degrading the Chicago defenses and your Headquarters was advised accordingly. Because of the operational necessity to remain within the general Chicago area, a new base in the NW quadrant of a circle, 70 nautical miles in radius and centered at Chicago, was recommended and your Headquarters advised by message, ADODO 1027, 17 June 1954.

A survey team composed of representatives of your Headquarters, this Headquarters, Headquarters Continental Air Command, and the Corps of Engineers examined the area and selected a site which met the Air Defense requirements just to the south of Kansasville, Wisconsin. Funds to master plan Kansasville have been requested by message, this Headquarters, ADMIS P-2 1521, 30 August 1954.

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General Thomas D. White 18 Oct 54

As a result of the approval of the Kansasville site, our FY-1956 Public Works Program contained the required line items for a complete base in the amount of approximately $25,000,000. We have been advised that the Installations ADHOC Committee of your headquarters reduced this program to $16,921,000 to cover the long lead time items, the balance of the program to be included in the FY-1957 Public Works Program. This lesser amount will not provide the facilities necessary to permit full and effective operation of the two squadrons currently stationed at O'Hare. Under this type of programming, it is quite probable that the move from O'Hare cannot be accomplished until the early part of calendar year 1958.

It is my feeling that sufficient money should remain in the FY 1956 Program to permit the move of both squadrons at the same and earliest time, in order to comply with the Secretary's announced decision, and that the Kansasville site should be made operationally complete before any move is attempted which might degrade the Chicago defenses.

Despite the Secretary's strong feelings on this matter, and despite the political and "airline" pressures being applied, I must continue to recommend from an operational standpoint, considering always the question of air defense of this important area, that both squadrons remain at O'Hare until the new Kansasville base is ready for occupancy.

Sincerely,

B. W. CHIDLAW
General, USAF
Commander

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From: COMMANDER, WADF, HAMILTON AFB, CALIFORNIA 15 July 1954

To: COMMANDER ADC, ENT AFB, COLORADO SPRINGS, COLORADO

/UNCLASSIFIED? WDODO 11813. The following information is forwarded in compliance with letter from General Smith to General Todd dated 11 June 1954. Bases are listed in recommended order of priority for elimination as Jet Operational Bases. Portland, Geiger, McChrord, Hamilton, Paine, Oxnard. The following general criteria were considered in establishing this priority: noise, community relations, hazards to the civilian populace, future operations and expansion. As an elimination of the noise problem it is recommended that solutions other than the evacuation of bases be given continued consideration. Possible solutions might be: Use of engine mufflers for 5.0. and ground operations, use of JATO for take off in lieu of afterburners, construction of take off runways that by-pass congested areas even though they may be of little use for landings, establishment of SOPS calling for a high rate of climb immediately after take off rather than a long flat climb to build up speed.

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JUPMC 94A 11 July 1954

From: COMMANDER, WADF, HAMILTON AFB, HAMILTON CALIFORNIA

To: COMMANDER, ADC, ENT AFB, COLORADO SPRINGS, COLORADO

/SECRET/ SECTION OF TWO SECTIONS. UDOPR 4 C-1601. This confirms telecon between Colonel Shoup your Headquarters and Lt Colonel Abel this Headquarters, 17 July 54. The following is extracted from the minutes of committee meeting at which selection was made:

1. Portland International Airport. The undesirable attitude of the Port of Portland and the anticipated continued problems between the Air Force and the Port of Portland renders this base as the most undesirable station even upon the completion of the presently authorized construction. Further, upon the consummation of the present proposed leases and the completion of authorized construction, the land area made available to the Air Force is inadequate to permit the successful operation, and any necessary development of the ADC, AFRTC, and Reserve Units of the Air Force. Also taken into consideration is the potential flooding conditions. The following message received from the Commander, 503rd Air Defense Group at Portland International Airport was read and is quoted: D0286. 1A. Reference your message UDOPR 11392. Community relations have steadily improved as a result of intensified efforts to keep civilians in adjacent areas

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JUPMC 94A

abreast of our Air Defense Mission. This has been accomplished through: 1. Base indoctrination tours given to clubs and civic groups which include lectures on mission as well as a tour of physical plant. 2. Lectures and reciprocal aid agreement with volunteer Fire Department personnel of the adjacent areas. 3. Use of public information media. 4. Close liaison with the Port of Portland, Air and Ground National Guard, CAP, and Boy Scouts. 5. In an effort to forestall complaints by local civilians, and, as part of our noise abatement program, an instrument Jet departure plan has been devised which keeps the aircraft clear of the more heavily populated areas. Although this was publicized in local papers, there are still an average of three (3) telephone calls a day by local civilians complaining of the noise made by our afterburner equipped aircraft. During periods of relatively low ceilings (2000, to 6000,), the increased rate of complaining telephone calls raises sharply. "D0286. 1B. Foreseeable community relations problems include: 1. The disturbances caused by our Jet aircraft with the attenant noise factor. "D0286. 1C. No foreseeable problem. "D0286. 1D. This Air Base is situated at the junction of Amber Airways 1 and Red Airways 1. Both airways carry heavy traffic. Present Jet instrument departures are predominately to the southeast in an open quadrant of Portland low frequency range. This is necessary because of traffic congestion on the airways at intermediate altitude of 3 to 16,000, and the fact that CAA has

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difficulty diverting traffic on a minimum warning basis. This problem is currently under discussion with the appropriate agencies. There are no major problems on recovery procedure. 2. Geiger Field. The joint use of the airport facilities at this station makes it undesirable. The low revenue received by the city of Spokane from the commercial airlines and the Air Force precludes the city from accomplishing proper maintenance for the operation of Jet aircraft. It is estimated that a minimum of $1,000,000.00 would be required to properly reseal and overlay the instrument runway at Geiger Field. Due to the limited area available for the parking of WADF aircraft, it is not possible to expand the presently stationed at Geiger and/or constructing additional apron in an area that will result in a split operation of the WADF mission. The following Council, however, the Mayor, City Council, and the Press immediately lined in support of the Air Force and no complaints have been received since. Fairchild AFB has periodically been the target in the past on the nose factor (B-36 type aircraft). This Headquarters took the following action as soon as any criticism was evident: 1. Explained problems to Chamber of Commerce. 2. To Aviation Committee of the Chamber of Commerce. 3. Furnished Press an explanation with diagrams of GCA and traffic patterns, which was published. 4. Arranged training night flights in early evening hours.

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The above action was taken promptly and was considered most effective as complaints by civilians ceased. Part II. No foreseeable community relations problems exists unless the noise problem arises again, however, it is believed that this could be easily resolved. The long-term outlook is for excellent community relations in this area between the military and Spokane. Part III. Geiger Field presently is a municipal airport with Air Force, Navy, and National Guard Tenants on a lease basis. City airport bounds Geiger AFB on one side and Navy on the other side. Future expansion space is, therefore, very restricted on the flight line. Future expansions to a permanent two-squadron base is possible at Geiger by building an additional hangar and ramp in vicinity of present alert hangar. Other land exists on other side of the field, and city has in every case made additional land available where it was requested. Relations with City Airport Manager at Geiger, Air National Guard, Navy, and Civil Air Lines are considered excellent. Part IV. Tower at Geiger is CAA controlled and tower officials and operators have evidenced a sincere desire to cooperate in ADC Jet operations. They are appreciative of the Air Force problems and will give Air Force personnel priority when required on scrambles and let downs. (It was suggested that a comment be added this recommendation to the effect that recommendation was made based on installations, etc.; that there was nothing in community relations to warrant the recommendation, except that Geiger Field

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is three miles from town.) 3. McChord Air Force Base. The undesirable weather condition at McChord is the primary factor affecting the desirability of this station. Following is quoted message from the Commander, 567th Air Defense Group at McChord, and which was read: "MCDDO-1 7280. Reference message WDOPR 11392. A. Community relations exceptionally good, no major problems. B. No major problems foreseeable. C. Expansion to north limits by ground contour, to south by Ft. Lewis Military Reservation. No contemplated expansion to east or west beyond present base boundaries. D. Base is located on amber airway. 1. which is main north-south airway and encircled to west by blue airway 71, and VOR airway 3, Victor 23 and Victor 27. This area immediately surrounding the base is all designated as control area. These airways and the air traffic control area definitely interferes with desired scramble and recovery procedures. Continued development of the areas to the east and west and north of the base will increase noise nuisance problems which are presently of a minor nature. 4. Hamilton AFB. The unstable soil conditions in the runway area places Hamilton in the next order for undesirability. The runway at this station requires continual major reconstruction. Further, the present land available would prohibit any major expansion without the acquisition of additional land. 5. Paine AFB. The inability to economically extend the primary instrument runway at Paine makes this station next in line for undesirability of retention.

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From: COMMANDER, ADC 15 October 1954

To: CHIEF OF STAFF, HQ USAF, WASHINGTON, D. C.

Thru: COMMANDER, WADF, HAMILTON AFB, CALIFORNIA
COMMANDER, EADF, STEWART AFB, NEW YORK
COMMANDER, CADF, GRANDVIEW AFB, MISSOURI
COMMANDER, 4750TH AIR DEFENSE WING (WEAPONS)
COMMANDER, 4600TH AIR BASE GROUP, ENT AFB, COLO (COURIER)
YUMA COUNTY AIRPORT, YUMA, ARIZONA

(CONFIDENTIAL) ADMIS P-11 1819. Reference your message AFCIE-3I 46213, 1 October 54, subject, Selection of FY-56 Public Works Project Critical Items of Construction. The following is a list of critical items in the FY-56 PWP for ADC with brief statement of criticality and required Beneficial Occupancy Date. Hamilton AFB: Runway primary, south end of existing runway failing requires replacement for safe operation of aircraft, BOD January 56; Fire Station, C&S, crash station building structurally unsound, structural fire equipment one-half mile from crash station and not on line, BOD December 55: Crash boat crew station, existing facilities inadequate due to silting of channel, BOD February 56; land, fee, condemnation required for construction of crash boat station, BOD July 55. Klameth Falls AFB: Hazard removal, existing structure in clearance zone and presents hazard to aircraft, BOD January 56. McChord AFB: Storage, base rocket and assembly, required for safe assembly testing and storage of ready missiles use by F-102 aircraft, BOD January 57. Castle AFB: Taxiway,

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(CONFIDENTIAL) ADMIS P-11 1819 . Cont'd

apron, access, required for parking fighter aircraft, BOD December 55. Travis AFB: Storage, base, rocket, assembly, required for safe assembly testing and storage of ready missiles used by F-102 aircraft, BOD October 56. Yuma AFB: Lighting taxiway, provide safe apron access taxiway for night rocket firing by tactical fighter interceptor squadron, BOD April 56; OQ, 196 men, tactical unit pilots flying jet aircraft and operating complex equipment do not receive sufficient rest when quartered in tents in this hot climate, BOD April 56. Dover AFB: Hangar, organization, 41,066 square feet, BOD March 56, essential for operation of Second Fighter Interceptor Squadron. Kansasville AFB: Apron, parking, runway, primary; taxiway alert; bulk jet fuel; operating storage gas; communication general; radio inner beacon; fire station C&S; base operations bldg; readiness crew building; hangar alert; hanger field maintenance; hangar organization; dining hall, airmen; dormitory, airmen; OQ men; utilities required for critical items; land, fee, pur; storage base rocket assembly; storage, ordnance, igloo; warehouse bulk supply, base; headquarters air base group; these items are considered to be the minimum facilities which would be required to provide an operating capability. Langley AFB: Flight simulator, BOD March 56. This facility required to house the F-102 simulator scheduled to arrive at this base 3rd quarter 1956. Storage ready rocket, this unit must be available to squadron before the type of ammunition

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stored is received. Lockbourne AFB: Flight simulator building, BOD March 57. This facility required to house F-86D simulator scheduled to arrive this base 4th quarter 1957. Otis AFB: Hangar, nose, wing, BOD September 56. This facility required to provide minimum maintenance facility requirement to supply RC121D aircraft which will require frequent maintenance due to sustained flight operations involved in the mission; flight simulator 1,860 square feet, BOD July 56, the fighter interceptor squadron is programmed to be equipped with F89 aircraft by 3d quarter 1956; academic classroom, BOD July 56, this building contains classrooms and space for the RC121D training to supply the AEW&C wing; storage, base, rocket, assembly, BOD July 56, this unit must be available to squadron before the type of ammunition stored is received. Truax AFB: Storage, base, rocket, assembly, BOD January 57, this unit must be available to squadron before type of ammunition stored is received. Westover AFB: Storage, base, rocket, assembly, BOD January 57, this unit must be available to squadron before type of ammunition stored is received. Youngstown AFB: Hq Air Base Group, BOD September 56, this activity temporarily housed the training aids building, flight simulator presently being installed, therefore, headquarters activity must be vacated. Duluth Municipal Airport: Test stand, jet, to eliminate shipment of engines to Sioux City, BOD October 56, water supply, portable, provide adequate supply for fire protection, BOD October 56.

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Glasgow AFB: Items required for new permanent base on which no facilities are existing; taxiway, apron, access, BOD December 56; fill stand, truck, BOD October 56; operational storage, aviation gasoline, BOD October 56; ILAS facility, BOD December 56; radio inner beacon, BOD December 56;test stand, jet,BOD December 56, flight simulator building, BOD October 56; utilities to support all critical items programmed, BOD March 57; heating plant, central, BOD December 56; base infirmary, no infirmary in immediate area, BOD October 56; ready rocket, storage, assembly, BOD 56; warehouse, bulk supplies, BOD December 56, no warehouse available in this vicinity; service club, BOD October 56; Headquarters Air Base Group, BOD October 56; AIO shop, BOD October 56; auto maintenance shop, BOD October 56. Grand Forks AFB: Items required for new permanent base on which no facilities are existing; apron, parking, T&B flight, BOD December 56; fill stand, truck, BOD October 56; operation storage, aviation gasoline, BOD October 56; communications building, BOD October 56; GCA mobile, BOD December 56; ILAS facilities, BOD December 56; radio inner beacon, BOD December 56; test stand, jet, BOD October 56; flight simulator building, BOD October 56; dormitory, airmen, BOD October 56; utilities to supply critical items, BOD March 57; heating plant, central, BOD October 56; infirmary, base, BOD October 56, no medical facilities available in the vicinity; storage, ordnance, igloo, BOD October 56; storage, base, rocket, assembly, BOD

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October 56; warehouse, base, bulk supplies, BOD December 56; service club, BOD October 56; Headquarters Air Base Group, BOD October 56; AIO shop, BOD October 56; auto maintenance shop, BOD October 56. Minot AFB: Items required for new permanent base on which no facilities are existing; apron, parking, T&B flight, BOD December 56; fill stand, truck, BOD October 56; operation storage, aviation gasoline, BOD October 56; communications building, BOD October 56; GCA mobile, BOD October 56; ILAS facilities, BOD October 56; radio inner beacon, BOD October 56; fire station C&S, BOD October 56; ready crew building, BOD October 56; test stand, jet, BOD October 56; flight simulator building, BOD October 56; officers club, BOD October 56; OQ, men, BOD October 56; utilities for critical items listed, BOD March 57; heating plant, central, BOD October 56; base infirmary, no medical facilities available, BOD October 56; storage, space, igloos, BOD October 56; storage, base, rocket, assembly, BOD December 56; warehouse, base, bulk supplies, BOD December 56; service club, BOD October 56; Headquarters Air Base Group, BOD October 56; AIO shop, BOD October 56; auto maintenance shop, BOD October 56. Grandview AFB: Hangar field maintenance with shops, no field maintenance hangar available to facilitate base maintenance work, BOD March 57; test stand, jet, to eliminate return engines to Sioux City depot, BOD October 56; headquarters command air conditioning, to facilitate loss of manhours during extreme hot weather for CADF personnel, BOD December 56. Minneapolis-St. Paul International Airport: Apron parking, provide adequate parking

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(CONFIDENTIAL) ADMIS P-11 1819 . Cont'd facilities for transient and base flight aircraft, BOD December 56; test call, jet, provide inclosed cell for testing jet engines, which will eliminate noise hazard to Veteran Hospital and nearby homes, BOD October 56; utilities to supply critical construction items listed, BOD December 56. Seymour-Johnson AFB: Hangar field maintenance, provide maintenance facilities for RC121 type aircraft, BOD March 57; storage, ready, rocket, assembly, BOD December 56, this unit must be available to squadron before the type ammunition stored is received. Ent AFB: Headquarters Group building, BOD October 57. For Benzie County Airport: Most of the items for FY-55 and FY-56 without critical when a firm site has been determined. BOD dates will then be established.

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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HEADQUARTERS
AIR RESEARCH AND DEVELOPMENT COMMAND
Post Office Box 1395
Baltimore 3, Maryland

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13 October 1954

RDSMCC

SUBJECT: Communication-Electronics Support for 49th Fighter Interceptor Wing

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

1. In accordance with current USAF Program documents, the 49th Fighter Interceptor Squadron (ADC) is scheduled to become a tenant organization at Laurence G. Hanscom Field, Bedford, Massachusetts during the second quarter, Fiscal Year 1956. This squadron will receive logistic support from the 6520th Support Wing (Test).

2. Laurence G. Hanscom Field is currently undergoing a major construction program. The existing Communication-Electronics facilities are being modified as required by the mission of the 6520th Support Wing (Test). Neither this wing nor this headquarters has ever received any specific information from your Command regarding the desired Communication-Electronic support to be required by the 49th Fighter-Interceptor Squadron (ADC). It is possible that the installed Communication-Electronics facilities at Laurence G. Hanscom Field are not adequate for air defense purposes.

3. It is requested that your Headquarters direct a staff visit to Laurence G. Hanscom Field for the purpose of inspecting the installed Communication-Electronics facilities. In the event these facilities are found to be below acceptable standards for support of a fighter interceptor squadron, it is further requested that this Headquarters be advised as soon as possible the additions or changes desired. Upon receipt of your requirements, this Headquarters will prepare appropriate amendments to our portion of the USAF Program, Communication-Electronics PC-56-1.

FOR THE COMMANDER:

/s/ ERIC D. THOMAS
Lt Colonel, USAF
Chief, Communications Division
Directorate of MS&C

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Hq ARDC, RDSMCC, Subj: C-E Support for 49th Fighter Interceptor Wing

EAOCE-P (13 Oct 54) 2d Ind 30 Dec 1954

HQ EASTERN AIR DEFENSE FORCE, Stewart Air Force Base, Newburgh, N. Y.

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

1. Representatives of this headquarters made a staff visit on 27 December 1954 to the 6520th Support Wing (Test), Laurence G. Hanscom Field, Bedford, Massachusetts, to inspect installed communications-electronics facilities at Hanscom Field, and to determine additional facilities required to support the 49th Fighter-Interceptor Squadron.

2. Navigational aid facilities installed, or programmed for installation, are considered adequate. The AN/MPN-11B GCA unit which presently serves Runway #5 is to be moved to serve Runway #11 when extension of this runway is completed. CAA is installing an ILAS facility to serve Runway #11. The AN/URN-5 Homing Beacon programmed in PC 56-1-I, has not been sited to date but will probably be located at Fort Devans, approximately thirteen (13) miles out on the extended centerline of Runway #11 at Hanscom. A homing beacon presently located at the outer ILAS Marker is in operation.

3. An AN/TRC-11 radio circuit, with a relay station, will be required between the 762d AC&W Squadron at North Truro, and the 49th Fighter-Interceptor Squadron at Hanscoom for emergency scrambling in the event landlines fail. There is an AN/TRC circuit presently operating between South Truro and Hanscom, with a relay station at Magnolia. It may be possible to join these two circuits by providing an AN/TRC-11 circuit between North Truro and South Truro and thereby conserve equipment. This headquarters will request PC programming of necessary equipment for both ends of the circuit and the relay station.

4. Teletype equipment for a tactical teletype circuit between the 4707th Air Defense Wing at Otis and Hanscom Air Base will be required. PC Facility 6314 for this circuit will be requested by this headquarters. This circuit will be terminated in the Base Communications Center at Hanscom. In addition, an approved on-base teletype pony circuit, PC Facility 6317, will be required between the Base Communications Center at Hanscom and the Readiness Building for the 49th Fighter-Interceptor Squadron. This headquarters will request PC programming of the 6317 pony circuit teletype equipment. It is requested that the 6520th Support Wing provide

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Hq ARDC, RDSMCC, Subj: C-E Support for 49th Ftr-Intcp Wing,
2d Ind (Cont'd)

a cable pair between these two points. This is to be an approved circuit cleared for passing classified traffic in the clear up to and including Secret. It must meet the provisions of Paragraphs 406 through 408 of ACP 122(B).

5. Reference letter, Headquarters Air Defense Command, ADOCE-C, 8 November 1954, subject: Standard Fighter Alert Wire Communications Facilities, and letter, Headquarters EADF, EAOCE-CW, 1 December 1954, subject: Standard Fighter Alert Wire Communications Facilities (Encl #1). Requirements for wire facilities, as outlined in the above referenced letters, will be submitted by the Commander, 49th Fighter-Interceptor Squadron. Minimum outside cable requirements to each building are as follows:

a. Readiness Building to MDF - 35 pair

b. Alert Hangar to MDF - 7 pair

c. Readiness Hangar to MDF - 8 pair

d. Academic Building to MDF - 4 pair

6. The Wing Staff Communications Officer was furnished a copy of Enclosure #1 and informed of these outside plant cable requirements. It is requested that the 6520th Support Wing (Test) provide the above cable by the second quarter of Fiscal Year 1956.

7. It is requested that the 6520th Support Wing (Test) provide cryptographic support for the 49th Fighter-Interceptor Squadron. A normal Air Force account will satisfy this requirement.

8. The contents of this indorsement are classified SECRET in accordance with Paragraph 23.c., AFR 205-1.

FOR THE COMMANDER:

1 Encl
Ltr, Hq EADF, EAOCE-CW,
1 Dec 54, Subj: Standard
Ftr Alert Wire Comm Facs

BEN D. MOORHEAD
1st Lt, USAF
Asst Adjutant

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HQ ARDC, RDSMCC, Subj: C-E Support for 49th Ftr-Intcp Wing

ABOCE-A (13 Oct 54) 3d Ind 31 Jan 1955

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

TO: Commander, Air Research and Development Command, P. O. Box 1395, Baltimore 3, Maryland

1. Forwarded for your information and action deemed necessary

2. PC revisions will be submitted to your headquarters on receipt from Headquarters Eastern Air Defense Force.

FOR THE COMMANDER:

1 Incl
n/c

W. J. BIRMELE
LT COL., USAF
Asst Comd Adj

MEMO FOR RECORD: HQ ARDC requested that C-E requirements in support of the 49th FIS programmed for L. G. Hanscom Field, be forecast to them. EADF replied by Ind of anticipated requirements and advised that PC revisions would be submitted. This info being forwarded to ARDC

/s/ GORDON F. PALMER
Capt, USAF

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EAOPR-2 18 August 1954

SUBJECT: (Unclassified) Programmed Conversion of the 330th and 539th Fighter-Interceptor Squadrons to F86D Aircraft

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

1. Reference is made to the July 1954 ADC Program Document and classified message, your headquarters, ADOAP 1839, 27 August 1953, wherein your headquarters agreed to delay the conversion of the 330th Fighter-Interceptor Squadron to F86D aircraft until the runway improvement at Stewart AFB was completed.

2. It is currently estimated that the construction on the runway extension which is programmed for Stewart AFB will commence in October 1954. Barring unforeseen delays, the construction on the runway extension should be completed in October 1955.

3. This headquarters has devoted considerable time and effort in studying all aspects and implications concerning the programmed conversion of the 330th and 539th Fighter-Interceptor Squadrons to F86D aircraft in the 3QFY55, and it is the concerted opinion of this headquarters that from a flying safety standpoint these units should not be converted to F86D aircraft prior to the completion of the runway extension.

4. Provided that the F86D aircraft were modified to permit the use of a drag chute, it is reasonable to assume that an interceptor unit with previous experience in the F86D could satisfactorily operate from Stewart AFB under the existing conditions; however, when it is considered that the 330th and 539th Fighter-Interceptor Squadrons are composed almost entirely of pilots with little or no F86D experience who must safely transition to a new aircraft and operate from relatively short runways with unsatisfactory approaches and inadequate recovery aids, it is believed that the accident potential that would exist if the conversion program is implemented is worthy of consideration and is a cogent reason to delay the conversion of these units to F86D aircraft until the runway extension at Stewart AFB is completed.

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EAOFR-2 Subject: (Unclassified) Programmed Conversion of the 330th and 539th Fighter-Interceptor Squadrons to F86D Aircraft (Cont'd)

5. It is therefore recommended that action be taken to delay the programmed conversion of the 330th and 539th Fighter-Interceptor Squadrons to F86D aircraft until 2QFY56 when it is estimated that the runway extension at Stewart AFB will be completed.

6. This letter is classified Secret in accordance with paragraph 23b, AFR 205-1.

FOR THE COMMANDER:

JOHN L. WARREN
Colonel, USAF
Adjutant

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Hq EADF, EAOPR-2, Subj: (Uncl) Programmed Conversion of the 330th and 539th Fighter-Interceptor Squadrons to F-86D Aircraft

ADHVP (18 Aug 54) 1st Ind 14 Sep 1954

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

TO: Commander, Eastern Air Defense Force, Attn: EAOPR-2, Stewart Air Force Base, Newburgh, New York

1. Reference is made to basic letter and classified messages this headquarters, ADOOT-B1 2071 dated 9 October 1953, ADOOT-B 2264 dated 18 November 1953, and ADOOT-B 0022 dated 6 January 1954.

2. A runway barrier system and drogue equipped aircraft are scheduled for Stewart Air Force Base. Latest information from Wilkins Air Force Depot indicates that a runway barrier set will be available on or about 15 September 1954. The installation of the barrier system plus the use of drogue chute equipped aircraft is considered to provide an adequate margin of safety. Further, operations may be temporarily suspended, at your discretion, during particularly inclement weather conditions.

3. The maximum capability of this command can only be reached when all our interceptors are capable of operating under weather conditions. The assignment of F-86D aircraft to the 330th and 539th Fighter-Interceptor Squadrons will complete the conversion of all ADC squadrons to all-weather interceptors.

4. In view of the foregoing, the 330th and 539th Fighter-Interceptor Squadrons will convert to F-86D aircraft in the Third Quarter FY-1955 as shown in the ADC Program, dated 1 July 1954.

BY ORDER OF THE COMMANDER:

JAMES S. PURDUM
Major, USAF
Asst Command Adj

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Hq USAF AFDRQ-CE/E Subj: Runway Distance Markers 218

ADOPR (23 Aug 54) 1st Ind 23 Sept 54

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

TO: Director of Requirements, Headquarters USAF, ATTN: Communications and Equipment Division, Washington 25, D. C.

1. This Command recommends a uniform system of runway distance markings for all runways. A research and development project should be established to determine the most suitable system.

2. From the standpoint of safety and operational utility, such markings should be readable day and night, in rainy or clear weather, and should extend the complete length of the runway.

3. USAF message AFOOP-OC-FL dated 4 September 1954 requires pilots of jet aircraft to enter, in remarks section of Form 175 or 113, the computed distance to become airborne. This information at present will only tell them whether or not the runway is long enough for take-off. Distance markings would show them where they should become airborne. This would be a useful indication of possible power plant malfunction and runway remaining for an attempted abort.

FOR THE COMMANDER:

MEMO FOR RECORD:

This has been verbally coordinated with O&T and Asst for Flight Safety

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EAODR 17 June 54

SUBJECT: Qualitative Operational Requirement - Zone Identification Lighting for USAF Runways

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

1. Introduction: Many aircraft accidents occurring within this command stem from pilots' inability to adequately determine their position on the runway during landing and take-off. With runways as long as 10,000 feet in use today, it is frequently impossible for pilots to see the full length of a runway because of terrain or atmospheric conditions. Consequently, uncertainty sometimes exists regarding the limits of the safe touchdown area, the amount of runway remaining after touchdown and just when it becomes necessary to effect a go-around or to revert to emergency action.

At night, or during periods of low visibility, this condition is aggravated by the lack of suitable references by means of which landing area, caution area, etc., are readily identified. A requirement exists to modify present runway lighting systems to include a positive visual reference to the safe touchdown zone on the approach end of the runway and the warning or caution zone on the far end of the runway.

Wright Air Development Center Technical Memorandum Report No. WCLE-54-23, 18 February 1954 (Inclosure 1) describes a runway lighting system which includes some identification. A test of this system was performed at Otis Air Force Base, Falmouth, Massachusetts. Results of this test are favorable (reference Inclosures 1, 2 and 3).

2. Objective: To increase the effectiveness of the USAF by reducing aircraft accident potential.

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EAODR Subject: Qualitative Operational Requirement - Zone Identification Lighting for USAF Runways (Cont'd)

3. Description:

a. Nomenclature: Zone Identification Lighting for USAF Runways.

b. Purpose: To reduce aircraft accident potential by providing a runway zone identification capability in present runway lighting systems.

c. Performance: The optimum runway and threshold lighting system should:

(1) Provide positive identification of the runway.

(2) Outline the runway.

(3) Distinguish between the touchdown zone, the center or intermediate zone and the caution or warning zone.

(4) Provide some identification during approach toward either end of the runway.

(5) Define the entrance threshold.

(6) Define the exit threshold.

(7) Require a minimum of electrical power for operation.

(8) Be susceptible to brightness control.

(9) Be physically compatible with present runway lighting systems.

d. Design Features: Reference Wright Air Development Center Technical Memorandum Report No. WCLE-54-23, 18 February 1954 (Inclosure 1).

e. Special Features: Negative.

f. Proposed Basis of Issue: Present runway lighting systems at all USAF air bases should be modified to include some identification lighting. Priority should be given to instrument runways on Air Defense Command bases.

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EAODR Subject: Qualitative Operational Requirement - Zone Identification Lighting for USAF Runways (Cont'd)

g. Method of Meeting the Requirement: It is recommended that the runway lighting system designed by Wright Air Development Center and tested at Otis Air Force Base, Falmouth, Massachusetts, be adopted as standard throughout the USAF.

FOR THE COMMANDER:

3 Incls
1. WADC Tech Memo Rept No. WCLE-5A-23, 12 Feb 54
2. Ltr, 564th ADG, subj: Rept of Test Rwy Lighting, 16 Mar 54
3. Ltr, 564th ADG, subj: Final Rept of Exper Rwy Lighting Test, 8 Apr 54

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Hq EADF EAODR Subj: Qualitative Operational Requirement - Zone Identification Lighting for USAF Runways

ADOPR (17 Jun 54) 1st Ind 6 July 54

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

TO: Director of Requirements, Headquarters USAF, Washington 25, D. C.

This Command concurs with the requirement in basic letter.

FOR THE COMMANDER:

3 Incls
n/c

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DOCUMENT NO. 220

THIS DOCUMENT MAY BE FOUND

IN VOLUME VII OF THE SUPPORTING

DOCUMENTS TO THIS HISTORY.

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From: HQ USAF, WASHINGTON, D. C. 8 July 1954

To: COMMANDER, AIR DEFENSE COMMAND, ENT AFB, COLORADO

/SECRET/ FROM AFCIE-4 58374. Re message AFCIE-4 -8801 this Headquarters information to your Headquarters. The visit at Youngstown was extremely well-conducted by Colonel Vetort and proved to be very informative for the visiting group. In further prosecuting the study of airfield criteria, Office of the Secretary of Defense has obtained services of a consultant group consisting of L. G. Whitehead, USAF retired; M. G. Weikert, USAF retired; Vice Admiral Moss, USN retired; Mr. Froesch, Vice President, Eastern Airlines and Mr. Littlewood, Vice President, American Airlines. In addition, OSD is entering into a contract with an outstanding architect-engineering firm who will be responsible for preparing detailed criteria and back-up in accordance with ordnance provisions by the consultant group, the services involved, and OSD. The primary purpose of this study is to provide detailed justification and back-up for airfield criteria and requirements through 1965 in order to facilitate favorable congressional action on future new construction programs. It is expected that completion of study will require about one year's time. As a preliminary step in starting the study, the consultant group has requested that certain tentative air base layouts be prepared for them which will indicate the facilities required for manned

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aircraft available in the 1960-65 period, utilizing dispersal to a sufficient number of bases to avoid a strategic concentration of aircraft at any one base. The Architect-Engineer will be responsible for final preparation of these layouts and will be ready to start work on them on or about 1 August with completion set for next meeting of consultant group, 27 August. It is desired to make certain that all possible guidance is furnished by your Command to the Architect-Engineer in his preparation of a typical Air Base layout for Air Defense Command Units. It is therefore requested you be prepared to send a representative to this Headquarters for a conference with Architect-Engineer on call on or after 26 July. This representative should bring with him a schematic layout of an Air Base to accommodate two F-102 Squadrons of 25 aircraft each and a listing of the structures required for such an Air Base together with recommended criteria for runway length and width, glide angles, clear zones, lateral clearances, etc. The schematic layout need not indicate all structures required but should show the ideal layout for major operational, maintenance and training structures such as hangars, maintenance shops, operations buildings, etc. Any questions or requests for additional information should be referred to Colonel W. T. Abbott, Acting Director of Facilities Support, this Headquarters, who has been designated as the USAF Liaison Officer with OSD for purposes of this study.

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ADMIS P-2 1 December 1954

SUBJECT: (Unclassified) Site Selection Criteria

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

1. Attached for your information and guidance are copies of USAF Document AFCIE-PS, October 1954, subject same as above.

2. Reference is made to Paragraph IV of the attached document. The sample field survey forms have been furnished your Headquarters previously and are therefore omitted.

BY ORDER OF THE COMMANDER:

1 Incl:
a/s
(10 cys)

JAMES S. CAPLES
Colonel, USAF
Deputy Director of
Installations

Identical letter sent to CADF and EADF.

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AFCIE-PS October 1954

SUBJECT: SITE SELECTION CRITERIA

I. PURPOSE:

The purpose of this paper is to outline policies, procedures and criteria which must be carefully considered when selecting new sites for Air Force bases.

II. GENERAL:

There is a current and continuing need for the evaluation and selection of airfields and virgin sites to meet projected Air Force base requirements. This need may be influenced by changes in mission and force requirements, local problems at existing air bases, new types of aircraft, or may be influenced by world affairs. Effective and efficient guidance and methods of selection are necessary in order to assure the proper base structure from which to conduct the many Air Force missions. Pre-planning and survey work should be accomplished 2 years prior to inclusion of air base in the Public Works Program.

III. POLICIES:

The following policies must apply when considering sites for possible use by the Air Force.

1. Proper analysis of the existing Air Force base structure must be made to assure that the requirement cannot be accommodated on existing bases.

2. Every effort must be made to meet air base requirements on existing bases (both military and civilian) within the designated geographical area of requirement subject to the criteria described in Part IV below. However, initial costs consideration must be secondary to long-term operational suitability and freedom from encroachment by urban development.

3. All prospective bases will be considered for multi-purpose missions, with the exception of those bases for Air National Guard and Air Force Reserve missions when municipal or other existing airports are under construction.

Inclosure 1

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IV. CRITERIA:

The following criteria are to be considered in the selection and development of Air Force bases or new sites. Attached is a sample survey form used by field survey teams, Tab A. The criteria and the survey forms together with topographical maps, aeronautical charts, photographs, and others, provides sufficient information to assure that the proper selection work is accomplished.

1. Geographical

Air bases are selected within specific geographical areas to meet the operational requirements which are established by Deputy Chief of Staff, Operations. Specific areas of requirement are usually identified by naming a community that is nearest the center of the area. The outer boundaries of a specific area are determined by the type of mission to be performed.

a. The following general criteria will apply to the location of all air bases:

(1) Minimum population for community support, 25,000.

(2) All airfields or virgin sites will be located at least 15 miles from the known planned expansion of a city to avoid noise and safety problems. This criterion will not apply to Reserve bases, which will be given careful consideration on the basis of type of mission and existing bases in the area.

(3) No airfield will be located further than 25 miles or 45 minutes elapse driving time from the known planned expansion of a city. This will be the maximum allowable distance to provide for community support.

b. The following geographic criteria will apply to the specific missions outlined below:

(1) ADC, Fighter-Interceptor Bases - within satisfactory operational distance of controlling radar.

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

(2) **TAC,** Fighter Bomber Bases - within 50 nautical miles of suitable bombing and gunnery ranges.

(3) Gunnery Staging Bases - within 50 nautical miles of suitable gunnery ranges.

(4) **SAC,** Bomber Bases

(a) SAC recommends that SAC bases will be located north of a line extending from Cutbank, Montana through Miles City, Montana, Sious Falls, S. D., Rock Island, Ill., Columbus, Ohio to Washington, D. C.

(b) No closer than 250 nautical miles from Atlantic, Pacific or Gulf coastlines.

(c) Prevailing winds influence atomic radiation fall-out patterns over targets. Bases under consideration will be located outside of atomic radiation fall-out pattern of large industrial targets of over 100,000 population. In addition, such bases will be located at right angles to the prevailing winds.

(d) Within 15 to 25 miles of known planned expansion of cities of approximately 50,000 population, for community support.

(e) For launching and staging bases as far northeast as possible and, in any event, north of the 40° north latitude.

(5) Strategic Fighter Bases - Within 50 nautical miles of suitable gunnery facilities.

(6) Air Training Bases

(a) Outside designated Air Defense Identification zones.

(b) Within 50 nautical miles of gunnery ranges for advance training fighter bases.

(c) Good weather area.

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

(7) Air Force Reserve Bases

(a) Fighter Bomber bases will be located primarily to provide Air Defense capability as required by the Air Defense Command.

(b) Within 25 miles or 45 minutes elapse time of designated metropolitan cities, to provide required manning.

2. Vulnerability

a. Certain areas within the Continental United States are vulnerable to attack by guided missiles from submarines. It is therefore necessary to locate bases of the Strategic Air Command not closer than 250 nautical miles from the Atlantic, Pacific and Gulf coastlines.

b. Large industrial cities within the Continental United States are possible atomic targets. No air bases will be located within the probable atomic radiation fallout pattern of industrial cities of over 100,000 population, or other potential atomic targets. When siting in the general area of such cities, locate base at right angles to the prevailing winds outside the fallout pattern. Auxiliary bases to a primary base should also be located at right angles to the prevailing winds.

3. Size of Facility

The acreage required for an Air Force base is determined by the number of units involved in the base mission, the length, number, and layout of the runway system; navigation casements; ordnance storage areas; alert hangar facilities; communications-electronic facilities; and the general topography of the real estate under construction. The acreage can only be determined after careful master planning. During the preliminary selection phase, the following criteria will be met:

a. Topography flat enough to lay out 15,000' runways with 1:100 clearance in the approach zone.

b. Secondary runway - 12,000', with 1:100 approach clearances. Site for secondary runway will be considered on the basis of a study of wind coverage, operational and air traffic control considerations.

c. Approximately 5,000 acres of land, depending on the type of mission.

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

d. Air Force Regulation of the 80 Series will also be used to determine acreage through master planning.

4. Air Space Analysis

A careful study of existing and probable air traffic in the area of the proposed air base is necessary to assure that the air space will not become saturated. It is impossible to establish criteria to determine air traffic saturation in view of the widely varying weather conditions and amount and type of instrument control navigation aids available in different areas. Each area of a proposed base must be carefully studied in cooperation with AACS, CAA and other services involved to determine whether or not saturation exists, and what additional problems will be generated as a result of constructing a new base in an existing traffic control area. The following guide will influence the location of an air base:

a. Airfields will be located at least 20 miles apart laterally, to avoid conflicting traffic patterns. There will be a minimum of 40-mile separation if proposed air base is to be located generally along the centerline of the instrument runway of an existing airfield.

b. Airfields will be located as far from major civil airways as possible to reduce to the minimum the necessity to block off air space along the airways for instrument penetrations and approaches. In some areas it will not be possible to locate a site which will not conflict with existing or proposed civil airways. In such cases, the individual site study shall include coordination with the agency responsible for traffic control in the area to determine whether or not procedures can be devised to minimize the possibility of conflicting traffic between en route and terminal traffic.

c. Aids to Navigation. Consideration must also be given to availability of real estate for radio, radar and other navigational aid facilities to permit all-weather operational capability. This includes plots on the extended centerline of the instrument runway at distances to 4,000', 4 to 5 miles, 7 to 12 miles on the downwind side, and at a distance of 1,000' to 2,000' on the upwind side.

5. Flying Safety and Noise Nuisance

a. To provide maximum safety and reduce aircraft noises to a minimum in the vicinity of populated communities, Air Force bases with exception of Reserve bases will not be located closer

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

than 15 statue miles from the known planned expansion of the nearest community. Runway centerlines must be oriented to assure that there will be no violation of the following sound and sound wave buffer criteria, for a distance of 15 to 25 miles from the air base.

(1) The extended runway centerline will not pass within 4 miles of proposed expansion of populated communities.

(2) The above criteria will provide adequate room for growth and expansion of both air base and city. It should also provide approach zones and traffic patterns over uninhabited areas as desired by existing criteria (AFR 86-3, 86-4 and 86-5).

b. Acceptable heights and locations of television towers and other obstructions are contained in AFR 86-1, 86-2, 86-3, 86-4.

c. With the advent of special jet fuel and take off Booster rockets having liquid propellants, it will be necessary to maintain a 5 mile safety zone with the currently approved lateral clearances off the end of each runway to assure a clear area to jettison rocket boosters and to provide for aborted take offs and crashes. Nuclear powered aircraft will have an equal effect on the location and characteristics of an Air Force base.

6. Topographical and Geological Considerations

a. In this area, an engineering analysis is indicated to provide information on the following specific items:

(1) Profile of proposed runway centerline.

(2) Soil boring log to indicate types of soil encountered below the ground surface.

(3) Depth of water table.

(4) Permeability and drainage characteristics of soil to include frost heave characteristics when applicable.

(5) Compaction characteristics of soil.

(6) CBR (California bearing Ratio) rating or K value of soil. CBR values to be computed both in the Laboratory and "in place".

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

b. Rolling topography is not objectionable for the construction of the built up area of the base. However, steeply rolling land is not satisfactory for the airfield portion of the base due to the large amount of cut and fill required to prepare the ground for the runway with accompanying high costs. Gentle rolling terrain is the best for airfield construction because it usually provides better drainage. Very flat terrain usually poses problems of providing adequate storm drainage. The cost of providing adequate storm drainage on very flat terrain is usually quite high. Items (3) and (4) must also be considered together with terrain features in this drainage study. High water tables and soils with low permeability will make drainage a costly problem.

c. The soil boring log is used to indicate the types of soil beneath the surface. From this analysis, factors such as water table depth, rock outcrops, soil permeability, availability of sub-surface water for base water supply, CBR, and bearing capacity of the soil can be determined together with cost of construction attributed directly to soil characteristics.

d. CBR ratings of soils are used in determining the design for flexible type pavement (asphalt). K values of soil are used for determining the design of rigid type pavement (concrete). Both these values are necessary in the site selection stage of air base development in order to determine the relative cost of constructing asphalt vs concrete runway pavement.

7. Engineering Analysis of Expansion Capability of Existing Airfields

a. There are several factors which must be considered in determining expansion capability. These are operational necessity to remain on base, terrain features including topography, streams, hills, etc.; man-made obstacles such as roads, railroads, canals buildings, urban development, and soil conditions such as rock outcroppings and soft muccy soil conditions.

b. In the analysis of expansibility, some or all of these factors may enter the problem to varying degrees. The decision as to the feasibility of runway expansion must be based on a common denominator cost. The engineering analysis then must reduce to cost all the factors involved in the expansion, and the decision as to whether or not it is feasible to expand a particular runway will be based on the cost consideration.

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

c. In the analysis of expansion capabilities, the engineer must take into consideration the criteria for meeting multi-purpose requirements. For example: If the mission calls for a base from which to operate medium jet bombers, then the requirements that must be met are a given length runway, taxiways, parking apron, POL, operating facilities, maintenance facilities, etc. The criteria for locating these facilities must be applied to the site at the time of the engineering analysis.

8. Evaluation of Real Estate Requirements

In developing land requirements for a new Air Force base, there are certain basic considerations which must be made to insure that the site selected is acceptable and feasible. These considerations are outlined below:

a. Availability of sufficient land area. A preliminary survey is required to determine if land area at the site desired is physically large enough to meet current and potential multi-purpose requirements.

b. Current ownership of the land. Special problems arise when the land is owned by private, municipal and state agencies, as well as the Federal Government. A preliminary analysis is required to predetermine current ownership.

c. Present and potential highest and best use of the land. In taking large areas of land from public or private use, it is desirable to determine present and potential, highest and best use. It is normally undesirable to expand where land is under intensive cultivation or where commercial development is extensive.

d. Land costs. A survey of land costs to include preliminary analysis of the cost of improvements; road, rail, utilities relocation, severance damage, and resettlements involved is considered essential. In addition a general knowledge of the number of tracts of land and the number of individual owners will reflect the extent of negotiations to be expected or condemnation procedures which may be required. Bare land values and the value of improvements thereon should be obtained so that excessively high cost areas can be avoided.

e. Federal jurisdiction problems. The problem of ascertaining whether Federal jurisdiction can be obtained readily should be investigated. Normally this matter is no major problem; however, difficulties have been encountered with certain states due to the requirement for special legislation. This can be accomplished prior to field work.

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

f. Land interests. Determine whether fee title or long term nominal lease is in the best interest of the government. Also, investigate any special restrictions on the land such as the existance of mineral rights or, in the case of federally-owned property, the existance of oil rights, permits, grazing rights, pipelines, or other special conditions.

g. Zoning and casements. Zoning ordinances from state or local sources should be obtained to prevent encroachment by private or commercial activities on the airfield and to eliminate the possibility of the establishment of industrial, commercial activities and vice establishments which might be detrimental to health, welfare and safety of personnel at the proposed air base. In addition, necessary restrictive and navigation easements should be obtained to prevent encroachment and construction in certain restricted areas and existance of flight hazards noise and shock wave damage in proposed runway approach zones.

h. Access roads. The availability and suitability of supporting road and rail networks should be investigated to insure that these facilities are adequate to support the type and size of the proposed base. In this connection it may be necessary to acquire additional real estate for the base for the construction of adequate roads and rail networks.

i. Off-base land requirements. The general survey of the area to be utilized should include an evaluation of possible land requirements for off-base activities such as remote communication sites, navigational aids, and ammunition storage facilities.

j. Exclusive or joint use and control of an airfield is determined on the basis of operational necessity and is determined separately as each case develops.

9. Availability of Logistical support facilities.

The accessibility and transportation facilities should be considered, i.e.:

a. Existing highway and railway facilities within the immediate regional area, utilization by adjacent military or industrial installations.

b. Labor and material sources for initial construction and future maintenance (immediate sources of supply of construction materials reduce costs considerably.)

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SUBJECT: SITE SELECTION CRITERIA (CONT'D)

c. Distance in miles to center of population, social outlets and commercial amusements.

d. Means and cost of transportation.

e. Location of existing or prospective areas of traffic congestion.

f. Civil air carriers and airport facilities within regional area.

g. Port facilities, POL, off-loading, intransit port facilities, warehousing, etc.

h. Pipeline, POL delivery.

10. Availability of Range Facilities.

When bombing and gunnery ranges are a necessary part of a base complex to assure adequate training ranges shall not be located beyond the following distances in nautical miles from the installation:

a. Jet fighter ranges: Air to Air - within 50 miles of Installations - 75 by 50 miles minimum area requirements.

(gunnery & rockets): Air to Air - within 100 miles of Installation - 2 by 6 miles.

b. Bomber gunnery ranges: Air to Air - within 100 miles of Installation - 20 by 50 miles.

Bomber rocket ranges: Air to Air - within 100 miles of Installation - 50 by 50 miles

Bomber bombing ranges: Visual - within 100 miles of Installation - 6 miles in diameter.

Bomber bombing ranges: Radar - within 100 miles of Installation - 10 miles in diameter.

11. Community Support Appraisal

a. Air bases will be located within 25 miles from known planned expansion of community. Having a minimum population

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of 25,000 with the exception of Reserve Bases. Can community provide support to the unit planned for the base, i.e.:

(1) Schools, recreation, hospitals, cultural facilities, and shopping services.

(2) Family housing - obtain commitments when possible.

(3) Utility connections to city systems are reasonable costs, electricity, sewage, gas, etc.

(4) General

(5) Availability of labor and construction material.

12. Community Attitude

Does community desire Air Force use and control of airfield? What positive efforts will community put forth to show their interest, such as land donations, nominal lease, obtaining aviation easements, airfield peripheral zoning, and new construction by local investor to provide family housing, etc.

13. Analysis of Weather Conditions

Can the planned mission be carried out with a minimum of interference from the weather? Factors to be considered are temperature ranges, amount of precipitation or snow fall, fog, smog haze, and number of days base is closed due to these factors. Is base or site located within hurricane, tornado, dust, earthquake or snow belts. Is base subject to flooding. Prevailing winds under both normal and instrument conditions for runway alignment and wind coverage.

14. Cost analysis of Proposed Development of an Existing Facility vs. a New Site.

a. Should any of the major factors discussed above be sacrificed for purely economical reasons?

b. Can the Air Force afford to settle claims from aircraft crashes, noise, and vibration damage?

c. Determine cost of developing each base or site under consideration and compare results.

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15. Comparative Analysis

a. List all possible selections.

b. Determine suitability. How many selections will accomplish the required mission and what will be the effect of future operations on the proposed base.

c. Determine Feasibility. Are the means available to do the work. This includes both natural and artificial obstacles.

d. Determine acceptability. Will the cost be acceptable.

16. Recommendation

That the foregoing site selection criteria be approved.

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ADOOT-C 28 December 1954

SUBJECT: (UNCLASSIFIED) Air Defense Command Navigation System Problem

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. The requirement for Air Defense Command to perform all-weather interceptions places an ever-increasing demand on our radio-navigation and aircraft recovery system. We feel that the many advantages of the TACAN system of navigation will enhance our capability to determine position precisely in all types of weather and to effect rapid and accurate return-to-base after intercept. The elimination of precipitation static alone will provide an increased reception certainty which will, in turn, accelerate and simplify this return-to-base problem for the pilot.

2. We do have an increasing problem in retaining our operational effectiveness during the period between the CAA introduction of VOR-TVOR and the USAF introduction of TACAN. Some of the facets of this problem are:

a. Eventual USAF financial support of low frequency facilities will be required. If this results in a substantial reduction in low frequency facilities, our flexibility in all-weather recovery will be likewise degraded.

b. Use of VOR-TVOR on Federal Airways and at civilian airports will limit the use of same to aircraft equipped with AN/ARN-14.

c. The F-102A will be produced with the AN/ARN-14 installed and with no provisions for the AN/ARN-6.

d. Only seventeen ADC bases are sufficiently near to VOR installations to allow a 500-foot low approach (12 miles, reference paragraph 2.0402 (C)(4), AMC Manual: Criteria for Standard Instrument Approach Procedures). Only five of these bases are programmed to be equipped with the F-102. This will cause a serious limitation on the operation of this Weapons System until TACAN is implemented. In no case do we have, or will we have, a navigation system common to all aircraft and all bases.

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ADOOT-C, Subject: (Uncl) Air Defense Command Navigation System Problem

e. Promulgation of Project Broficon, which utilized standard broadcasting stations to control fighter-interceptor aircraft, will require inclusion of a small, light-weight M/F receiver in the electronic configuration of the F-102A.

3. It is felt that a solution to these problems must be reached and that this solution must be a progressive move. The following recommendations are made.

a. That the implementation of TACAN be accelerated in any way possible to precede the present forecast date of 1 January 1957.

b. That we not retrogress to the AN/ARN-6 in the F-102A.

c. In the event TACAN is not available until the January 1957 date, an interim system of navigation be provided for ADC use. This system should be compatible with Federal Airways and should provide common navigation and recovery facilities for all ADC interceptors at all ADC bases. We believe this system should be VOR-TVOR.

d. If recommendation in paragraph 3c above is adopted, it is further recommended that commercially-tested VOR-TVOR equipment be installed as quickly as possible. This equipment is desired for ZI installation only; and if it satisfies the CAA and USAF requirements for position fixing, it need not satisfy mobility requirements and other stringent military requirements necessary for equipment to be used in combat zones.

e. That installation of a small, light-weight M/F radio receiver be included in the electronic configuration of the F-102A.

4. This command is fully aware of the effort and money being expended on TACAN. We realize the military position which has been taken on the implementation of this system in favor of the CAA-developed VOR-TVOR system. This knowledge has been carefully weighed against the knowledge that the operational potential of our weapons systems will be seriously curtailed in the next two years or more unless a solution is reached immediately. We cannot afford to accept this curtailment, and feel that the recommendations in paragraph 3 should receive your utmost consideration.

FOR THE COMMANDER:

KENNETH P. BERGQUIST
Major General, USAF
DCS/Operations

Info Cy:
F-102 Proj Officer, Edwards AFB, Calif
Comdr, WADC, Attn: WCSF-6

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ECONOMIC EVALUATION DIVISION
DIRECTORATE OF MANAGEMENT ANALYSIS
DCS/COMPTROLLER
HEADQUARTERS AIR DEFENSE COMMAND

223

15 November 1954

SUBJECT: Recommendation for Establishment of a Requirement for Economy Bases in Air Defense Plans

TO: ADC STAFF

1. This study attempts to solve the following:

a. Uneconomical manning of support units of Air Defense Command.

b. Alleviation of the Daily Early Combat Potential of Air Defense Command.

c. Noise and Danger problem of present air force bases to civilian populace.

d. Base modernization to keep pace with the Air Force SAGE System.

2. Factors Bearing on the Problem:

a. Support manning in Air Defense groups is excessive. A one squadron fighter base requires about 700 military and civilian personnel. These support personnel support the fighter squadron which consists of 320 personnel, 27 of which are pilots. So in order to put 18 combat ready aircraft in the air, it requires over 1,000 personnel, not considering supporting radar personnel in the area. This is an economic problem which faces top management in Air Defense Command.

b. Air Defense Command Early Combat Potential. As of October, 1954, only 79 aircraft (on the average) were available for combat from 5 minute alerts. In 30 minutes only, 141 were available for combat. A total of 1,192 aircraft were assigned to the command. Economically speaking, this is a low return for approximately a 3.9 billion dollar capital investment and a total personnel figure of 81,000 personnel. The above is a major problem area for extensive study in Air Defense Command.

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Staff Study, Subj: Recommendation for Establishment of a Requirement for Economy Bases in Air Defense Plans

c. Force Balance: The enemy is making great strides in force buildup and in the 1960 era it is expected that he can bring to the attack on the Continental United States approximately 4,000 flying objects (aircraft, decoys and air-to-surface missiles). Force must be fought with force and will require Air Defense Command to build up a huge weapon force. Where to base this force is a major economic problem for top management in Air Defense Command. The electronics control of interception on a large scale is being modernized through the Air Force SAGE System and base modernization for large scale force is not yet being thoroughly considered.

3. Discussion of the Implications of the Economy Base:

a. Support manning - A review of manning data shows that 6 separate single squadron bases require almost 3,000 more support people than a concentration of six interceptor squadrons on one base. Below is shown the support manning required for 1, 2, 3 and 6 squadrons. A comparison of the 6 squadron base is made with the most common case in ADCR 54-60, 1 July 1954, 1960 Plan, a 2 squadron base.

Deployment	Manning
1 Squadron	692
2 Squadrons	796
3 Squadrons	890
6 Squadrons	1,250

Comparison:

3 Double Squadrons	2,388	Total Support Personnel
1 Six Squadron	1,250	Total Support Personnel
Net Savings	* 1,138	Total Support Personnel

* In addition to the above, ADC Staff Weather estimates a 40% savings on AACS and Weather personnel.

b. Force in the Large Target Areas - The location of a 6 squadron base in the large target areas such as Los Angeles, San Francisco, New York, Philadelphia, Detroit, Chicago, Pittsburg, Washington and St. Louis, would provide force comparable to the expected enemy attacks at these locations. This proposal would eliminate certain bases only, bases such as O'Hare which are practically on the edge of the cities. Possibly 10 each 6 squadron bases would provide deployment space for 60 squadrons of fighters and 20 squadrons of Bomarc.

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c. Tactics - No tactical disadvantage results in locating six squadrons of fighters on a single base. The original deployment as outlined in Air Defense Command Requirements 54-60 shows clusters of fighters in certain areas of the Continental United States. Clustered deployment is usual around the large target areas. These are the areas which are adaptable to economy base considerations. The economy base could be located in the center of these clusters, thereby enabling fighters to make, on the average, the same interception at the same point that they would make with the six single or three double squadrons. A preliminary check with the concept contained in Project Combine indicates that an economy base appears tactically feasible.

d. Vulnerability - The enemy will require his available bomber force to destroy critical industrial and population targets. When the enemy penetrates the radar, the fighter force will be in the air protecting its key targets as its primary mission. If the bases are bombed out, fighters could use alternate fields of which there is an abundance in the ZI. Single squadron bases now located on the edge of cities give the enemy a double return for a single effort, a bombed city and a bombed Air Force base. Economic location of Bomarc, Talos and even NIKE on these locations further reduces vulnerability since these weapons are simultaneously defending the base when firing at bombers in the area.

e. Fighter Alerts - An economy base with six squadrons will alleviate the alert situation in an Air Defense Command. With six squadrons located on one installation, 2 squadrons could train, 2 squadrons could stand alerts and 2 squadrons could be off but available for alert. Family quarters would necessarily have to be furnished due to the proposed hinterland location of the economy bases.

f. Combat-ready Aircraft - More combat-ready aircraft will be assured by having a six squadron base. The aircraft assigned to the units could be treated as an aircraft pool. In other words, fighter units scheduled for early alerts, and not having the necessary number of combat-ready aircraft could use combat-ready aircraft assigned to the squadron in released status. The centralized maintenance facility should provide a higher combat readiness rate than the small shop facilities now available at single squadron bases. More specialized tools could be justified, authorized and used by larger field maintenance facilities. Highly specialized, skilled military maintenance personnel, now at a premium, could be better utilized. Supply and logistics problems are minimized considerably.

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g. Take-off and Recovery - With the economy base having three parallel runways, aircraft could take off as rapidly as on a single squadron base. No problem is anticipated. By 1960 Volscan or some other similar type air traffic control device should be available. This should enable aircraft to be receovered on a parallel runway in 30 seconds.

h. Bomarc Deployment - Two or more Bomarc Squadrons could also be located on the economy base. As observed at the Boeing mock-up, these squadrons require large acreage. Bomarc, especially "A" head Bomarc, if located near populated areas would worry the civilian populace and through congressional pressure, it can be foreseen that the Air Force will be meeting considerable difficulty in deployment of Bomarc. The establishment of a six squadron plus two Bomarc squadron base at a considerable distance from a metropolitan area should bring about better civilian relations.

i. Base Layout - Savings in communications facilities could be realized in the Air Force SAGE System. Communication lines instead of being laid for 3 or 6 bases would only have to be laid to one base. A new type of base layout would be required for the handling of six squadrons. A preliminary check reveals that several types can be developed and would cost approximately $35,000,000. One suggestion is a centralized support facility as the hub of a runway system, such as the one now being planned commercially for Chicago. The details of base layout are being held in abeyance till the concept is accepted in Headquarters, ADC that such a base could possibly be a future requirement. Family quarters will be more readily justified when the economy base is proposed to the USAF JCS or the National Security Council, due to the fact that the installation of necessity must be located away from metropolitan areas.

j. Morale - It would entirely be possible to have a much higher troop morale following the principle of Project "Arrow". All troop facilities could be built in a more permanent and satisfactory nature. From the congressional aspect the economy base can be justified as a long term investment amortizing itself by savings achieved as years went by. Family quarters which could be justified would provide retention of a high percentage of personnel on base after normal duty hours. Squadron competition would be keener and pilots wouldn't have to stay on alert for extended periods of time as they do presently. One small fighter wing headquarters be included on each such station with a Brigadier General as Commander. These wings could be numbered and so

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designated as to carry on the fighter tradition of former years. Esprit de corps is all important to any organization's performance and efficiency.

k. Cost - Using the Rand-ADC methodology it appears that a 20 million dollar savings will result from the 6 squadron "economy" base as compared to the 3 double squadron bases. This 20 million dollars represents a savings gained at the end of 1 year operation including initial construction costs. Following cost estimates have been reviewed for essential validity with personnel of the Economics Division of Rand:

RAND - ADC
1960 Cost Comparison

	Three Double Squadron Bases	6 Squadron Economy Base	Savings
Real Facilities	* $ 42,000,000	* 35,000,000	$ 7,000,000
Other Capital Investment (Including Aircraft)	294,000,000	287,000,000	7,000,000
Annual Operating Cost	110,000,000	103,500,000	6,500,000
End of 1st Year	$446,000,000	425,000,000	$20,500,000

* It may be possible to add to existing or already programmed facilities at a more reasonable cost. This would require detailed study by DCS/Operations, Director of Installations and DCS/Comptroller.

4. Conclusions:

a. There is a definite indication that ADC economy bases in the large target areas would be very helpful, economically and tactically speaking.

b. Approximately 10 each economy bases would be required to satisfy the needs of Air Defense Command in the 1960 to 1965 era. Ten such bases would be a capital investment of approximately 1/3 of a billion dollars. Medium or long range fighters could operate from these installations.

c. The bases would have to be located 50 to 200 miles from large metropolitan areas. A 50 mile area around the economy base would be declared as a defense zone and civilian community development would be prohibited (Similar to defense Zones surrounding munitions, chemical plants and AEC installations.)

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5. Recommendations:

a. Recommend that an Economic Evaluation Committee be formed of representatives from Plans Analysis, Operations Analysis, Manpower, Logistics, Installations, Management Analysis and Intelligence for detailed study of the proposal.

b. Recommend that Plans Analysis personnel head this committee. The detailed report, after thorough study, should be presented to the Command Council in a formal briefing.

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EAOPR-2 8 Jan 1955

SUBJECT: (Unclassified) Fighter-Interceptor Program

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

1. A review of the revised ADC Fighter-Interceptor Program reveals programming actions which are considered undesirable. Of particular concern are the number of conversions which are currently programmed at Griffiss AFB. Conversion programs are always costly in time and money and place a severe overload on the support facilities of the base. In addition, experience has shown that the combat potential of a converting unit is seriously reduced for a period of several months.

2. Programmed conversions for units at Griffiss AFB call for the 27th Fighter-Interceptor Squadron to convert from F-94C aircraft to F-89D aircraft and the 329th Fighter-Interceptor Squadron to activate with F-86D aircraft and then convert to F-102 aircraft. The problems of supporting two types of fighter-interceptor aircraft on one base are well known, particularly the duplication of supply stocking, specialized maintenance setups and special tools and ground handling equipment. These problems assume major proportions when the units are tenant upon the base of another command and depend upon that command for support.

3. In view of the foregoing, the following changes to the Fighter-Interceptor Program are submitted for your consideration:

a. The 27th Fighter-Interceptor Squadron at Griffiss AFB to retain its currently assigned F-94C aircraft in lieu of converting to F-89D aircraft.

b. Activate the 329th Fighter-Interceptor Squadron at Griffiss as programmed but equip this unit with the F-94C aircraft presently programmed for the 498th Fighter-Interceptor Squadron.

c. Activate the 498th Fighter-Interceptor Squadron at Bunker Hill as programmed but equip this unit with the F-86D aircraft presently programmed for the 329th Fighter-Interceptor Squadron.

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EAOPR-2 Subject: (Unclassified) Fighter-Interceptor Program (Cont'd)

d. Activate the 327th Fighter-Interceptor Squadron at K.I. Sawyer as programmed but equip this unit with the F-89D aircraft which are presently programmed for the 27th Fighter-Interceptor Squadron.

4. The changes recommended in the preceding paragraph will greatly simplify the support problems at Griffiss AFB in that it will eliminate abnormal supply actions and maintenance problems resulting from multiple conversions over a relatively short period of time.

5. Additional benefits which will accrue from the proposed changes are:

a. The assignment of F-89D aircraft at K.I. Sawyer will provide greater defense in depth.

b. The 30th Air Division (Defense) does not at present have any F-94C type aircraft and this proposal will eliminate problems involved in having one squadron of "orphan" type aircraft.

6. Homogeneity of aircraft is highly desirable and should be observed whenever practicable to simplify supply and maintenance functions. It is realized that adjustment of weapons deployment by conversion to an interim type aircraft pending assignment of a subsequent type is in many cases necessary and desirable; however, it is believed that these actions should be held to a minimum.

7. This letter is classified Secret in accordance with paragraph 23b, AFR 205-1.

FOR THE COMMANDER:

JAMES R. WORLINE
Captain, USAF
Asst Adjutant

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Hq EADF EAOPR-2, Subj: (UNCLD) Fighter-Interceptor Program

ADOOT-B2 (8 Jan 55) 1st Ind. 27 Jan 1955

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

TO: Commander, Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York

1. The following objectives are used by this headquarters in developing and amending the Fighter Interceptor Program:

a. To match aircraft performance to defense requirements.

b. To meet Air Force expansion program.

c. To require a minimum of ZI moves.

d. To require a minimum of program changes.

e. To allow a maximum time period between conversions.

f. To mix aircraft types in major areas.

g. To standardize aircraft type on bases.

It is obvious that at times all objectives cannot be satisfied, but every effort is expended to meet as many as possible, usually in the order of priority shown.

2. We are aware of the disadvantages of mixing types of aircraft on a base, but in the interest of maximum utilization of the Ding Dong weapon capability (nuclear warhead), it was necessary to place an F-89DH squadron at Griffiss Air Force Base. The location of two such units at that base, however, was not feasible because of the limited number of programmed F-89DH squadrons.

3. Activation of the 329th at Griffiss Air Force Base was programmed only because of the lack of a suitable base and facilities elsewhere.

4. The F-94C type aircraft were selected for Bunkerhill to meet our programming objective, as stated in paragraph 1.f. above, to prevent area defense paralysis in event of grounding of a particular model.

5. Since F-89DH squadrons are already programmed for Kinross, Duluth, and Minneapolis-St. Paul, the allocation of these aircraft to K. I. Sawyer would cause complete paralysis of that area in event F-89s are grounded. Another equally important consideration is that these

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HQ EADF EAOPR-2, Subj: (UNCLD) Fighter-Interceptor Program Contd.

aircraft with their anticipated high kill capability will be more urgently required elsewhere. As a result of this last consideration, other changes in the F-89DH program may be expected as further technical information on the Ding Dong weapon becomes available.

BY ORDER OF THE COMMANDER:

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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ADOPR 19 Aug 1954

SUBJECT: (Uncl) Improvements in the Air Defense System of the Continental United States

TO: Commander
Air Research & Development Command
P. O. Box 1395
Baltimore 3, Maryland

1. Reference:

a. Conference between General Chidlaw, General Power, and members of ADC and ARDC staffs, 8 July 1954.

b. Air Defense Requirements 1954-1960, dated 1 July 1954.

2. During the past few years, we have become increasingly concerned over the widening gap between the Soviets' ability to attack this country, and our ability to defend it. While we have been engaged in the slow task of constructing an air defense system designed to counter an attack by TU-4 type aircraft, the enemy's capability has progressed beyond this point to where it now consists of long-range jet and conventional bombers carrying thermonuclear weapons. Recently, we have learned that this force has been augmented by an extremely high performance medium jet bomber which is now ready for use against us in sufficient numbers to pose a serious threat to the United States. Finally, the great effort being expended by the Soviets upon development of an intercontinental ballistic missile -- current estimates hold that such a weapon may be operational in 1958 -- presages a threat against which known defensive devices will be powerless. This grave prospect demands that research and development of a weapons system capable of meeting all levels of this complex threat be pressed forward at as rapid a pace as can be economically maintained.

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Hq ADC, ADOPR, Subj: (Uncl) Improvements in the Air Defense System of the Continental United States

3. Our studies, war games and exercises have revealed that the best tactic for meeting an attack involves distributing our weapons evenly against attacking forces, and assaulting them continuously with multiple waves of defense weapons. In order to do this, we must be able to rapidly identify an attacking force as soon as it comes within range of our detection system, ascertain quickly how many aircraft are in each track so that weapons may be assigned appropriately, and be aware at all times of how many of the hostiles have been attacked.

4. Our current equipment, and that programmed for our future use, will not allow us to perform these vital functions if we are attacked by the weapons described in the first paragraph. Inasmuch as a breakdown in any of these functions will probably result in a breakdown in our defensive system, we urge that specific improvements in ground and air equipment be made as soon as possible.. For guidance, we have appended a listing which points out which of our needs are the greatest, and identifies those items which show the most promise of meeting these needs.

5. It is requested that necessary planning, re-programming, and budgetary actions be taken to provide this command with the increased operational capability that will result from emphasizing these requirements.

1 Incl
ADC Priority R&D
Items

B. W. CHIDLAW
General, USAF
Commander

Info Cy:
Dir of Requirements,
Hq USAF
(w/Incl)

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AIR DEFENSE COMMAND

PRIORITY RESEARCH AND DEVELOPMENT ITEMS

DATA GATHERING

A. Ground Radar

1. Prime Radar

Early improvements should be designed into prime radars to give them the ability to detect and track targets with the equivalent of one (1) square meter of reflecting surface at a range of 250 miles and at an altitude of 65,000 feet. The probability of detection should be between 95-98 per cent. By 1960-61 the detection capability must be increased to provide coverage of similar targets flying at altitudes of 90,000 - 100,000 feet with no decrease of horizontal coverage or probability of detection.

2. Low Altitude Surveillance Radar (Gap Filler)

Gap filler radars must be capable of providing surveillance data on aircraft representing the equivalent of one (1) square meter of reflecting surface and flying at altitudes from the surface to 6,000 feet. They must also have a probability of detection of 95-98 per cent and a maximum range of about 48 miles. These units must be capable of operating on an unattended basis and require a minimum of maintenance and repair. They must be designed to automatically indicate equipment failure or submarginal operation.

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3. Raid Size Determination

Radar stations which operate in the air defense system must be capable of producing raid size data simultaneously with the initial detection or as soon thereafter as possible. This information is essential to rapid and accurate identification and to the realistic planning of air battles. The present methods of using expanded "A" and "B" scopes is entirely inadequate.

4. Doppler Radar

This radar will be installed in the Mid-Canada line in Southern Canada and is scheduled for operation 30 June 1956. This radar must be capable of detecting a one (1) square meter target from the surface to 65,000 feet altitude. By 1960-61 this capability must be increased to 90,000 to 100,000 feet. It must operate continuously unattended and be able to indicate to parent station submarginal operation or complete failure.

5. IFF

There is an immediate and urgent requirement for fail-proof identification at the perimeter of the combat zone. This requirement becomes even more critical as the magnitude of the threat increases. The SIF requirement for all manned and unmanned interceptors is of equal importance. The most

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desirable IFF equipment would provide positive identification simultaneously with the initial detection.

6. ECM

All communications and electronics equipment intended for ADC use should be designed for maximum security against jamming. The vulnerability of the ground-to-air communications link is of grave concern to this command. This vulnerability will become more critical with the advent of the Data Link. All ADC radars should be equipped with anti-jamming circuits, and provided all other means available to minimize the effects of jamming. This urgent problem requires continuous investigation.

7. Height Finding Capability

Future ADC search radars should be designed to provide height data simultaneously with the initial detection. Height data accuracy on the order of approximately five hundred feet (500') is desired.

B. Airborne Radar

1. AMTI

Because of the non-availability of a suitable AMTI, AEW&C aircraft are now forced to fly at low altitudes. This method of operation results in poor radar coverage and creates severe communications problems. The development program for this item should be accelerated to the highest degree.

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2. AEW Radar

AEW Radar capability must be increased to permit it to detect and track aircraft, representing the equivalent of one (1) square meter of reflecting surface, from the surface to 65,000 feet at supersonic airspeeds. Initially, these radars must have an 80% probability of detection. In a later time period, this capability must be increased to 95 to 98% against the same targets at altitudes of 90,000-100,000 feet. Detection ranges in both cases should be at least 200 miles.

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WEAPON CONTROL

A. Data Transmission Equipment

1. Ground-to-Air Data Link

The AN/GKA-1 must be improved to attain greater resistance to jamming and greater reliability at its expected maximum range. The development of a 10 EW UHF power amplifier or transmitter will contribute significantly toward overcoming these limitations. This equipment must be produced concurrently with the production of the AN/GPA-37.

2. Ground-to-Air Voice Communications

The ECM vulnerability of voice communications is of grave concern to this command. The development of a 1 KW UHF power amplifier or transmitter should be completed as expeditiously as possible. A minimum of 96 of these units must be operational within the air defense system by 31 December 1955.

B. Weapon Control System

1. Improved Manual Air Defense System

As specified by General Chidlaw and General Power, reference par 1-a basic letter, the capability of the Manual Air Defense System must be improved prior to the advent of a suitable semiautomatic air defense system. The AN/GPA-37 is now under production contract to G. E. Although this unit will increase the effectiveness of the system, additional

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capabilities are desired. These additional requirements are now being studied by this headquarters and will be forwarded shortly.

2. Semi-Automatic Air Defense System

The continued development of an air defense system capable of timely, semi-automatic operation is essential to the defense of the United States. This system should be made available to ADC as soon as reasonable development and testing permit.

3. Weapon Recovery

This command must be capable of recovering its all weather interceptors from a range of at least 200 miles by programming and directing an optimum "return-to-base" course for them and automatically scheduling their final approach and landing. The "Volscan System", developed by AFCRC, may meet this requirement.

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WEAPONS

A. Nuclear Armament

1. Nuclear Warhead Air-to-Air Rocket

High priority should be maintained on the projects developing a nuclear warhead, air-to-air rocket. Although a non-guided timer-fuzed model of the rocket is expected to provide satisfactory kill probabilities in 1956-57, continued research and development may make possible improved rocket models which can produce greater kills in the period 1957-1960 when the enemy superbomb threat becomes greater.

2. Nuclear Warheads for Surface-to-Air Pilotless Interceptors

Nuclear warheads for medium range surface-to-air pilotless interceptors must be developed on a priority consistent with the accelerated need for more effective weapons systems.

3. Short Range Missiles

Research development and procurement of short range missiles with nuclear warheads should be accelerated. Such missiles should be available in 1956 and have a range from 0 to 50 miles and attack capability to 65,000 feet. This altitude should be increased to 100,000 feet by 1960-61.

B. Aircraft

1. Interceptors

Research must be continued to make possible Mach 3.0 manned interceptors capable of combat at 70,000 feet by 1960.

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An urgent requirement exists to increase the performance of programmed fighters to obtain combat capability at 55,000 feet no later than 31 December 1955.

2. Long Range Interceptor

High priority must be given to produce a long-range interceptor by, or before, 1959, which can intercept and fight at 60,000 feet.

3. Nuclear Power

Continue research on development of nuclear powered interceptors.

4. Ballistic Missile Interceptors

Accelerate research to extend ceilings, range, speed, fire power and accuracy of unmanned interceptors to achieve a capability to intercept ballistic missiles by 1958.

C. Airborne Electronics

1. Fire Control System

Continue development of a fire control system capable of search ranges of 100-120 nautical miles and a lock-on range of 50 miles. This system should be available for the Long Range Interceptor.

2. Altitude Capabilities

Altitude capabilities of the fire control system must reach lower limits of 500 feet and must keep pace with the altitude increase of the systems aircraft, i.e., 70,000 feet by 1960.

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3. Light Weight Search Radar

It is very important that augmentation aircraft be provided with a clear air mass interception capability. This requires the development of a light weight search radar or a light weight radar-infrared system packaged in a detachable pod or as an integral part of the aircraft.

4. Anti-Jamming Features for Fire Control Systems

Although the common synchronizer and tuneable magnetron have substantially reduced our vulnerability to spot and sweep jamming and chaff, we are highly vulnerable to barrage jamming. It is imperative that means be devised whereby we can obtain range information in the face of jamming, or fire our guns, rockets and missiles without benefit of accurate range information.

5. Terminal Navigational Equipment

Accelerate the development of the airborne and ground based short-range terminal navigation equipment (TACAN) for ADC. This system must be operational no later than 1 January 1957.

6. Automatic Navigational Equipment

To enable the LRI to operate at the required ranges and to be temporarily independent of GCI, a light weight, self-contained, automatic navigation system should be developed.

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7. Ground-to-Air Data Link (Airborne Components)

Develop a suitable data link presentation for the present and future fighter-interceptor aircraft. Develop and install a data link system in all augmentation aircraft that will be compatible with the ADC data link system.

D. ECM

1. Ground-Based Jamming

In view of the urgency of our need for protection against effective radar bombing, we urge that the RADC ground-based jamming program be given all possible emphasis.

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FEASIBILITY STUDY

A. Ballistic Missile Threat

The present, or programmed, Air Defense System will not be capable of countering the intercontinental "ballistic-missile" threat. Intelligence information indicates that such a missile may be tactically available to the USSR in 1958; therefore, the seriousness of this situation cannot be overemphasized. In view of this threat, overriding consideration must be given to study and development of a means of countering it. This is an urgent requirement.

B. Decoys

The USSR currently has the capability of using decoys to distract and dissipate our air defense capability to a degree sufficient to permit atomic bomb-laden aircraft to approach their targets with relative ease. The appropriate agency should launch a vigorous investigation to determine the feasibility or possibility of developing a detection device, or method, which can discriminate between a bomber and a decoy.

C. Air-to-Air Rocket

Continued research may make possible a reduction in size and weight of a nuclear warhead, air-to-air rocket. Therefore, a study should be made of the feasibility of equipping interceptors with 4 to 6 nuclear rockets.

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Lt General Thomas S. Power
Commander
Air Research and Development Command
P. O. Box 1395
Baltimore 3, Maryland

19 Aug 1954

Dear Tommy:

In response to your query at our recent conference concerning ADC's position on high altitude performance for its interceptors, I will try to give you a brief history of our aircraft requirements.

When the 1954 interceptor was decided upon, we anticipated this airplane as becoming tactically available in 1954. Had the F-102 come along as proposed, we would not be receiving in the system a Falcon-carrying interceptor capable of speeds and altitudes with superior performance over today's jet bomber threat.

By late 1952, our information and our war gaming began to show us that a 55,000 foot airplane would be marginal in its lifetime and, therefore, in January 1953, we submitted a requirement for the F-103 or like type interceptor which was to have altitude and speed characteristics at altitudes of 70 to 75,000 feet and Mach 3.0. This need was concurred in by Headquarters USAF and our requirement approved. We asked for the airplane to be tactically available in 1958, since this coincided with our estimate of the threat even though we recognized the fact that the successful development of this airplane required new advances in metallurgy, aircraft and engine design. We have never retreated from our need for this aircraft, and have continued to support it on every occasion presented.

On 7 April 1953, we submitted a requirement for a long-range interceptor which we expect to produce a successful engagement at altitudes of 60,000 feet. The concept of use of this airplane, as well as its performance, were questioned intensively by Headquarters USAF. Our requirement letter requested tactical availability in late 1957; however, we were finally, over much opposition, able to "jell" the requirement for late 1959.

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I desire to point out that ADC has been considered in the past to be prone to stretch the technical capability of both our people and the enemy in our concept of the threat and the means to combat it. Subsequent events have proven that we have not been visionary, but rather, have been less than predictive of Soviet progress and ability. I refer, of course, to the Russian types 37 and 39 which have recently appeared to the consternation of our experts. The picture as we now see it is grim. Intelligence experts state that we could expect a Soviet capability by December of 1955 of attacking our major industrial targets and key SAC facilities with 200 heavy bombers at altitudes approaching 55,000 feet and at speeds of Mach .8 to .9 with the capability of delivering 1 to 5 megaton yield bombs. If this is true, then frankly, the interceptors currently considered for contract are of marginal value to us. In the case of the F-102A, for example, we are fighting to attain a maneuverable ceiling of 50,000 feet.

An interceptor must meet the following requirements, which are equal parameters. It must--

(1) Have a speed advantage at combat altitude of 20% to 25%.

(2) Achieve an altitude superiority.

(3) Have armament for a minimum of two kills.

(4) Have a fire control system capable of producing a nonvisual intercept.

(5) Have a load factor adequate to permit required combat maneuvers at low altitudes and high speed.

(6) Be able to scramble within two minutes of a given signal.

(7) Be able to re-service within 15 minutes.

(8) Be capable of high maintainability with reasonable numbers or ordinary people.

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In designing an interceptor which will meet these basic parameters, it may be found that an individual airplane is strong in some points and weak in others. In these cases there may be room for compromise, but this negotiation has to be accomplished on an individual basis.

As we see it, the indicated capability of the new Soviet aircraft clearly indicates that they have made a major step in engine design years ahead of our industry. We would like to emphasize strongly to you that ADC manned interceptors must be superior to any manned aircraft or cruising missile threat. We urge that ARDC should put every effort into engine development so that such engines as the Wright J-67-W-e/xRJ55-W-1 dual cycle and the Allison 700-B1 be given an early opportunity to prove themselves. Growth potential of these engines indicates that we can have higher speeds and altitudes than thought feasible in January of 1953; therefore, ADC will give every support to R&D programs on engines which will give us Mach 3.7 - 4.5 at altitudes of 80,000 - 85,000 feet. We are fully aware that there is no magic airplane that performs at all altitudes, and we feel strongly enough in this position to be assured that air breathing vehicles which we will combat at high altitudes will be limited at low altitudes to the same degree as ourselves and that we will not therefore be ineffective.

I am attaching a weapon development plan projected through 1965 for your information. This is as we see it today and is based upon today's planning with the exception that it excludes the ballistic threat. We sincerely hope that this expression of ADC's views on the subject of interceptors will be of value to your approach to our problems. If at any time you feel the need for further backing on these views, please call upon us for help.

Sincerely,

1 Incl
Air Defense Weapons
System Long Range
Plan (1 cy)

B. W. CHIDLAW
General, USAF
Commander

Info Cy:
B/Gen Price, AFDRQ, USAF

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

227

AFDRD-AD

20 May 1954

SUBJECT: (UNCL) Offensive and Defensive Ballistic Missile Systems

TO: Commander
Air Defense Command
Ent AF Base
Colorado Springs, Colorado

1. Reference is made to your Top Secret letter, subject as above, dated 13 April 1954.

2. Your comments concerning ballistic missiles coincide with reviews of the ATLAS Project currently being conducted in this Headquarters to determine the best means by which acceleration of this project can be realized. Relaxing the CEP specification has been one of the factors under consideration in this regard. The project administration and technical supervision are now being realigned with the aim of producing results in a shorter time.

3. As you have pointed out, the ballistic missile threat is a serious one and by its nature presents a very difficult defensive problem. Although we do not at this time have an acceptable solution, the problem is being attacked through studies by Lincoln Laboratories and the Rand Corporation. The extensive studies of the University of Michigan with respect to defense against V-2 type threats are expected to be valuable contributions to these studies of the more difficult ATLAS type defense problem. As these studies determine items which are agreed upon as being likely components of the future complete ballistic missile defense system, development of these items will be initiated. For instance, development of the detection radar expected to be required is now being initiated.

4. Any further assistance you can provide in this difficult area will be appreciated.

BY ORDER OF THE CHIEF OF STAFF:

/s/ HUBERT B. HATCHER
Major General, USAF
Assistant
Deputy Chief of Staff, Development

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FROM: COMMANDER, ARDC 17 June 1954

TO: COMMANDER ADC/ATTN: MAJ CRISPEN P&R

EDGRD6-13-E 18701. Reference conversation between Lt Col Barrett, this Headquarters and Maj Crispen on 26 May concerning research and development efforts toward providing an air defense capability against intercontinental ballistics. An active program is now underway in this area. A proposal made by RADC called ORDIR is now in a study stage under cognizance of Columbia University. The program will very shortly reach the initial hardware development stage. ORDIR (Omni Range Digital Radar) is a system employing a central transmitter in conjunction with several receivers and data processing computer scattered throughout a defense area. No detection capability figures can be given at this time, however it is anticipated that necessary ranges and altitude coverages can be obtained to cope with the intercontinental ballistic threat. This office will attempt to obtain additional information on ORDIR for your headquarters prior to our next visit. In addition USAF has directed ARDC to make a study of the intercontinental ballistics problem. In alternate direction this effort USAF has requested a feasibility study of Billboard of other radars to fulfill this type of requirement. Additional information on this subject will be furnished your headquarters as available.

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AFDRQ-SA/D

Nov 10 1954

SUBJECT: Draft of GOR SA-5c-'56

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

Attached is a draft of GOR SA-5c-'56 for your review and coordination. This is a draft GOR and will be revised upon receipt of recommendations of Air Staff agencies and major Air Commands. Request that your comments be returned to this office by 30 November 1954.

BY ORDER OF THE CHIEF OF STAFF:

1 Incl
Draft of GOR
(2 cys)

JAMES W. GUTHRIE
COLONEL, USAF
DEPUTY CHIEF, STRATEGIC AIR DIVISION
DIRECTORATE OF REQUIREMENTS

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Hq USAF AFDRQ-SA/D Subject: (Unclassified) Draft of GOR SA-5c-'56

ADOPR (10 Nov 54) 1st Ind 29 Nov 1954

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

TO: Director of Requirements, Headquarters USAF, ATTN: Strategic Air Division, Washington 25, D. C.

This Command agrees that a long range decoy weapon system will reduce the overall effectiveness of the enemy air defense system. The attached GOR for such a system is concurred in except for the launch rate. We do not feel that 100 decoys per hour will cause a significant degradation in the enemy air defense capability. Our own planning for the 1960 time period is based on a threat of 1500 bombers and 2000 decoys striking this country simultaneously.

FOR THE COMMANDER:

1 Incl
w/d 1 cy

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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From: COMDR ADC, ENT AFB
COLORADO SPRINGS COLO

24 Nov 1954

To: CANAIRDEF
ST. HUBERT QUEBEC

(S E C R E T) ADOPR 2051. Reference telecon A/C Annis to Austin on 22 Nov 54. ADC(USAF) weapons available and performance data follows in three parts; part a - aircraft, date expected available for operational use, combat ceiling (feet) radius of action (NM): F-102A - 3d Qtr CY 56, 52,500, 577: F102B - 2d Qtr CY 58, 54,500, 550: F-101 AI - 1st Qtr CY 58, 49,800, 926; F-101 BI - 2d Qtr CY 59, 54,300, 763; F-103 1st Qtr CY 60, 80,000, 328; F-104I 3d Qtr CY 57, 60,000, 375 armed with gatling gun; F-104 I - 3d Qtr CY 57, 51,000, 265 armed with infra-red missiles of falcon or sidewinder type. Part b - Missile, date expected available for operational use, effective altitude (feet) range (NM): NIKE B - 3d Qtr CY 57, surface to 80,000, 50; TALOS - 2d Qtr CY 57, surface to 60,000, 75: TALOS - 2d Qtr CY 58, surface to 80,000, 100; BOMARC (F-99B) - 3d Qtr CY 59, surface to 80,000, 250, Lockheed 253 - 3d Qtr CY 59, surface to 80,000, 250. Part C - Note. Above dates are earliest expected availability to ADC (USAF).

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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ADOPR 27 January 1955

SUBJECT: (UNCLASSIFIED) Proposed GOR for Medium Range Interceptor

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. On 24 through 26 January 1955, this Command was visited by Colonel J. L. Laughlin on behalf of the Director of Requirements, Headquarters USAF, for the purpose of coordinating a proposed General Operational Requirement for a Medium Range Interceptor to be used in the primary mission of CONAD.

2. This General Operational Requirement, as proposed by Colonel Laughlin, the provisions of which appear to be the result of a general misunderstanding of verbal remarks given in a briefing by Air Defense Command to the Air Council in December 1955, is not acceptable to this Command as a General Operational Requirement for an air defense weapon for use in the period 1961 to 1965.

3. Reference your letter AFDRQ-AD/F, 15 November 1954, subject: (Unclassified) "Draft Copies of a GOR for Piloted Interceptor Weapons System (Medium Range)" and our 1st Indorsement ADOPR, 28 December 1954. The comments on subject draft GOR as outlined in our 1st Indorsement have not changed. It is a concept of this Command that all weapons which are introduced as part of the air defense weapons system should provide an effective defense against air attack on the United States by air breathing weapons systems which have the capability of delivering one or more bombs, missiles carrying an integral warhead, or against long-range cruising missiles directed to targets on the North American continent.

4. This Command does not envision the use of manned interceptors against a ballistic threat, but only against air-breathing vehicles. Although the national intelligence estimate does not give the Soviet Union an intent to produce a "Navaho" type missile, it must be considered that such a device, the possible ultimate in air breathing weapons, can be built and launched against this country in the time period covered by this General Operational Requirement. Therefore, this and future interceptors must be designed with the capability of destroying this threat. Reference

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Hq ADC ADOPR Subject: (Unclassified) Proposed GOR for Medium Range Interceptor

USAF Standard Aircraft Characteristics, "Green Book," the first configuration "Navaho," B-64A, will be designed to fly at Mach 2.75 at an altitude of 75,000 feet with ultimate development to Mach 3.25 at an altitude of 88,000 feet. In this respect, it is considered mandatory that an operational requirement be placed to provide an interceptor with a minimum capability against the earliest "Navaho," with growth potential sufficient to defend against ultimate "Navaho" development. This GOR must provide for an aircraft with a maneuverable operational ceiling of 75,000 feet and 20% to 25% speed advantage over Mach 2.75 or a minimum of Mach 3.3.

5. It is considered that in designing an interceptor which will fulfill the mission of Air Defense Command, in destroying enemy offensive weapons directed towards targets in continental North America, that the load factor as heretofore specified for a fighter type may be higher than that required for the new development cycle interceptor. It is considered possible that a relaxation of the current interceptor load factors may be feasible and desirable and might be a key factor in making possible the speed and altitude performances prescribed without sacrificing armament load or other key requirements. In order to determine the possible and desirable load factor for this interceptor, a study by ARDC must be conducted to determine the load factor required of an interceptor in carrying out all facets of a possible mission. This mission must include attacks on high speed cruising missiles, heavy manned bombers, FICON, air-to-surface missiles, and sub-launched missiles. This study must also include the maneuvering load factors required to convert to collision course at very high speeds on high speed targets, as specified in this GOR, at all altitudes, and in addition it must compute the maximum load factor required to successfully complete an attack using atomic guided or unguided rockets, including the escape maneuver. In addition, special consideration should be given to the interpretation of aircraft flight characteristics in the Mach 3.0 speed regime (sea level to in excess of 80,000 feet) as affects load factor. Such factors as inadvertent maneuvers, gust and dynamic pressure loads, and the reaction time required of the pilot or auto-pilot, should be considered in this investigation.

6. The use of the term "bomber-destroyer" in reference to Air Defense Command weapons, including the manned interceptors, is a descriptive term to differentiate between an aircraft which may be designed to engage in high speed individual combat with other enemy fighters and aircraft designed to intercept and destroy

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Hq ADC ADOPR Subject: (Unclassified) Proposed GOR for Medium Range Interceptor

hostile targets within the meaning of this letter. It is not considered that aircraft engaged in the defense mission of this continent will be engaged in fighter-to-fighter tactics, therefore this Command does not expect or require a fighter-to-fighter aircraft.

FOR THE COMMANDER:

Info cy
Comdr ARDC

KENNETH P. BERGQUIST
Major General, USAF
DCS/Operations

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

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AIR DEFENSE COMMAND COUNCIL MEETING REPORT

I. Subjects considered:

A. WEAPONS REQUIREMENTS

B. LONG-RANGE INTERCEPTOR COMPETITION

1. A meeting of the Air Defense Command Council was held at 0900, 13 December 1954, in the Commander's Conference Room (410), Bldg 1.

2. The following members were present:

Major General Frederic H.Smith, Jr. (Chairman)
Major General George F. Smith, Chief of Staff
Major General Kenneth P.Bergquist, DCS/Operations
Major General Marshall S.Roth, DCS/Materiel
Brigadier General W. M. Burgess, DCS/Intelligence
Colonel Robert J.Friedman, representing DCS/Comptroller
Colonel John C. Horton, DCS/Personnel
Colonel Delbert H. Hahn, representing Inspector General

The following interested persons were present:

General B. W. Chidlaw, Commander
Colonel Charles Bond, DCS/O
Colonel E. A. Herbes, P&R
Colonel W. H. Powell, P&R
Colonel Charles Slocumb, ADC Rep to AFSWC
Colonel Clay Tice, Asst for Programming
Lt Col C. J. Butcher, P&R
Lt Col R. Thornton, P&R
Lt. Col T. Scott, AFSWC
Major William Preble, P&R
Major Norman Bodinger, P&R
Major Robert Merrill, P&R

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3. Weapons Requirements. Colonel Herbes explained to the Council that the purpose of the meeting was to present for approval and/or comment our recommendations for improvement of Air Defense weapons. He stated that an additional part of the presentation would be the results of the meeting at Headquarters ARDC on the Long-Range Interceptor competition. Following are the salient points covered during the meeting:

a. Manned Interceptors - Lt Colonel Butcher. Charts were shown which indicated inventories of various aircraft recommended for ADC by Fiscal Year. Problem areas confronting the manned interceptor were pointed out. The following recommendations for improvement were outlined to the Council:

(1) Emphasize requirement for supersonic speed at combat ceilings above 55,000 feet.

(2) Push development of FI-X medium range interceptor as first priority air defense development (F-103) to solve the high speed, high altitude problem.

(3) Pursue Falcon "snap-up" program vigorously as an immediate measure to increase combat ceiling of manned interceptors.

(4) Re-emphasize need for early availability of light weight search radar for augmentation forces.

(5) Urge Hq USAF-ARDC for a decision on 2.0" rocket.

(6) Performance figures as indicated should be minimum acceptable for following aircraft:

(a)	F-102A	1.15 Mach at 35,000 feet 52,000 feet combat ceiling (500 foot min rate of climb)
(b)	F-101AI	50,000 feet combat ceiling (500 foot min rate of climb)
(c)	F-102B	55,000 feet combat ceiling (500 foot min rate of climb)
(d)	F-101BI	54,500 feet combat ceiling (supersonic rate of climb)

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(7) Delete the following aircraft from consideration as all-weather interceptors:

(a) F-89X

(b) F-100AI

(c) F-107

(8) Change MIL-C-5011A as pertains to the basic air defense mission as follows:

(a) Take-off and climb to altitude at maximum power.

(b) Cruise out at maximum power.

(c) Climb to combat ceiling (defined as max altitude a 1.2G steady state turn can be made) at maximum power.

(d) Combat 5 minutes at combat ceiling at maximum power.

(e) Return to base at optimum altitude and power.

(f) Loiter 20 minutes at sea level.

(g) Land with 5% internal fuel reserve.

(9) Desired performance for the FI-X medium range interceptor for the above profile is:

(a) Radius -- 300 NM

(b) Combat -- 75,000-85,000 feet.

(c) Minimum top speed at ceiling -- Mach 3.0

b. Nuclear Armament - Major Bodinger. Integration of nuclear warheads into the air defense family of armament requires that the following conditions be satisfied:

(1) No restructions on operational use.

(2) We must have simple weapon in the sense that we cannot have on-base assembly procedures and logistical support.

(3) We must have relaxed security and legal restrictions.

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(4) We must require no unusual operational techniques associated with the weapon.

The first programmed ADC aircraft scheduled to receive this weapon will be the F-89H. Reasons for specifying this aircraft ahead of the F-102 are:

(1) External installation on wing is a fairly simple job.

(2) F-102 fit is not firm.

(3) F-102 has possible problem of engine induction and rocket exhaust.

(4) HUGARN will not destroy FALCON capability on this acft.

(5) F-89H is available and in place at time of first production HUGARN.

The necessary Public Works program is now under study in this Headquarters. Objective of construction is to provide protection from damage by explosion of the 125 lbs of HE present in each weapon. It is visualized that the PW programs will involve the following areas:

(1) Assembly and check-out

(2) Storage

(3) Loading and alert

Full integration of atomic armament into ADC requires intensive study of the following problems:

(1) Snap-on capability of HUGARN.

(2) Mixed Weapons loads.

(3) BIRD DOG integration.

(4) HE warheads for HUGARN.

(5) HUGARN type warheads for interceptor missiles.

Discussion. Major Bodinger advised the Council that we should begin receiving these weapons by 1 Jan 57. Further, that by

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utilizing figures available from Hq USAF, we have come up with a requirement for 16,300 weapons by 1961. The question was raised as to what was meant by "relaxed security and legal restructions." Major Bodinger stated that unless some restrictions are lifted concerning the use of nuclear weapons, HUGARN may have to be scratched from our program. In this connection, General F. H. Smith remarked that there is some public opinion that if we give an offensive weapon to the military, they are apt to use it without authority. It was further pointed out that before we have alert aircraft with HUGARN, we will have to have an early warning line in and operating.

c. Interceptor Missiles - Lt Colonel Thornton.

(1) Problem areas. There are generally two problem areas in the Interceptor Missiles program. It appears that all the effort is being applied to the program which can be reasonably expected. Therefore, there are only two major limiting factors (low altitude and range) which can be pursued with vigor.

(a) Low Altitude. There are three active projects in the field of seekers: Pulse Doppler, being developed by Boeing/RCA Victor; and Continuous Wave Doppler, being developed separately by Ryan and Raytheon.

(b) Range. Range in Interceptor Missiles allows for flexibility which is desirable in any air defense weapon. It is estimated (and substantiated by war gaming) that this desired range is 200 to 300 nautical miles. There are only two development interceptor missiles which will attain these ranges: The F-98B and the advanced L-253. Neither of these weapons will be available prior to 1960.

(2) Recommendations.

(a) Push the Pulse Doppler and Continuous Wave development programs.

(b) Stress ADC requirement for F-98B type by 1960.

(c) Pursue research and development for the LRIM-X.

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(3) Future force structure. Indications are that increased pressure may be expected from without ADC to substitute Interceptor Missile Squadrons for Manned Interceptor Squadrons on a one-for-one basis during the post-1958 time period.

(a) Composite force of weapons was well planned during the 1954-60 Requirements Plan studies.

(b) A substitute program for interceptor missiles and manned interceptors is not offered as a solution at this time.

(4) Recommendations.

(a) Maintain balanced force structure at minimum levels of each weapon.

(b) Disapprove any substitution for this program.

No important discussion followed this portion of the briefing.

d. Avionics - Major Preble.

(1) Detection and Lock-On.

(a) The Fire Control Systems programmed for the F-89H, F-102A, F-102B and F-101A will provide adequate detection and lock-on range for those weapons systems. The systems proposed for the F-103 and the LRI will not meet the 50 NM and 100 NM ranges required, respectively, for these systems. ARDC has forecast a 40-50 NM detection capability in the most complicated systems proposed.

(b) Recommendation: Requirements for extended lock-on ranges should not be relaxed.

(2) Augmentation Forces.

(a) Light weight search radar for augmentation fighters (pod type) will be evaluated by April 1955 and will be available in late calendar year 1956. First integrated systems will be in the F-104.

(b) Recommendation: Stress desirability for integrated systems in future augmentation aircraft.

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(3) Fire Control System Features.

(a) Air-to Air IFF. Available late calendar year 56.

(b) AMTI. Available on MG-3 and Mx-1179.

(c) Data Link. First system, GE Data Link, late CY 55.

(4) ECCM. The following countering measures to ECM are in being or are planned for our weapons systems:

(a) ECM - ECCM

(b) Microwave Jamming - Tuneable Magnetron Homing Circuit in FCS

(c) Chaff - Anti-Chaff Synchronizer

(d) UHF Jamming.

(5). TACAN.

(a) TACAN, world-wide military tactical navigation system, is forecast for operational use by Jan 57. Any further slippage (very possible) will prejudice our ability to navigate modernized and future aircraft.

(b) Recommendations:

1. Support TACAN implementation.

2. Press for interim VOR-TVOR installation for ADC.

(6) Ground Based Jammer

(a) Interim system will be available late Calendar Year 1957 with an improved system developed by late CY 1959.

(b) Electronic intelligence is needed to assure jamming on proper frequency bands.

Discussion. During the discussion period which followed, the TACAN system was discussed at some length. It was brought out in

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the briefing that we may have to delay TACAN and go to TVOR. The point was then brought up as to why we support a move to TACAN when we can effectively operate and navigate with TVOR. Colonel Powell stated that the recommendation was made that we support TACAN due to pressure from top-side. Also, he stated that it has sufficient advantages, and if CAA has it, we ought to support it too. Our purpose is not to fight it, and it does offer advantages if it is accepted both here and internationally. If it works, we should have no objection going to TACAN when available.

e. Results of Long-Range Interceptor Competition - Col Powell.

(1) Conclusions reached.

(a) Considering proposals submitted in the airframe and fire control system competitions, no weapon system combination met the altitude or target acquisition range requirements within the specified time period.

(b) A LR interceptor meeting the performance requirements specified by the military characteristics will require use of advanced engines which are now in the preliminary stages of investigation. It is estimated that an operational weapon system using such engines could not be available before 1962.

(c) The fire control system competition indicated that no new techniques are available to permit marked improvements in acquisition range. A logical development program aimed at providing the best possible capability with respect to an armament and control system for the LRI-X will result in availability of production systems no sooner than mid-1960, assuming Hughes as the source. Utilization of a new source for development would result in production availability approximately one year later.

(d) The combat capability represented by proposals submitted in the competition, when considered realistically as to tactical availability, is inconsistent with the projected threat in the post-1960 time period.

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(3) Recommendations.

(a) That none of the proposals, prime or alternate, as submitted in the airframe competition, be selected for development.

(b) That the general operational requirement for the Long Range Interceptor be reviewed in light of revisions of threat estimates and a realistic appreciation of the estimated date of tactical availability.

(c) That a firm development program be established which will lead to a suitable armament and control system having a maximum acquisition range capability, and which is compatible with the Long Range Interceptor mission.

(d) That the contracts be given selected contractors for the purpose of obtaining General Design Studies leading to development of a Long Range Interceptor Weapon System incorporating advanced engines and sub-systems, and which would replace the F-101 interceptor at the earliest practicable date.

(e) That an interceptor version of the F-101 be procured to provide the earliest Long Range Interceptor capability in the 1958-60 time period.

(f) That the procedures established by AFR 80-30 be followed in fulfillment of all future weapon system requirements.

Discussion. A rather lengthy discussion followed this portion of the briefing, and it was a final determination that we would have to take the F-101 as an interim Long Range Interceptor and follow up with developments. It was stated that the 101 with a J-67 engine will have a supersonic speed at ceiling, and it is within the realm of possibility the F-101 can be improved. Col Powell stated that members of the LR Interceptor Committee had taken these results back to their respective commanders for review and comment, and at a formal meeting to be held at Hq ARDC, the final report will be drawn up. General Chidlaw stated he would discuss the LRI problem further with Colonel Powell on the flight to Wright-Patterson AFB, and that while there, he may have a chance to discuss it informally with General Power.

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4. Council Action. The ADC Council accepted the ADC weapons requirements proposals subject to further study in some instances.

5. There being no further business to come before the council, the meeting adjourned at 1210.

FREDERIC H SMITH, JR
Major General, USAF
Vice Commander
(Chairman, AD Command Council)

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AFDRQ-AD/F 15 Nov 1954

SUBJECT: Draft Copies of GOR for a Piloted Interceptor Weapons System (Medium Range) (U)

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

Attached for your information are two draft copies of a GOR for a Piloted Interceptor Weapons System (Medium Range). This GOR is for a new medium range interceptor aircraft to be a follow-on to the F-102 series aircraft. It is requested that any comments or recommendations you may have be returned to the Air Defense Division, Directorate of Requirements, DCS/O, Hq USAF, prior to 30 November 1954.

BY ORDER OF THE CHIEF OF STAFF:

1 Incl:
As mentioned abv.
(2 cys)

JOSEPH L. LAUGHLIN
Colonel, USAF
Chief, Air Defense Division
D/Requirements, DCS/D

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Hq USAF AFDRQ-AD/F Subj: (U) Draft Copies of GOR for a Piloted Interceptor Weapons System (Medium Range)

ADOPR (15 Nov 54) 1st Ind 28 Dec 1954

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

TO: Director of Requirements, Headquarters USAF, ATTN: Air Defense Division, Washington 25, D. C.

The following comments and recommendations by item to the attached GOR for a Piloted Interceptor Weapons System (Medium Range) are submitted as per your request and for your consideration.

I. Purpose. The referenced Development Planning Objective has not been approved and published and should not be used as a basis for a weapons system requirement until the information contained therein is approved and disseminated to interested agencies.

III. Enemy Effectiveness Estimates. This Command does not envision use of manned interceptors against a ballistic threat but only against air breathing vehicles. Although the latest National Intelligence Estimate does not give the Soviet Union an intent to develop a "Navaho" type missile, this Command considers that such a device, the possible ultimate in air breathing weapons, can be built and launched against this country in the time period covered by this GOR. Therefore, future interceptors must be designed with the capability of destroying this threat. Reference USAF Standard Aircraft Characteristics, "Green Book," the "Navaho," B-64A, is designed to fly at Mach 3.25 at an altitude of 80,000 to 88,000 feet.

IV. Friendly Environment.

D. Maintenance Facilities.

1. The statement, "Overall facilities....," should be deleted as not necessarily applicable to a GOR. The Wartime Planning Factors Manual is undergoing revision to reflect a change in operational concept.

V. Operational Employment. The third sentence, "To permit....," should be amended to include a provision for re-installing droppable fuel tanks in the maximum turn-around time in the cases where the use of such tanks is part of the basic mission.

VII. Operational Performance.

A. Radius of action. Should be 300 nautical miles.

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Hq USAF AFDRQ-AD/F Subj: (U) Draft Copies of GOR for a Piloted Interceptor Weapons System (Medium Range)

ADOPR (15 Nov 54) 1st Ind (Cont'd)

B. Altitude. This document should reflect a 1.2 G maneuverability ceiling as being required for the interceptor at the maximum altitude of the target, in this case the maximum operating altitude of Navaho type cruising missiles.

C. Speed. Consistent with the foreseeable technical development of ram jet engines, a maximum speed of Mach 4.5 for this interceptor is highly desirable. In any event a 20 to 25 percent speed advantage over the anticipated target is mandatory.

E. Fire Control Systems. In subparagraph 1(b) an additional statement should be included which will insure that the fire control system will provide an automatic break away maneuver when the firing impulse has been given. This is considered a mandatory feature on interceptors firing atomic armament or on interceptors which may be closing with the target at extremely high rates of speed.

FOR THE COMMANDER:

1 Incl
w/d 1 cy

JOSEPH D. HORNSBY
Lt Col, USAF
Asst Command Adj

COPY OF INCLOSURE NOT AVAILABLE FOR COMMAND ADJUTANT FILE.

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11 Aug 1954

Dr. C. C. Furnas
Chairman, Advisory Panel on Aeronautics
Office of the Asst Secretary of Defense for R&D
Washington 25, D. C.

Dear Dr. Furnas:

Further to our conversation on the F-103 during your visit here, I should like to be certain that I left with you no misunderstanding as to our desire in this command that this project be pushed as fast as is practicable. While we realize, as I told you, that in certain areas we are very probably pushing the state of the art in the development of this aircraft and its power plant, the fact remains that the recent evidence of a much more rapid than forecast rate of development in Russian bombardment aircraft creates a pressing requirement for fighter-interceptors of extremely high performance. Thus, while in its present state, the F-103 may be a purely research vehicle, there is a requirement for a fighter in our inventory of similar performance by 1958 or as soon thereafter as possible. This requirement has been established with Headquarters USAF and is perhaps the source of your information that quantity production was being considered.

In clarification of our conversation, therefore, we have stated a requirement for an operational manned interceptor with a combat ceiling of 70 to 75,000 feet and a speed approaching Mach 3.0. This aircraft would be employed within the combat zone under close control as a weapons system teaming with the long-range interceptor presently under Phase I competition.

Trusting that this communication will serve to establish our position on the F-103 or an aircraft of like performance, I am

Sincerely,

FREDERIC H. SMITH, Jr.
Major General, USAF
Vice Commander

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16 October 1954

From: COMDR AIR DEFENSE COMMAND ENT AIR FORCE BASE
COLORADO SPRINGS, COLORADO

To: CHIEF OF STAFF, USAF, WASH 25, D. C.

(SECRET) ADOPR 1828. REUR AFDRQ-AD/F 52477 DTD 15 Oct 54.

Estimates of maximum altitude attainable by Russian Jet bombers have increased by more than ten thousand feet since 4 May 54. Situation so serious ADC must take more than passing interest in any repeat any weapon proposal that insures successful engagement at altitude around fifty five thousand feet. Reference (TS) ltr Gen Chidlaw to CofS USAF, dated 17 Aug 54, subject: "Air Defense Capabilities." Renewed interest shown F89X due to claims by Northrup and failure of F-102 to meet specifications. Northrup representatives in early October indicated WADC concurrence in performance figure contained in proposal from Northrup. No recent figures were available from WADC to confirm or deny. Letter from Hq ARDC to Hq USAF dated 1 Oct 54, subject: "Evaluation of F89X" was not known to this headquarters until 15 Oct upon receipt of 52477. Informal information same day from Hq USAF indicates combat ceiling of subject aircraft as being fifty-two thousand five hundred. This is below previous estimate and coupled with serious speed deficiencies would make this aircraft unacceptable for the air defense mission in the time period of availability. This further emphasizes the requirement

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for new interceptor of better performance at altitude nearing sixty thousand with the least possible delay. If interceptors cannot meet these performance requirements other weapons will have to be substituted in greater numbers.

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From: HQ USAF, WASH D. C.

To: COMMANDER, AIR DEFENSE COMMAND, ENT AFB COLORADO

(SECRET) From AFDRQ-AD/F Cite 52477. Reference telecon between Brig Gen Gerrity, this Hq, and Maj Gen George F. Smith, your Hq, regarding F-89X aircraft in which more than passing interest was shown on the part of ADC. This represents a significant change in ADC views, reference ADOPR 0726, 4 May 54 and indication to Hq ARDC personnel on their visit to Hq ADC, 11 June 54. Further, letter from Hq ARDC, Subject: "Evaluation of F-89X," 1 Oct 54, recommends no further consideration be given to F-89X proposals based on comparison of F-89X performance estimates to those of other interceptors that could be available in the same time period. Request latest views and comments of ADC relative to the F-89X proposal be forwarded to arrive this Hq not later than 18 Oct 54.

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Subject: Pers ltr from Gen Everest to Gen Chidlaw and Draft of Proposed Reply

To: DCS/O
DCS/M
Asst for Programming
C/S
IN TURN

From: VC

Date: 12 Nov 54
Comment No. 1

For coordination.

2 Incls
1. Ltr to Gen Chidlaw
2. Proposed Reply

FREDERIC H. SMITH, JR.
Major General, USAF
Vice Commander

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16 November 1954

Lt. Gen. F. F. Everest
Deputy Chief of Staff, Operations
Headquarters USAF
Washington 25, D. C.

Dear Hank:

Thanks a lot for your letter of 5 November. As you surmised, we are keeping in as close touch as possible with developments at Muroc and are extremely encouraged by the initial flight test information on the F-101. As you may know, we were instrumental in having the 101 mocked up as an all-weather fighter, for we felt very definitely that we needed a companion piece for the F-102 through its various configurations. We were informed by WADC that if we would accept initially a rocket-firing fighter only, and were able to shorten the Cook-Craigie program by test data obtained on the F-101 in its escort-fighter configuration, we could have a companion piece in our inventory shortly after we start our F-102A conversion. Assuming continued successful tests of the 101, we would advocate initial planning for about equal numbers of 101-I's and 102A's, substituting 101's for the latter on a one-for-one basis. This program could then be adjusted if experience dictates.

Insofar as the F-104 is concerned, we are, as you know, only willing to take aircraft without an all-weather capability if that is the only way by which we can achieve the minimum required altitude performance. It is our understanding that ARDC is presently engaged in the evaluation of several aircraft against the altitude criteria.

Insofar as the F-89D is concerned, and again in connection with the altitude requirement, we have expressed to your headquarters an interest in the Northrop F-89X proposal with J-65 engines, if, as Northrop expects, the last sixty-eight F-89H's on contract could be delivered as X's without a serious gap in the program and without inordinate cost. This airplane would be somewhat marginal

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insofar as speed at altitude is concerned; but if it is the only way we can achieve a high altitude Falcon capability in the foreseeable future, it might well be worthwhile.

I am relieved at your news that Admiral Radford understood clearly and shared our reservations on the report of the Net Evaluation Committee. I know you shared our concern here about possible misinterpretation of the paper results obtained.

With best personal regards, I am

Sincerely,

B. W. CHIDLAW
General, USAF
Commander

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5 November 1954

General Benjamin W. Chidlaw
Commander, Air Defense Command
Ent Air Force Base
Colorado Springs, Colorado

Dear Ben:

Please know how much I appreciated the hospitality extended by you when Nate and I visited ADC last week. It was a most interesting, although abbreviated, visit and very profitable for us. We went on to Muroc that night and spent Friday there.

I know that both you and Freddie are keeping a close touch with developments at Muroc, but I suggest one of you fly out there in the near future and take a look at the F-101, F-102, and F-104 in their current stages of testing.

Without any prejudice as to the ultimate development of the 102, the question in our minds is whether or not, and to what extent, it would be sound to plan for the equipping of a portion of your Command with a day fighter of the F-101 configuration with a limited all-weather capability. To a considerable lesser extent, there is also the question of the F-104 in the air defense role.

I think the Chief has given up any thought of the F-89D extension. This should be a relief to Freddie.

The Net Evaluation Committee made its presentation to the National Security Council, the Joint Chiefs of Staff, and the Planning Board this morning. Admiral Radford summarized the presentation, or rather I should say he amended the presentation, with a short talk of his own which largely took the curse off of the report in the areas which were of concern to you and Freddie. I personally have not seen the report nor did I hear the presentation, but Nate told me after the meeting that Radford left no doubt in the minds of the Council as to the overly optimistic conclusions that could be drawn from the report. When we do get a copy, we will give you the reaction of Plans and Operations.

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Thanks again for taking care of us so nicely.

Sincerely,

F. F. EVEREST
Lieutenant General, USAF
Deputy Chief of Staff, Operations

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Major General George W. Mundy
Director, Supply and Services
Office of Deputy Chief of Staff, Materiel
Headquarters United States Air Force
Washington 25, D. C.

6 Aug 1954

Dear George:

Thank you very much for the copy of your report, "DCS/M Staff Visit to ADC," which was recently received. I think that you have selected for comment many of the vital problems affecting logistic support of this command.

I would like, however, to make one comment on Item 8, which is entitled "F-102 Aircraft." This is an item on which we have been going around and around on for sometime since there exists at all levels and between all levels some difference of opinion. Some of the Operational people believe that it is necessary to keep gyros spinning, tube filaments warm, inverters running, etc., while the airplanes are in the alert hangar on five minute alert. Other Operational people believe this is not necessary. The same situation exists in DCS/M. Personally, I feel that the wear and tear on gyros and electronics equipment will be greater and thus cause more aborts or more out of commission time than would exist if we turned them on at the sound of the bell and used the subsequent four minutes to get gyros up to speed and electronics equipment working.

We are going to resolve this difference of opinion this next week (9-14 August).

The resolution, I hope, will result in requirements something like the following: flight instrument gyros up to speed in two minutes; communications equipment operating approximately two minutes; fire control system up to speed, warmed up, and operating five minutes, etc. This will permit proper control and safe flight

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during scrambles, and I believe will provide enough time for the fire control system to become operating about the time the pilot reaches eight to ten thousand feet.

I point this out to you at this time because I notice you took action with Deputy Chief of Staff Development and Depty Chief of Staff Operations and I feel we should not get these organizations hot and bothered until we come up with a firm and well-supported requirement -- one way or the other.

Let me thank you again for your helpful visit to this headquarters.

Sincerely,

MARSHALL S. ROTH
Brigadier General, USAF
Acting Chief of Staff

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OFFICE OF ADC PROJECT OFFICER
Edwards Air Force Base
Edwards, California

10 September 1954

SUBJECT: Early "Lock On" Type Testing of F-102A

TO: Commander, ADC
ATTN: Director, Plans & Requirements
Ent Air Force Base, Colorado

1. It is generally agreed that "Lock On" testing of squadrons equipped with F-86D and F-94C type aircraft has given ADC valuable information. However, I believe that this information came late in the program. Had this information been available at or near the beginning of conversion of ADC squadrons to this type aircraft, some man-hours, money and resources would surely have been saved. This is to say nothing of the possible earlier attainment of combat readiness of these squadrons.

2. In order to avoid some of the difficulties of the F-86D Program, it was proposed to certain officers of DCS/O and DCS/M of Headquarters ADC that an extended "Lock On" type testing be accomplished on the first ADC F-102A Squadron. This test is not to replace the Phase VI or VII testing by ARDC or APGC. These officers agreed that the idea was sound. To get the Air Proving Ground Command's reaction to this proposal, a visit was made to the Air Force Operational Test Center at Eglin AFB on 2 September 1954. Colonel E. W. Szaniawski, Deputy Commander, and Colonel T. D. DeJarnette, Chief of Air Defense Division, were contacted. Both officers felt that this was a sound approach to the problem.

3. In reference to the Cooke-Craige plan for testing the F-102A, it is believed that this plan will eliminate a majority of the problems encountered in the F-86D Program. However, as an added insurance, it is felt that the early squadron testing of the F-102A aircraft for an extended period will pay dividends.

4. On 3 September, a conference was held with Lt. Colonel Victor Milner, Jr., Chief of System Training and Operations Division, Lt. Colonel P. E. Joyal and Major M. C. Johansen of Operation and Training, Headquarters ADC. At that time I outlined in detail the proposal for early "Lock On" testing of the first F-102A squadron. Lt. Colonel Milner will prepare a letter of requirement, with

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Office of ADC Proj Off, Edwards AFB, Calif, Subj: Early "Lock On" Type Testing of F-102A

all necessary information, and after appropriate coordination will recommend forwarding of the letter to Headquarters USAF. It is requested that an information copy of that letter be forwarded to Colonel T. D. DeJarnette of the AFOTC.

/s/ ROYAL N. BAKER
Colonel, USAF
ADC Project Officer
(F-102)

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B/Ltr fm ADC, Subject: (Unclassified) Requirement for Medium Range Interceptor, dated 10 July 1954

AFDRQ-AD/F 1st Ind 27 August 1954

DEPARTMENT OF THE AIR FORCE, HQ USAF Washington 25, D. C.

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

1. This headquarters has directed ARDC to proceed with the mock-up of the F-101A in both a rocket-only version and a MG-3/Falcon/rocket version. Also, ARDC has been directed to initiate a study of a two-place configuration of both the F-101A and F-101B incorporating the MX 1179/Falcon/rockets which would utilize the J-67 or J-75 engines. The mock-up of the rocket-only version is scheduled for completion in late November, this year.

2. Future development action will be withheld pending completion of Phase I testing of the F-101A. Phase I testing is now scheduled to commence 25 September 1954. This headquarters plans to review both the F-100BI and the F-101AI at the earliest possible date after Phase I testing of the F-101A, in order to select a companion or back-up aircraft for the F-102A.

BY ORDER OF THE CHIEF OF STAFF:

/s/ GILBERT L. MEYERS
Colonel, USAF
Acting Director of Requirements
Deputy Chief of Staff, Development

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From: HQ ADC ENT AFB COLORADO SPRINGS COLORADO 2 Nov 1954

To: COMDR SAAMA, KELLY AFB, SAN ANTONIO TEXAS

COMDR WRAMA, ROBINS AFB, GEORGIA
COMDR AMC, WRIGHT PATTERSON AFB, OHIO
COMDR WADC, WRIGHT PATTERSON AFB, OHIO
DEPUTY CHIEF OF STAFF/MATERIEL, HQS USAF, WASH. D. C.
COMDR EDWARDS AFB, CALIFORNIA

(SECRET) ADMAC-5A 1917 . For Mr. F.E.Thrailkill, SAAMA.

For WINT, WRAMA. For MCMIN, AMC. For AFTRQ, Hqs USAF. For ADC F-102 Liaison Officer, Col. R.N. Baker, EDWARDS AFB.

This message is in two parts. PART I. It is imperative that maintenance of all electronic systems with their connectors and couplers, peculiar to the F-102 type aircraft, be accomplished in a like manner. This is necessary to provide a unified and integrated F-102 electronic maintenance program. This command strongly recommends that all electronic maintenance on F-102 peculiar systems be accomplished at a combined organizational and field maintenance facility at organizational level with depot support provided on contract or at zonal depots. It is imperative that a functionally integrated electronic system not be split up into several AMA depots for logistic support. Part II. To assist this Hqs in planning for the logistical support of the F-102 electronic system, it is requested that you indicate which of the following F-102 systems will be supported by:

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(SECRET) ADMAC-5A_____.

(a) Three (3) distinct echelons of maintenance, (organizational, field and depot)

(b) A combined organizational and field at organizational level with contract depot support

(c) Other (describe)

FCS Radar

Computer

Power Supply

Missile Auxiliaries

Automatic Flight Control (Including ILS Coupler)

AN/APX-26

AN/APX-27

AN/ARR-39

Optical Sight

Pitch and Yaw Damper system. Connectors and Couplers for the above systems. It is further requested that this information be forwarded ASAP since shop designs, ECL's, Ground Handling Equipment, spares and test equipment are dependent upon the levels at which maintenance is to be accomplished.

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OFFICE OF THE ADC PROJECT OFFICER (F-102)
EDWARDS AFB
EDWARDS, CALIFORNIA

13 May 1954

SUBJECT: Preliminary Air Force Phase II Flight Test & Data on YF-102A

TO: Commander
Hq Air Defense Command
ATTN: Director of Plans and Requirements
Ent Air Force Base
Colorado Springs, Colorado

1. Inclosed is a copy of classified message sent to Hq USAF and Hq ARDC by the AFFTC regarding the Preliminary Data on YF-102A airplane from Air Force Phase II Flight Tests.

2. Please note that the preliminary limiting altitude of the aircraft as a weapon is approximately 44,000 to 47,000 feet. In the first evaluation by ARDC pilots this altitude was thought to be approximately 40,000 feet. This office will advise your Headquarters as to the effective combat altitude as soon as final data becomes available.

3. Suggest the inclosed message be sent to the Commander and Vice Commander for their information.

1 Incl
TWX

/s/ ROYAL N. BAKER
Colonel, USAF
F-102 Project Officer

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From: COMMANDER AFFTC, EDWARDS AFB, CALIFORNIA 13 May 1954

To: COMMANDER WADC, WRIGHT-PATTERSON AFB OHIO
ATTN: WCSF

HQ ARDC, RDDSB, ATTN: LT COL L V GOSSICK

HQ USAF, DRD, ATTN: LT COL C W BUTCHER

FTDTP-5-35-E....PRELIMINARY DATA ON YF-102A AIRPLANE FROM AIR FORCE PHASE II FLIGHT TESTS. LIMITED PERFORMANCE WITH QUALITATIVE STA-BILITY AND HANDLING CHARACTERISTICS ARE AVAILABLE FROM THE PHASE II TESTS AT THIS DATE. THESE DATA INDICATE THAT THE LIMITING ALTITUDE OF THIS AIRPLANE AS A WEAPON IS APPROXIMATELY 44,000 to 47,000 FEET. /1/ THE STABILITY AND CONTROL CHARACTERISTICS HAVE BEEN OBSERVED. /A/ THE GROUND HANDLING CHARACTERISTICS ARE UNSATISFACTORY IN THAT THE NOSE WHEEL STEERING IS EXCESSIVELY SENSITIVE AND THE TURNING RADIUS IS APPROXIMATELY TWICE AS LARGE AS DESIRED. /B/ DURING THE TAKE OFF THE SENSITIVITY OF THE NOSE WHEEL STEERING IF USED TENDS TO CAUSE OVERCONTROLLING. DIRECTIONAL CONTROL CAN BE MAIN-TAINED WITH THE BRAKES, AND WITH THE RUDDER AT HIGHER SPEEDS. IT IS RECOMMENDED THAT NOSE WHEEL STEERING NOT BE USED IN THE TAKE OFF. /C/ THE STICK FORCES FOR NOSE WHEEL LIFT OFF ARE HIGH WHEN USING THE RECOMMENDED TRIM SETTINGS; HOWEVER THE FORCES FOR TAKE OFF ARE NOT HIGH AND LITTLE TRIM CHANGE IS REQUIRED WITH THE RETRACTION OF THE LANDING GEAR. THERE IS NO TENDENCY TO OVER-CONTROL EITHER LONGITUDINALLY OR LATERALLY DURING OR IMMEDIATELY AFTER TAKE OFF. /D/ THE AIRPLANE ACCELERATES RAPIDLY TO BEST

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FTDTP-5-35-E

CLIMB SPEED AFTER TAKE OFF TAKING APPROXIMATELY ONE AND ONE HALF MINUTES FROM BRAKE RELEASE. VISIBILITY THROUGHOUT TAKE OFF AND THE INITIAL CLIMB IS SATISFACTORY EXCEPT FOR THE RESTRICTION CAUSED BY CANOPY STRUCTURE. /E/ IN LEVEL FLIGHT THE AIRPLANE EXHIBITS A SLIGHT BUFFET NEAR THE MAXIMUM LEVEL FLIGHT SPEEDS. A DIRECTIONAL TRIM CHANGE ALSO OCCURS IN THE RANGE OF .91 TO .93 INDICATED MACH NUMBER REQUIRING RIGHT RUDDER TO MAINTAIN STRAIGHT AND LEVEL FLIGHT. THE SEVERITY OF THIS TRIM CHANGE VARIES POSSIBLY DUE TO ASYMMETRIC FUEL LOADINGS. /F/ THE DYNAMIC LATERAL DIRECTIONAL OSCILLATIONS ARE ADEQUATELY DAMPED WHEN THE YAW DAMPER IS FUNCTIONING PROPERLY; HOWEVER THE DAMPER MALFUNCTIONED ON FOUR OF THE ELEVEN PHASE II FLIGHTS. (THIS DAMPER IS UNSATISFACTORY FOR USE IN THIS AIRPLANE. /G/ THE AIRPLANE APPEARS TO DEMONSTRATE NEUTRAL TO NEGATIVE STATIC LONGITUDINAL STABILITY IN THE SPEED RANGE AT 250 KNOTS TO 340 KNOTS INDICATED AIRPSEED AT 35,000 FEET ALTITUDE. /H/ IN MANEUVERING FLIGHT AT ALTITUDE STICK FORCES LIGHTEN WITH INCREASING NORMAL ACCELERATIONS. AT 35,000 FEET AND .9 INDICATED MACH NUMBER FORCES ARE SATISFACTORY TO APPROXIMATELY 2.5G BUT GO TO ZERO BY 3.0 TO 3.2G. SIMILAR CHARACTERISTICS WERE NOTED AT .7 INDICATED MACH NUMBER AND LOWER "G" LOADINGS. /I/ BUFFETING IN MANEUVERING FLIGHT AT 47,000 FEET BECOMES SEVERE ENOUGH TO PREVENT ACCURATE GUN SIGHTING AT APPROXIMATELY 2G AND AN INDICATED 0.8 MACH NUMBER. AS "G" IS INCREASED THE DRAG

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FTDTP-5-35-E

INCREASES RAPIDLY RESULTING IN A FAST BLEED OFF OF IAS OR LARGE RATES OF DESCENT IN A TURN. ACCELERATION TO SPEED IS SLOW EVEN WITH AFTERBURNER. /J/ ADVERSE YAW IN ROLLING MANEUVERS IS UNSATISFACTORY CREATING A SLOPPY LATERAL DIRECTIONAL FEEL DURING ROLLS. /K/ THE STALL IS CHARACTERIZED BY A HIGH RATE OF SINK WITH AMPLE WARNING IN A MILD AIRFRAME BUFFET. WITH GEAR RETRACTED AND POWER FOR LEVEL FLIGHT AT 275 KNOTS, 35,000 FEET ALTITUDE AND 25,000 POUNDS GROSS WEIGHT A BUFFET IS EXPERIENCED AT 176 KNOTS AND A RATE OF SINK DEVELOPS AT APPROXIMATELY 140 KNOTS WITH ADEQUATE CONTROL TO APPROXIMATELY 105 KNOTS. IN THE POWER APPROACH CONFIGURATION GEAR DOWN POWER FOR LEVEL FLIGHT AT 180 KNOTS 25,000 FEET AND 24,000 POUNDS GROSS WEIGHT A BUFFET IS NOTICED AT 168 KNOTS WITH A SINK STARTING AT 150 KNOTS AND THE NOSE FALLING OFF TO THE LEFT AT 106 KNOTS. /L/ SUPERSONIC FLIGHT IS ATTAINABLE IN SHALLOW DIVES WITH MAXIMUM POWER. NO UNUSUAL TRIM CHANGES OCCUR AFTER THE DIRECTIONAL CHANGE IN THE TRANSONIC REGION. THE AIRPLANE APPEARS MORE STABLE IN THIS SUPERSONIC REGION THAN IN THE SUBSONIC REALM. ABOVE MACH NO. 1.0 ELEVON EFFECTIVENESS IS DECREASED WITH RESULTANT LARGE DEFLECTIONS AND HIGH FORCES FOR MANEUVERING AND DIVE RECOVERY. /M/ AILERON FORCES ARE SATISFACTORY IN ALL REGIONS OF FLIGHT. THE RUDDER FORCES ARE SLIGHTLY LIGHT OR THE RUDDER TOO EFFECTIVE IN THE SUBSONIC REGION. ELEVATOR FORCES ARE TOO LIGHT IN THE SUBSONIC AND TRANSONIC REGIONS BECOMING TOO HIGH AT SUPERSONIC SPEEDS. THE TRIM RATES ABOUT ALL AXIS ARE TOO SLOW. /N/ THE SPEED BRAKES ARE AS EFFECTIVE AS

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THOSE OF AN F-86 AIRPLANE: HOWEVER A BUFFET OCCURS AT HIGH SPEEDS WITH FULL EXTENSION. THE ACTUATION TIME FOR THE BRAKES IS TOO LONG. THE OPERATING SWITCH IS UNSATISFACTORY AND SHOULD BE CHANGED TO THE TYPE EMPLOYED IN F-86 AIRCRAFT. THE SPEED BRAKES ARE NOT AVAILABLE WITH THE LANDING GEAR EXTENDED UNTIL WEIGHT IS PLACED ON THE NOSE GEAR. /0/ IN LANDING THE TURN ON TO FINAL APPROACH MUST BE STARTED EARLIER THAN IN PRESENT DAY FIGHTERS AS A TENDENCY EXISTS TO OVERSHOOT THE FINAL APPROACH. THE RECOMMENDED PATTERN SPEEDS ARE 180 KNOTS ON BASE WITH 160 KNOTS ON FINAL AND 140 to 125 KNOTS AT TOUCHDOWN. WITH A GOOD FINAL APPROACH THE AIRCRAFT SHOULD BE TOUCHED DOWN AT 130 KNOTS OR LOWER. THE DRAG CHUTE WAS PROVEN UNSAFE ON THE SECOND FLIGHT OF PHASE II AND HAS NOT BEEN USED SINCE. LANDINGS WITHOUT THE CHUTE CAN BE ACCOMPLISHED WITH MODERATE BRAKING ON A DRY 8,000 FOOT RUNWAY. /2/ THE STANDARD DAY PERFORMANCE DATA THUS FAR OBTAINED ARE SUMMARIZED HEREIN. /A/ THE MAXIMUM LEVEL FLIGHT SPEEDS WITH AFTERBURNING ARE 0.96 TRUE MACH NUMBER AT 15,000 FEET and 0.97 MACH NUMBER AT 25,000 FEET. WITH MILITARY POWER THE LEVEL FLIGHT SPEEDS ARE 0.93 TRUE MACH NUMBER AT 15,000 FEET, 0.94 MACH NUMBER AT 25,000 FEET, AND 0.90 MACH NUMBER at 40,000 FEET. /B/ THE BEST CRUISE MACH NUMBER AT 40,000 FEET IS 0.72 WITH A RANGE AT .35 NAUTICAL AIR MILES PER POUNT OF FUEL. /C/ THE RATE OF CLIMB AT 25,000 FEET WITH THE SPEED FOR BEST CLIMB IS 13,400 FEET PER MINUTE. THE TIME TO CLIMB TO 40,000 FEET FROM BRAKE RELEASE IS 4.7 MINUTES AND THE TIME TO

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FTDTP-5-35-E

CLIMB TO THE COMBAT CEILING AT 48,000 FEET (500 FEET PER MINUTE) IS 8.5 MINUTES. /D/ THE STATIC THRUST OF THE J-57-P11 ENGINE INSTALLED IN THE F-102 AIRPLANE IS 11,600 POUNDS AT SEA LEVEL WITH MAXIMUM POWER AND 8,400 POUNDS WITH MILITARY POWER. /3/ THE FOLLOWING EQUIPMENT ON THE AIRPLANE HAS MALFUNCTIONED DURING THE PHASE II TESTS CAUSING DELAYS: /A/ THE YAW DAMPER MALFUNCTIONED ON FOUR OF THE ELEVEN FLIGHTS. /B/ THE DRAG CHUTE JETTISONED AS A PACKAGE WHEN AN ATTEMPT WAS MADE TO DEPLOY THE CHUTE AT TOUCH-DOWN. ON THE NEXT FLIGHT THE CHUTE INADVERTENTLY DEPLOYED IN FLIGHT AT 400 KNOTS INDICATED AIRSPEED. THE SHEAR LINK DID NOT FAIL AND THE PARACHUTE WAS JETTISONED BY THE PILOT AFTER SOME DIFFICULTY. /C/ THE COCKPIT PRESSURIZATION IS UNSATISFACTORY IN THAT THE FUMES OBTAINED WITH HIGH ENGINE POWERS INTERFERE WITH THE PILOTS VISION. A FLUCTUATION OF THE CABIN PRESSURIZATION ON LATER FLIGHTS MADE HIGH ALTITUDE OPERATION VERY UNCOMFORTABLE. /D/ THE LEFT FUEL TANK FEEDS AT A GREATER RATE THAN THE RIGHT TANK REQUIRING CONSTANT ATTENTION TO THE FUEL SEQUENCING TO AVOID ASYMMETRIC LOADINGS. /4/ THESE TESTS ARE BEING ACCOMPLISHED WITH THE NORMAL COMBAT LOADING AT TAKE OFF. THE WEIGHT IS IN THE REGION OF 29,900 POUNDS WITH A CG OF 28% MACH. THE FOLLOWING COMMENTS REGARDING PILOT TRANSITION TO THE F-102 TYPE AIRCRAFT ARE BELIEVED PERTINENT. /A/ THE NOSE HIGH ATTITUDE ON TAKE OFF AND LANDING IS NOT NOTICEABLE AND SHOULD IMPOSE NO TRAINING PROBLEM. /B/ GENERAL HANDLING IN THE TRAFFIC PATTERN AND ON APPROACH IS SLIGHTLY

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FTDTP-5-35-E

MORE DIFFICULT THAN THAT OF THE F-86D. /6/ IT IS EMPHASIZED THAT THE ABOVE INFORMATION PARTICULARLY THE LIMIT ALTITUDE CAPABILITY AND THE HANDLING CHARACTERISTICS IS PRELIMINARY AND THAT A COMPLETE EVALUATION CANNOT BE MADE UNTIL THE REMAINDER OF THE PHASE II TESTS HAVE BEEN COMPLETED AND THE DATA REDUCED.

JOHN L. WESESKY, Flight Test Engineer
FTDTP 462

H. A. HANES, Colonel, USAF
Director, Flight Test and Development

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HEADQUARTERS
AIR FORCE FLIGHT TEST CENTER
DIRECTORATE, FLIGHT TEST AND DEVELOPMENT
EDWARDS AIR FORCE BASE
EDWARDS, CALIFORNIA

21 January 1955

SUBJECT: Air Force Evaluation of the YF-102A # 53-1787

TO: Commander
Wright Air Development Center
Wright-Patterson AF Base, Ohio
Attn: F-102 JPO

1. During the week of 15 - 21 January 1955, the Air Force Flight Test evaluation of the YF-102A was conducted at this Air Force Flight Test Center, Edwards AF Base, California.

2. One qualitative evaluation flight each was made by Major General A. Boyd, Colonel H. A. Hanes, Lt. Colonel F. K. Everest, Jr. (aborted after 10 min. flight due to malfunction of hydraulic pressure gage), and Captain J. S. Nash. Three (3) quantitative flights were conducted by Major R. L. Stephens, AFFTC F-102 Project Officer.

3. This aircraft is the first YF-102A with the NACA ideal body shape incorporating the longer nose, refaired aft section and improved canopy. Weight was reduced synthetically to 27,350 pounds and thrust increased to slightly over 16,000 pounds (before installation).

4. The most noticeable improvement in this airplane over the earlier YF-102 is increased performance. The Phase II recommendations to decrease weight, increase thrust and decrease drag have been accomplished. Take-off distance is reduced from 3800 feet normal ground roll and 5,200 feet to clear a fifty (50) ft. obstacle in the YF-102, to 2,500 feet and 3,600 feet respectively in the YF-102A. Maximum speed obtained in level flight was 1.22 Mach number at 40,000 feet. Maximum altitude reached in a straightaway climb was slightly over 54,500 feet with outside air temperature three (3) or four (4) degrees colder than standard. At this altitude the afterburner blew out and the climb was terminated. Corrected to standard day conditions, the rate of climb was approximately 19,000 feet/min. at sea level and decreased to zero at 54,250 feet. Time to climb from brake release to 50,000 feet was just over six (6) minutes, and to 54,000 feet ten (10) minutes were required. This data is shown in Inclosure 1.

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Hq AFFTC ltr to Hq WADC, 21 Jan 55, Subj: "Air Force Evaluation of the YF-102A # 53-1787"

5. A simulated intercept mission at high altitude was accomplished. The details of this flight are included as Inclosure 2. This flight indicated that it is possible to intercept a non-maneuvering target of lesser speed between 52,000 and 53,000 feet. At this altitude, the YF-102A can do limited maneuvers restricted by 20^{o} to 30^{o} angles of bank.

6. Deficiencies in the aircraft are listed below. Many of these are the same as those previously listed in the Phase II report of YF-102 # 52-7995. It is recommended that the following deficiencies be corrected prior to the Phase II flight test evaluation of this aircraft:

a. The flight control system should be improved to eliminate the longitudinal trim change and the excessively high sensitivity in the transonic speed range, (Mach No. .85 to .98). The maximum power climb speed schedule is in this speed range and with the present control system, it is almost impossible to hold the aircraft on best climb speed. The static longitudinal instability results in a longitudinal stick force lightening as speed decreases through this speed range during maneuvering flight. It would be relatively easy to overstress the aircraft inadvertently because of this trim change.

b. An acceptable turn coordinator has not yet been installed. The yaw dampener presently works against turn coordination. This is particularly objectionable after rolling maneuvers and during simulated tracking.

The following deficiencies were not fully investigated due to limitations placed on the aircraft by the Contractor. It is recommended that a high priority be given to the correction of these problems:

c. A duct "buzz", or high frequency vibration, occurs at high speed, above approximately 1.24 Mach Number. Unless corrected, this could result in a speed restriction being placed on the aircraft.

d. A duct rumble occurs at high subsonic speeds and low power settings, as in a descent.

It is recommended that the following deficiencies be corrected as early as possible, and prior to delivery of the aircraft to tactical units:

e. Longitudinal, lateral and directional control forces are excessively high.

f. Nose wheel lift off force is high.

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Hq AFFTC ltr to Hq WADC, 21 Jan 55, Subj: "Air Force Evaluation of the YF-102A # 53-1787"

g. Fuel feeds unevenly from each wing during afterburner operation.

h. Engine compressor stalls were encountered and must be eliminated.

i. No speed brakes are installed on this aircraft.

j. The fuel quantity indicator is unreliable, particularly at low indications. With the indicator selector in the right or left position, the indicator should show the fuel remaining in that side at all times, even after the low lovel light comes on.

k. Para-brake operation is slow and not 100% reliable.

l. Nose wheel steering has been improved but pedal forces are excessively high.

m. Visibility has been improved but the spacer between the panels of the windscreen must be extended further aft to eliminate as much reflection as possible.

7. Until the deficiencies described in a, b and possibly c above are eliminated, this aircraft is considered tactically unuseable.

8. It is re-emphasized that this aircraft was stripped to a weight of 27,350 pounds and had approximately 16,000 pounds thrust. Duplicate performance of the production airplane requires that it meet these same weight and thrust conditions. Every effort should be made by all agencies concerned to keep the weight of the production airplane to an absolute minimum.

FOR THE COMMANDER:

/s/ ROBERT L. STEPHENS
Major, USAF
F-102 Project Officer

cc: ARDC

2 Incls:
1. Climb Performance
2. Simulated GCI Mission

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Ltr, subj: Air Force Evaluation of the YF-102A #53-1787

(21 Jan 55) 1st Ind. 1 February 1955

OFFICE OF ADC PROJECT OFFICER, Edwards Air Force Base, Edwards, Calif.

TO: Commander, ADC, ATTN: Director, Plans and Requirements, Ent AFB, Colorado

1. On 21 January 1955 I flew one qualitative flight on YF-102A S/N 53-1787. The information gained on this flight was given verbally (in part) to General Chidlaw and (in full) to General Bergquist. The AFFTC flight evaluation gives in detail the qualitative and quantitative data obtained on this aircraft. I concur with this report.

2. Request that this letter be forwarded to the Commander, Vice Commander, Chief of Staff, DCS/O, and DCS/M for their information.

2 Incls: n/c

/s/ ROYAL N. BAKER
Colonel, USAF
ADC Project Officer
(F-102)

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Insert Climb Performance Chart here

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From: HQ ADC ENT AFB COLORADO SPRINGS COLORADO 6 Aug 1954

To: COFS USAF, WASHINGTON, D. C.

(SECRET) ADOPR 1385. Reference your message AFDRQ-AD 59234. Speed and Altitude Figure quoted for the F-102A do not appear acceptable to this Hq. The threat which must be expected, as accepted by this command, is 53 to 55 thousand feet over target at speed of .78 to .8 Mach. The F-102A must be capable of Mach. .98 at 52,000 feet and be able to guide Falcon to target at 55,000 feet or it must be capable of .97 Mach. at 55,000 feet. It must have sufficient maneuverability to perform at least two passes on a single target. The design load factor of this aircraft must permit required combat maneuvers at low altitudes and high speed. Any performance less than this will not be acceptable to the Air Defense mission. If the F-102A cannot produce a kill at 55,000 feet every effort should be made to speed up development and procurement of F-102B or like aircraft.

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ADOPR 18 Sep 1954

SUBJECT: (Unclassified) Evaluation of F-104 for Air Defense

TO: Commander
Air Research and Development Command
P. O. Box 1395
Baltimore 3, Maryland

1. Reference is made to your letter, subject as above, 23 August 1954.

2. This headquarters does not have sufficient technical information upon which an evaluation of the F-104 as an air defense weapon can be made. Based on the limited knowledge available, it does not appear that this aircraft could be expected to meet the performance and electronic criteria established for all-weather interceptors without seriously jeopardizing its present design performance.

3. There is an urgent need for a medium range interceptor which has sufficient speed and maneuverability to perform combat and attain kills at 55,000 feet. This altitude is consistent with the evaluated capability of the Type 37, 39. None of our present interceptors nor the predicted performance of the F-102A meets this requirement. The F-104A with modified scoops and the F-100I may possibly achieve this capability.

4. It is recommended that the F-104A and all others of this type be thoroughly considered in attempting to obtain an interceptor to meet the above urgent requirement. This aircraft would be considered as interim to the F-102B and should be introduced so as to replace present interceptors and the F-102A as rapidly as possible.

5. The aircraft is suggested as interim on the basis of ADC's standing requirement for an interceptor capable of combat under all weather conditions from the ground to 60,000 feet and on the assumption that the F-102B will meet all our requirements in this respect.

FREDERIC H. SMITH JR.
Major General, USAF
Vice Commander

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HEADQUARTERS
AIR RESEARCH AND DEVELOPMENT COMMAND
Post Office Box 1395
Baltimore 3, Maryland

RDTSD

23 Aug 1954

SUBJECT: Evaluation of F-104 for Air Defense

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

1. Reference is made to the attached wire from Headquarters USAF dated 10 August 1954. This Command is evaluating the capability of the F-104, as an air defense weapon, from the viewpoint of technical feasibility and availability. Since an evaluation of this type is so largely dependent on operational factors, your recommendations are requested as to:

a. How this weapon would fit into programmed electronic environment. Data link should be considered as a possible requirement in the over-all tactical employment of a weapon of this type.

b. The degree of "sophistication" desirable, i.e., the relative priority and requirement for autopilot, radar tie-in or CSTI, air to air identification, AILS, AGCA, and lead collision and/or lead pursuit firing of rockets or guns.

c. Possible tactical employment and total quantities desired to complement the F-100I, F-101I and F-102 type interceptors.

d. The desirability, from an operational standpoint, of pursuing a development program of this type.

e. Possible other operational inputs which might influence a decision on this system. (Secret)

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HQ ARDC, RDTSD, Subj: Evaluation of F-104 for Air Defense

2. It is our desire that your recommendations be integrated with the results of our study on this subject. Our final recommendations will be coordinated with you prior to submission to Headquarters USAF. (Unclassified)

1 Incl
Cy msg for HQ USAF
dtd 10 Aug 54 (S)

/s/ THOMAS S. POWER
Lieutenant General, USAF
Commander

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HEADQUARTERS
AIR RESEARCH AND DEVELOPMENT COMMAND
Baltimore, Maryland

INCOMING CLASSIFIED MESSAGE

RC 11/10 AUG RH RH RH

PRIORITY 091552z AUG 10 AUG 54 0958

FM HQ USAF WASH D C AFDRD-AD
TO COM ARDC BALTO MD ATTN RDTSD
INFO COM WADC WP AFB OHIO ATTN WCSF

/S E C R E T/ CITE 59619. THIS HQ CONSIDERING POSSIBILITIES OF F-104 AS AN ALL WEATHER INTERCEPTOR OF INTERIM LIMITED CAPABILITY WHICH MIGHT BE USED TO AUGMENT AIR DEFENSE FORCES EQUIPPED WITH F-102, F-101 OR F-100I AIRCRAFT. ENVISIONED THAT F-104 BASIC AIRFRAME CONFIGURATION WOULD REMAIN ESSENTIALLY AS IS AND THAT DEVELOPMENT PROGRAM WOULD PROCEED AS FOLLOWS:

A. INITIAL MODELS WOULD POSSESS THE BEST "AW" CAPABILITY THAT COULD BE ATTAINED BY INSTALLING ARMAMENT AND EQUIPMENT AVAILABLE NOW AND IN NEAR FUTURE. THE RESULTING "AW" CAPABILITY MIGHT BE LIMITED, FOR INSTANCE TO PROVIDING BLIND FIRING ONLY FROM ASTERN OR MIGHT BE LIMITED TO VISUAL FIRING AFTER GCI/AI PICKUP.

B. ULTIMATE MODELS WOULD POSSESS A TRUE ALL WEATHER CAPABILITY ALTHOUGH PROBABLY REMAIN LIMITED IN RADIUS AND ARMAMENT LOAD. THIS ALL WEATHER CAPABILITY TO BE ATTAINED BY INTENSIVE PROGRAM OF MINATURIZATION OF EQUIPMENTS PERMITTING ALL REQUIRED EQUIPMENTS TO BE PACKAGED IN F-104. REQUEST WITHIN 30 DAYS A STUDY OF F-104 POSSIBILITIES INCLUDING:

A. AIRCRAFT PERFORMANCE (STUDY WILL ALSO CONSIDER POSSIBLE USE OF GENERAL ELECTRIC J-73 ENGINE.)

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B. ESTIMATE OF INITIAL, INTERIM AND ULTIMATE "AW" CAPABILITIES IN TERMS OF ARMAMENT, FIRE CONTROL SYSTEMS AND GROUND ENVIRONMENT CAPABILITY.

C. DEGRADATION OF DAY FIGHTER CAPABILITIES WITH INCREASE IN "AW" CAPABILITIES. DESIRE TO RETAIN MAXIMUM DAY FIGHTER CAPABILITY.

D. PRODUCTION AVAILABILITY ESTIMATES AND EFFECT ON OTHER PROGRAMS. THE ABOVE AIRCRAFT SHOULD BE CONSIDERED AS SEPARATE AND DISTINCT FROM THE DAY FIGHTER, AIR SUPERIORITY VERSION OF THE F-104 WHOSE COMBAT CAPABILITIES MUST NOT BE COMPROMISED BY THE EXISTENCE OF AN "AW" VERSION OF THE F-104. YOUR OPINION REGARDING ADVISABILITY OF HAVING A COMPANION AIRCRAFT SUCH AS F-104 IN THE ALL WEATHER INTERCEPTOR PROGRAM IS REQUESTED.

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From: COMMANDER ADC 13 Oct 1954

To: COMMANDER, ARDC, BALTIMORE

(SECRET) ADOPR 1800. For RDGRD. Reference our letter, Subject: "Evaluation of the F-104 for Air Defense", 18 Sep 54. ADC has an interest in the XF-104 type interceptor and desires every opportunity to evaluate the potential of the XF-104 to determine its capability in performing an Air Defense Mission. The predicted performance of the F-102A makes it imperative that this command obtain an early evaluation of this and any other aircraft which may offer a solution to our necessity for obtaining kills at altitudes of 55,000 feet and above. Approval is requested for Colonel Royal N. Baker, 8315A, and Colonel William H. Powell, Jr., 4768A to fly the XF-104 at Edwards AFB during Phase II testing. Colonel Powell is Chief, Weapons Division, Plans and Requirements, Hq ADC and is responsible for submitting requirements for all Air Defense Weapons Systems. Colonel Baker is ADC Project Officer for the F-102 and is closely related with weapons requirements. Both have extensive background in fighters and are current in jet aircraft.

C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

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AFCGM

29 November 1954

SUBJECT: Air Force Nomenclature for Guided Missiles

TO: Commander
Air Defense Command
Colorado Springs, Colorado

1. This headquarters has recently reviewed the existing nomenclature for USAF guided missiles and unit designations, and has adopted the following official nomenclature.

Equipment	Unit Designations
TM-61 (Tactical Missile)*	Tactical Missile Sq (Wg)
SM-62 (Strategic Missile)*	Strategic Missile Sq (Wg)
SM-64 (Strategic Missile)*	Strategic Missile Sq (Wg)
SM-65 (Strategic Missile)*	Strategic Missile Sq (Wg)
IM-99 (Interceptor Missile)*	Air Defense Missile Sq (Wg)
GAR-1 (Guided Aircraft Rockets)*	(No squadron designation required
GAM-63 (Guided Aircraft Missile)*	(since these missiles are aug-
	(mentations of armament.

* The words in ( ) are added here for clarity and are not part of the official nomenclature. It should be noted that the term "Pilotless Aircraft" has been dropped from official use as far as guided missiles are concerned. Changes to existing documents are to be accomplished only as revisions are made. New documents will reflect this new nomenclature. In the near future, the existing AFOGM Letter 452.1, subject: AF Policy - Guided Missiles, dated 16 September 1952, and AFL 136-3, subject: Armament, dated 18 September 1952, will be amended.

2. Each major command will be responsible for dissemination of this information to subordinate commands, services and air divisions.

/s/ CHARLES M. McCORKLE
Brigadier General, USAF
Deputy Asst Chief of Staff
for Guided Missiles

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From: COMMANDER ADC 23 Dec 1954

To: CHIEF OF STAFF, USAF, WASHINGTON, D. C.

(SECRET) ADOPR 3162. Reference your message AFOOP-OP-D 54801 dated 14 Dec 1954. Your questions A, B and C answers as part 1, part 2 and part 3. Part 1. (A) All future ADC interceptors should have capability of launching mixed loads of IR and Radar Falcon missiles. (B) With regard to INV interceptors, sufficient information is not available within this Headquarters to evaluate desirability of Falcon IR COMB. Before any decision can be made the following factors should be considered: extent of airframe and FCS modifications; performance degradation; utilization of simpler missile such as Sidewinder; availability to ADC of tactically useable weapon. Only after receipt of technical and production data can evaluation be made. Part 2. ADC medium range interceptor missiles must have two capabilities: altitude and range. Prior to 1960: altitude of at least 60,000 feet and range of at least 50 nautical miles. Talos appears capable of this altitude and range requirement. Talos is extremely desirable since most other ADC weapons are delinquent in altitude capability. Part 3. ADC has requirement for 50-53 squadrons of long range interceptor missiles by end 1961. Bomarc being two to three years later than Talos allows for sizeable buildup in Talos capability. Therefore it is most desirable to

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(SECRET ADOPR 3162) (Cont'd)

have Bomarc and Talos in the same system. As Bomarc becomes available it will phase Talos out of most critical areas into less critical areas and eventually replace Talos. As Talos is phased out these weapons will be channelled into ADC unit training program and returned to stockpile for other AF uses.

JAMES S. PURDUM
Major, USAF
Asst Command Adj

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From: HEADQUARTERS USAF, WASHINGTON, D. C. 28 Oct 1954

To: COMMANDER, AIR DEFENSE COMMAND, ENT AFB, COLORADO

/SECRET/ FROM: AFDRQ-AD/F 52957. Recent JCS decision (JCS-1620/95, dated 9 September 54) assigns to USAF responsibility to develop, procure and employ surface-to-air missiles as required by its assigned functions. For the air defense of the Continental U. S. these missiles would be effective beyond ranges of approximately 50 nautical miles. Land-based version of Navy-developed Talos surface-to-air missile is being considered for Air Force use. As improvement for initial Talos, contractor has proposed land-based Talos system (high explosive and atom. versions) with range of approximately 100 nautical miles and interception capability up to 70,000 feet. Feasibility of this much range increase being investigated by ARDC. Preliminary estimate of Talos unit strength is 7 officers and 75 airmen for a 2 launcher, 60 missile Talos installation with appropriate control and support equipment. Land-based system is to be compatible with semi-automatic ground environment (Lincoln Transition System) as well as earlier non-automatic nets. Operational concepts for such a missile are now in preparation. Request you provide ADC requirement for such a surface-to-air missile based on Air Force operation. (a) Qualitative - operational characteristics desired. (b) Quantitative - Assume missile could become available for USAF operation in 1958.

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AFDRQ-AD/F 52957 (con't)

Request desired unit build-up for first four years. Current status of R&D programs indicates there is approximately 2 years difference in operational availability of Talos and F-99. Reply should be forwarded by 30 Nov 54.

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26 Nov 1954

SUBJECT: (UNCLASSIFIED) Requirement for Land Based Talos in Air Defense

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. References.

a. Letter, Headquarters ADC, ADOPR 471.6, subject: (SECRET) Requirement for Weapons with Atomic Capability in the Air Defense System, dated 6 May 1953, and 1st Indorsement Headquarters USAF, AFDRQ-AD, dated 22 June 1953.

b. Teletype message, Headquarters USAF, AFDRQ-AD/F 52957, dated 28 October 1954.

2. The following requirement is submitted in accordance with Air Force Regulation 57-3, dated 28 May 1951.

3. Introduction.

a. Air Defense Command requirements previously established required the tactical deployment of fifty-three (53) squadrons of pilotless interceptors in the time period 1957 to 1960. The slippage of the F-99 (Bomarc) program, the pilotless interceptor planned and programmed for deployment in air defense, precludes the fulfillment of the established requirement. Therefore a requirement exists for an interim pilotless interceptor with a range capability of greater than fifty (50) nautical miles. Furthermore, this interim weapon should have a high performance capability as an augmentation weapon in the future pilotless interceptor program. It appears that this requirement can be met with the land based Talos with extended range.

b. It is conceivable that Talos would be deployed in the proposed F-99 Base environment, thereby minimizing special installation facilities. Talos deployment would proceed until the Bomarc Type weapon production, along with the Talos production, filled the requirement for the Pilotless Interceptor program. The Talos production would be phased out at this time and the ADC inventory would be diverted into the Air Defense Command Pilotless Interceptor Training Program.

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Hq ADC, Subject: (Unclassified) Requirement for Land Based Talos in Air Defense

4. Objective.

a. To possess in the Air Defense Command during the period 1957 to 1960 a pilotless interceptor capability.

b. To possess in the Air Defense Command during the period 1957 to 1960 an interim pilotless interceptor pending the fulfillment of previously established requirements.

c. To enable the Air Defense Command to activate and man pilotless interceptor bases and sites which will be required for future programs.

d. To possess in the Air Defense Command a pilotless Interceptor for tactical deployment and use which, in addition to providing the required operational, maintenance and logistics training for future units, will also provide a stockpile of weapons for the pilotless interceptor training program, and for the further development and evaluation of Logistic and Operational Plans for the use of pilotless interceptors.

5. Description.

a. Nomenclature. Talos, Surface to Air Missile; Extended Range Land Based Version of the Navy Talos Program.

b. Purpose.

(1) To provide the Air Defense Command with operational Pilotless Interceptor units equipped with a weapons system possessing high kill probability.

(2) To provide an interim pilotless interceptor for tactical deployment to cover the slippage of programs established to meet air defense requirements.

(3) To provide an interim weapon for deployment on pilotless interceptor bases which must be activated for phase-in of the ultimate weapons system.

(4) To provide a pilotless interceptor, which in addition to providing an active air defense capability with a high kill probability will:

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(a) Have a high value in maintaining a state of unit operational readiness in air defense pilotless interceptor squadrons thus providing combat ready units for phase-in of the higher capability weapon.

(b) Provide a stockpile of weapons for use in the pilotless interceptor training program.

(c) Be used to further develop and evaluate Logistic and Operational Plans for Pilotless Interceptors.

(5) To provide the Air Defense Command with a pilotless interceptor capability on a 1A priority under AFR 80-11.

c. Performance.

(1) Operational reliability of 75% or greater and a kill probability of .50 or greater per interceptor.

(2) A range greater than fifty (50) nautical miles through 1957 and a range greater than seventy-five (75) nautical miles after 1957.

(3) A speed of 2000 feet per second or greater.

(4) An altitude capability of approximately 60,000 feet through 1957.

(5) An altitude capability greater than 60,000 feet after 1957.

d. Design Features.

(1) The Talos weapon as presently designed but incorperating the necessary engineering changes required to provide for increased ranges.

(2) The necessary improvements in mid-course guidance to provide the accuracy required to provide a kill potential greater than .50 per interceptor.

(3) A semiactive radar seeker for Talos equipped with a standard warhead.

(4) Capable of being equipped with an atomic warhead.

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(5) Capable of being launched from the site and revetments to be used by the ultimate F-99 (Bomarc) Base installation, with a minimum of engineering changes required for phase-in of the F-99 (Bomarc).

e. Special Features.

(1) The Talos must be compatible with the F-99 Base installations.

(2) The Talos weapon system must be compatible with the air defense ground electronic environment in use during the time period of the weapons deployment.

f. Proposed Basis of Issue. One hundred twenty (120) Talos per squadron in up to fifty-three (53) squadrons (this quantity requirement is dependent upon the deployment of the F-99 and/or the L-253 toward the required activation of fifty-three (53) squadrons of pilotless interceptors.)

g. Method of Meeting the Requirement. It is recommended that the land based Talos with extended range be given a top priority for development, testing and production.

6. The land based Talos with extended range will provide the Air Defense system with an early capability at high altitudes and at extended ranges which cannot be obtained with other weapons. It will provide Pilotless Interceptor capability in the air defense system regardless of the progress of other pilotless interceptor programs. The Talos, when developed to be employed in the Bomarc Base environment, will provide a weapon for the extensive Air Defense Command Pilotless Interceptor Program requirement. Therefore this headquarters requests that a high priority be established to develop Talos with extended range for first unit deployment in 1957.

FREDERIC H. SMITH, JR.
Major General USAF
Vice Commander

-Info cy
Commander, Air Research and Development Command

Deputy Chief of Staff for Guided Missiles, Headquarters USAF

Director of Research and Development, Headquarters USAF

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FILE NUMBER 304.2

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21 JAN 1955

SUBJECT: (UNCLASSIFIED) Tentative Operational Plan for Interceptor Missile (Talos)

TO: Director of Plans
Headquarters USAF
Washington 25, D. C.

1. Attached hereto are twenty-five (25) copies of the Tentative Operational Plan for an Interceptor Missile (Talos). An additional (75) copies are being forwarded under separate cover. Upon receipt of additional required information concerning the guided Talos land based weapons system, a final plan will be prepared.

2. The Talos system should be designed to implement the Operational Plan for an Interceptor Missile (Talos) as described in the attached document. The additional required information includes the items listed below:

a. Detail specifications of the electronic and mechanical equipments.

b. Detail specifications of ground handling equipment.

c. Level of factory or contractor support for maintenance.

d. Automation of the maintenance testing equipment.

e. Frequency of maintenance:

(1) Inspection.

(2) Major overhaul.

f. Numbers and level of skills of military personnel required to implement a:

(1) Flight of 30 and/or 60 Talos.

(2) Squadron of 4 flights.

E-6852

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M571-1

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W. J. BIRMELE
LT COL., USAF
Asst Comd Adj

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_____Not requested, not furnished
21 JAN 1955
__/__Furnished_____
(Date) (Initials)

COPY OF INCLOSURE NOT AVAILABLE FOR COMD ADJ FILE.

Lt Col VR Thornton/rm
2133
21 Jan 55

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

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AFOOP-OP-D

SUBJECT: (U) Operational Concept for USAF Area Intercept Missile (TALOS)

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

1. The attached Operational Concept on the USAF Area Intercept Missile (TALOS) has been developed in accordance with AFR 5-47 and is forwarded for your information and necessary action. It is desired that you develop an operational plan on the USAF Area Intercept Missile (TALOS) in accordance with AFR 5-47.

2. This plan must be in this Headquarters not later than 15 January 1955.

BY ORDER OF THE CHIEF OF STAFF:

Earl H. Dunham

1 Incl
Opnl Concept for
USAF Area Intercept
Missile (TALOS) (5 cys)

EARL H. DUNHAM
Colonel, USAF
Chief, Defense Branch
Operational Plans Div., D/O

If inclosure No. 1 is withdrawn (or not attached) the classification of this correspondence will be downgraded to UNCLASSIFIED in accordance with Para. 25e, AFR 205-1.

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Incl 1.b.

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OPERATIONAL CONCEPT USAF AREA INTERCEPT MISSILE (TALOS)

I. GENERAL DESCRIPTION.

1. TALOS is an interceptor missile which will be integrated into the overall defense system to augment the manned interceptors. It is a ramjet-propelled, supersonic, surface-to-air guided missile designed to intercept and destroy enemy aircraft at horizontal ranges up to 100 NM at altitudes up to 80,000 feet and at elevation angles over water as low as one to two degrees.

2. TALOS is launched at elevation angles from 25 to 55 degrees. It is boosted to a nominal flight speed of Mach 2.4 by a solid fuel booster rocket providing impulse for the first four seconds of flight. Stabilization during the boost period is accomplished by means of movable jet vanes in the booster nozzle, coupled to external booster fins. After boost, the rocket automatically separates from the missile, and the missile is ramjet-propelled at a speed of Mach 2.4 at a cruise altitude of 70,000 feet. The missile is capable of maneuvering at greater than 30's in any direction up to 30,000 feet and approximately 40's at an altitude of 70,000 feet.

3. The general launching configuration of the TALOS missile assembly is as follows. The forward annular compartment of the missile houses an annular rod-type warhead, guidance and homing electronics, electrical power supplies, and the proximity fuze. The after compartment contains the hydraulic and fuel-system equipment and the fuel tank. The forward electronic equipment is packaged in sections installed in an integrated arrangement designed to facilitate checkout maintenance, and repair. Like sections are physically and functionally interchangeable to permit replacement in the event of equipment failure during checkout. Interchangeable wings and fins are provided which can be quickly attached to or removed from the missile booster assembly.

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4. Engine. A ramjet engine will power the TALOS [illegible] initial boost phase. This engine uses J.P.-4 fuel or light diesel is injected into separate pilot and main air streams by a [illegible] system. Speed control of the missile is obtained by [illegible] the fuel supply to the main air stream in accordance with [illegible] and temperatures, while the pilot fuel-air mixture is held [illegible] altitudes.

5. Dimensions and Weights.

	Missile	Booster	Combination
Weight (pounds)	3,000	3,900	6,900
Dimensions (inches)	-	-	-
Length	234	121	355
Body diameter	28	30	30
Wing Span	110	-	110
Fin Span	68	134	134

6. Guidance.

a. There are three phases of guidance for the TALOS missile. First, the missile booster assembly is accelerated to approximately its flight speed in about four seconds by its booster rocket. During this period the missile wings are locked in zero position and the assembly is [illegible] by a control system which uses jet vanes in the booster nozzle and [illegible] on the booster. The second missile of a salvo will be fired from [illegible] launcher approximately one to two seconds after the first missile [illegible]

b. [illegible]. At separation of the booster, the missile wings are unlocked and the missile guidance system is energized. [illegible] action then takes place in approximately one second, after which [illegible] is initiated. The missiles of a salvo all ride the beam of the same [illegible]

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transmitter until target acquisition by their respective homing systems. The position of the guidance beam is programmed continuously through flight so that the missile follows an up and over trajectory. This type of trajectory is chosen primarily for fuel economy. In addition, this type of trajectory control permits flexibility in the missile approach to low altitude targets.

c. Homing Phase. The TALOS missile is guided during its terminal phase by its semi-active interferometer seeker system. Guidance during this homing phase is obtained from signals reflected from the target by an illuminating radar located at the defense unit. This illuminating radar (AN/SPG-49 initially) is also the same target-tracking radar which provides the precision target-position data required toward the end of the beam-riding phase of guidance. The beam-riding system is automatically turned off after the target has been acquired by the range-acquisition unit of the seeker and from then on the homing system guides the missile to the target. The signals from the guidance transmitter are still used during this phase so as to provide a time reference for the range-tracking unit.

d. Another version of the TALOS missile (termed TALOS-W) carries an atomic warhead which is command detonated. Initial versions of TALOS-W will not be equipped with a target seeker.

II. ORGANIZATION.

1. The TALOS is designed as an interceptor missile and will be part of the unit equipment of interceptor missile squadrons. The squadrons will be composed of one or more TALOS defense units, each of which will stock 30-60 assembled missiles in ZI installations. Actual quantities will be decided at a later date. It is anticipated that the personnel requirements will be similar to BOMARC squadrons. It will require approximately seven (7) officers and seventy-five (75) airmen to operate TALOS defense unit.

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2. Formation of new organizations of this type will require adjustments in personnel and facilities. The TALOS (with atomic warhead) will require special handling and security measures which can be adjusted more accurately after experience has been obtained. It is expected that personnel to maintain and install the atomic warheads will be integral to the personnel allowance of each unit.

III. OPERATIONAL LIMITATIONS:

1. Performance Characteristics.

a. Range . . . . . 100 Nautical Miles.

b. Maximum intercept altitude . . . . . 80,000 Feet.

c. Cruise altitude . . . . . 70,000 Feet.

d. Launching Elevation Angle . . . . . 25° to 55°.

e. Can pull 8G below 30,000

f. Can pull 4.5G below 55,000

g. Climb Speed . . . . . Approx. 2,000 Ft/Sec.

h. Launch weight with boost . . . . . 6,900 lbs.

2. Invariance to Enemy Tactics.

a. The boundary condition on the TALOS weapon system design must provide a defense invariant to cope with enemy tactics. This task has four main factors - high altitude, low altitude, high speed, and formation attacks.

b. High Altitude. TALOS can engage targets up to 80,000 feet. The engine has operated smoothly in flight to 67,000 feet, and although limited to less than maximum maneuverability at these altitudes, the missile has responded with 4.5G accelerations at 55,000 feet. No difficulty is expected with non-maneuvering targets, nor with maneuvering targets unless the maneuver capability exceeds that of the missile, which seems unlikely for some time.

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c. Low Altitude. There are major limitations in target tracking in any centrally vectored guidance system. This is due to inherently poor target elevation tracking at low angles. This limitation is far less critical in TALOS due to its two-phase guidance.

The shrinkage of effective intercept range due to this radar limitation and its effect on firepower are very critical. As the outer range shrinks, the ability to maintain firepower close-in becomes more important. The use of trainable launchers provides TALOS with the ability to intercept low angle targets at relatively short ranges. In spite of this, the shrinkage of firepower is still appreciable. As long as the tracking and illuminating functions are combined in a tracking radar which must be mounted close to the launcher, there is little that can be done to improve this situation. With the introduction of SAGE and the integration of TALOS into the network, it becomes possible to vector the illuminator from the network data. The basic limitation is then directly determined by a problem in civil engineering, simply, how high an elevated illuminating site is it economically feasible to supply? In lieu of local high terrain it seems reasonable, on the basis of micro-link experience, to contemplate illuminators on 500 feet towers. In this case a target at 375 feet could be illuminated out to 50 nautical miles, providing full TALOS firepower down to this altitude.

A final low angle consideration is that of operation over land. The low angle limitations of pulse seekers are well known, and the pulse interferometer seeker used in TALOS is no exception. To retain the low angle advantages of a semi-active guidance system, TALOS must incorporate a CW seeker for any extensive use over land. Such a program has been supported for nearly two years, and will culminate in the TALOS with a CW interferometer seeker. This seeker may be available for the first operational TALOS missiles delivered to the Air Force.

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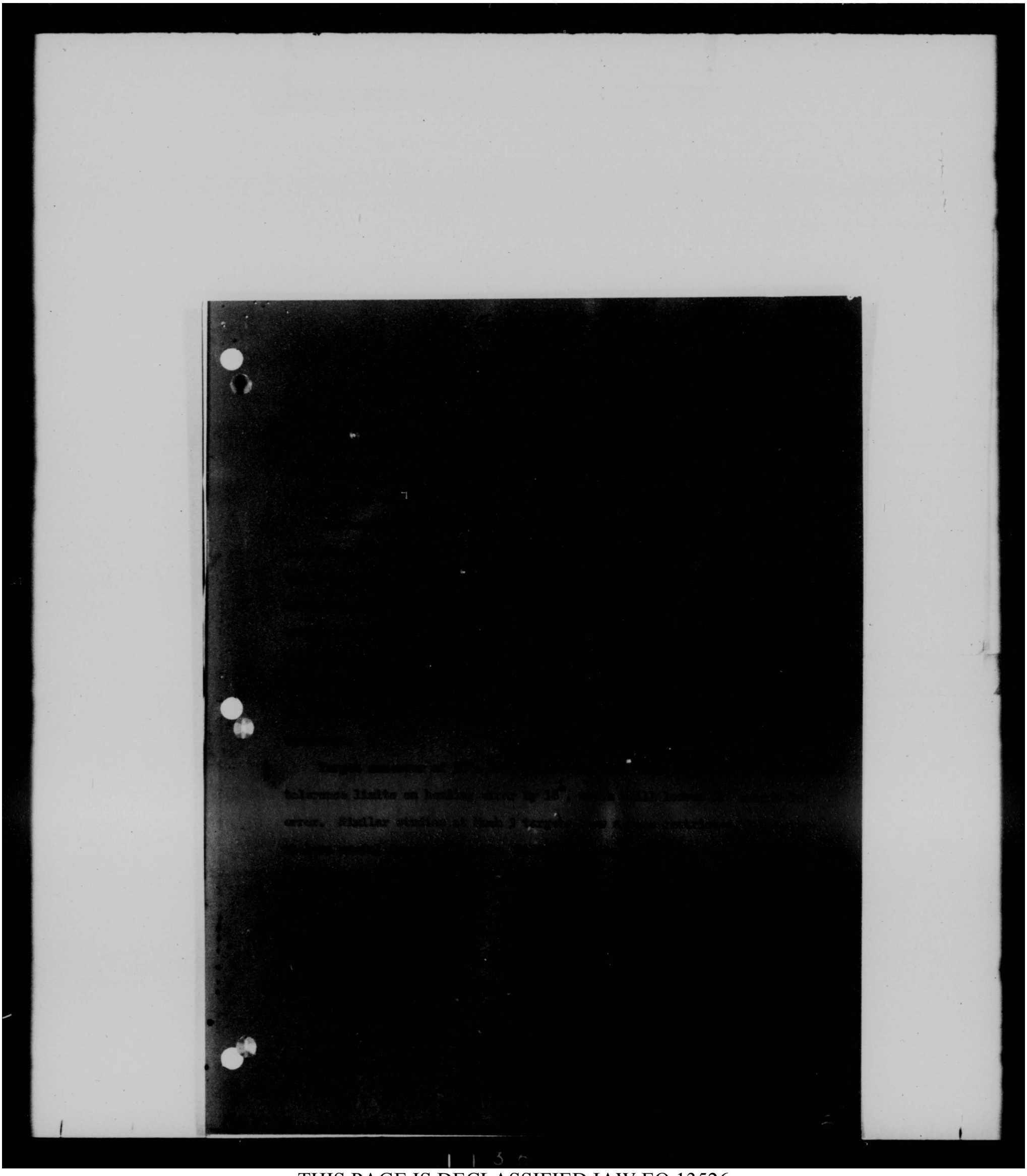

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type warhead also has excellent kill capabilities against single targets. A 50-mile range version of this model is now entering the production phase and is still the only immediate and certain answer to the problem of [illegible] of the TALOS seeker in the face of properly spaced formations. The vast advantages and higher kill probability inherent in the use of the atomic warhead are obvious. This is especially apparent at high altitude in standard missiles where limited maneuverability makes the discrimination problem for all missiles an order of magnitude.

3. Fuze and Warhead.

a. The fuze is of the microwave proximity type. Longitudinal slots in the missile surface contain the six fuze antennas. In order to maximize damage from the warhead blast, it is planned to feed steering-intelligence information also to the fuze in order to trigger the warhead at the optimum time in flight for any approach to the target.

b. The TALOS annular rod-type warhead weighs 420 pounds, and ejects high-velocity rod segments. The rods are designed to inflict major structural damage due to blast against targets which are passed at small miss distances. This warhead, therefore, consists of an explosive charge and rods arranged lengthwise along the missile. The rods form the outer surface of the annular can containing this charge. Firing of the detonators by the fuze safety-arming device initiates a warhead booster which in turn explodes the charge.

c. A new type of rod warhead is also under development. This warhead expels one continuous circle of rod, the rod being packaged annularly in the style of a folding ruler or [illegible] and expelled outward at about 4,500 feet/Sec. Preliminary tests for rod pattern and [illegible] ballistics (including firings against [illegible]) [illegible] expect that such a continuous rod will be [illegible] against aircraft structure [illegible]

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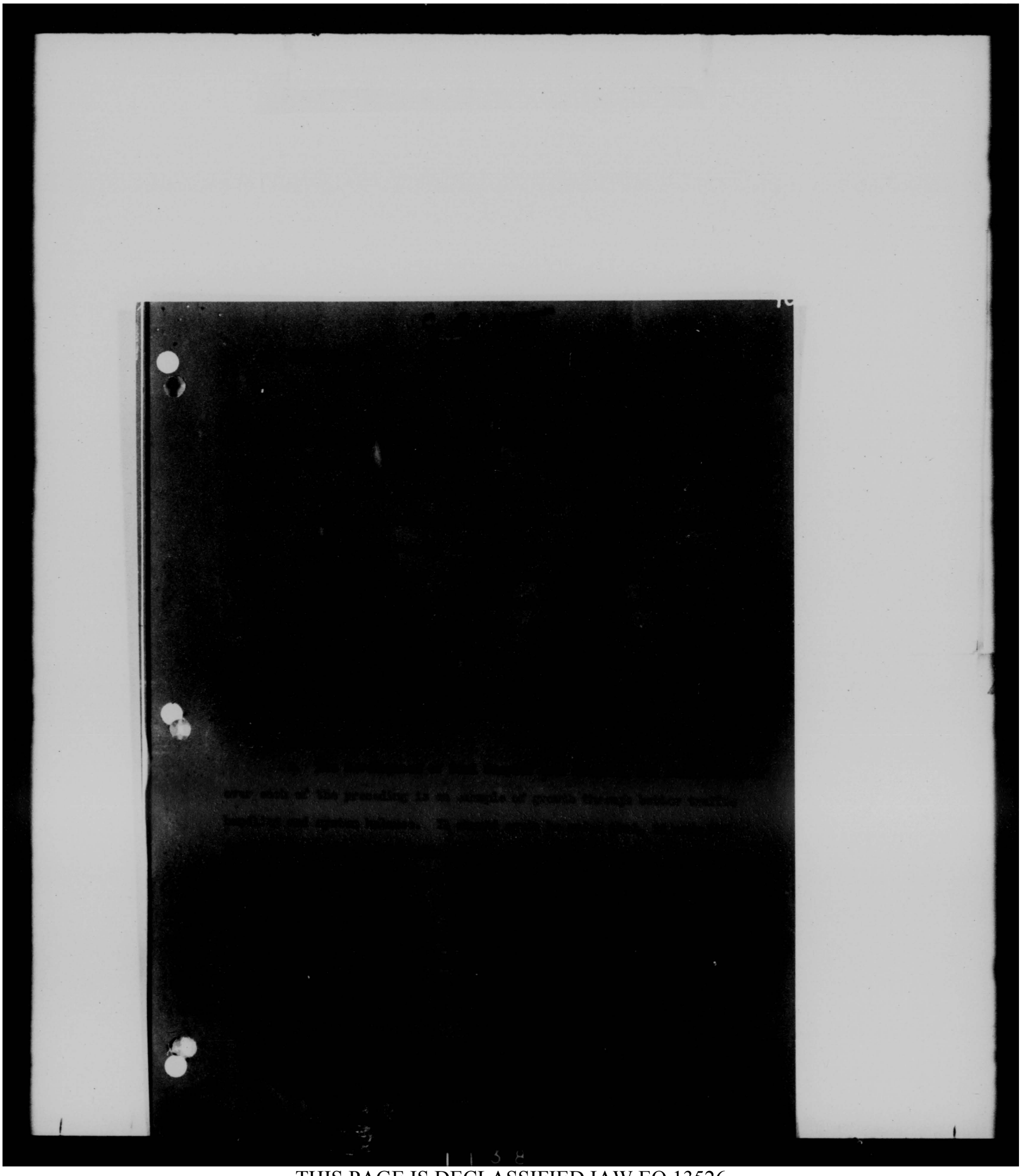

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(4) Nearly full firepower can be effectively [illegible] attack altitude, however, this tactic [illegible] will require further development.

(5) It is flexible; it provides growth [illegible] basic missile or system redesign; [illegible] not be soon obsoleted.

(6) Its atomic capability exists.

(7) It can provide very effective [illegible] only acquisition data; further [illegible] integration into [illegible]

(8) Land use of TALOS involves the [illegible] lations for a missile already [illegible] for Navy use.

(9) It is the conviction of [illegible] engineering and production of [illegible] for land use can start now, [illegible] and on existing Navy equipments.

(10) Missiles will be available on a time scale compatible with the needs for evaluation and [illegible]

IV. UTILIZATION RATES.

1. There will be no peace time [illegible] exception of test firing or training. [illegible] rates, will be as outlined in the [illegible] approximately four of these missiles will [illegible] for crew indoctrination.

2. Units will normally maintain a [illegible] have the capability of launching these [illegible] operation, these units can fire on [illegible]

3. No turn-around data is [illegible]

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V. DEPLOYMENT.

1. The use of TALOS for areas other than the continental United States is under current consideration. Present indications are that equipment for the first TALOS squadron may be available late in Calendar Year 1957. The latest information on this subject may be found in current programming documents.

R. E. KOON
Brigadier General, USAF
Deputy Director of Operations, DCS/O

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PRIVILEGED INFORMATION

Document number:	[redacted]
Obtained by:	R. W. Smith
From:	APL, Dr. C. F. Meyer, March 1954
Nature of Privileged Information:	APL data supplied for use of Project Combine and other members of the Air Force
Limitations on use:	Prepared for use of RAND, AF, & APL

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COST ESTIMATES OF TALOS-TYPE CW & TALOS-TYPE W
DUAL MULTIPLEX DEFENSE BATTALIONS
(ADC Project Combine)

The Talos-type missile used in the Combine Defense Study is of two types: the Talos-type with CW seeker and the Talos-type W. The organization of the Talos-type CW battalion differs with method of deployment.

I. Talos-type Cost Systems

It was requested that six types of missile systems be estimated.

The standard Talos-type battalion is to consis of four sites or batteries. In all cases the same guidance equipment is used for each site.

The six cases are summarized as follows:

TALOS-TYPE BATTALION SYSTEMS

Case No.	Case Type	No.*of Talos-Type CW	No.*of Talos-Type W	No. of Launching Buildings	Type of Launching Building	Deployment of Batteries	No. of Personnel
1	Standard	240	-	4	Double	All together	[illegible]
2	Standard-dispersed	240	-	4	Double	Two together	[illegible]
3	Standard-dispersed	240	-	4	Double	Separate	[illegible]
4	Special-dispersed	360	-	4	Triple	All together	[illegible]
5	Special-dispersed	480	-	8	Double	All together	600
6	Standard	-	120	4	Double	All together	400

*These numbers do not include the missiles in depot maintenance.

II. Equipment Facilities

In Cases 1, 2, 3, and 6 each site is to have an equipment facility and two electronics buildings as indicated in sketch.

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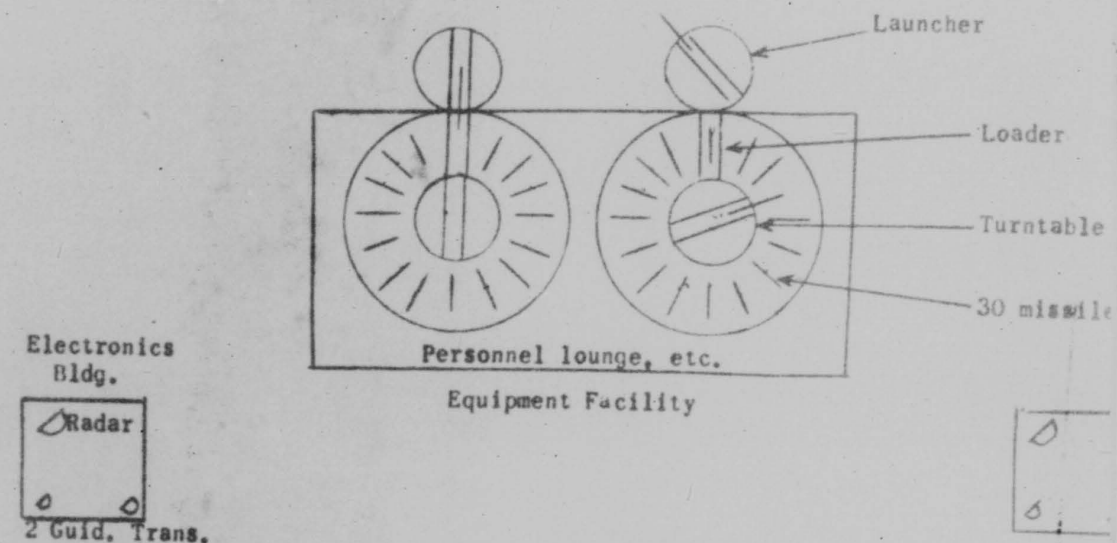

The equipment facility consists of two rooms containing ready missiles and two launchers. The missile ready rooms are to have a capacity for 30 Talos-type CW missiles each.

From the Applied Physics Laboratory the following estimate was obtained for the site described above.

1 building & facilities (incl. 2 ready rooms & some personnel facilities) Average price of 1st 20	$2,250,000

In Case 4 the building contains three missile rooms and three launchers. In Case 5 there are two buildings of two launching units per site. Each launching building in Case 5 will be the same as in Cases 1, 2, 3, and 6.

Quantity production is not likely to result in material savings; therefore for this study the double buildings were estimated at $2,000,000 each and the triple buildings at $3,000,000 each.

III. Talos-type Estimates

As a result of information obtained from the Applied Physics Laboratory

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and a previous component study in December 1952 by the Cost Analysis Section, it was decided to use a cumulative average price for the Talos as follows:

Talos-type CW	$100,000 in quantity of 8280
Talos-type W	80,000 in quantity of 5880

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It is assumed that a 90 per cent improvement curve may be applied to missiles even though there is little or no evidence that there will be improvement in some of the higher quantities contemplated. The estimates may then be approximated by:

Talos-type CW	$C_{CW} = 395{,}000N^{a}$
Talos-type W	$C_{W} = 300{,}000N^{a}$

where

N is the number of missiles

a is -0.152

Each missile ready room contains 30 Talos-type CW missiles or 15 Talos-type W missiles. In addition to the ready missiles, fifteen per cent more missiles are assumed to be in depot maintenance.

IV. Special Equipment

The Applied Physics Laboratory furnished the following estimates for special equipment.

A. Launcher & Test Equipment (Average price of first 20)

1. Double Building

(2) Launching & handling system at 0.750	1.500
(1) Missile & D.V. test equipment at 0.400	0.400

2. Triple Building

(3) Launching & handling system at 0.750	2.250
(1-1/2) Missile & D.V. test equipment at 0.400	0.600

B. Guidance Equipment (Average price of first 100)

(2) Tracking radars at 0.433	0.866
(4) Simplex computers at 0.223	0.892
(4) Guidance transmitters at 0.245 (Incl. receiver & tracking unit)	0.980

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C. Transmission & Communications Equipment (Average price of first 20)

(1) Data transmission system per site	0.100
(1) Defense site communications system	0.030

It is assumed that a 90 per cent improvement curve may be applied to all special equipment. The above estimates may then be approximated by:

1. Double building, special equipment,	C_{DB}	$9.12B^a$
2. Triple building, " " ,	C_{TB}	$12.72B^a$
3. Guidance equipment	C_G	$14.80B^a$
4. Trans. & Commun. equipment	C_C	$0.60B^a$

where

B is the number of battalions

a is -0.152

V. Personnel

The Applied Physics Laboratory estimates the on-duty operating personnel per site to be:

Launcher control	1
Tracking & radar operators	2
Guidance transmitter monitors	1
Tactical control	1
Computers	1
Teller	1
Maintenance & check-out of missiles	2
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Command support and service people will greatly increase this number. It is believed that the personnel requirements will be approximately 500 men for the standard system (Case 1). This has been adjusted for the other five cases as shown above in Section I.

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VI. Talos-type System Estimate

The estimates of the system costs for the Talos-type missile for the six cases and the various quantities required are given in the following tables. It is to be noted that the annual operating costs are through battalion level only.

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CLASSIFICATION OF EXPENDITURES FOR TALOS-TYPE DUAL MULTIPLEX DEFENSE BATTALIONS
(Millions of Dollars)

	Talos-type CW					Talos-type W
	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Initial Investment						
Equipment Facilities	8.00	8.00	8.00	12.00	16.00	8.00
Personnel Facilities	1.50	1.50	1.50	1.65	1.80	1.20
Equipment						
Talos-type missile (Incl. 15% in Maint.)	$46.50B^a$	$46.50B^a$	$46.50B^a$	$65.00B^a$	$83.50B^a$	$19.58B^a$
Launching & Test Equipment, etc.	$9.12B^a$	$9.12B^a$	$9.12B^a$	$12.72B^a$	$16.42B^a$	$9.12B^a$
Radars, Guidances & Computers	$14.80B^a$	$14.80B^a$	$14.80B^a$	$14.80B^a$	$14.80B^a$	$14.80B^a$
Trans. & Comm. Equipment	$0.68B^a$	$0.68B^a$	$0.68B^a$	$0.68B^a$	$0.68B^a$	$0.68B^a$
Organizational Equipment	0.68	0.75	0.82	0.75	0.82	0.54
Stocks and Spares						
Initial Stock Level						
Installation Maintenance	0.11	0.11	0.11	0.16	0.21	0.11
Personnel Supplies	0.09	0.10	0.11	0.10	0.11	0.08
Services and Miscellaneous	0.05	0.06	0.06	0.06	0.06	0.04
Spares						
Talos-type - 20%	$9.30B^a$	$9.30B^a$	$9.30B^a$	$13.00B^a$	$16.60B^a$	$3.92B^a$
Launching & Test Equipment,etc.-10%	$0.91B^a$	$0.91B^a$	$0.91B^a$	$1.27B^a$	$1.64B^a$	$0.91B^a$
Radars, Guidance & Computers - 30%	$4.45B^a$	$4.45B^a$	$4.45B^a$	$4.45B^a$	$4.45B^a$	$4.45B^a$
Organiz., Trans. & Comm. Equip.	0.07	0.07	0.08	0.07	0.08	0.06
Transportation	1.75	1.75	1.75	2.25	2.60	1.10
Personnel						
Training	2.00	2.20	2.40	2.20	2.40	1.60
Travel	0.10	0.11	0.12	0.11	0.12	0.08
TOTAL INVESTMENT COST PER BATTALION	$85.88B^a + 14.4$	$85.88B^a + 14.6$	$85.88B^a + 15.0$	$111.98B^a + 19.4$	$138.18B^a + 24.2$	$53.56B^a + 12.8$

NOTE: B is the number of battalions,
a is -0.152.

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CLASSIFICATION OF EXPENDITURES FOR TALOS-TYPE DUAL MULTIPLEX DEFENSE BATTALIONS
(Millions of Dollars)

	Talos-type CH					Talos-type H
Annual Operating	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Spares						
Installation	0.10	0.10	0.10	0.14	0.18	0.09
Talos-type Missile - 10%	4.658[a]	4.658[a]	4.658[a]	6.508[a]	8.358[a]	1.968[a]
Launching & Test Equipment, etc. - 10%	0.918[a]	0.918[a]	0.918[a]	1.278[a]	1.648[a]	0.918[a]
Radars, Guidance, & Computers - 20%	2.968[a]	2.968[a]	2.968[a]	2.968[a]	2.968[a]	2.968[a]
Trans. & Comm. Equipment - 10%	0.078[a]	0.078[a]	0.078[a]	0.078[a]	0.078[a]	0.078[a]
Organizational Equipment	0.04	0.04	0.05	0.04	0.05	0.03
Utilities, Installation Services, etc.	0638	0.38	0.38	0.55	0.71	0.36
Personnel						
Pay and Allowances	1.60	1.76	1.92	1.76	1.92	1.28
Travel	0.02	0.02	0.02	0.02	0.02	0.02
POL Miscellaneous	0.05	0.06	0.06	0.06	0.06	0.04
Indirect Services	0.06	0.06	0.06	0.06	0.06	0.04
Support Intermediate Commands	Usually 17-1/2% of above items for ADC - Omit for Project "Combine"					
Talos-type Missile Replacement - 2%	0.938[a]	0.938[a]	0.938[a]	1.308[a]	1.668[a]	0.398[a]
Transportation	0.20	0.20	0.20	0.25	0.30	0.15
Training of Replacement Personnel	0.50	0.55	0.60	0.55	0.60	0.40
Support Major Commands	Usually 33-1/3% of above items for ADC - Omit for Project "Combine"					
TOTAL ANNUAL COST PER BATTALION	9.528[a] + 2.95	9.528[a] + 3.17	9.528[a] + 3.39	12.108[a] + 3.43	14.688[a] + 3.90	6.298[a] + 2.41

NOTE: B is the number of battalions.
a is -0.152.

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ADOPR 10 Nov 1954

SUBJECT: (UNCLASSIFIED) Minimum Requirements for Air Defense Pilotless Interceptor

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. Judging from many reports, verbal and written, which have reached this headquarters, it is apparent that the capability of the various components of the pilotless interceptor have departed from the original text of the contract. For example, the reorientation of the Boeing Aircraft Corporation contract for the F-99 (Bomarc), which this headquarters understands is being considered, will result in a weapons system of marginal capability, i.e., its range, speed and altitude capability will not be sufficient to counter the then existing threat. Therefore this headquarters considers it necessary to restate its requirements by time periods in terms of the minimum acceptable for air defense pilotless interceptors.

2. Intelligence information indicates that time periods based on the existing and anticipated threat can be defined as follows:

a. Present through 1957.

b. 1958 through 1962.

c. 1963 until appearance of the ballistic threat.

3. a. The minimum acceptable requirements for a pilotless interceptor capable of defending against the threat during each time period are as follows:

(1) Present through 1957.

(a) Speed: Mach 2.0 - 2.5.

(b) Altitude: Up to 60,000 feet.

(c) Range: 100 - 125 nautical miles.

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Hq ADC Subject: (Unclassified) Minimum Requirements for Air Defense Pilotless Interceptor

(d) Seeker Lock-On: 10,000 to 60,000 feet altitude (capable of retrofit for 0 - 60,000 feet altitude).

(e) Warhead: High explosive or nuclear.

(2) 1958 through 1962.

(a) Speed: Mach 2.5 - 3.0.

(b) Altitude: Up to 80,000 feet.

(c) Range: 250 - 300 nautical miles.

(d) Seeker Lock-On: 0 to 80,000 feet altitude at 20 nautical mile range.

(e) Warhead: Interchangeable; high explosive or nuclear.

(3) 1963 through an indefinite time period.

(a) Speed: Mach 4.0 - 4.5.

(b) Altitude: Up to 100,000 feet.

(c) Range: 300 nautical miles.

(d) Seeker Lock-On: 0 - 100,000 feet altitude at 25 nautical mile range.

(e) Warhead: Interchangeable; high explosive or nuclear.

b. In addition to the above, the weapons system must be compatible with the ground electronic environment in use during the time period of the weapons deployment.

4. It is requested that these minimum acceptable requirements be applied not only to the F-99 (Bomarc) and the L-253, for which this headquarters desires that Lockheed Aircraft Corporation be given a contract, but to all future air defense pilotless interceptor programs. Furthermore, to assure that a weapons system possessing the necessary minimum acceptable requirements will be developed as rapidly as possible, it is urgently requested that

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Hq ADC Subject: (Unclassified) Minimum Requirements for Air Defense Pilotless Interceptor

the F-99 and L-253 programs be given a high priority and that they be developed as weapons systems on separate, distinct and competitive bases.

5. This headquarters has been informed that Headquarters ARDC is evaluating a study made by the Applied Physics Laboratory, Johns Hopkins University, which indicates that the overland range of the Talos can be extended to 100 nautical miles. If such a range extension is deemed possible, then this headquarters desires that every effort be made to develop this weapons system for tactical deployment as early as possible.

FREDERIC H. SMITH JR.
Major General, USAF
Vice Commander

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ISSUE NUMBER 18

BOEING AIRPLANE COMPANY
SEATTLE, WASHINGTON

BOMARC
NEWSLETTER
No. 35

June 11, 1954

Reference No.
60-837D-1994

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PROPULSION

Boost Rocket Testing - Four additional full duration runs with Desert Rat 3 at EAFB have produced further data necessary to finalize boost system designs for Desert Rats 4 and 5 and interceptor 623-7. A conference is scheduled for the week of June 14 at Aerojet to evaluate test results and discuss the configuration for flight approval testing.

While all four runs were considered satisfactory, the last two produced the most significant results. The following items indicate that orifices in the propellant supply lines and DMH in the fuel both contribue to rocket stability:

(a) A run on June 8 was made without orifices and was terminated with propellant exhaustion and operation of the fuel bypass valve. Except for using JP-X and RFNA as propellants, this substantially duplicated the Desert Rat 2 tests that resulted in failure. With 40% DMH in the fuel, the June 8 run exhibited short periods of oscillation but no failures occurred.

(b) On June 10 the oxidizer exhaustion run was repeated with orifices in the propellant supply lines. This run was smooth.

These last two runs were the first made with Desert Rat 3 where a timed shutdown was not employed. Some of the stability data obtained during these tests agrees very closely with Boeing-Seattle vertical test facility results using interceptor 623-4.

Installation of boost system components in Desert Rat 4 by Aerojet is nearly complete. Shakedown runs will be made before starting flight approval tests. Desert Rat 5 has been shipped to Aerojet for completion of the boost system. With the completion of a second test stand at EAFB, flight approval testing will be able to proceed as rapidly as the supply of DMH permits. Initial shipments of DMH have been received from Westvaco under the new contract. (Newsletter No. 32)

Ramjet Development - Marquardt Aircraft Company has been conducting intensive development tests recently on a

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modification of the 75C burner for the Appendix "C" ramjet engine. This revised configuration omits the shroud between the inner and outer fuel injection rings and adds an aerodynamic grid (latticework having airfoil across sections) upstream of the fuel injector rings. The new burner has been designated 75J.

Testing of the 75J configuration has given encouraging results over a considerable range of positive and negative angles of attack, Mach number, and fuel/air ratios. The presence of the aerodynamic grid apparently gives a pattern of air flow in the burner which results in an expanded tolerance of angle of attack and expanded fuel/air limits. Runs were made at Mach numbers of .8, 1.0, 1.2, 2.2, 2.5 and 2.7 with angles of attack from -9° to $+3^{\circ}$ and fuel/air ratios from .02 up to 0.85. Under these conditions no rich blow-outs were encountered. Further tests are to be made at the Marquardt Jet Laboratory at Mach 1.5 and Mach 1.92.

Testing is also scheduled to be initiated at NACA-PSL during the week of June 6 when the 75J configuration will be tested at Mach numbers of 2.2, 2.35, 2.5, and 2.7 at altitude. All testing is under free-jet conditions.

An MX-883 flight has been tentatively scheduled for June 17. This flight will be accomplished with an Appendix "C" engine with shroud, no aerodynamic grid, and inner ring fuel injection only. Marquardt's support testing indicates that this configuration should result in a favorable flight on the flight path that has been selected. Launch will be at approximately 25000 feet instead of the previous 30000 feet.

STRUCTURE

Battery Cell Research - A contract has been awarded to Batelle Memorial Institute of Columbus, Ohio, for a nine-month cell research program to improve the zinc-silver peroxide secondary battery now used for interceptor power. Three additional proposals for this work were considered. This effort has been initiated in competition with the auxiliary power unit development program which the Contractor is also pursuing in an endeavor to develop a satisfactory power source for the tactical interceptors.

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Model 623 interceptors use four separate batteries for tube plate circuits, tube heater circuits, hydraulic pump, and destruct unit. An additional battery will be required for an inverter which will supply power for the target seeker when this unit is incorporated. The secondary cells now used are zinc-silver peroxide with potassium hydroxide electrolyte, manufactured by Yardney Electric Company under the trade name "Silvercel." These batteries can be stored for long periods in the dry condition, but are limited to three months reliable life in the charged state. The cells are relatively light in weight and have a high discharge rate. The present operating conditions for the hydraulic pump battery are 25 to 30 watt-hours per pound with 450 amperes average current during an 8 minute discharge cycle.

The following items are included in the statement of work for the battery research contract:

a. The rates of erosion and efficiency of deposition of zinc in alkaline solutions containing amounts of dissolved silver peroxide will be determined.

b. Combinations of resins and semi-permeable membranes will be tested for ability to prevent transfer of silver and zinc to the anolyte and catholyte respectively.

c. Improved testing techniques will be developed to determine cell life.

d. Recommendations for possible design of long-life cells for manufacture and use will be made.

Batelle has facilities and experienced personnel which are qualified to undertake cell chemistry research. Development of a battery suitable for tactical interceptors is expected to result in increased reliability over other power sources.

FUSE AND WARHEAD

Cluster Warhead Research - Feasibility of a fin-stabilized cluster warhead for BOMARC is being investigated by Armour Research Foundation under a six months study contract with Ballistics Research Laboratory. A similar fin-stabilized cluster warhead for Sparrow appears to be a promising development and has reached the sled test stage. Armour

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representatives visited Boeing-Seattle June 7, 1954, to coordinate the study program.

Warhead Temperature Study - A study to determine hot spot temperatures and average temperature of the T-33 fragmentation and T-44 cluster warheads has been conducted. The study conditions were Mach 2.55 at 60,000 feet with free air temperatures of -50°F and typical launching operations.

Both T-33 fragmentation and T-44 cluster warhead explosive hot spot temperatures occurred adjacent to the mounting brackets because of heat conduction from the interceptor skin. The T-33 warhead will reach its melting temperature of 174°F in local areas after about 5 1/2 minutes of a typical flight; the T-44 warhead will reach its melting temperature of 180°F in local areas after approximately 8 minutes. The average temperatures of either warhead will not reach melting point during 10 minutes of a typical flight.

The effect of shock upon a warhead with melted areas is not fully known. The results of this study are being discussed with Ballistics Research Laboratory and the Contractors involved. Means of reducing heat transfer to the warhead compartment will be developed if the melted explosive condition cannot be tolerated.

GROUND SUPPORT EQUIPMENT

JP-X Fueling Trailer - Design, procurement, and fabrication of JP-X fueling equipment are progressing on a close schedule to meet the shipment date for interceptor 623-7. Special facilities are required for handling fuels containing unsymmetrical dimethyl hydrazine (DMH) because the fuel will be mixed at Aerojet's plant. A closed pumping system will be used to prevent contamination and reduce exposure to air.

JP-X will be supplied by Aerojet and shipped to AFMTC in stainless steel drums. Five drums of JP-X will be required for each Block III test flight. Three sets of drums will be used so that a reserve fuel loading is always available at AFMTC. Each drum of JP-X will be checked for specific gravity and temperature at the time drums are installed on the trailer prior to fueling an interceptor. No procedures are available at AFMTC for chemical analysis of JP-X.

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The JP-X fueling trailer consists of an M-1 trailer equipped to receive five shipping drums, manifold piping, and a pumping system. JP-X will be pumped directly from shipping drums to the interceptor by two ECO pumps in parallel which are capable of delivering 20 gallons per minute at 40 psi. An ullage control tank is incorporated in the pumping system.

The new JP-X fueling trailer will be checked out and personnel familiarized with its use before interceptor 623-7 is fired. It has been determined that RENA can be handled with the existing acid trailer. Horizontal and vertical defueling and interceptor decontamination procedures have been established.

Helium Supply Equipment - Arrangements have been completed for equipment at AFMTC to fill interceptor nose pressure bottles with high pressure helium for flight. A series of interceptors starting with 623-7 will use a 3000 psi nose pressure bottle of 26 cubic foot capacity for cold gas (helium) pressurization of boost system. A Greer transfer unit will be used to pressurize the helium from 2400 psi maximum bottle pressure. A nose tank simulator has been fabricated for testing the supply equipment. Helium will be furnished by the Air Force in standard commercial bottles. Low pressure leak tests are accomplished with nitrogen containing 1% freon. Each interceptor nose pressure bottle will be tested with helium on the day previous to the firing schedule date.

TESTING

F-94B/624N-1 Nose Program - The F-94B airplane has been ferried to AFMTC and electronic equipment is being reinstalled and tested preparatory to flight testing. Considerable delay during the ferry to AFMTC resulted from unfavorable weather and difficulties with fuel tanks and engine. The airplane arrived at AFMTC May 31.

The present schedule for the first flight is June 22, dependent upon continuous availability of necessary facilities. Nose power system checks are complete; beacon, command receiver, and telemeter checking is in progress. Field tests of all equipment will be performed before flight tests are begun. The temporary nose pressurization truck to provide nitrogen and ammonia servicing has been completed and placed in operation.

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Control Surface Testing - A new method which has been developed for determining interceptor control surface natural rotational frequencies will result in sharply reduced testing time and cost. Rotational natural frequency tests establish that frequencies are higher than the minimums which will insure freedom from control surface flutter.

Previous rotational frequency tests involved considerable time and equipment during Period I inspections. Each control surface was vibrated by a shaker pot in a bulky fixture while the frequency was swept from 4.5 to 100 cps. Natural frequencies were determined by observing surface deflections.

The new method of determining natural rotational frequency uses the interceptor hydraulic system and the Moog control valves to supply the required test vibrations. Sine waves of the required sweep frequencies are supplied to the Moog valves as a control current. The increase in amplitude of rotation at natural frequency is determined either by observation or by instrumenting the surface with an accelerometer. Recently improved control valve reliability has made this type of test feasible. The time to determine interceptor control surface natural rotational frequencies has been reduced to about one hour by this new method.

A series of tests was conducted with interceptors 623-4, -7, and -007 to determine if this shortcut in testing was reliable. The results were entirely satisfactory. Agreement of measurements by the two methods for interceptor 623-7 was between 98 and 100% for the various control surfaces. Accordingly, the improved testing method will be used for 623-8 and subsequent interceptors as a period II functional test. This type of test will also be useful to verify reassembly procedures at AFMTC.

Hydraulic System Heat Tests - Environmental tests are being conducted to determine the performance of the hydraulic pumping unit at cruise conditions. The initial test used a full scale interceptor section containing hydraulic pump, motor, battery, and temperature instrumentation. Succeeding tests will substitute laboratory power for the battery. The test section is operated in a strato-chamber equivalent to approximately 60,000 feet altitude and heat is supplied by radiant sources to raise skin temperature to 500° F. Hydraulic

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system loads are regulated by external valves to simulate a flight condition.

The first test which used battery power simulated a flight of 8 minutes duration. All equipment operated without failure and the recorded test data is being analyzed. The servo battery used was a spare from Block II flight testing, representative of Block III batteries. Preliminary results indicate a battery case temperature of 336°F and an electrolyte temperature of 136°F. The maximum battery output was equivalent to about 27 H.P. at a hydraulic pump output of approximately 19 H.P.

Further tests will be conducted with this facility to investigate hydraulic pump and motor operation under various loads and operating conditions.

623-7 Functional Testing - Period II testing of interceptor 623-7 began June 2 as planned. The hydraulic system tests were successfully completed. FM and PDM telemeter system tests are partly complete and are on schedule. The pitch system is being investigated to determine the effect of configuration changes on the stability margin. Necessity for relocation of the pitch angular accelerometer is being considered.

Captive Firing Stand - Construction of the firing pad and related facilities for the captive firing stand (soft mount) at AFMTC have been completed by the subcontractor. This installation will be used for boost rocket system captive firing with the interceptor in a vertical attitude subject to limited freedom in pitch and yaw. (See Progress Report No. 11 for a description of the facility). Because current flight problems are not of a nature suited to investigation in the captive firing stand, no test schedule has been set.

In accordance with previous plans, it is intended to place the captive mount structure and supporting steel frame work in storage pending establishment of a test schedule. Installation and removal of the structure for checkout purposes does not appear warranted. Permanent erection of the structure would constitute a potential hazard during forthcoming interceptor firings.

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Ready availability of this test facility will be of considerable benefit when investigation of certain problems related to boost system operation is necessary.

/s/ R. H. Jewett

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(Uncl) Bomarc Performance Data

Management Analysis (Maj Leggette) ADOOA 12 August 1954
THRU: DCS/O (Col Bond)

1. Reference is made to your verbal request. The following data is furnished under Priority C project entitled "Interceptor Aircraft Performance."

2. Requested data is as follows:

a. Weight at launch - 12,000 lbs.

b. Fuel load:

Jet fuel - 500 gal.
Oxidizer - 360 gal.

c. Thrust:

Booster rocket - 35,000 lbs.
Ram-jets (2) - 3,600 lbs. at 60,000'

d. Scramble order to launch time (min.) - 2 min.

e. Cruise speed:

Bomarc I - 2.5M @ 60,000' (24 n.mi/min.)
Advanced Bomarc - 2.7M @ 80,000' (26 n.mi/min.)

f. Combat radius and time of flight:

Bomarc I - 125 n.miles in 5.5 min.
Advanced Bomarc - 250 n.miles in 10 min.

g. Time vs. distance vs. altitude in climb:

Bomarc I

Time (Min)	Dist (n.mi)	Alt (100')
.25	.2	8
.5	2.0	30
.75	12.0	52
1.00	20.0	60

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Subj: (Uncl) Bomarc Performance Data, 12 Aug 54, Cont'd

Advanced Bomarc

Time (Min)	Dist (n.mi)	Alt (1000')
.25	.2	12
.5	2.0	45
.75	9.0	68
1.00	17.0	80

h. Curves of combat radius or cruise speed vs. altitude are not required since in all cases the aircraft is to be flown at 60,000' or 80,000' to a transition point in the vicinity of the target prior to going into a terminal dive.

3. Up-to-date data on the F-102 has been requested from ARDC and will be furnished as soon as available.

E. C. HELFRICH
Ftr & Armt Div, OOA
Ext 2742-3

P. S. BALL, JR.
Chief, Operations Analysis
Ext 2742 - 3

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AFOOP-OP-D 1 Oct 1954

SUBJECT: (U) Revised Operational Concept of the F-99 (BOMARC)

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

The attached Operational Concept of the F-99 (BOMARC) is forwarded for your information and necessary action in accordance with AFR 5-47. It is desired that your Headquarters develop an Operational Plan on the F-99 (BOMARC) and that it be submitted to this Headquarters for review and final approval not later than 15 November 1954.

BY ORDER OF THE CHIEF OF STAFF:

1 Incl
Opnl Concept of F-99
(BOMARC) (Revised)
(5 cys)

EARL H. DUNHAM
Colonel, USAF
Chief, Defense Branch
Operational Plans Div., D/O

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OPERATIONAL CONCEPT
FOR F-99 (BOMARC)
(REVISED)

This document supercedes the original concept for the F-99, dated March 1953.

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OPERATIONAL CONCEPT - F-99 BOMARC

I. GENERAL DESCRIPTION

1. The F-99 (BOMARC) is a pilotless interceptor which will be ultimately integrated into the overall air defense systems as an area supplement to the manned interceptors.

2. The mission of the F-99 is the interception and destruction of hostile aircraft and missiles from subsonic to Mach 2.0 speeds, at altitudes from 10,000 to 80,000 feet and at ranges up to 250 miles from the launching site. The F-99 will be launched vertically by an acid petroleum rocket booster, which will carry it to cruising altitude. A pre-set guidance system will be employed during the initial stage. Upon reaching the optimum altitude, the F-99 will level off and the gasoline ram jet, which becomes effective during the rocket phase, will power the weapon throughout the remainder of the flight. During this phase of the flight, two guidance systems, mid-course and terminal, will be employed. The mid-course guidance will be inertial with refined heading corrections received through the radio data link from Air Defense Direction Centers as required. The final phase of the interception is a programmed dive on the target coupled with automatic search and lock-on by the target seeker. As the F-99 nears the target, commands are sent via the radio data link that pre-orients the target seeker to bring the target in its field of search. At the distance of about ten (10) miles from the target, the seeker is energized and begins tracking the target. When the missile's radar seeker is tracking on target, it automatically assumes direction of the auto-pilot. This radar seeker then directs the F-99 on a collision course with the target. When the F-99 is within 750 feet of the target, the influence fuze of the 300-pound, or larger, warhead will be armed and the warhead will be detonated within lethal range of the target. In the event of a target miss, a self - or command - destruction capability is included within the weapon. The dimensions of the F-99 are as follows: Length - 35 feet, diameter - 35 inches, span - 18 feet, and weight - 11,000 pounds gross.

II. ORGANIZATION

1. The F-99 squadron will consist of a Headquarters section, maintenance and supply section, armament section, and an air installations section. Approximately twenty-five (25) officers and two-hundred-eighty (280) airmen will be required to man a squadron responsible for four launching sites. Several of the F-99 squadrons may have less than four (4) launching sites assigned, therefore, the personnel breakdown will be as follows:

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A squadron with one (1) launching site will consist of approximately ten (10) officers and one hundred (100) airmen, and for each additional launching site assigned, approximately five (5) officers and sixty (60) airmen will be required in this section.

2. A table of organization for an F-99 squadron and the personnel required for the direction and assignment sections cannot be firmly determined or established until the weapon and control facilities have been tactically evaluated.

3. The squadron maintenance section will be responsible for assembly, maintenance, and testing of the F-99. This section will also be required to transport the vehicle to revetments, erect it on the launching stands and prepare for launching. In addition to normal maintenance, it may be assumed that the F-99 will have to be re-cycled every six (6) months.

4. Training - Specialized technical training will have been accomplished prior to the activation date of these units. Refresher training will be accomplished within the squadron by electronic devices which simulate all phases of the operation. Periodically, the units will be afforded the opportunity to perform actual firings at available missile ranges. Pre D-day it is anticipated that each squadron will fire at least two missiles per year for quality test. After D-day it is anticipated there will be no requirement for practiced firing; however, operational training will continue using synthetic training devices.

III. OPERATIONAL LIMITATIONS

1. The F-99 unit will be designated as an interceptor squadron, it will be supported and administered as a separate squadron in much the same manner as presently manned interceptor squadrons. Although currently manned interceptor squadrons operate as an integral unit, F-99 squadrons will be cellular and operate from one (1) to four (4) launching sites. The following limitations are inherent in this weapon and requires special attention to insure maximum combat capability.

a. Complex weapon and support equipment.

b. Large numbers of weapons per squadron, wide dispersion of squadrons throughout the U. S. and difficulty in handling this equipment to numerous sites throughout the ZI.

c. Electronic Environment - The F-99 will require a very comprehensive and detailed guidance system within the ZI. This is due to the fact that this equipment will be under the

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electronic control of the guidance system until terminal phase of the flight has been reached. This portion of the flight is comparatively small in comparison to the total distance this weapon must travel.

IV. UTILIZATION RATES

1. Utilization rate of a F-99 unit will be determined by the number of launching sites. Each launching site will be capable of launching 24 F-99's within five minutes. A capability of launching four (4) of these immediately must be maintained 24 hours a day. Thirty-five (35) F-99's will be required for each site; 28 will be operationally ready, 2 for cyclical maintenance and 5 for spares.

2. The limiting factor is the rate at which the weapon can be directed to designated targets. A direction team will be capable of controlling a maximum of two (2) weapons simultaneously. The control center will have two (2) direction teams.

3. Allocation of weapons will be made on a Sector basis and determined at the Air Division Combat Center. When the decision has been made to utilize the F-99, the Combat Center will assign the mission to a Direction Center within the Sector. The F-99 squadron will launch the interceptors in accordance with instructions received from the Direction Center. The Air Defense Direction Center will have two (2) direction teams, and required equipment, to direct the vehicle during the mid-course guidance phase of the flight. This method of employment has been selected because of the short flight time of the F-99 and to permit maximum utilization of the search and tracking capabilities of the aircraft control and warning system that will ultimately be in operation.

4. Present planning now indicates that storage quantities of F-99's, other than on-base, will not be required prior to the end of FY 60.

5. The squadrons in being at this time will not have received their total operational stock of F-99's. As war plans and planning factors are reviewed, the storage back-up requirements, if any, for F-99's will also be re-evaluated.

V. THEATER AND TIME DEPLOYMENT

Present planning envisions that F-99 squadrons will be deployed within the ZI commencing in 1958. Subsequent deployment will be as indicated in appropriate programming documents.

/s/ WILEY D. GANEY
Major General, U. S. Air Force
Director of Operations, Office of
Deputy Chief of Staff, Operations

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B/Ltr fr ADC, subj: (S) Requirements for a Development and Testing Program for the Lockheed Pilotless Aircraft, L-253, dated 19 February 1954

AFDRQ-AD 1st Ind 1 Apr 1954

DEPARTMENT OF THE AIR FORCE, HQ USAF, Washington 25, D. C.,

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

1. The requirement for a pilotless interceptor capable of providing a good defense capability at short and medium ranges is being studied in light of:

a. Current pilotless interceptor developments.

b. Air Force plans for use of TALOS.

c. Improved capabilities expected from advanced development of BOMARC.

2. As background in this area of air defense requirements, characteristics covered in your basic letter as well as those of several pilotless interceptors under development are summarized in Inclosure 1. It may be noted that characteristics of the TALOS nearly match the characteristics of the ADC requirement for the short range application and the growth potential indicated could satisfy the medium range insurance requirement.

3. As part of the Air Force support for missile development a proposal is now being evaluated in ARDC for use of the X-7 Test Vehicle for flight testing a development model of the Ryan CW Seeker. Effort on such a program would apply as insurance on the present pilotless interceptor program.

BY ORDER OF THE CHIEF OF STAFF:

1 Incl:
Chart

B. K. HOLLOWAY
Brigadier General, USAF
Deputy Director of Requirements

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Hq ADC ADOPR Subj: (SECRET) Requirements for a Development and Testing Program for the Lockheed Pilotless Aircraft, L-253

ADOPR (19 Feb 54) 2d Ind 10 Jul 1954

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

TO: Director of Requirements, Headquarters USAF, Washington 25, D. C.

1. Attached is a copy of an Air Research and Development Command letter, RDGRD, subject: "Lockheed Missile Proposal," dated 8 June 1954, which introduced the L-275 missile to Headquarters Air Defense Command. Reference also paragraph 3 of your 1st Indorsement to the ADC basic letter subject as above, in which you described a program for the evaluation of the X-7 for flight testing the Ryan CW Seeker. It is assumed that the X-7 and the L-275 is in fact the same vehicle.

2. In reviewing the basic requirement, with the information contained in paragraph 3 of the RDGRD letter and paragraph 3 of the USAF 1st Indorsement, this headquarters is of the opinion that the L-275, or X-7, more nearly fulfills the requirement as stated in the basic letter.

3. Further reference is made to your 1st Indorsement, paragraph 2. This headquarters is extremely interested in Talos and its possible role as a replacement for other weapons of the short range class (50 nautical miles) and as a complementary weapon for the medium range class (up to 500 nautical miles). Air Defense Command does not envision Talos as a companion weapon for, nor a replacement weapon for the F-99 in the event the Bomarc program fails. It should be emphasized that this headquarters does not wish to substitute the Lockheed missile for the F-99 nor does it wish to negate the F-99 program in any way. It does appear sound to develop a companion weapon in this medium range area so as to provide capability to guard against long delays in this development and to provide a capability in the event of Technical Order compliance.

4. It is requested therefore that a high priority be established for an approved L-275 project as referred to in the RDGRD letter and that it be developed in the same way as the F-99 (Bomarc) to be compatible with the air defense ground environment system.

FOR THE COMMANDER:

1 Incl
Ltr Hq ARDC, RDGRD,
subj: Lockheed Missile
Proposal, 8 June 54
(trip)

KENNETH P. BERGQUIST
Brigadier General, USAF
Deputy Chief of Staff, Operations

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B/Ltr fm ADC, subj: (S) Requirements for a Development and Testing Program for the Lockheed Pilotless Aircraft, L-253, dated 19 February 1954

AFDRQ-AD/F 3rd Ind. 20 Sep 1954

DEPARTMENT OF THE AIR FORCE, HQ USAF, Washington 25, D. C.

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

A contract is currently being negotiated with Lockheed for the L-275. This will provide for modification as required to ground launch the X-7 vehicle and use it to flight test ramjet engines, target seekers, and other components of the F-99. The L-275 will be recoverable by parachute and will be used to simulate the F-99 mission. This will provide an economic means of expediting the BOMARC program and will provide an alternative in the event the F-99 development lags behind the overall BOMARC system schedule.

BY ORDER OF THE CHIEF OF STAFF:

1 Incl:
n/c (2 cys w/d)

JOSEPH L. LAUGHLIN
Colonel, USAF
Chief, Air Defense Division
D/Requirements, DCS/D

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Hq ADC ADOPR Subj: (Secret) Requirements for a Development and Testing Program for the Lockheed Pilotless Aircraft, L-253

ADOPR (19 Feb 54) 4th Ind 16 Oct 1954

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

TO: Director of Requirements, Headquarters USAF, ATTN: Air Defense Division, Washington 25, D. C.

1. Reference is made to message this headquarters (Secret) ADOPR 1493 dated 25 August 1954, confirming a conversation between Major General F. H. Smith, Vice Commander, Air Defense Command, and Lieutenant General Putt, Director of Requirements, Deputy Chief of Staff, Development, Headquarters USAF. This conversation dealt with the desire of this headquarters that the L-253 be developed and test evaluated as a weapons system separate and distinct from the F-99 (Bomarc) and that it be developed on a high priority program.

2. Your third indorsement states that a contract is currently being negotiated with Lockheed for the L-275. This indorsement implies first, that the Lockheed vehicle will be a flight test vehicle for F-99 components and second that it will provide an alternate to the F-99. Recent information reaching this headquarters indicates that the L-275 is in fact a test bed vehicle for Research and Development. It is requested therefore that the terms of the contract be clarified to provide a development contract for the L-253 pilotless interceptor.

3. This headquarters desires and recommends that the L-253 be a competitive development, a separate and distinct contract to the F-99. It is the opinion of this headquarters, an opinion supstantiated by wide experience, that in the interests of national security, air defense is best served by competitive development of weapons systems.

FOR THE COMMANDER:

1 Incl
n/c

KENNETH P. BERGQUIST
Brigadier General, USAF
Deputy Chief os Staff, Operations

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	TALOS	TALOS (Growth / Potential)	BOMARC F-99A	BOMARC F-99C	ADC Insurance Requirement
Range N.Mi.	5-50	5-100	15-125	15-250	7-100
Speed Mach No.	2.06	2.2	2.5	2.7	2/
Altitude Maximum	60,000'	70,000'	60,000'	80,000'	60,000'
Minimum	800-8000'	0	10,000'	0	"Low" Alt.
Launch Rate with	2/min 2 launchers	2/min 2 launchers	25 at once 25 launchers	25 at once	6/min -
Launch Azimuth	360°	360°	360°	360°	360°
Availability	2-3 years	3½-4 years	3½-4 years	4½ years	

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Headquarters
AIR RESEARCH AND DEVELOPMENT COMMAND
Post Office Box 1395
Baltimore 3, Maryland

RDGRD 8 June 1954

SUBJECT: Lockheed Missile Proposal

TO: Commander
Air Defense Command
ATTN: P & R
Ent Air Force Base
Colorado Springs, Colorado

1. Reference request for additional information on the Lockheed missile proposal made by Col Powell and Lt Col Thornton. (UNCL)

2. Hq ARDC has carefully considered the Lockheed L-253 proposal and cannot support it for the following reasons:

a. The guided missile budget has been cut several times and retention of the Bomarc program without serious reduction in funds has been affected with extreme difficulty. Supporting the L-253 proposal at this time apparently could only be at the expense of Bomarc. L-253 would initially cost $14 million and ARDC experience with similar program indicates that estimated costs increase with time.

b. The absence of a stated requirement for a second pilotless interceptor program of the Bomarc type requires we clearly prove that any such program will provide a level of operational effectiveness not possible with weapon systems now being developed. This cannot be proven.

c. The most attractive feature of L-253 is an early operational date. This is based on integration of many features of Bomarc which are assured to be operationally effective. It is a fact, however, that several of these equipments are undergoing difficulties (ile., Ramjet engines) which will require time for solution, thereby slipping the operational date of any missile tied to this equipment.

d. The low altitude capability, another attractive feature of L-253, will also be provided in Bomarc. (SECRET)

Inclosure # 2

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RDCRD Subject: Lockheed Missile Proposal

3. Support of the Bomarc program requires substantial seeker testing, and ARDC has proposed to Hq USAF that the Lockheed ramjet test vehicle be adapted to a missile seeker test for this purpose. This program, known as L-275, if approved, will require the development of substantial launch, guidance and corollary equipment which will be of considerable value in the event the Lockheed proposal is accepted in the future by the Air Force as a weapon system development program. (SECRET)

4. Paragraphs 2 and 3 classified SECRET in accordance with paragraph 23 b (8), AFR 205-1. (UNCL)

FOR THE COMMANDER:

JOSEPH A. BARRETT, JR.
Lt Colonel, USAF
Chief, Air Defense Division
Asst for Operational Readiness

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From: HQ USAF, WASHINGTON, D. C. 3 January 1955

To: COMMANDER, ARDC, BALTIMORE, MARYLAND

/SECRET/ FROM AFCOM 55619. Following Bomarc dates currently being used by Hq USAF: A. Completion of Weapon System Developmental Test: November 1958. B. Start of OST of base equipment (APG/ADA/40-A) upon delivery of ground support equipment in April 1958. Start of OST of weapon system (APG/ADA/412-A) upon delivery of missiles in January 1959. C. Completion of OST of APG/ADA/40-A, December 1958. Completion of OST of APG/ADA/412-A, December 1959. D. Activation of first ADC Squadrons: March 1958. E. Start of squadron unit training: April 1958. F. Equipping of first ADC Squadron: October 1958. G. First squadron operationally ready: January 1960.

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ADOPR 28 December 1954

SUBJECT: (Unclassified) Requirement for Standard Interceptor Missile Base in Air Defense Command

TO: Director of Requirements
Headquarters USAF
Washington 25, D. C.

1. References.

a. Letter, ADOPR, Headquarters Air Defense Command, 10 November 1954, subject: (Unclassified) Minimum Requirements for Air Defense Pilotless Interceptor.

b. Letter, ADOPR, Headquarters Air Defense Command, 26 November 1954, subject: (Unclassified) Requirement for Land Based Talos in Air Defense.

2. The following requirement is submitted in accordance with AFR 57-3, dated 23 May 1951.

3. Introduction. Recently announced slippage in the F-99 (Bomarc) program has necessitated a reorientation of the Air Defense Command's planning for deployment of Long Range Interceptor Missiles. Allied missile projects such as the Talos and L-253 programs have provided alternate avenues of approach to the interceptor missile requirement in air defense. The L-253 appears to be a parallel development program to the F-99 in both performance capability and development. Talos however appears to be two or three years nearer realization. It appears feasible and is considered essential that all three weapons should fit into the same missile base environment. Furthermore, it appears feasible that all three missiles could fit into the missile base environment which will be required for the advanced Long Range Interceptor Missile (LRIM-I) which will be required in the time period 1963-1965.

4. Objective. To provide a base for Air Defense Command interceptor missiles which will be standard to all interceptor missiles.

5. Description.

a. Nomenclature: Air Defense Interceptor Missile Base.

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Hq ADC Subject: (Unclassified) Requirement for Standard Interceptor Missile Base in Air Defense Command

b. Purpose: To establish a standard base environment, including all facilities for receipt, storage, assembly, fueling, checkout, maintenance, and launching, for all Air Defense Command interceptor missiles which will:

(1) Provide for redeployment of ADC interceptor missiles as tactical requirements may dictate.

(2) Provide for the phasing in of long range interceptor missiles of increased capability without requiring major changes in existing base facilities which would render the base tactically inoperative for a long period of time and which would require a large expenditure of Public Works funds.

(3) Provide manufacturers with a set of standard requirements which will result in all air defense interceptor missiles being compatible with and interchangeable on the standard base.

(4) Provide the Air Defense Command with the standard base on a 1A priority basis.

c. Performance: The standard base should be planned, designed and constructed so that the most critical function or characteristic of any interceptor missile expected to be deployed by ADC can be performed or accommodated by the standard base facilities without major changes. Particular attention should be given to the requirements for the advanced long range interceptor missile (LRIM-I) to be deployed in the time period subsequent to 1963. The standard base facilities should be capable of accommodating this advanced type missile.

d. Design Features:

(1) Preliminary design studies should be undertaken immediately to determine the optimum design for the base.

(2) It is considered that the general principles of design and operation as projected for the F-99 (Bomarc) installation would be a suitable standard for the Interceptor Missile Base.

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Hq ADC Subject: (Unclassified) Requirement for Standard Interceptor Missile Base in Air Defense Command

e. Special Features: None.

f. Proposed Basis of Issue: The standard bases should be constructed at such places and at such times as to meet the ADC requirements for tactical deployment as published in appropriate USAF Programming Guides and USAF Programming Documents.

g. Method of Meeting the Requirement: Conduct appropriate design studies.

6. The establishment of a Standard Air Defense Command Interceptor Missile Base will prevent a possible major problem, i.e., the necessity of constructing a new type missile base to accommodate each new interceptor missile and, in addition, would provide the Air Defense Command with a certain tactical mobility in its interceptor missile deployment and employment. It is requested that urgent consideration and approval be given this request so that it will be applicable to the earlier interceptor missile employed by the Air Defense Command.

Info cy
Comdr, ARDC
Comdr, WADC

FREDERIC H. SMITH JR.
Major General, USAF
Vice Commander

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From: COMMANDER, ADC 13 Jan 1955

To: CHIEF OF STAFF, USAF, WASHINGTON, D. C.

(SECRET) ADOPR 0094. Reference message AFOPD 55494 dated 30 December 54 regarding item (6) augmentation of Ft. Myers Gunnery Base to include missile training facilities. Attention invited to letter ADOPR, Hq ADC, 25 May 54, Subject: (unclassified) Requirement for Pilotless Interceptor Unit Training, and first indorsement ADOPR, Hq ADC, 14 July 54, to letter AFDDC, Hq USAF, 4 June 54, Subject: Siting of Air Defense Guided Missile Operational Suitability Test. An interceptor missile unit training base is a requirement for 57 for the following reasons: (1) One Talos Squadron will be activated in 58. (2) Unit activation and training must be accomplished three to six months prior to tactical base assignment. (3) Launching of missiles must be a part of initial training. (4) Missiles cannot be launched from tactical bases because (a) there will be no range facilities and (b) most interceptor missile bases will be located in areas of high population and industry.

/s/ LT COL J R THORNTON, USAF
for C. F. HUMPHREYS
Captain, USAF
Asst Command Adj

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From: HEADQUARTERS USAF

30 December 1954

To: COMMANDER, ENT AFB, COLORADO

/SECRET/ FROM: AFOPD 55494. Re your ADOPR 3082 and letter this headquarters, Subject: "Air Defense Requirements 1954-1960," 1 December 54. Following remarks refer to same numbered item in ADOPR 3032. (1), (2) and (3) Action being taken on these items is outlined in referenced letter. (4) No action being taken. ADC force level will remain at 69 squadrons. (5) FY 57 programming objectives objectives, now being considered by AFC include 2 squadrons TALOS end FY 58, 5 squadrons TALOS end FY 59, and 61 Bomarc squadrons end FY 59. Ten site concept for five TALOS squadrons now under consideration by Air Staff. (6) Augmentation of Ft. Myers Gunnery Base to include missile training facilities - not contained in FY 57 program objectives. This item being considered as new requirement by this headquarters. (7) Action now being taken to include a requirement in FY 57 program for Atomic Rocket storage and handling facilities at those ADC bases which will have F-89D/H or F-102 squadrons in FY 57-58 time period. (8) FY 57 program objectives for SAGE follows phasing previously recommended by your headquarters. FY 57 C&E requirements being developed by JPO. Current procedures provide for submission of these requirements to this headquarters thru your Command. Development of PWP in support of SAGE C&E requirements is a responsibility of your Command.

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ADPTR-S-1

10 September 1954

SUBJECT: Special Weapons and Guided Missiles Orientation Course

TO: Commander
Eastern Air Defense Force
Stewart Air Force Base
Newburgh, New York

Identical Letters:
CADF, WADF

1. Reference is made to my message ADPIR-S-1 21897, 9 July 1954. Cited message indicated the availability of a limited number of spaces in the Army Special Weapons and Guided Missiles Orientation Course conducted at Ft. Bliss, Texas.

2. The following quotas are allocated commands indicated in subject course:

Class Nr	Rept Dt	EADF	WADF	CADF
66	3 Oct 54	0	1	0
74	16 Jan 55	1	0	0
78	13 Mar 55	0	0	1
82	1 May 55	0	1	0
84	22 May 55	1	0	0
85	5 Jun 55	0	0	1
86	12 Jun 55	0	1	0
87	19 Jun 55	0	0	1
88	26 Jun 55	0	1	0

These are the maximum number of spaces available to this command at the present time and no additional quotas are expected to be available during Fiscal Year 1955.

3. Reporting instructions and other administrative details pertaining to this course are as follows:

a. MISSION. The mission of this course is to orient selected officers in the basic factors of the characteristics and effect of atomic weapons and guided missiles, and in the peculiarities inherent in operations involving these weapons.

b. PREREQUISITES. Officers selected for this training must be in the grade of captain or above, must require information concerning special weapons in the performance of assigned duties

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ADPTR-8-1, subject: Special Wpns and Guided Missiles Orientation Course

and must possess a security clearance of TOP SECRET. (Orders detailing officers to attend this course must indicate such a clearance).

c. DURATION. The duration of the course is one week.

d. REPORTING. Officers will report to the Commandant, Antiaircraft and Guided Missiles Branch, The Artillery School, Fort Bliss, Texas, on the class reporting date indicated in paragraph 2.

e. FUNDING. Use following fund citation in orders detailing officers to this course: 5753400 564-4110 P443-02-03-07 S22-606.

f. Cite as authority, letter, Headquarters USAF AFPMP-1-E-3c, subject: Special Weapons and Guided Missiles Orientation Course, 27 August 1954.

BY ORDER OF THE COMMANDER:

DONAVON F SMITH
Colonel, USAF
Dir of Training

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON 25, D. C.

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AFPMP-1-E-3c

27 August 1954

SUBJECT: Special Weapons and Guided Missiles Orientation Course

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

1. Reference is made to messageform, Headquarters USAF, AFPMP-1 1270 M, dated 6 July 1954. Cited messageform indicated the availability of a limited number of spaces in the Army Special Weapons and Guided Missiles Orientation Course conducted at Fort Bliss, Texas.

2. A quota of one is allocated your command in each of the classes indicated below:

Class Number	Reporting Date
66	3 Oct 54
70	14 Nov 54
74	16 Jan 55
78	13 Mar 55
82	1 May 55
84	22 May 55
85	5 Jun 55
86	12 Jun 55
87	19 Jun 55
88	26 Jun 55

3. Reporting instructions and other administrative details pertaining to this course are as follows:

a. MISSION. The mission of this course is to orient selected officers in the basic factors of the characteristics and effect of atomic weapons and guided missiles, and in the peculiarities inherent in operations involving these weapons.

b. PREREQUISITES. Officers selected for this training must be in the grade of captain or above, must require information concerning special weapons in the performance of assigned duties and must possess a security clearance of TOP SECRET. (Orders detailing officers to attend this course must indicate such a clearance).

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Ltr to ADC, Subj: Special Weapons and Guided Missiles Orientation Course (Contd)

c. **DURATION.** The duration of the course is one week.

d. **REPORTING.** Officers will report to the Commandant, Antiaircraft and Guided Missiles Branch, The Artillery School, Fort Bliss, Texas, on the class reporting date indicated in paragraph 2.

e. **FUNDING.** Use following fund citation in orders detailing officers to this course: 5753 400 564-4110 P443-02-03, 07 S22-606.

4. No additional quotas are expected to be available to the Air Force during Fiscal Year 1955. If any additional quotas become available, however, consideration will be given to your additional requirements submitted in response to the message cited in paragraph 1, above.

BY ORDER OF THE CHIEF OF STAFF:

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307		Jul-Dec-54	2			S	
523		Jul-Dec-54	3			S	
714		Jul-Dec-54	4			S	
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