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JAN - JUN 1955
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RETURN TO:
Director
Aerospace Studies Inst
ATTN: Archives Branch
Maxwell AFB, Alabama

HISTORY
of the
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS
DEPUTY CHIEF OF STAFF, OPERATIONS
1 January 1955 to 30 June 1955
MM-3 006588

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v. 4

RETURN TO:

Director
Research Studies Institute
Attn: Andrew Simon
Maxwell AFB, Georgia

5-3507-5

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HISTORY
of the
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS
DEPUTY CHIEF OF STAFF, OPERATIONS

1 January 1955 to 30 June 1955

BRIEF RESUME OF THE HISTORY OF THE
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

Following, broken down by Divisions, is the History of the Directorate of Communications-Electronics, DCS/Operations, Hq USAF, for the period 1 January 1955 through 30 June 1955. (UNCLASSIFIED)

Effective 1 May 1955, the title of the directorate was changed to Directorate of Communications-Electronics, which more clearly defines the functions of this directorate. (UNCLASSIFIED)

Personnel authorizations for this directorate were increased by four spaces during this period. These spaces were allocated as follows:

a. A Lt Colonel space was allocated to the Systems Engineering Branch, Communications Systems Division, to provide an officer full time to assume the responsibilities regarding ownership, programming and funding of base telephone systems. These responsibilities were previously charged to the Directorate of Maintenance-Engineering.

(UNCLASSIFIED)

b. A T/Sgt space was granted to the Message and Correspondence Control Section to help overcome the backlog caused by increased workload and more strict regulations with regard to processing classified correspondence. (UNCLASSIFIED)

c. A Captain space and a civilian space were allocated to the Operations Branch, Communications Systems Division. The Captain

space provided an Assistant Chief, Military Affiliate Radio System. The civilian space was utilized as clerical assistance. (UNCLASSIFIED)

There was only one change in key personnel assigned to the Office of the Director and Executive during this period. WOJG Johnnie W. Hill was assigned as Assistant Executive. WOJG Hill is primarily assigned as TOP SECRET and COSMIC Control Officer. There were several changes in key personnel within each Division, as evidenced in the histories immediately following. (UNCLASSIFIED)

During the period of this report, Major General Blake and Brigadier General Pachynski made numerous staff visits to various Air Force Bases for the purpose of inspecting communications and electronics facilities. (UNCLASSIFIED)

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HISTORY OF COMMUNICATIONS SYSTEMS DIVISION

1 January to 30 June 1955

COLONEL BERNARD M. WOOTTON
Chief

LT COLONEL C. R. GAJAN
Executive

COMMUNICATIONS SYSTEMS DIVISION
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

COMMUNICATIONS SYSTEMS DIVISION
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

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COMMUNICATIONS SYSTEMS DIVISION
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

SECTION I

ORGANIZATION AND FUNCTIONS

The Communications Systems Division, Directorate of Communications-Electronics, is divided into three branches: Operations Branch, Systems Engineering Branch, and Security Branch.

The functional responsibilities of the Communications Systems Division are as follows:

Determine and review the operational requirements for point-to-point communications systems, tactical and fixed radio and wire systems, and ground/air radio stations, in accordance with current programs and projects. Determines need for control and controls the issue of critical items of communications equipment. Exercises staff supervision over the planning and operation of communications systems. Formulates and prescribes communications doctrine, methods and operating procedures for Air Force communications. Exercises supervision and technical direction over the Air Force Security Service on all matters pertaining to cryptography and communications security. Exercises general supervision and policy direction over the Military Affiliate Radio System (MARS). (UNCLASSIFIED)

SECTION II

ACTIVITIES

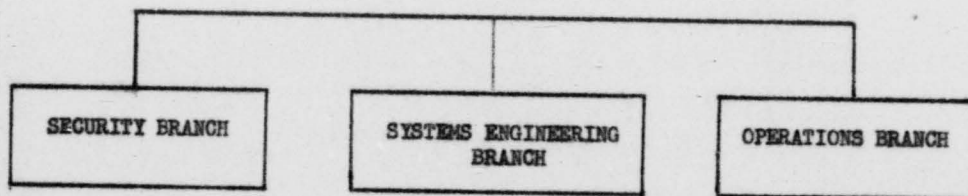
The activities of the division are set forth in detail in the histories of the branches which follow. (UNCLASSIFIED)

Organization entire period - 1 January through 30 June 1955

COMMUNICATIONS SYSTEMS DIVISION

Colonel (Chief)..... 1
Lt Colonel (Executive) 1
GS-5 (Secretary) 1
Airman 1

Colonel Bernard M. Wootton
Lt Col Charles R. Gajan
Miss Coletta L. Schulz
A/lc Irvin L. Neil



HISTORY OF SECURITY BRANCH
1 January 1955 to 30 June 1955

ROBERT C. SEARS, Colonel USAF
FRANCIS A. BRANT, Major USAF
DON D. PERRY, Major USAF

Communications Systems Division
Directorate of Communications

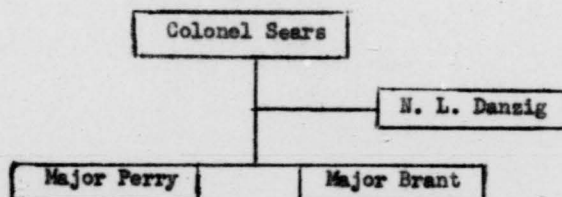
SECTION I

ORGANIZATION AND FUNCTIONS

The functions of the Security Branch for the period 1 January 1955 to 30 June 1955 were as follows:

- Establish and interpret USAF communications security policy.
- Collaborate with the Director of Intelligence in operational control over the USAF Security Service. Monitor USAF communications security equipment development and application. Develop and maintain USAF position in joint and combined committees.
- Prepare and justify crypto budget.

The organization of the Security Branch on 30 June 1955 was as follows:



Short Tour Officer Participation. During June, this Branch again utilized the services of two short tour officers who have mobilization assignments with this office, Lt Colonels Carl Glaser and James Howe. Next year it is planned to assign these officers to USAF Security Service, San Antonio, Texas. (UNCLASSIFIED)

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SECTION II

ACTIVITIES

Functional and Application Tests of AFSSM-9. These tests, under the technical supervision of Headquarters, USAF Security Service, were conducted during this period by Strategic Air Command, Air Defense Command, Tactical Air Command, and Airways and Air Communications Service. The AFSSM-9 is designed for the encipherment and decipherment of the normal 7,42 teletype code utilizing either on- or off-line operating procedures. Equipment is capable of either half or full duplex operation (depending on number of equipments), and at speeds of 50, 67, or 100 words per minute. As a result of these tests, it was determined that the AFSSM-9 is applicable to all levels of Air Force teletype communications on point-to-point circuits. It was further determined that the AFSSM-9, in its present form, is not applicable to landline or radio circuits that require synchronizing equipment and that certain components and/or circuits must be modified or refined prior to general use within the Air Force. National Security Agency and the contractor have agreed to correct component and circuit deficiencies and to deliver service test models by 1 October 1955 for further evaluation by the Services. This equipment will not be used for operational traffic until the results of this evaluation are known.

(SECRET)

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SECTION II

ACTIVITIES

Functional and Application Tests of AFSAM-9. These tests, under the technical supervision of Headquarters, USAF Security Service, were conducted during this period by Strategic Air Command, Air Defense Command, Tactical Air Command, and Airways and Air Communications Service. The AFSAM-9 is designed for the encipherment and decipherment of the normal 7.42 teletype code utilizing either on- or off-line operating procedures. Equipment is capable of either half or full duplex operation (depending on number of equipments), and at speeds of 60, 67, or 100 words per minute. As a result of these tests, it was determined that the AFSAM-9 is applicable to all levels of Air Force teletype communications on point-to-point circuits. It was further determined that the AFSAM-9, in its present form, is not applicable to landline or radio circuits that require synchronizing equipment and that certain components and/or circuits must be modified or refined prior to general use within the Air Force. National Security Agency and the contractor have agreed to correct component and circuit deficiencies and to deliver service test models by 1 October 1955 for further evaluation by the Services. This equipment will not be used for operational traffic until the results of this evaluation are known.

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Cryptographic Planning and Budgeting Program. Preparation and presentation of the communications security portion of the Planning Communications and Electronics documents continued during this period. After approved circuit and engineering changes were made to existing documents, appropriate adjustments were made in the authorization and allocation of communications security equipment to insure a timely and well balanced USAF world-wide communications security program. A great number of emergency changes for these documents were processed to provide equipment for certain disaster and emergency communications plans. A review of the implementing instructions for the communications security portion of these documents was made and appropriate changes made as required. (CONFIDENTIAL)

Cryptologic Budget. The FY 1956 buying program for cryptologic equipment was prepared, presented and approved by the various Air Staff and Defense Department agencies and implemented during this period. This buying program varied considerably from the FY 1956 budget estimate due to the advancement in state of the art of specialized COMINT equipment and the accelerated procurability of this equipment to meet service requirements. Cryptographic equipment was a near parallel of the FY 1956 budget estimate with the exception of the AFSAN-9 and AFSAY 801 equipment. The program will be reviewed again in January 1957 to determine the acceptability of this equipment for Air Force use and release of funds

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for procurement. Monitoring continued on the progress of the FY 1954 and FY 1955 buying programs for Project, Communications Security Equipment. All funds within the FY 1955 buying program have been committed and/or obligated and with one minor exception the FY 1954 buying program has been completed. Preparation of the FY 1957 cryptologic budget estimates for Project 236 began during this period. (CONFIDENTIAL)

AFSAY 808. Four (4) models of the AFSAY 808, VHF/UHF Airborne Speech Security equipment, were provided the Air Force by National Security Agency in January for testing. The test was conducted at Edwards Air Force Base between January and May with USAF Security Service, Air Research and Development Command and NSA taking an active part. The object of the test was to determine the operational and technical feasibility of airborne ciphony (speech encryption). The test was very successful and proved the equipment to be suitable for certain Air Force uses. However, due to its size and weight (1 cubic foot and 52 pounds) its use appears to be strictly limited to large aircraft. (CONFIDENTIAL)

US CCCC. Planning action was inaugurated early this year for construction and installation of an automatic switching center at Chicksands, U. K. This center, to be known as the UK Combined COMINT Communications Center, is to be USAF installed and operated as part of the USAF communications contribution to NSA. AACS was designated the engineering agency and USAF Security Service the operating agency. Construction details of the building were finalized by June and construction is expected to begin

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in the fall of this year. The switching center is planned to be one of the USAF's most modern communications installations utilizing newly developed Western Union Automatic Switching equipment due to become available in the near future. (SECRET)

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H I S T O R Y

of the

COMMUNICATIONS SYSTEMS ENGINEERING BRANCH

1 January 1955 to 30 June 1955

CHIEF

COLONEL JAMES R. McNITT

Communications Systems Division
Directorate of Communications-Electronics

ORGANIZATIONAL AND PERSONNEL CHART
(1 January 1955 through 30 June 1955)

CHIEF ----- Colonel
Secretary-Stenographer ----- GS-5

Col James E. McNitt
Mrs. Mary Cutright

LONG LINES SECTION

Chief ----- Lt Col
4 ----- Majors
1 ----- Typist
(GS-4)

Lt Col A. A. Kurs
Maj W. J. Fry
Maj D. H. Blakley
Maj G. E. Townsend
Maj C. J. Welti
Mrs. M. Fisher

BASE SYSTEMS SECTION

Chief ----- Maj
1 ----- Maj
1 ----- GS-11
1 ----- GS-4
(Typist)

Maj D. J. Lake
Major F. L. Ferra
Mr. M. A. Loftin
Mrs. R. Valentine

SYSTEMS ENGINEERING BRANCH
COMMUNICATIONS SYSTEMS DIVISION

SECTION I

ORGANIZATION AND FUNCTIONS

Functional Description, Systems Engineering Branch. The Systems Engineering Branch is the agency within the Communications Systems Division which deals with turning requirements into realities. These requirements include all United States Air Force Government owned fixed point-to-point, ground components of HF (High Frequency) ground to air and base communications. The activities of the Branch include programming, systems engineering, project following and monitoring procurement, research and development and installation activities related to the above. The Branch consists of two sections: (1) Long Lines Section, and (2) Base Systems Section.

The functions of the Systems Engineering Branch are:

- a. Program for budgetary action and assist in defense of all equipment required for longlines, base and the ground portion of ground to air HF facilities and systems.
- b. Assist in budgeting for, and defense of, construction and installation in support of these facilities and systems.
- c. Monitor all staff and command actions outside the Branch which may affect equipping, construction, or installation of these facilities and systems, and recommend appropriate action when necessary.

d. Represent the Directorate of Communications-Electronics (or Headquarters United States Air Force) on all matters pertaining to the development and engineering of new techniques and to changes in design of existing equipment related to these facilities and systems.

e. Provide Joint Communications-Electronics Committee (JCEC) representation on equipment working groups and panels as required.

The functions of the Long Lines Section are:

a. Programming for budgetary action and assisting in the defense of all equipment in the Long Lines category required for these facilities and systems. (The Long Lines category includes all terminal and relay point to point communications equipment which furnishes connecting links between Air Force installations, and between these installations and others outside the Air Force if furnished by the Air Force; and ground components of HF ground to air systems).

b. Review requirements and plans for new longlines category communications systems relative to realism of programmed operating dates, and to assure incorporation of latest state of the art engineering and equipment.

c. Keep abreast of the state of the art in longlines category communications.

d. Provide guidance as to type and composition of standard communications-electronics packages.

e. Monitor certain high priority communications projects to

insure all elements are coordinated and accomplished on a timely basis.

f. Represent the Communications Systems Division on technical matters pertaining to development, design criteria for communications-electronics structures, land acquisition, standby and backup criteria and other subjects related to longlines category systems.

g. Represent the Communications Systems Division on equipment programming and budgetary matters dealing with longlines systems.

h. Translate approved requirements into USAF C-E communications program.

i. Provide allocation guidance to Directorate of Supply and Services on critically short C-E equipment.

The functions of the Base Systems Section are:

a. Programming for budgetary action and assisting in the defense of all equipment in the Base Systems category. (The Base Systems category includes all on-base systems used for security, maintenance, fire and crash, intercomm, telephone and terminal operating equipment).

b. Review requirements and plans for new base systems relative to realism of programmed operating dates and to assure incorporation of latest state of the art engineering and equipment.

c. Keep abreast of the state of the art in base systems communications.

- d. Provide guidance as to type and composition of standard C-E packages.
- e. Monitor certain high priority communications projects to insure all elements are coordinated and accomplished on a timely basis.
- f. Represent the Communications Systems Division on equipment programming and budgetary matters dealing with base systems.
- g. Represent the Communications Systems Division on technical matters pertaining to development, design criteria for C-E structures and other subjects related to base systems.
- h. Translate approved requirements into USAF C-E communications program.
- i. Provide allocation guidance to Directorate of Supply and Services on critically short C-E equipment.
- j. Deal with matters pertaining to Government versus commercial ownership of base telephone and intercomm plants.

Functions of the Assistant for Programming:

- a. This is an additional duty for the Chief of the Long Lines Section. He coordinates programming actions of the Long Lines and Base Systems Sections and represents the Branch on programming policies, program, budget and buying program support. (UNCLASSIFIED)

Changes in Key Personnel. There were no key personnel changes during this reporting period.

SECTION II

ACTIVITIES

AN/VRC-27, AN/VRC-19 Base Non-Tactical Communications Program.

Vehicular AN/VRC-19 base non-tactical radios required as Base Support Equipment (USE) were deleted from Table of Allowance 1-1 COMM. To provide continued authorization for this equipment, authorization was deleted from the Unit Allowance List (UAL) and transcribed to the USAF Communications-Electronics Program (PC) Document. New USAF worldwide requirements were reported by all major commands on Report AF-E89 (OT). These requirements were included in the FY 56 Buying Program and FY Budget estimate. All new USE requirements were included in the PC document. (UNCLASSIFIED)

Base Wire Systems. In accordance with Department of Defense Directive 4640.2, dated 9 October 1952, a cost comparison analysis has been completed on two of eleven Government owned telephone systems which do not meet the requirements for authorized Government ownership.

The cost comparison at Fort George Wright, Spokane, Washington, revealed that the Air Force evaluated the system at \$73,571, while the telephone company made an offer of \$79,630, or a difference of \$6,059. Also the monthly operating cost to the Air Force would be reduced by \$1,901.

The cost comparison at Government Aircraft Plant #4, Fort Worth, Texas, revealed that the Air Force evaluated this system at \$297,038,

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while the telephone company made an offer of \$121,379 or a difference of \$175,659. Also the monthly operating cost to the Air Force would be increased by \$4,030.25. (UNCLASSIFIED)

Globecom. (Operation) Three Globecom stations went into operation during this period from new facilities. These stations are EW-8, Greenland, EW-1, Greenland, and Wheelus Air Force Base, Libya. This brings the total to five, i.e. Andrews Air Force Base, Maryland, Thule Air Base, Greenland, EW-1, EW-8, and Wheelus Air Force Base. Of the remaining 35 Globecom stations, 31 are operating from a portion of the new facilities and/or from interim facilities.

(Construction) During this period construction activity was in progress at the following Globecom stations: Loring Air Force Base, Maine; Kwajalein Naval Air Station, Marshall Islands; Andersen Air Force Base, Guam; Kadena Air Force Base, Okinawa; Dhahran Airfield, Saudi Arabia; Keflavik Airport, Iceland; Chateauroux Air Depot, Chateauroux, France; United Kingdom; Lajes Air Force Base, Azores; Ernest Harmon Air Force Base, Newfoundland; Site A, and Tokyo, Japan. Construction has been completed or not required at the following stations: Andrews Air Force Base; Offutt Air Force Base, Nebraska; McClellan Air Force Base, California; Goose Bay Air Base, Labrador; Pepperrell Air Force Base, Newfoundland; EW-1; EW-8; Thule Air Base; Ladd-Eielson Air Force Bases, Alaska; Adak Naval Air Station, Alaska; Elmendorf Air Force Base, Alaska; Johnston Island Air Force Base, Johnston Island; Eniwetok

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Island, Marshall Islands; Iwo Jima; Wheelus Air Force Base, Sidi Slimane Air Base, French Morocco; and Site B. Rehabilitation of existing structures is required at Albrook Air Force Base, Canal Zone, and Clark Air Force Base, Philippine Islands. Of the eight remaining Globecom stations, construction is needed at Kindley Air Force Base, Bermuda, Ramey Air Force Base, Puerto Rico, Aden; Adana; Leghorn, Italy; Talamanca, Spain; Site D, Site E, and Hickam Air Force Base, T. H.

(Engineering and Installation) During this period all installation responsibilities were transferred from Headquarters Airways and Air Communications Service (AACS) to the AACS wings and independent groups except for the stations at Aden, Adana, Site D and Site E, Hickam Air Force Base, Leghorn, Talamanca and Ramey Air Force Base. Installation of new communications equipment is in progress at Kadena Air Force Base, Elmendorf Air Force Base, Keflavik Air Base, Ernest Harmon Air Force Base, Lajes Air Force Base and Wheelus Air Force Base. Clark Air Force Base, Goose Bay, Kwajalein, McClellan Air Force Base, Loring Air Force Base, Sidi Slimane Air Base, Offutt Air Force Base and Site B. Of the remaining 18 Globecom stations a replacement of existing equipment was required. At 13 of these stations this replacement of equipment will not be accomplished until the new construction is completed. During this period, installation of communications equipment was started at Ernest Harmon Air Force Base and Lajes Air Force Base.

The plan for the Leghorn station was approved by JCCE and

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\$432,000 is in the FY 56 construction program for this station. AACS has been requested to furnish construction data.

A resurvey of the power units required for the Globecom stations revealed that 56 100KW power units, 6 350KW power units, and 2 600KW power units are needed to complete the program. The 100KW units have been placed on procurement at a total cost of \$670,535.04. The remaining 350KW and 600KW units will require \$730,660 which will be programmed for from FY 56 funds.

All of the operating dates for the Globecom circuits have been revised and brought up to date to reflect the current estimates on construction and availability of equipment. All stations are programmed to be in complete operation by 30 June 1957, except Stations E and D, which are programmed for 30 December 1958.

The plan for the Glark Air Force Base station has been approved and Far East Air Force (FEAF) has been required to submit construction estimates for the station.

Land acquisition is still in progress at Spain, Puerto Rico and Adana. A resurvey of the transmitter site at Aden was required to utilize only British Crown property. Approximately one third of the site was on territorial land which the British Air Ministry advised could not be negotiated for under the existing policies. This resurvey was completed and the site is located within the Crown boundaries and United States Air Forces in Europe (USAFE) was requested to acquire the necessary land. (SECRET)

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Iceland Tropospheric Scatter. On 15 February 1955, procurement directive 36-234-55 was issued to Air Materiel Command (AMC). This directive provided P-234 funds amounting to \$3,181,612 to cover procurement of the tropospheric scatter equipment. The directive stated Air Research and Development Command (ARDC) was requested in November 1954 to determine quantities and types of equipment to be used.

The specifications for the tropospheric scatter equipment were available 15 June 1955. These were joint specifications with the nomenclature of AN/FRC-39 assigned. The equipment will operate in the frequency band 890 to 960 mc, and will be multiplexed with the AN/TCC-3.

The latest information available indicates that Rome Air Force Depot (RAFD) is in the process of soliciting bids to manufacture the equipment. The Depot estimates it will take three to five months to negotiate a contract and twelve to fifteen months to manufacture the equipment. (SECRET)

Point-to-Point Communications for Texas Towers. A report from Lincoln Laboratory, subject: "Communications Texas Tower to Shore Via UHF Tropospheric Scatter", dated 16 December 1954, was received 10 March 1955. This report indicated that the 60 channel requirement for the Texas Towers could be provided by tropospheric scatter with a 99.99% reliability factor. This predicted reliability raised the question as to the necessity of the submarine cable. On 22 March 1955 the Director

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of Communications-Electronics sent a memorandum to the Director of Research and Development requesting that ARDC evaluate the report by Lincoln Laboratory. It was pointed out that this action was necessary in order to determine if the submarine cable was required. AMC was directed to defer action on installation of the submarine cable until after ARDC completed the evaluation of the Lincoln Laboratory report.

In March 1955 the Air Force Cambridge Research Center (AFCRC) prepared specifications for the tropospheric scatter equipment for the first tower. These specifications were written around available commercial equipment. In April 1955 the procurement directive to AMC was amended to include only equipment for the first tower and directed the specifications contained in exhibit AFCRC 55-15 be used. The frequency range of this equipment is 890 to 960 mc. Frequencies 902mc and 952mc have been obtained for temporary use by the first installation. RAFD negotiated a contract with the E. C. Page Company to engineer, furnish, and supply the tropospheric scatter system for the first tower.

Rome Air Development Center (RADC) prepared joint specifications for tropospheric scatter equipment which will be used for the remaining towers and to replace the equipment installed on the initial tower. Equipment on the first tower must be replaced since frequencies in the 890 to 960 mc band are practically impossible to obtain on a permanent basis. The JAN equipment will operate in the frequency band 1700 to

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2000 mcs. Action has been initiated to develop a 10KW klystron in this band. It is expected that this development will be completed in time to procure the equipment. (CONFIDENTIAL)

Project Fat Girl. Though initial operation of the Narsarsuak, Greenland (EW-1), to Goose Bay, Labrador, link began in December 1954, considerable testing and minor refinements were necessary. This was continued into the first quarter of 1955. The EW-8 - Iceland link began its initial operating and testing phase in the first quarter of 1955, operating entirely on locally generated power. The power line to the base central power plant is 95% complete at the close of this reporting period. Construction at Grindavik, Iceland, on the Iceland-United Kingdom link was delayed by the change of contractors from the United States firm, Metcalf-Hamilton, to an Icelandic firm. Icelandic labor strikes delayed construction even more. At the close of this period the situation had improved and construction was progressing satisfactorily. The major bottleneck, acquiring a site in the United Kingdom, was resolved on or about 20 February 1955 when the lease was finally signed. Work commenced immediately, however, British labor difficulties slowed progress considerably. The installation was approximately 50% complete at the end of this period. (CONFIDENTIAL)

Project Four Wheels. The prototype van passed the road tests at Aberdeen Proving Grounds, Maryland. The design of the power unit was

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completed and was under development by the contractor. A freeze was placed on the design as a result of a slippage in the project, partially caused by engineering changes. Other factors contributing to the delay were the non-availability of the Navy items of Government Furnished Part (GFP) and the facilities being overweight. The project has slipped six months and deliveries are expected to begin in June 1956 and be completed in July 1957. All mock-ups were completed by the contractor preparatory to complete prototype fabrication. The specifications for the high power RF amplifier trailer, OA-901/MRT-6, were completed by RADC and sent to RAFD for development-production action. (UNCLASSIFIED)

Project Pole Vault. Early in March 1955 Canadian Bell, contractor for Project Pole Vault, started turning over a limited number of channels in the system for operational use. By the end of this reporting period all of the available channels in the system were made available for use

The 6631st Radio Relay Squadron of the Northeast Air Command (NEAC) participated in the installation and equipment line-up phase and consequently, by the end of this reporting period, was in a position to accomplish approximately 90% of the operational and operator maintenance workload. During this reporting period AMC contracted with the Canadian Marconi Company for depot maintenance and logistic support of the Pole Vault system. This action, it is believed, will result in the most economical and effective support for the radio and carrier equipments which presently are unique to the USAF supply system. AMC, in

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May 1955, initiated contractual negotiations for Canadian Bell technical representatives. These technical representatives will be stationed at each Pole Vault site to train USAF personnel and provide operational continuity.

On 10 June 1955 action was initiated to increase the capacity of the Hopedale to Resolution Island circuits to 36 VF channels and the circuit from Resolution Island to Frobisher to 18 VF channels. These increased channels were required to support rearward communications from the Eastern portion of the DEWLINE. At this time, action was also taken to accomplish a complete engineering review of the system to insure compatibility between Pole Vault facilities and various existing and planned commercial and military facilities which will tie into the Pole Vault system.

(CONFIDENTIAL)

Project Stretch. Operation of this project continued as planned. Data collected through the first two quarters of 1955 substantiated earlier beliefs that 1414 mile path is feasible for an ionospheric scatter circuit if both sites are topographically ideal. (UNCLASSIFIED)

Project Two Wheels. All prototype models were completed and delivered to RADC. Environmental and climatic tests at RADC were begun on or about 15 June 1955. Following the tests at RADC it has been planned to test the units for operational suitability at

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Griffiss Air Force Base, Rome, New York, and at North Auxiliary Field, South Carolina, in conjunction with the operational suitability test for the C-123 aircraft. (UNCLASSIFIED)

Project White Alice. This item was reported in the preceding history as the Alaskan Communications Study. The project will provide the basic longlines communications circuits needed to support the Alaskan AC&W program. These longlines facilities have been planned and engineered as part of an integrated United States Government communications system which includes facilities and requirements of the Alaskan Communications System (ACS). The Department of Commerce and other governmental agencies.

AMC on 11 February 1955 consummated a sole source package contract with the Western Electric Company (AT&T) for engineering, procurement, construction, and installation of White Alice facilities. Western Electric Company, during the negotiation period, started planning and assembling an organization for implementing this project. As a result of this action the contractor was in a position to proceed rapidly with system design and implementation planning which would enable maximum utilization of the CY 1955 construction and shipping season. A copy of the initial progress report by Western Electric is attached as Appendix I to show the considerable progress made during the first five months of implementation. (UNCLASSIFIED)

Teletypewriter Equipment Program (AN/FGC-20, AN/FGC-25). During April 1955 the Office of the Secretary of Defense deferred FY 55

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procurement of military developed teletypewriter equipment. Deferal was maintained in effect until modifications were completed and equipment was service tested and accepted by the United States Army Signal Corps and the USAF. Acceptance and service tests were completed by the Signal Corps and Air Proving Ground Command (APGC), USAF, during the latter part of May 1955. At a meeting with the Signal Corps and USAF it was determined that production of teletypewriter equipment would begin during September 1955, at the rate of 250 sets a month. To assure economical use of teletypewriter assets world-wide, and assign limited depot stocks to high priority projects, all USAF teletypewriter equipment were "frozen" and placed under Headquarters USAF control. A control system was established between the Directorate of Communication-Electronics and Directorate of Supply and Services. All major commands were directed by AFL 121-20, dated 3 June 1955, to make the economical use of teletypewriter equipment a Special Subject for Inspection. (UNCLASSIFIED)

Tropospheric Scatter for AC&W in Greenland. In February 1955 the NEAC requested that tropospheric scatter be installed between N-32 (Thule, Greenland), and the two EW radar stations at N-33 and N-34. These systems would replace programmed VHF/FM systems and back-up HF facilities. NEAC had been advised by Middletown Air Materiel Area (MAAMA) that the use of AN/TRC-11 equipment was not feasible due to distance and terrain features. Also the HF facilities were not reliable due to propagation characteristics in this area.

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This requirement was approved in principle and was forwarded to ARDC for evaluation and recommendations as to the type of equipment to be used. NEAC was advised of this approval and directed to submit Air Force Forms 1295 and 1295A for the facilities. NEAC was further advised to coordinate with NAAMA and ARDC for information to complete the forms. The forms were received from NEAC 20 June 1955. (CONFIDENTIAL)

Tropospheric Scatter for the Labrador Extension of the Mid-Canada Line. On 31 March 1955 procurement directive 41-234-55 was forwarded to AMC. P-234 funds amounting to \$1,200,000 was authorized for these systems. There are six systems involved consisting of four channels each. These systems provide the primary means of communications between the augmentation radars and the parent radars. The procurement directive recommended that these systems be provided, engineered, and installed as a package facility similar to Project Pole Vault. (SECRET)

USAF Communications-Electronics program (PC). The number of administrative revisions to the PC continued to decrease as the program became more stable and accurate. The workload of keeping the document current was spread out in the calendar by the introduction of Air Force Form 1295 which was submitted by a major command for each new requirement. The separate submission procedure for each new requirement had been advocated by the Systems Engineering Branch

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for over a year. The Department of Defense Directive 4630.1, dated 29 October 1954, made it necessary to submit each requirement for individual review. (UNCLASSIFIED)

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APPENDIX I

Western Electric Company

INCORPORATED

220 CHURCH STREET NEW YORK 13, N.Y.

WORTH 4-5400

U.S.A.F.
ADES Project Office
220 Church Street
New York 13, N. Y.

Attention: Lt. Col. J. D. Crisp

Gentlemen:

Re: Project 717 - "White Alice"

To date we have furnished to various interested Air Force people informal fragmentary information pertaining to progress on Project "White Alice". We have reached the point where sufficient information has become available and progress made to warrant an overall report, which we expect to submit by the first week in July. In the meantime we are forwarding this brief summary of progress to date.

On February 1, we began putting together an organization for implementing the Project. On February 11, we received a letter Contract, authorizing the beginning of work. Our manpower requirements have been estimated at 180 people and we now have 120 on the payroll, primarily engineers, involved in systems design, equipment engineering, path loss testing and site selection work. The remainder of the people required will be used primarily in the field on the construction, installation and testing phases. We do not anticipate much difficulty in securing people for these assignments.

In our letter to you of June 9, we submitted our views relative to locations where work should be concentrated in 1955. For scheduling purposes and work assignment, we are designating these locations Phase I, the remaining locations have been designated Phases II and III, (see attached construction schedule) and are scheduled for construction in late 1955 and during 1956.

SYSTEMS DESIGN

Phase I

Radio Equipment

TD-2 design engineering is 100% complete.

FPTS design engineering is approximately 98% complete and is scheduled to complete by the end of this month. The criteria specification has been submitted to the Air Force.

VHF (order wire) criteria specification has been submitted to the Air Force. Engineering is scheduled to complete 4 weeks after Air Force approval.

The frequency allocation plan was submitted in mid-April to the Air Force for approval.

Carrier Equipment

The criteria specification has been submitted to the Air Force. Engineering is 98% complete provided the Air Force approves the specification as submitted.

Terminal Equipment

Telegraph terminal engineering is 100% complete.

Order wire engineering is 100% complete.

Office terminal equipment is 95% complete.

Circuit Layout

The circuit numbering system has been designed and coordinated with the Air Force and has been integrated into the existing layout of the various users involved.

The foregoing will indicate that except for the VHF order wire facilities, the Systems Design work for all Phase I locations is scheduled to complete by June 30, 1955, subject to Air Force approval of specifications.

Phases II and III

Radio Equipment

ID-2 design engineering is 100% complete.

RFIS preliminary engineering work has been carried out concurrently with Phase I and is approximately 25% complete. This work is scheduled to complete by the end of September 1955.

VHF status is the same as Phase I.

Carrier Equipment

Preliminary engineering has been carried out concurrently with Phase I and is approximately 40% complete. It is scheduled to complete by the end of September 1955.

Terminal Equipment

Telegraph terminal engineering is 100% complete.

Order wire engineering is 100% complete.

Office terminal equipment is approximately 10% complete and is scheduled to complete by the end of September 1955.

Circuit Layout

Status same as Phase I.

Systems Design work for Phases II and III will be completed by the end of September 1955.

EQUIPMENT ENGINEERING

Phase I.

Middleton Island - Anchorage route engineering is approximately 50% complete and is scheduled to complete by the first of September 1955. The Anchorage - Homer - Sitkinak and Homer - Sparrevohn routes are approximately 15% complete and scheduled to complete by October 15, 1955.

Phases II and III

Preliminary ordering and analysis is being carried on concurrently with Phase I. This work is approximately 2% complete and is scheduled to complete by May 1956.

POWER ENGINEERING

Phase I

Criteria specification has been approved by the Air Force. Middleton Island - Anchorage route engineering is approximately 25% complete and will be completed by the end of September 1955. The Anchorage - Homer - Sitkinak and Homer - Sparrevohn routes are approximately 10% complete and scheduled to be completed by November 1, 1955.

Phases II and III

Preliminary ordering and analysis has been carried on concurrently with Phase I, is approximately 10% complete, and is scheduled to complete by June 1956.

SITE SELECTION

Site selection work started March 15, 1955 and at this time 20 out of the total of 33 sites have been tentatively selected. Based on results of the path tests, 7 of the Phase I locations appear to be satisfactory, subject to detailed engineering analysis. These locations are Middleton Island, Minchinbrook, Wasilla, Iliamna, Homer, Sparrevohn, Sitkinak. Final site approval by the Alaska Air Command has been obtained for Middleton Island and Minchinbrook.

Tentative site selection work is scheduled to complete in July 1955.

PATH TESTING

The first FTS path testing work started April 15 and tests have been completed over 3 paths, they are Middleton Island - Minchinbrook, Wasilla - Minchinbrook and Homer - Iliamna. At the present time tests are in progress on 6 other paths. FTS path tests are scheduled to complete in November 1955.

TD-2 path testing is scheduled to start June 15 and to complete in August 1955.

PROCUREMENTPhase 1

The following major equipment items have been ordered (or advance commitments released):

TD-2 microwave equipment including antennas, FTS radio equipment, toll terminal equipment, 60 foot antennas, and wave guide systems.

All these items are in the process of manufacture except the FTS radio equipment, since REL is unable to start manufacture pending Air Force approval of the specification.

Primary power equipment (alternators) will be on order by July 1. The remaining major items, consisting of the 30 foot antennas and all carrier equipment will be ordered in time to assure delivery to meet our construction and installation schedules. The specifications for these items will be submitted very shortly for Air Force approval.

Delivery promises from all suppliers are in line with our shipping requirements to meet our construction and installation schedules.

Phases II and III

We anticipate no difficulty in getting all equipment delivered to meet the construction and installation schedules for phases II and III.

BUILDING ENGINEERING

The Architectural firm of Metcalf-Eddy, Boston, Massachusetts was engaged on April 13, 1955 and they have been actively working on designs for equipment, power, and dormitory buildings.

A preliminary structural design of a typical F117 communication building has been submitted for Air Force approval. Final design for the communication building which is the only building required at Middleton Island will be submitted for Air Force approval by July 6.

Final design of the B2 buildings will be submitted for approval by the same date.

It is anticipated that preliminary design for typical power and dormitory buildings will be submitted for approval by July 15 and August 1 respectively.

Specific building plans are contingent upon the terrain of each site, and therefore must await final selection of the location. It is expected that only minor modifications to basic design will be involved.

ANTENNAS

The structural design of the 50 foot parabolic antenna has been completed and production is in progress. A field test of one of the antennas being produced, to check the erection procedures as well as the mechanical and electrical characteristics, will start July 1 in Blaw-Enox, Pa. and continue for several months. Feedhorns and wave guides will also be involved in these tests.

Present production schedules call for the shipment of the first of thirty-two antennas about August 15, 1955. All of these antennas will be delivered to site locations so as to meet installation erection schedules. At the present time, there are two locations (Middleton Island and Minchinbrook) where 50 foot antennas are feasible. Arrangements are being made to secure approval for the antennas for these sites.

CONSTRUCTION

Five contracting firms have submitted bids for construction work. We have evaluated the bids and are preparing our recommendation.

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for the awarding of the contract. It is expected that a proposal will be submitted for Air Force approval by June 17, 1955.

Considerable thought has been given to the grouping and allocating of work to stations with a view toward meeting the Air Force's desired overall service dates and at the same time provide service to some of the more critical locations before completion of the entire project.

The attached schedule has been prepared with this in mind and will, we believe, meet the above objectives. It is pointed out that this schedule is tentative and may be subject to many changes depending on actual conditions encountered.

We have made no attempt to schedule construction of buildings at locations which are U.S.A.F. construction responsibility. We expect to provide building design plans so as to coordinate with U.S.A.F. construction activities and at the same time meet the overall service objectives.

Very truly yours

Very truly yours
C. F. HANSEN
Manager

Att.

TENTATIVE SCHEDULE - W. A. CONSTRUCTION SITES
(All dates week ending)

<u>Locations</u>	<u>Start Construction (Move in Equipment)</u>	<u>Start Bldgs.</u>	<u>Complete Bldgs.</u>	<u>Complete Construction</u>
<u>Phase I</u> <u>1955</u>				
1. Hinchinbrook	7-2	9-3	10-15	11-5
2. Wasilla	7-23	8-27	10-1	10-22
3. Iliamna	7-2	8-20	10-1	11-5
4. Anchorage	9-17	10-15	12-17	12-17
5. Anchorage FIC	8-6	9-10	10-1	10-15
6. Kenai FIC	8-6	9-10	10-1	10-15
7. Kenai	8-27	10-1	10-22	11-5
8. Kenai FIC	8-27	10-1	10-22	11-5
9. Homer FIC	9-3	10-8	10-29	11-12
10. Middleton Island	*			
11. Kodiak	*			
12. Sitkinak	*			
13. Homer	*			
14. Sparrevohn	*			
<u>Phase II</u> <u>1955 & 1956</u>				
1. Naknek	8-13	9-24	10-22	11-19
2. Aniak	9-3	7-7 (56)	8-18 (56)	9-15 (56)
3. Newnan	7-2	6-23 (56)	8-4 (56)	8-18 (56)
4. Nonsnoof	8-20	6-23 (56)	8-4 (56)	8-18 (56)
5. Canfield	Aug. & Dec.	7-7 (56)	8-18 (56)	9-15 (56)
6. None	8-20	7-14 (56)	8-25 (56)	9-22 (56)
7. N. E. Cape	7-30	7-7 (56)	8-4 (56)	8-25 (56)
8. Wales	9-17	7-7 (56)	8-4 (56)	8-25 (56)
9. Idsburne	7-23	7-21 (56)	8-18 (56)	9-15 (56)
10. Bethel	*			
11. Unakleet	*			
12. Kotschub	*			
<u>Phase III</u> <u>1956</u>				
1. Gillsore	5-5	6-23	8-4	9-1
2. Fairbanks	5-26			7-7
3. Tanana	5-5	7-7	8-18	9-15
4. Calena	5-5	8-4	9-15	10-13
5. McGrath	8-16	8-25	10-6	11-3
6. Indian Mt.	*			
7. Ft. Yukon	*			

*Air Force Construction

HISTORICAL REPORT

1 January - 30 June 1955

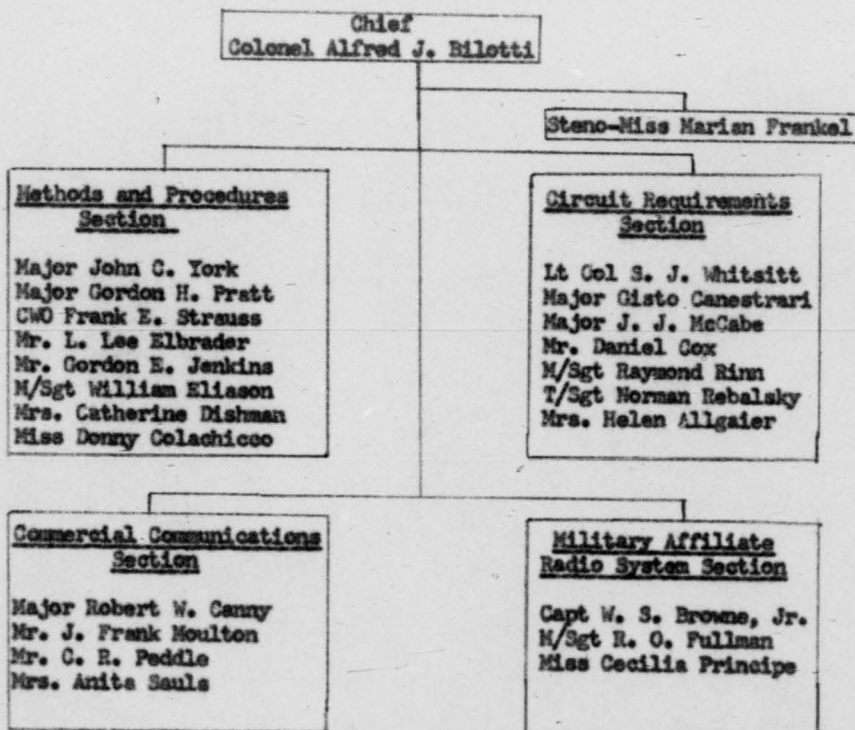
OPERATIONS BRANCH

COMMUNICATIONS SYSTEMS DIVISION
DIRECTOR OF COMMUNICATIONS-ELECTRONICS

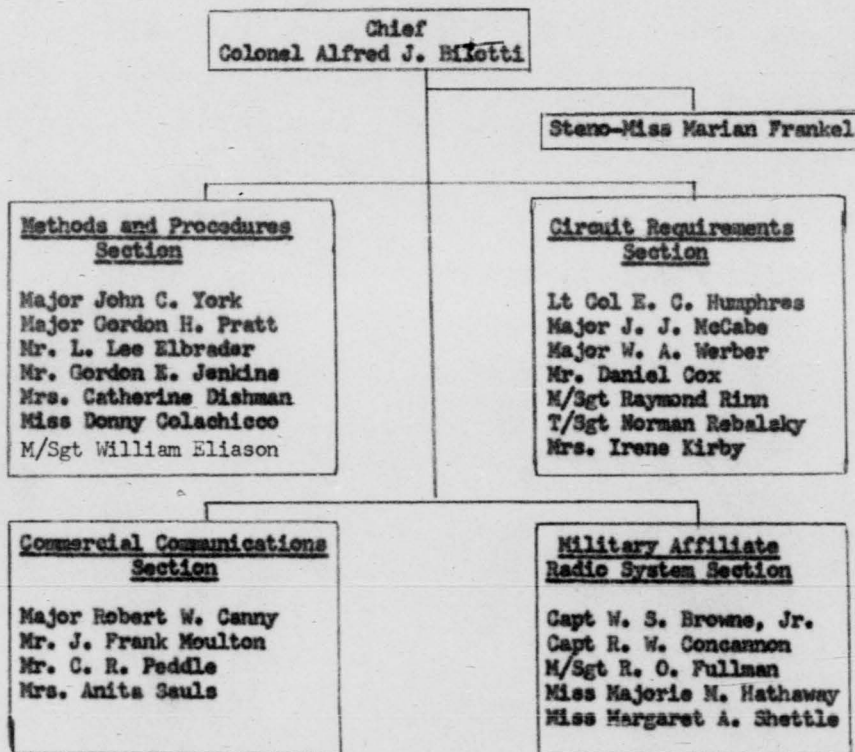
OPERATIONS BRANCH
 COMMUNICATIONS SYSTEMS DIVISION
 DIRECTOR OF COMMUNICATIONS-ELECTRONICS
 SECTION I - ORGANIZATION AND FUNCTIONS

At the beginning of the period, 1 January - 30 June 1955,
 the Operations Branch was organized as indicated in the chart
 below:

OPERATIONS BRANCH



At the end of the period, the Operations Branch was as indicated below:



Lt Col S. J. Whitsitt - Chief, Circuit Requirements Section, reassigned on PCS to Headquarters, United States Air Forces in Europe on 16 June 1955.

Lt Col Earl G. Humphree - Assigned 15 April 1955 from USAF Institute of Technology, Air University to duty in Circuit Requirements Section.

Major William A. Werber - Assigned 27 March 1955 from the 315th Air Division, Japan to duty in the Circuit Requirements Section.

Major Gisto Canestrari - Circuit Requirements Section, reassigned on PCS to Allied Air Forces Southern Europe on 24 May 1955.

Captain R. W. Concanon - Assigned 20 May 1955 from Fifth Air Force to duty in MARS Section.

CWO Frank E. Strauss - Methods and Procedures Section, reassigned on PCS to Selfridge Air Force Base, Michigan on 18 May 1955.

OPERATIONS BRANCH

- SCOPE - Methods, procedures and circuit requirements for USAF Strategic Communications and Related Systems CEI Chapter 31.
- FUNCTIONS - Reviews, evaluates and approves communications requirements to support Air Force activities and joint projects; programs, budgets and obtains leased communications services; allocates circuits for designated use from resources of Air Force, Army or Navy; negotiates for commercial leases; initiates action for effecting the programming and provision of required government-owned fixed station point-to-point and air/ground communications. Formulates, evaluates and prescribes communications doctrine, methods, and operating procedures for Air Force communications and for Air Force participation in joint panels; exercises supervision of Air Force MARS activities.

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SECTION II - ACTIVITIES

AWARD FOR MERITORIOUS CIVILIAN SERVICE TO MR. LEE ELBRADER, METHODS AND PROCEDURES SECTION, OPERATIONS BRANCH

Mr. Lee Elbrader, Communications Specialist, Directorate of Communications-Electronics, Headquarters USAF, successfully developed in February 1954, standardized forms now used by communications activities Air Force wide (refer to USAF Supplement Number 2 to AGP 127(B) titled: "USAF Communications Station Operating Procedures" dated February 1954). This action has resulted in substantial monetary savings, improved management, and is in keeping with the over-all effort to reach maximum operational effectiveness. The savings attributed to elimination of local reproduction of communications forms has been conservatively estimated at between \$10,000 and \$15,000 per annum. (UNCLASSIFIED)

USAF SUPPORT PROVIDED THE ROYAL AIRCRAFT DURING THE PERIOD 31 JANUARY - 1 FEBRUARY 1955.

At the request of Mr. Arthur Lebel, Assistant Chief, Telecommunications Policy Staff, Department of State, a meeting was called at 1000 hours, Friday, 21 January 1955, for the purpose of discussing the communications support for the flight of Her Royal Highness Princess Margaret from London to Trinidad via Bermuda, 31 January - 1 February 1955. Message instructions and correspondence were dispatched by AFOAC-S/O, having been previously coordinated with AFOAC, AFOOP, AFOPD, GAA, Department of State, and the U. S. Coast Guard.

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Copies of all such instructions were provided the British Embassy, Washington. All Air Force communications activities in support of this flight performed in a most admirable manner, and the Air Force was given personal thanks by the British Embassy for its splendid cooperation. (UNCLASSIFIED)

COMMUNICATIONS SUPPORT FOR THE HANDLING OF "INDICATIONS" MESSAGES.

As a result of an agreement between AFOIN and AFOAC, relative to Air Force activities to provide warning of imminence of hostilities, the Directorate of Communications-Electronics made available the USAF Command Net for the handling of INDICATIONS messages. Special communications instructions were issued to all Air Force communications stations involved on a "need-to-know" basis and the major air commands concerned, via: FEAF, ADC, USAFE, AAG, AACS and NEAC. The communications instructions are contained in AFR 100-4, dated 14 January 1955, and are similar to the instructions governing the handling of REDLINE messages contained in AFR 100-3. (SECRET)

USAF TO PROVIDE FACILITIES AND SERVICE TO SCANDINAVIAN AIRLINES SYSTEM AT BM-S, GREENLAND.

Through an exchange of diplomatic notes (Department of State and Government of Denmark) Denmark asked the United States if the USAF would take over the responsibilities for operating the ICAO air/ground facilities at BM-S. General White and the Air Staff (AFCOP, AFOPD, AFOAC) concurred and the Department of State was advised accordingly. (UNCLASSIFIED)

At this date, AACS has implemented two of the three authorized

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civil air/ground frequencies (5626.5 and 8913.5 kc/s) with the third frequency (2668 kc/s) held in abeyance awaiting receipt of crystals from Air Materiel Command. Associated with the responsibility for providing aeronautical mobile service to ICAO is the problem for providing local delivery service to air carrier representatives (in this case SAS dispatch office at BW-8 from the air/ground station). This is under the provisions of paragraph 3.3.7, Part III, "Procedures", Annex 10, which governs the regulation of civil aviation in communications facilities and services. (UNCLASSIFIED)

IMPLEMENTATION OF AACS FRAG ORDER 453-54.

AACS Frag Order 453-54 provides for patching service to SAC units for all OPERATIONAL-IMMEDIATE and higher FLECOH/ZIPPO and SACOTAD types of messages. AFOAC desired to hold this implementation in abeyance until a complete analysis could be made to determine its impact upon the AIRCOMNET as a whole with respect to other user agencies. However, this delay was opposed by SAC as being detrimental to their mission, and recommended no limitations that would restrict their operations. Consequently, and due to the absence of data with regard to patching capabilities and its utilization, AFOAC agreed to a 60 day test, after which time a complete review would be made on the traffic volume and channel time "vs" utilization time. Results of this analysis submitted by AACS for the 60 day period, 25 February - 25 April, so far indicate that SAC units have utilized only approximately 50% of the full capability of the channels withdrawn from the

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common-user system of the AIRCOMNET. This matter is being given further study for the basis of revising our present on-call patching service regulation, AFR 100-55. (CONFIDENTIAL)

IMPLEMENTATION OF ICAO MIDDLE EAST (MID) COMMUNICATIONS (COM) PLANS AT DHAHRAN, SAUDI ARABIA.

On 8 April 1955, CINCUSAFE was advised that the ICAO Representative, North American Office requested information as to whether the United States would be able to meet the implementation dates of the MID COM Plan dated May 1954. CINCUSAFE was advised that inasmuch as the Saudi Arabian Government will presumably be queried by the ICAO concerning this implementation, it was not unlikely that the Mission at Dhahran would be contacted by the Saudi Arabian Government for information upon which to base a reply. Although Saudi Arabia is not a member of the ICAO, it was represented at the Special MID COM Meeting by a three man delegation and is, therefore, presumably aware of the various recommendations of the Meeting affecting Dhahran. Accordingly, APOAC prepared a draft reply and forwarded it to CINCUSAFE indicating the intentions of the USAF relative to the ICAO recommended facilities and services requirement at Dhahran. This reply was coordinated with Military and Base Rights (APOPD), Directorate of Operations (APOOP), Directorate of Communications-Electronics (APOAC), and the Department of State. CINCUSAFE was advised that should the Mission at Dhahran be contacted by the Saudi Arabian Government with respect to this matter

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that the results of any collaboration and comment by the Saudi Arabian Government would be forwarded to this headquarters. (UNCLASSIFIED)

ON-CALL PATCHING SERVICE, "AFR 100-55".

Two more requests for on-call patching priorities were honored, and provisions were made in an amendment to AFR 100-55. Those requesting patch service were Commander, MATS for urgent messages generated by his Division Commanders during those times when a major aircraft accident or equivalent emergency has occurred, involving units of the MATS Divisions; and Commander, Icelandic Air Defense Force for emergency conditions involving Air Defense purposes. (UNCLASSIFIED)

DELETION OF TWO ICAO HF AERONAUTICAL FREQUENCIES AT KINDLEY FIELD, BERMUDA.

Headquarters AACS requested this headquarters for assistance in deleting the requirement for the two 13 mc/s frequencies (GAR A3 and the NAT A3) at Kindley because of non-use of the channels since September 1954, and to effect a savings in equipment and personnel. A review of this request indicated that with deletion of the service on these two 13 mc/s frequencies, and in view of the relatively light load on the remaining ICAO HF frequencies, it appeared that both the GAR and NAT frequencies could be satisfactorily handled by two positions - thus, effecting an economy in the savings of one console unit. AACS was advised to promulgate a NOTAM message to the effect that service on the NAT frequency (13324.5)

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and the CAR frequency (13344.5) would be discontinued until operational requirements further justified resumption of the service. It is expected that this service will be discontinued effective 1 September 1955. (UNCLASSIFIED)

OPERATION OF THE ICAO AFTN CIRCUIT BETWEEN NEW YORK AND BERMUDA.

The Director of Civil Aviation at Bermuda through devious backdoor means has been proposing to British Cable and Wireless (BC&W) that they consider taking over the Bermuda terminal of the New York - Bermuda ICAO radioteletype circuit (CAA circuit 2107). Presently, this circuit is operated by the CAA at New York and USAF at Kindley, primarily as an Air Traffic Control circuit for the handling of Class "A" type messages (Flight Safety and Regularity). Inasmuch as the Air Force agreed with the CAA to handle Class "B" traffic for Pan American at Bermuda approximately 2 years ago, the Director of Civil Aviation (Wing Commander Ware) has been maneuvering into the position of taking over operation of this circuit, because as he feels, a rather lucrative branch of revenue is slipping out of his coffers. The USAF previously informed the Colonial Secretary's Office that should BC&W beef up their circuit efficiency to handle Class "B" traffic within the transit time criteria established by the ICAO (Annex 10), the USAF would cease acceptance of such traffic. This matter has recently flared up again and through Colonel Read, Telecommunications Attache, British Embassy - Washington, to the Department of State (Telecommunications Policy Staff) Mr. Arthur Lebel,

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several meetings have been convened with Department of State to discuss the USAF's position on this matter. At the last meeting with Mr. Lebel, the USAF stated its position with respect to BCOM taking over this operation:

(1) The USAF did not intend giving up operation of the Bermuda terminal, because the circuit in question is one primarily for air traffic, and not a public correspondence network.

(2) The circuit operated by the USAF is presently performing highly satisfactorily and BCOM could not improve it.

(3) USAF would oppose BCOM operating the Bermuda terminal, because BCOM would be in a position to monitor and tell the USAF what it could and could not send on this circuit.

(4) That in accordance with Article VII, Base Rights Agreement between the U. S. and the U. K., the U. S. military was charged with the responsibility for operating all facilities which provide service to international civil aviation. Further negotiations are being conducted between Department of State and the British Embassy, and it is anticipated that this matter will be concluded at an early date with the USAF continuing to operate the Bermuda terminal. (UNCLASSIFIED)

AIR FORCE PARTICIPATION AT THE EIGHTH ANNUAL TECHNICAL CONFERENCE OF IATA IN PUERTO RICO, 25 APRIL - 4 MAY 1955.

The International Air Transport Association (IATA) extended

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an invitation to the Chief of Staff, USAF to participate in its Eighth Annual Technical Conference at San Juan, Puerto Rico, for the period 25 April - 4 May 1955. Inasmuch as the IATA is influential in the International Civil Aviation Organization (ICAO), and the USAF stood to derive substantial benefit from the conference by gaining information upon which to determine Air Force positions for future ICAO meetings (two of which are scheduled in late 1955, and one in early 1956), a delegation of 10 individuals was selected and approved by CSAF. Policies developed and thoughts expressed indicate almost complete accord between the Air Force and IATA on future concepts and requirements in the particular fields discussed. No major differences were apparent. Direct pressure by IATA on the nations of the world for fulfillment of these policies should help in future Air Force operations. IATA actions at the forthcoming ICAO conferences referred to above should assist in fostering acceptance of Air Force requirements.

(UNCLASSIFIED)

DISTRIBUTION OF COMMUNICATIONS PUBLICATIONS.

A resurvey was made of the requirements of all Air Force organizations for the distribution of Joint Army-Navy-Air Force Publications (JANAPs) and Allied Communications Publications (ACPs). This resurvey resulted from a review of Chapter 2, JANAP 199(E), "U. S. Distribution Manual for Noncryptographic JANAPs and ACPs", which indicated that the following factors should be provided for:

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(1) The deletion of all activities below group (or equivalent) echelon from the programmed distribution of JANAPs and ACPs. (The activation, deactivation, redesignation or movement of activities, normally more prevalent at lower echelons, was seldom reported in sufficient time to prevent mal-shipments of JANAPs and ACPs. This not only resulted in delays or losses of JANAP and ACP shipments, but also required additional effort in the preparation and processing of corrective correspondence or requisitions. It was further considered that the listing in Chapter 2, JANAP 199(E), of numerous activities of lower echelons was not recommended for continuance because of the "battle order" type information reflected in a publication given such wide distribution).

(2) The alignment of activities eligible and approved for the programmed distribution of JANAPs and ACPs so that they will be listed, where possible, by numerical order within echelons. (Numerous activities were listed in Chapter 2, JANAP 199(E), without any semblance of order. This non-alignment of activities not only precluded easy reference, but also was responsible for the duplication of, or discrepancies concerning, programming actions.)

(3) To reflect the current requirements of activities eligible and approved for the programmed distribution of JANAPs and ACPs. (Many activities were receiving distribution of JANAPs and ACPs in accordance with the expressed - and unrevised - requirements of long standing. This means that some activities were

receiving JANAPs and ACPs for which no current requirement existed, or were not receiving subsequently issued JANAPs and ACPs for which a current requirement existed).

(4) To list and provide for the separate distribution of United States and USAF Supplements to JANAPs and ACPs. (United States and USAF Supplements were previously distributed on the same basis as the JANAP or ACP that was supplemented. This means that many activities may have received insufficient, excess or non-required distribution of supplements). (UNCLASSIFIED)

EMERGENCY AIR STAFF ACTION (EASA) MESSAGES.

At the request of the Deputy Chief of Staff for Operations, coordination was effected with the USAF Command Post and the USAF Communications Center to develop and implement a Standard Operating Procedure (SOP) to insure the most rapid handling possible of EASA War and Warning Messages. (SECRET)

REVISION TO JANAP 117(A) ON 2 JUNE 1955.

The U. S. and Canadian Services agreed to publish a revision to JANAP 117(A). This decision was predicated upon the following facts:

(1) A copy of the existing publication drawn from stock today consists of the basic publication and 25 printed changes containing approximately 100 pages each. Depletion of shelf stocks in the distribution agencies would require another reprint of all these changes if a revision was not made.

(2) The implementation of ACP 117 will be delayed for further discussion in the C/MP Panel regarding the classification

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and format.

(3) Recent action by the Canadian Joint Telecommunications Committee wherein the one Canadian Joint Tape Relay Network was divided into three separate service networks and implementation of the letter "R" preceding all routing indicators effective 1 June 1955 modified every entry in the publication.

The revision will be unclassified and will employ the combined routing indicator plan as contained in paragraph 507, ACP 121(B).

(UNCLASSIFIED)

COMMUNICATIONS SERVICE FOR USAF CENTRAL COORDINATING STAFF, OTTAWA, CANADA.

The USAF Central Coordinating Staff, 1327A Wellington Street, Ottawa, Canada has been established for the purpose of monitoring and coordinating USAF activities in Canada, excluding the functions of the U. S. Air Attaches. Interim arrangements have been made with the RCAF Communications Center for handling their unclassified traffic and the U. S. State Department for classified traffic. (UNCLASSIFIED)

POLICY CONCERNING ASSIGNMENT OF DESIGNATORS TO SOVIET AIRCRAFT TO PRECLUDE CONFLICTION WITH VOICE CALL SIGNS.

The U. S. Services have established a system of designating Soviet aircraft for which the true name or designation is not known. These designators in many cases are identical or very similar to the voice call signs contained in JANAP 119(B). Although the possibility of these designators conflicting with voice call signs or otherwise

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causing confusion is very remote, it has been agreed within the Joint Call Signs Panel, JCBC that duplication should be avoided wherever possible. Accordingly, arrangements are being made within the USAF for the Directorate of Intelligence, cognizant agency for the assignment of aircraft designators, to coordinate with the Directorate of Communications-Electronics, representing the Joint Call Signs Panel, prior to making each assignment. (CONFIDENTIAL)

FLIGHT SERVICE COMMUNICATIONS REQUIREMENTS.

During the reporting period, the AT&T completed the initial portion of their study of the Flight Service Communications requirements. This consisted of revising and rearranging interphone circuits to permit more efficient and economical operation and to take care of summer traffic. These rearrangements were completed on 1 June 1955. The next step in the AT&T study will be conducted subsequent to their receipt of data concerning record type communications. (UNCLASSIFIED)

AUTOMATIC TELETYPEWRITER SWITCHING EQUIPMENT.

By letter dated 10 January 1955, Airways and Air Communications Service was directed to assist Rome Air Force Depot in the contract negotiations with Western Union and to reduce the complexity of the automatic switching system of all unnecessary functions which do not contribute to message handling capability. Further, after a thorough review of the automatic switching requirements, action to contract with Western Union was reaffirmed. Rome Air Force Depot was directed to enter into negotiations with the Western

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Union Telegraph Company for a contract to cover leasing equipments for both the Zone of Interior and overseas locations under a single contract. (UNCLASSIFIED)

CANADIAN COMMERCIAL COMMUNICATIONS CONTRACT.

The contract, negotiated by AMC for landline communications services in support of project "PINETREE" which is the establishment of an Air Defense Early Warning Network in the northern part of the North American continent, was distributed to the interested agencies by AMC. (UNCLASSIFIED)

LONG RANGE PROVIDING GROUND SUBMARINE CABLE.

AT&T continued their investigation of the manner of providing landline extensions to ZI locations from the submarine cable.

(UNCLASSIFIED)

DECENTRALIZATION OF ISSUANCE OF COMMUNICATION SERVICE AUTHORIZATIONS (CSA'S).

Instructions were issued to the major Zone of Interior to decentralize from this headquarters the issuance of Communication Service Authorizations (CSA's) for leased long lines. (UNCLASSIFIED)

EMERGENCY RESTORATION OF AF LEASED CIRCUITS WITHIN THE ZI.

By letter, dated 7 January 1955, AT&T was given the consolidated list of circuits categorized on a priority basis. A similar letter was given Western Union Telegraph Company for the circuits leased from that company. (UNCLASSIFIED)

IBM TRANSCIVERS.

Additional meetings were held with AMC and Statistical Control concerning AMC use of the IBM transceivers. AMC ordered the initial increment of leased circuits from AT&T for the IBM transceiver use. (UNCLASSIFIED)

COMMAND POST SWITCHBOARD.

Based upon previously developed plans, work was started on the new Command Post switchboard. (CONFIDENTIAL)

PROJECT "DEEP FREEZE".

Negotiations were initiated by the Commercial Cable Company for landing rights for the commercial cable which will be laid between the U. S. and U. K., with the governments of Canada and U. K. Difficulties have been experienced in obtaining the necessary approvals. Correspondence was initiated by this headquarters in support of the cable project, transmitted to the defense establishments of the Canadians, U. K. and to the U. S. Department of State. (CONFIDENTIAL)

GUIDE TO BASE COMMUNICATIONS ADMINISTRATION.

Revisions to Chapter 12, USAF Communications-Electronics Instructions were distributed to the Air Force commands. (UNCLASSIFIED)

EMERGENCY COMMUNICATIONS REQUIREMENTS IN SUPPORT OF STRATEGIC AIR COMMAND EMP.

Arrangements were finalized with RCA Communications, Inc., for emergency standby facilities US-Guam (1 radioteletype) and US-UK (2 radioteletype). These radioteletype facilities are on an on-call standby basis, to be activated by SAC in the event of an emergency

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or during scheduled CPX's. (CONFIDENTIAL)

SOUTHERN BELL TELEPHONE COMPANY STRIKE.

During the period of the Southern Bell Telephone Company strike, Air Force leased circuits were interrupted due to malicious damage to Telephone Company plants. However, reports received from Air Force commands having stations in the strike affected area indicated no serious outages occurred on any major communications system (AIRCOMNET, SACCOMNET, Flight Service Communications System, USAF Weather Teletype Network, Weather Facsimile Network, SAC Operational Telephone and Telephoto Net). On 27 April 1955, Lake Charles AFB was practically isolated for a few hours due to cable cuts to the north, east and west of Lake Charles, Louisiana. Backup CW radio to Barksdale AFB and use of MARS facilities provided emergency service during the outage period. On 25 April 1955, the Maxwell Switching Center was out of business for approximately 90 minutes due to sabotage of cables in the Montgomery, Alabama area. There were no serious delays as the outage was during a low volume traffic period. (UNCLASSIFIED)

LEASED COMMUNICATIONS FOR SEMI-AUTOMATIC GROUND ENVIRONMENT SYSTEM (SAGE SYSTEM).

The SAGE System is planned to consist of 8 sectors and 32 sub-sectors. External and internal communications will be leased from commercial telephone companies, rather than being government-owned, because of the magnitude of the capital investment. Extensive expansion of commercial telephone facilities will be necessary. The

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commercial companies advised that orders must be given by the Air Force at least 24 months in advance of programmed operational dates and that orders must contain provision for payment of termination charges in the event the Air Force cancels the lease on any circuit in use less than 10 years. The termination charges would be reducible at the rate of 1/120 for each month the circuits have been in use. Under provisions of Public Law 152, 81st Congress, the Commander, Air Defense Command was redelegated authority by the Assistant Secretary of the Air Force to enter into 10 year contract with the Telephone Companies for the leased communications required in support of the SAGE System. The redelegation of authority limited the annual obligations for sub-sectors one and two to \$4,200,000 and \$6,000,000, respectively for the leased external and internal communications. (CONFIDENTIAL)

AMENDMENT TO LICENSE FROM DEPARTMENTS OF THE ARMY, NAVY AND AIR FORCE TO BELL TELEPHONE COMPANIES FOR PUBLIC TELEPHONE SERVICE.

In conjunction with representatives of the Assistant Chief of Staff, Installations, proposed amendments to the existing revocable license with the Bell Telephone Companies, were formulated in coordination with the Army and Navy. The amendments definitized responsibilities and reimbursement to the governmental agencies. (UNCLASSIFIED)

LIST OF MAJOR MILITARY INSTALLATIONS CONNECTED TO COMMERCIAL TELEPHONE EXCHANGES.

A listing of Major Military Installations connected to Commercial Telephone Exchanges was compiled from submissions of the Air Force major commands. The listing was forwarded to the Chairman, Joint

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Communications-Electronics Committee, Joint Chiefs of Staff for transmission to the Industrial Evaluation Board and the Business Defense Service Agency. The latter organization was making an evaluation of each Telephone Toll Center in the Zone of Interior and required the listing for their evaluation. (UNCLASSIFIED)

SPECIAL AIR/GROUND SERVICE.

Contract AF 30 (635) 2783 was negotiated between the Air Force and the Radiomarine Corporation of America. This contract will enable certain command type aircraft to utilize the services of the Radiomarine Corporation for air/ground voice service and land phone patching. The Radiomarine Corporation was advised of the aircraft authorized to utilize this service and the manner for submission of bills for payment. (UNCLASSIFIED)

CERTIFICATION OF INVOICES.

The Air Force commands and the commercial communications companies were advised, based upon General Accounting Office Accounting Systems Memorandum No. 38 dated 9 March 1955, that discontinuance was authorized until further notice of the requirement for the public utilities companies to certify bills "as correct and just and that payment had not been received." (UNCLASSIFIED)

PROPOSED DEPARTMENT OF DEFENSE INSTRUCTIONS ON "INVENTORY OF POINT-TO-POINT COMMUNICATIONS."

Near the end of the previous reporting period a proposed directive was received from the Deputy Assistant Secretary of Defense (S&L)

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for comment. The directive if published would require an inventory and report covering certain types of communications facilities. Purpose of the reported data was to aid in reviewing communications projects required to be submitted to OASD. A memorandum was forwarded to OASD recommending that publication of the directive be deferred pending talks between interested agencies. It was stated that any such directive should be flexible enough to permit use of existing management tools. If the directive were issued as written approximately 95% of the data would have to be obtained from sources outside Headquarters USAF from possibly as many as 825 Air Force activities. It was estimated that at least seven months would be required to compile the initial report and that the initial report would cost approximately \$500,000. It was further determined that the type of data obtained would not be of value in meeting other requirements for information. At the end of this reporting period a final decision had not been made on the matter. (UNCLASSIFIED)

DEPARTMENT OF DEFENSE APPROVAL OF COMMUNICATIONS PROJECTS.

Near the end of the previous reporting period Department of Defense Directive 4360.1 prescribing a review of certain communications projects was received. Any project to cost more than \$50,000 was to be reviewed by the Assistant Secretary of Defense (Supply and Logistics). Additionally, those projects of a joint or strategic nature were to be reviewed by the Director of Communications-Electronics, Joint Chiefs of Staff. Air Force implementing

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directives (AFR 100-46 and Instructions to the USAF Program-Communications) were published. Basically the new instructions provided for all facility requirements to be submitted on AF Form 1295 which was designed to provide all the information required by either OSD or the Director, C-E, JCS. Approval was received from OSD for requirements to be submitted directly from the USAF Director, C-E to OASD (S&L). Requirements to be submitted to JCS were to be handled in the form of Joint Communications Electronics Committee papers. After the JCEC review and approval by the Director, C-E, JCS, these requirements were to be forwarded to the OASD, if appropriate. Sufficient submissions have now been made so that the system may be evaluated. Those requirements submitted direct to OASD are returned in approximately three weeks. Those submitted through JCEC require an appreciably longer period of time before returned. All requirements which have been submitted for review have been approved. At the end of the reporting period, a memorandum was received from the Director, C-E, JCS, which requires a large amount of additional information to be furnished with those requirements submitted to the JCEC. Work was begun on amending existing directives to provide for receipt of the additional information when the facility required is of a joint or strategic nature. It is apparent that a large amount of time will be required on the part of commands in preparing new requirements for submission. (UNCLASSIFIED)

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COMMUNICATIONS FACILITIES AT BARTER ISLAND AND POINT BARROW,
ALASKA.

The Navy requested that the Air Force provide shore terminations at Point Barrow and Barter Island for ship-shore circuits to be used in connection with Project 572 (sealift supporting construction of Alaskan air defense facilities). Communications handled through these stations was to be passed over AIRCOMNET facilities to Elmendorf and thence to the Naval Teletype Exchange System. The Navy indicated that Western Electric Company would furnish necessary equipment. After investigation it was determined this was not true and a decision was made to have AACS provide and operate the facilities. The matter was turned over to Alaskan Air Command and the facilities installed. Equipment requirements were met from theater resources and frequencies obtained from the Navy. At the close of the reporting period, the operation had not begun but all the communications arrangements had been made. (CONFIDENTIAL)

ALTERNATE KEYING CIRCUITS FOR GATEWAY STATIONS.

Letters received from AACS requested a policy decision on back-up cable circuits for primary microwave keying circuits at the AIRCOMNET Gateway Stations, Andrews and McClellan. A policy had previously been disseminated to the effect that such keying lines whether VHF, microwave, or wire, would be backed up by VHF, microwave, or wire circuits. After an additional exchange of letters to determine actual numbers of circuits required, AACS was told to inform the appropriate telephone companies of required facilities. They were further directed

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to plan for use of receiver sites as alternate communications relay centers. (CONFIDENTIAL)

COMMUNICATIONS FOR WAKE AND MIDWAY ISLANDS.

Requirements of Military Air Transport Service, Strategic Air Command, and the Civil Reserve Air Fleet Plan have imposed a need for communications facilities at Wake and Midway Islands. Required facilities in each case are seven ground/air channels, and a radioteletype channel to Hickam AFB, Hawaii. The Civil Aeronautics Administration had previously been approached with a view to providing the required facilities at Wake for the Air Force. They had agreed to provide the service and furnished a cost estimate. Due to several factors including lack of programmed funds, action on an agreement was deferred. During this reporting period, the CAA was again queried on providing the Wake facilities and the Navy on providing the Midway facilities using a joint Navy-Air Force arrangement. At the end of the period a final answer had not been received from CAA. The Navy replied that due to lack of a decision on the Pacific terminus of the Distant Early Warning Line they were unable to make a commitment. Subsequent to the original query to the Navy, Project GRAYBACK (Confidential) generated a requirement for similar communications facilities at Midway to be operational by 31 August 1955. After informal discussions with Navy representatives, it was determined that the Air Force would provide all facilities necessary on Midway Island. At the end of the reporting period, action was underway to install

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these facilities. A memorandum had also been forwarded to the Navy to formalize agreements on provision of the interim facilities. (SECRET)

COMMUNICATIONS SUPPORT FOR OPERATION REDWING.

Operation REDWING (winter 1955/56 atomic tests in the Pacific test area) created a requirement for extensive communications support by each of the three services. Air Force communications support includes installation of new ground/air and point-to-point facilities, provision of communications security equipment and making channels in existing facilities available for use. During the reporting period, a meeting was held with representatives from each of the three Services, Atomic Energy Commission, and Joint Task Force Seven to discuss provision of communications requirements. AACS was given the responsibility to provide these facilities which the Air Force must support. At the end of the reporting period a tentative AACS communications plan had been approved. Action to program facilities and obtain equipment is proceeding. No insurmountable difficulties are foreseen. (SECRET)

PACIFIC AREA INTERIM SINGLE-SIDEBAND PROGRAM.

During the early part of the reporting period, a meeting was held with representatives of AACS to discuss provision of interim single-sideband facilities in the Pacific area. A letter was later forwarded directing AACS to consider the problem and determine what could be provided by 1 July and 31 December 1955. After some study they determined that the desired Guam-San Francisco circuit was not

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technically feasible. A target date of 31 December 1955 was established for operation of all the facilities listed below. This headquarters concurred in the plan but asked that 15 September be the target date for the Clark-Okinawa circuit (Clark terminal to be Army operated). Resultant approved interim SSB plan is as follows:

Okinawa - Philippines (Army operated)	- 15 September 1955
Okinawa - Hawaii	- 31 December 1955
Hawaii - Guam	- 31 December 1955
Hawaii - San Francisco (McClellan)	- 31 December 1955
McClellan - Elmendorf	- 31 December 1955 (CON-

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PROJECT GRAYBACK (CONFIDENTIAL) COMMUNICATIONS REQUIREMENTS.

During the reporting period communications support requirements for Project GRAYBACK were determined and action taken to provide necessary facilities. Items of concern to the Operations Branch were point-to-point and ground/air facilities. Seven ground/air channels are required at Tokyo, Midway, Iwo Jima, Elmendorf, Kadana, Adak and Clark.

Point-to-point communications facilities required include manual CW radio circuits and radio and landline teletype circuits. All CW circuits are the responsibility of USAF Security Service. These circuits will connect Tokyo, Japan with Wake and Midway Islands.

Radioteletype (RATT) and landline teletype (LLTT) circuits are required between the points indicated below and will be provided as

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indicated:

Tokyo - Clark RATT - Army allocated circuit.

Tokyo - Okinawa RATT - Existing USAF circuit.

Tokyo - Iwo Jima RATT - New USAF circuit.

Tokyo - Midway RATT - Tokyo to Hickam existing USAF circuit, Hickam to Midway new USAF circuit.

Tokyo - Adak RATT - Existing USAF circuit.

Tokyo - Kodiak RATT - Army allocated circuit via Hawaii - Anchorage - Elmendorf.

Tokyo - Misawa and Tokyo - Johnston landline circuits will be provided by Headquarters FEAF. (SECRET)

MOBILIZATION REQUIREMENTS FOR COMMUNICATIONS CIRCUITS.

During the reporting period a list of Air Force requirements for communications circuits under mobilization conditions was compiled. This list was furnished to the Director of Communications-Electronics, Joint Chiefs of Staff for forwarding to the Office of Defense Mobilization. The list enumerated those transoceanic circuits which would be required from commercial sources under mobilization. The Office of Defense Mobilization compiled a list of commercial radio and cable channels available and attempted to match requirements of the services to them. A conference was held with representatives of ODM, the Armed Services, Federal Communications Commission, State Department, and commercial communications company representatives in attendance. Items discussed pointed out a need

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for further study of the problem by all concerned. Tentative agreement was reached on not specifying a particular channel in a group of channels operated by one company to meet a specific requirement. The company will instead provide the required channels in the best manner possible within their total capacity. In general, it can be stated that sufficient channels are available to meet mobilization requirements of the services. However, very little capacity remains to satisfy civilian requirements. At the end of the reporting period another meeting had been scheduled to discuss proposals made to ODM by the commercial companies. (CONFIDENTIAL)

ALLOCATION OF COMMUNICATIONS CIRCUITS.

As in previous reporting periods, it was necessary to allocate communications channels to other agencies and to obtain allocated channels from other agencies. This practice provides the requesting agency with communications to points where it does not have circuits, or where existing circuits are inadequate to meet requirements. It results in economies being effected through avoidance of installing new and possibly duplicating facilities. Allocations are made and requested in those cases where volume of traffic, speed of service or peculiar requirements, do not permit common-user or on-call patching service to be utilized. Following are listed allocations made and obtained during the reporting period:

Navy Allocations to the Air Force

One radioteletype channel; Sidi-Slimane - Port Lyautay -

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Leghorn, used for coordination of SAC flights with the Air Information Center Air South. One radioteletype channel; Hawaii - Guam. This connects with Navy Hawaii - San Francisco circuit previously allocated. Channel provides communication between 3rd Air Division, Guam and 15th Air Force, March Air Force Base.

One radioteletype channel San Francisco - Hawaii, and one channel Guam - Tokyo formerly allocated by the Navy on an on-call basis were withdrawn.

Army Allocations to the Air Force

One radioteletype channel San Francisco - Hawaii. This is extended to Guam by an Air Force channel and provides communications between Guam and March Air Force Base.

One radioteletype channel Clark AFB - Tokyo. This allocation was made for a 120 day period terminating 15 October 1955. The channel supports Project GRAYBACK (Confidential).

One radioteletype channel Tokyo - Hawaii - Kodiak. This channel also supports Project GRAYBACK (Confidential).

One radioteletype channel Eielson - Fairbanks - Point Barrow. This channel supports USAF construction activities in Alaska.

Air Force Allocations to Other Agencies

One radioteletype channel Wheelus Field, Tripoli to Siegelbach, Germany; allocated to U. S. Air Force Security Service (NSA).

One radioteletype channel U. K. - Azores - Iceland allocated to SACLANT. Allocation made through Secretary of Defense.

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On-call patching service for the Corps of Engineers
Mouasseur - Wheelus, North Africa.

Following are allocations made in the "POLE VAULT" Tro-
pospheric Scatter System:

Radioteletype St. Johns, Newfoundland - Goose Bay,
Labrador for RCAF.

Radioteletype Goose Bay - Frobisher Bay for RCAF.

Voice channel linking Stephenville - Gander - St.
Johns - Goose Bay for RCAF.

One radioteletype Gander - Frobisher Bay for Western
Electric Company while engaged in projects for the USAF. (CONFIDENTIAL)

TELETYPE CIRCUITS REQUIRED TO SUPPORT STRATEGIC AIR COMMAND EMERGENCY
WAR PLANS.

Early in the reporting period Strategic Air Command forwarded
to this headquarters a list of teletype circuits to overseas loca-
tions and within overseas areas required to support the SAC EMP.
This listing reflected circuit paths, responsible commands, and
whether circuits were required on a full period basis as were needed
only during exercises and under actual emergency. The magnitude of
the total circuit requirement was such that Air Force commands world-
wide were required to provide support. Primarily facilities of the
AIRCOMET operated by AACS were used to provide long distance cir-
cuits. The list, which became known as the "T" (teletype) list,
was approved and forwarded to supporting commands. It provided an

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excellent means of notifying the various commands of the support they must provide. Changes in the list have been forwarded by message as they were approved. Near the end of the reporting period, a revised listing was received based on decentralization of SAC communications. As the period closes the new list is being reviewed and certain corrections made. When approved, it will be forwarded to the various supporting commands. As the new list is unclassified, simplifying dissemination, except for a small portion, it will be of even more value than the previous list which has a high classification. (UNCLASSIFIED)

POLICY ON SAC REQUIREMENTS, NUMBERED AIR FORCES SPECIAL SECURITY OFFICES - HQ SECURITY SERVICE.

A request was received from the Commander, Strategic Air Command for communications circuits for the direct exchange of "INDICATIONS" traffic and special reports between Hq Security Service and numbered air forces special security offices. This requirement would support SAC's decentralization plan and alternate headquarters concept. Since this would change the policy of distributing special reports, a memorandum was forwarded to the Director of Intelligence for their review of the requirement. It was felt that this action was necessary to insure the communicators were not endorsing a change in concept of operations that may not necessarily be approved or concurred in by responsible agencies in the Air Staff. When in receipt of information from the Director of Intelligence, we will

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act accordingly. (SECRET)

POLICY ON ALLOCATED CHANNELS ZONE OF INTERIOR - ALASKA.

During May a memorandum was forwarded to the Signal Corps requesting confirmation as to the "free of charge" use of Alaska Communications System "on-call" channels or the time period wherein reimbursement would be required. This had, in the past, been handled as an unofficial item; however, a record of agreement was considered necessary. We requested confirmation of the following. When we employ ACS common user channels via the ALCAN system:

(1) For short periods "on-call" circuits may be activated by the Commander, Strategic Air Command by notification to ACS. A short period is defined as being from 1 to 14 consecutive days. Under this arrangement no reimbursement to the Signal Corps for the Canadian portions of the circuit would be required.

(2) For a consecutive number of days in excess of fourteen (14); for example, 30 to 60 days, the USAF will make arrangements at Departmental level and reimburse the Signal Corps, if deemed necessary.

(3) Under emergency or war time conditions "on-call" channels will be allocated on a full period basis with complete reimbursement to the Signal Corps. Actual activation will be effected by the Commander, Strategic Air Command, and confirmed at Departmental level.

At such time as the Signal Corps confirms the above, the Commander, Strategic Air Command and Air Defense Command (as required) will be advised accordingly. (CONFIDENTIAL)

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PLAN TO SUPPORT CONTIGUOUS RADAR COVERAGE OF CONAD.

During March this directorate received the Navy plan for communications to support Picket Vessels and the Early Warning Barrier Plan (Navy only). Simultaneously with the dispatch of the plan to Hq USAF, a copy was forwarded to CONAD. A query to ADC revealed that they were in complete accord with the plan; however, on 10 May Air Staff coordination was completed and a memorandum advised the Navy that the Air Force agreed in general with the plan with the following exceptions:

(1) We did not agree that surveillance data should deviate from the normal flow now in effect in CONAD.

(2) We could not see the need for a duplication of telling circuits, that is, FVs to Direction Centers and to Navy radio stations, too.

(3) Navy stations passing surveillance data direct to defense forces rather than via divisions and direction centers.

In addition to the above the USAF could not comment on the Barrier Plan in light of a recent report to the JCS as submitted by a Joint USN-USAF Feasibility Study Group.

During the course of this action a special high level ad hoc group was established in JCEC to resolve the frequency problem to support the Airborne Early Warning and Control, Picket Vessels and Texas Tower Plans, all of which had a bearing on the strictly Navy Plan. Since an overall plan had not been received by the

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Director of Operations, COMAD was directed to prepare such a plan for presentation to Hq USAF as well as the ad hoc group. Upon presentation, it is hoped that the overall circuitry and means of supporting same can be agreed to by the Army, Navy and Air Force. (SECRET)

ALASKA HF WEATHER/FACSIMILE BROADCAST.

The original AACS Plans 1-51 (World-wide Facsimile Broadcast Intercept) and 15-51 (World-wide RATT Weather Broadcast Intercept) was developed prior to WHITE ALICE, and as a result, a duplication of facilities existed in Alaska for distribution of raw weather and facsimile data. In this regard, AACS requested a conference on this subject; however, this headquarters did not deem it necessary and requested AACS to effect coordination with the Commander, Alaskan Air Command and delete programmed radio intercept facilities at those locations which will be served by WHITE ALICE facilities. The actual broadcast facility remains installed and will be operated in accordance with schedules determined by the AWS. The latter will afford a continuous broadcast and be available to support special maneuvers, emergency intercept (employing intercept calls from AACS Mobile Squadrons) and Naval forces as required. (UNCLASSIFIED)

HF RTTY CIRCUITS IN NEAC AREA.

As a result of progress made in use of FPIS in the NEAC area, AACS requested deferment of HF RTTY GLOBECOM circuits. After due consideration AACS was advised that recent reports of unsatisfactory communications in NEAC dictated retaining all resources for quite some time. Further that VHF is also subject to fade during unstable

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conditions, especially during the equinox. Not only would they continue to install the HF GLOBECOM equipment, but they should also effect the installation of required multiplex equipment to provide four (4) channels on the HF/LF combination of circuits. At such time as completely reliable service is assured by LF, FPIS, FPTIS or submarine cable, we would reconsider the request for discontinuance of HF circuits. (CONFIDENTIAL)

BROADCAST FIGHTER CONTROL PLAN (BROFICOM).

As a result of OSD, ODM and FCC approval of the USAF BROFICOM Plan, ADC submitted preliminary equipment and fund requirements. BROFICOM itself is designed to employ the use of selected commercial AM broadcast stations as an emergency means of communications by OGI stations in the event VHF and UHF facilities are rendered inoperative. Since the FCC had not actually contacted the commercial stations to determine whether or not they would participate, no action by this headquarters nor ADC was possible until a report was available from the FCC. On 31 May a meeting was held attended by representatives from FCC, AFOAC, AFMSS and AFOGP to review FCC data and arrive at a means of implementation. Results of the meeting were as follows:

(1) Seventy-three transmitters would be required for use at commercial stations. This was necessary in order to allow the station to carry out its COMELRAD responsibility since certain stations had a dual function, but only had one transmitter.

(2) No low frequency transmitters of the type required

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are available in Air Force stocks. AFMSS would survey reports from AMC as a double check and also coordinate with both the Army and Navy.

(3) The Director of Operations would direct ADC to revise their plans to implement that portion of the plan which would not require additional transmitters and to work out a phased program for provision of transmitters to stations with the highest priority as a survey of availability and procurement actions makes the transmitters available.

There remained the question of funds for antennas and antenna modification and engineering consultant fees, plus, a means of supplying replacement parts. Both ADC and AFMSE and AFMSS must resolve this point after further advice from ADC.

It is apparent that there was a lack of coordination when the Plan was originally staffed since immediate implementation depended upon availability of suitable equipment and a satisfactory means of supplying spare parts etc. Ramifications to the problem were not brought out until the Directorate of Communications-Electronics was "tossed the ball" for implementation. Partial realization of the program is expected in the second quarter of FY 1956. (CONFIDENTIAL)

NORTHWEST COMMUNICATIONS FACILITIES IN CANADA.

As a result of a memorandum from the Army Member of the PJDB to the USAF Member, it was necessary to furnish the Signal Corps with USAF requirements for any additional wire circuits between:

- (1) Alaska and the continental United States and,

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(2) Yukon and Northwest Territories of Canada and the United States.

This action was necessary to assist the Signal Corps in resolving arrangements to meet the new AT&T submarine cable at Ketchikan which will run between Ketchikan and Seattle. The Signal Corps had to guarantee the Canadians at least \$16 thousand dollars annually for circuits in the ALCAN wire line. For protection as well as an alternate route we advised the Signal Corps that the following were considered firm for the foreseeable future:

Existing

- 1 DUX - Elmendorf - Washington, D. C.
- 1 Half DUX - Elmendorf - Eielson - Whitehorse - Ft Nelson -
Edmonton - Great Falls - McChord
- 2 DUX - Elmendorf - McClellan
- 1 DUX - Elmendorf - Travis
- 1 DUX - Elmendorf - Kelly
- 1 DUX - Elmendorf - Andrews
- 1 DUX - Elmendorf - Vancouver - Hamilton
- 1 DUX - Eielson - March or Offutt (on-call)
- 1 Voice or telephoto - Eielson - March or Offutt (on-call)

Proposed New Requirement

- 1 DUX - Ent - Elmendorf o/a 1 July 1955
- 1 Voice - Ent - Elmendorf o/a 1 July 1955
- 3 Voice - Elmendorf - Edmonton - McChord 1 January 1957
- 1 DUX - Elmendorf - Edmonton 1 January 1957

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1 DUX - Eielson - March or Offutt - "M-Day" or before, replaces on-call channel.

1 Voice - Eielson - March or Offutt - "M-Day" or before, replaces on-call channel.

(CONFIDENTIAL)

EMERGENCY DISCONTINUANCE OF AIRCOMNET TRIBUTARIES.

As a result of the Air University being designated as the alternate headquarters, USAF effective 1 April 1955, an emergency contingency plan was approved for AACS to automatically discontinue certain tributaries of the Maxwell Switching Center. Action in this regard was necessary in order to accommodate the Disaster Plan circuits connecting the Air University to the AIRCOMNET in the event the H-USAF-DP is implemented. All affected commands were advised by letter on 4 March 1955. Bases and commands concerned are as follows:

- (1) Tyndall AFB - Air Training Command
- (2) Craig AFB - Air Training Command
Montgomery AFB - Air University
- (3) Dobbins AFB - Continental Air Command
Savannah AFB - Air Materiel Command
- (4) Greenville AFB - Air Training Command
Lawson AFB - Tactical Air Command
- (5) Moody AFB - Air Training Command
- (6) Hunter AFB - Strategic Air Command
Turner AFB - Strategic Air Command

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Where more than one base is listed the above indicates multi-point circuit. Upon realization of benefits expected as a result of the AIRCOMNET study it may be possible to rescind our current directives. In the meantime, should the plan be implemented, bases must rely on T&K service and/or command networks for handling common user or command traffic. (CONFIDENTIAL).

AIR/GROUND TELEPHONE PATCH FACILITIES.

On 5 January, representatives from the Strategic Air Command presented their requirements for air/ground telephone patch facilities at twenty-three (23) stations. Present at the meeting were: Major General Blake; Major General Ankenbrandt; Brigadier General Pachynski as well as top level personnel from the Directorate of Communications-Electronics, Operations and the AACS. The main purpose of the requirement is to support jet bomber operations during strategic operations and under airborne refueling operations. Primarily, however, this capability will support air refueling. The Director of Operations concurred in SAC's requirement and the AACS was directed to accomplish necessary engineering and installation at twelve (12) stations initially to include McChord, March, Offutt, Andrews, Loring, Thule, Coose, Harmon, Kindley, Lajes, Croughton and Sidi Slimane. Although SAC desired a complete separate family of four frequencies and the capability of extending this service into long distance commercial and military point-to-point circuits; example, Barksdale AFB through Kindley ground/air

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station to the aircraft, only "on-base" and use of existing frequencies was approved at this time. Once this was accomplished AACS will make a study of extending the service. A complete operational test and a report of evaluation by SAC and AACS is due on or about 1 August 1955. It is well to note at this time that a similar service is provided by the American Telephone and Telegraph Company to ships at sea as well as licensed aircraft. (CONFIDENTIAL)

MILITARY FLIGHT INFORMATION CENTERS NORTHEAST AIR COMMAND AREA.

As a result of an exchange of correspondence between this headquarters and NEAC and a conference during the previous reporting period, AACS in conjunction with NEAC, presented the operational requirements including both equipment and personnel. Basically, the plan provided for a central point on the bases at Pepperrell, Harmon, Goose, BW-1, BW-8, Thule and Keflavik to provide flight following and flight assistance service to military aircraft. Each station is either directly connected to each other by allocated channels, or by patching through an adjacent station. On 10 February AACS, NEAC, MATS, and IADF were advised that the plan was approved as follows:

- (1) The additional fifty-one (51) troop spaces were authorized and would be reflected in the Personnel Allotment Voucher to MATS for February.
- (2) Equipment requirements would be met from command assets as a result of phasing out certain facilities previously authorized in the P.C.

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(3) Relay of all traffic pertaining to aircraft operations handled by the MFICS would be handled within each center rather than through the AIRCOMNET relay centers.

(4) One allocated channel would be used for handling air movement traffic, as well as serve controller to controller MFIC operations.

(5) Until such time as added capacity on the Loring-Goose FPLS circuit is available one channel would be used exclusively for air operational traffic. As added capacity is available, one (1) additional channel will be installed between the Olmsted Flight Service Center and Goose Bay for direct coordination, especially during periods of high density traffic in the Northeast Area.

(CONFIDENTIAL)

APPLICATION OF CONELRAD TO THE STRATEGIC COMMUNICATIONS SYSTEM.

During November 1954, the Commander, Military Air Transport Service queried this headquarters concerning the application of CONELRAD to the Strategic Communications System. After extensive discussion within the Air Staff and with representatives of the Air Defense Command as well as the Departments of Army and Navy, the following policy was disseminated:

"Since facilities of the USAF Strategic Communications System are in support of the USAF world-wide mission, a modified "Note 2" of the DOD CONELRAD applies. Specifically, USAF stations will reduce transmission to the minimum consistent with the require-

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ment to move essential traffic. The transmitters which remain in use will utilize, as practicable, frequencies considered the least vulnerable to interference, jamming, or as a possible aid to the enemy for navigational purposes."

The above was considered to be the most practicable method of complying with the plan to the maximum possible even though the DOD recognizes the impracticability of shutting down certain essential military stations. (SECRET)

CANADA-US CIRCUITS FOR OPERATIONAL MESSAGES.

This requirement continued from the last report wherein it was outlined that arrangements had been made with the DOT for installation of the circuits providing the USAF reimburses the DOT for the Canadian portion. The latter being necessary since the DOT has a policy that only "they" will order in circuits in Canada that connect to DOT stations. Although this type arrangement dictated a means be established for the transfer of funds the circuit was installed by both the DOT and the USAF with the USAF meeting DOT circuits at the border. As of the end of the reporting period a means had not been established to transfer the funds. To insure that funds to cover the transaction were obligated, the Military Air Transport Service was directed to obligate the required Fiscal Year 1955 funds which we have two years to actually make payment. (UNCLASSIFIED)

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AIROPHNET STUDY.

Continuing this item from the previous reporting period reflects several developments that are a change from those previously covered. On 7 March, AACS was directed to participate in an ad hoc group to be steered by a representative from this directorate. The group convened and a report was rendered essentially as follows:

(1) Remove the AIROPHNET from the confines of the ZI switching centers and establish an independent network connecting only Flight Service Centers, Key air/ground stations, plus MATS and AMC bases.

(2) More modern equipment such as Western Union type 111A be employed in the relay centers at the Flight Service Centers.

The above would release semi-automatic console equipment and provide an expansion factor to meet emergency requirements or programmed new bases. Considerable effort is still required before this can be implemented if adopted as the interim arrangement until conversion to fully automatic operation. In anticipation of its acceptance, funds to cover lease of the 111A equipment were included in the FY 1956 Financial Plan for Project 482.5. (UNCLASSIFIED)

BUDGET AND FISCAL.

The Fiscal Year 1956 Budget Estimate for Commercial Communications Systems, Project 482 in the amount of \$48,492,000 was presented to the Subcommittee of the Department of the Air Force

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Appropriations, House of Representatives, on 25 March 1955. Brigadier General Alvin L. Pachynski, the principal witness, made the presentation. Major J. J. McCabe, Jr., and Mr. D. J. Cox were present as supporting witnesses. Questions by members of the Subcommittee were centered on the Military Point-to-Point Communications Requirements in Spain, the Aircraft Control and Warning System and the AIRCOMNET. The Subcommittee referred our Budget Estimate to the Senate Subcommittee without comment. A special presentation, re the SAGE System was made to the Subcommittee on Appropriations, United States Senate on 2 June 1955. The purpose of this presentation was to advise the Senate of the magnitude of cost to the USAF in implementing this system. There were no dollars for the SAGE System included in Project 482, FY 1956, Budget Estimate.

The Budget Advisory Committee hearings on the FY 1956 financial plan were held on 3 June 1955. Colonel J. R. McMill and Major J. J. McCabe, Jr. made the AFOAC staff presentation totaling \$56,377,000. This increase of approximately \$7.9 million over the President's Budget Estimate was due to an additional requirement in Spain to cover installation charges for point-to-point facilities, (\$3.6 million) actual pricing of the PG 57-1 as it applies to the ACAN Program (\$3 million) and the necessary realignment of SAC system (\$1.3 million dollars). The BAC approved \$51,366,000 or a reduction of \$5,011,000. This reduction was directed against ACAN System.

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A reclama was not allowed but this directorate requested the Chairman of the Budget Advisory Committee to consider restoration of a minimum of \$3 million. The Director of Budget advised that \$1 million from FY 1955 funds would be made available to JUSMCO Spain which would reduce the FY 1956 requirement a corresponding amount. This \$1 million is to be made available to ADC during the first revised financial plan. (UNCLASSIFIED)

USE OF RCAF AND DOT COMMUNICATIONS, CHURCHILL-THULE.

At the request of SAC a letter was forwarded the last part of May to the Canadian Joint Staff requesting arrangements be made to accept and relay SAC traffic between Churchill and Thule during periods of SAC operations through Canada. Although coordination messages pertaining to tanker-bomber operations have been passed during a previous exercise, it was felt that confirmation should be received from the RCAF and DOT. This is especially true of the DOT since the facilities are limited in the hours of operation and the W/T circuit connecting Churchill-Resolute Bay-Thule is used primarily for weather collection. (SECRET)

AIR/GROUND COMMUNICATIONS FOR WEATHER RECONNAISSANCE OPERATION.

As a result of a personal letter from Brigadier General H. A. Parker, Deputy Commander, Alaskan Air Command to Major General Blake, a conference was convened in APOAC-E to cover aspects of both the airborne and ground environment and possible ways of improving communications. Action was taken by OAC-E to obtain Collins 618-51

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transceivers for improved airborne operations. With regard to the ground side a letter was forwarded to AACS requesting recommendations for providing continuously reliable communications for PTARMIGAN (North Pole) and LOON (Bering Sea) flights. Consideration would be given to the adequacy of existing and programmed installation as well as frequency requirements. Their recommendations together with both interim and long range plans was requested no later than 1 September 1955. (UNCLASSIFIED)

AIR FORCE COMMUNICATIONS REQUIREMENTS AT THE ALTERNATE JOINT COMMUNICATIONS CENTER (AJCC).

As a result of participation in "OPERATION ALERT" during the period 15-17 June 1955, it was determined that a need exists for provision of additional cryptographic equipment at the AJCC for on-line operation of all Air Force command circuits. In addition, it was determined that additional back-up radio capability was required to provide needed circuits to Air Force major commands in the ZI and to overseas gateway stations such as McClellan and Loring Air Force Bases.

It was considered desirable that the AJCC be connected into the ADC "Alert Status Network" and action was taken to accomplish this.

Finally, it was proposed that all communications personnel to be assigned duties in the JCA communications center, either on a permanent duty or an augmentation basis, be trained in their duties to insure competent handling of messages for all services with the desired degree of accuracy, security and speed. This training to be

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accomplished by establishing the JCA as a full time relay center or by having periodic communication exercises. (SECRET)

STRATEGIC AIR COMMAND'S COMMUNICATION NETWORK (SACCOMNET).

Tests of the SAC teletype communications network (SACCOMNET) during this period indicated a deterioration of the network with respect to meeting SAC's operational requirements. This was partially due to the rapidity of implementation of a communications dispersal plan with inadequate personnel and equipment available. The dispersal plan consisted of giving each numbered Air Force (2nd, 8th and 15th Air Forces) the overseas circuitry necessary to control that portion of SAC's world-wide operations for which each numbered Air Force was responsible (i.e., 2nd Air Force-North Africa and Mediterranean, 8th Air Force-Northeast and United Kingdom, 15th Air Force-Pacific and Far East).

To pinpoint the causes of the deterioration, determine the scope of equipment shortages, and to determine courses of corrective action, a Hq USAF team made a survey of the ZI portion of the network. This survey indicated that a detailed engineering study of the network was required to determine circuit and channel requirements to handle the traffic load, to determine ways and means to improve operations within the communications centers, to determine equipment requirements and develop procedures for effective technical control of the network, and to determine equipment requirements and develop procedures for improvement of equipment maintenance. The need for more intensive

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operational and maintenance training programs was also indicated.

Subsequent to the survey, action was taken to obtain additional circuits and equipment to meet, insofar as possible, known requirements for the next evaluation test. At the time of the test, both American Telephone and Telegraph Company and Western Union Telegraph Company will make independent engineering surveys and prepare proposals for effecting needed improvements to the system including use of modern "labor saving" communication center equipment where applicable.

The commercial surveys are being made at no cost to the Air Force and with an understanding that none of the proposals need be accepted; however, it is anticipated that considerable improvement in speed of operation and reliability, and a net reduction in personnel requirements and total cost of the network will insure subsequent to implementation of the proposals made by either of the two commercial companies concerned. It may even be desirable to lease the network completely within the ZI, including terminal equipment (except cryptographic equipment) in order to make maximum use of labor saving devices (torn-tape or semi-automatic consoles in relay centers, etc.) and release a considerable quantity of government-owned equipment for use on other networks where equipment shortages now exist. (CONFIDENTIAL)

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DISTRESS SIGNALS FROM UNKNOWN STATION.

Headquarters USAF MARS Station AIR received distress signals at 1630 hours, 19 May 1955 on 14405 Kcs. Chief, MARS USAF was informed of these signals and called Northeast Air Command, asking them to monitor. MARS Stations at Ramstein and Rhein Main monitored the signals and heard them on 14405 and 14635 Kcs. At times the SOS signal would come in very clear and last for a few minutes, at other times the signal was SSOS. Repeated attempts at contact were fruitless. At no time did the operator give a call sign or position report of any type. Rhein Main made a bearing of 129 degrees from Rhein Main Air Base on the transmitting station. They reported the signal QRX with a wide null. They observed at this time that the sending was very poor and that the operator did not send his position or call sign nor did he attempt to do so.

All communications centers in Europe, Northeast Air Command, North Africa, Caribbean Air Command and Zone of Interior had been notified and also the Air Sea Rescue Unit in the Rhein Main Area in approximately 10 minutes after first distress signals were heard indicating the inherent speed and flexibility in the existing system.

(UNCLASSIFIED)

OPERATION ALERT 1955.

As a result of the desire of the Federal Civil Defense Administration to conduct "OPERATION ALERT 1955", 15-16 June 1955, as much as possible within its own resources, the Air Force was requested

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to provide supplemental communications facilities only between the 3rd Regional Office and the Civil Defense Center, San Juan, P. R. MARS terminus stations handling the traffic were Moody Air Force Base MARS Station, AFAPCI, and Ramey Air Force Base MARS Station, AH2AB. Headquarters USAF MARS Station AIR guarded frequencies utilized in a liaison status. (UNCLASSIFIED)

THE AIR FORCE SCROLL OF APPRECIATION.

Air Force MARS member, Mr. Garrett V. Dillenback, Jr., AF2LXP, was issued Air Force invitational orders for travel by MATS through Westover Air Force Base to Thule Air Force Base, Greenland where he was presented with the Air Force Scroll of Appreciation during the week of 17 January 1955 by Colonel Kimball, Air Force Commander at Thule, acting for Mr. Talbott, Secretary of the Air Force. The presentation was made in recognition of the services of MARS Station AF2LXP for providing a continuous outlet daily and through week-ends for morale traffic and other communications requirements generated at Thule and handled by Mr. Dillenback via his personal MARS station at his home. (UNCLASSIFIED)

WINNER 1954 GE EDISON AWARD.

The joint facilities of Headquarters USAF MARS Station AIR (K4AF) and Headquarters Army MARS Station WAR (K4USA) were utilized on 10 February 1955 for the transmittal of a special message to amateur radio operators from the Administrator, Federal Civil Defense Administration. The message was sent by Benjamin S. Hamilton, A6VFT,

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winner of the 1954 GE Edison Award from the Mayflower Hotel in Washington, D. C. as part of the Edison Award Ceremony. The award was presented by Honorable Val Peterson, Director, Federal Civil Defense Administration. (UNCLASSIFIED)

FREQUENCY MONITORING BY MARS DURING SOLAR ECLIPSE PERIOD.

As a result of the request from Dr. A. P. Dale, Department of Physics, Rhodes University, Grahamstown, South Africa, MARS stations in Far East Air Forces and Pacific Command monitored the frequency 7020 Kcs during the period 14 June through 26 June 1955 to assist in recording data during the Solar Eclipse at that time. (UNCLASSIFIED)

MARS YOUTH PROGRAM.

The Continental Air Command was designated in February 1955 as the Air Force agency to develop a MARS program for the youth of the United States between the ages of 10 and 19 years with the purpose of stimulating the interest of local youth groups such as Boy Scout troops, boys clubs, school clubs and church groups in electronics, particularly in radio operations, to further their training in this field and to provide an additional source of trained radio communications personnel in the event of a local disaster or national emergency. Telegraph keys, headsets and Code Practice Sets will be made available together with obsolete electronic equipment for use as classroom material.

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Individual members of the program will be the grass roots of this endeavor through local organization and instruction under the administrative guidance of the numbered Air Forces of the Continental Air Command. (UNCLASSIFIED)

TRANSFER OF POLIO PATIENTS TO U. S.

Headquarters USAF MARS Station AIR, passed a priority message on 9 June 1955 to Surgeon, McGuire Air Force Base, New Jersey from 2d General Hospital, Landstuhl, Germany which requested space block aboard AE 452 on 14 June 1955 for airlift to U. S. of polio patients: Albert L. Holloway, employee of Government Point IV Program, and Ruth Hart, wife of Presbyterian Minister, Lebanon. The message stated that the diagnosis of the illness of Mr. Holloway was Poliomyelitis, chronic spinal paralysis of upper and lower extremities and that it was necessary that he remain in full body type respirator at all times, prognosis: questionable. The 2d General Hospital, Landstuhl stated that they could effect movement in a modified drinker Collins tank type respirator but preferred that arrangements be made to utilize polio team with portable full body type respirator since special 24 Volt respirator operation would be required to evacuate the patient from McGuire Air Force Base to final destination at Fort Dix, New Jersey. The diagnosis of the illness of Mrs. Ruth Hart was given as Post Polio Quadro Palgia, prognosis: guarded, that she would require the use of a portable chest type respirator intermittently

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in flight and did not require lung in hospital.

AIR received reply from Surgeon at McGuire Air Force Base which they relayed to Germany and expedited transportation of patients to U. S. (UNCLASSIFIED)

MARS EMERGENCY OPERATIONS.

On 5 January 1955 at approximately 2300 hours the MARS Director, Lake Charles Air Force Base, Lake Charles, Louisiana, 1st Lt. Thomas R. Perry, was called at his home by the Base Communications Officer and told to report to the base and establish radio contact with surface vessels searching the crash area for two B-47 aircraft from Lake Charles Air Force Base, Louisiana that had collided in mid-air over the Gulf of Mexico, south of Cameron, Louisiana. The MARS Director picked up one of the MARS radio operators, S/Sgt. Thomas E. Davidson, and they opened the MARS station at approximately 2345 hours, the first radio contact being established between the base and the search vessels at 2400 hours on 2398 Kcs. Thereafter, the Base MARS station was utilized to maintain direct radio liaison between officials directing search rescue operations on the base and ships, both Coast Guard and civilian, and aircraft actually performing the search. Lt. Perry and S/Sgt. Davidson manned the station from the beginning of the emergency operations until about 0800 the 6th of January. From then on a schedule was established utilizing the regular operators for the remainder of the emergency operations. The emergency net was closed down at 1506 hours 12 January 1955.

The following excerpt is from comments of the Strategic Air

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Command letter of transmittal:

"This incident is an example of the MARS potentiality to support the USAF and other activities and verifies the flexibility of operation possible by MARS stations and the invaluable on-call services where emergency communications are required." (UNCLASSIFIED)

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HISTORY OF ELECTRONICS SYSTEMS DIVISION

1 January to 30 June 1955

COLONEL HARRY A. FRENCH
Chief

LT COLONEL J. B. MCKENZIE
Executive

ELECTRONICS SYSTEMS DIVISION
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

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DIVISION OFFICE
ELECTRONIC SYSTEMS DIVISION
HISTORICAL REPORT
COVERING THE PERIOD
1 JAN - 30 JUN 1955

SECTION IA. ORGANIZATION

The Electronic Systems Division is organized with a division office and three branches: Aircraft Control and Warning Branch, Navigational and Air Traffic Control Aids Branch, and Electronic Warfare Branch.

The personnel assigned to the division office as of 30 Jun 1955 are as follows:

Colonel Harry A. French

Lt Colonel James B. McKenzie

Lt Colonel William J. Retzbach was reassigned on 7 Mar 1955.

B. FUNCTIONS

The functions of the Electronic Systems Division are as follows:

Provides technical guidance and advice for the planning and operation of Navigational and Air Traffic Control Aids, Aircraft Control and Warning, Tactical Air Control, and Electronic Warfare Systems.

Establishes requirements for Air Force participation in the Common System Air Traffic Control and Navigation program.

Determines the need for control and controls the issue of critical items required for specific electronic systems.

Formulates and participates in determining doctrine for the utilization of electronic systems equipment.

SECTION IIACTIVITIES

Colonel John E. Frizen was designated as Air Force Representative and Mr. R. O. Smith as Alternate on Advisory Committee No. 3 of the Air Navigation Development Board (ANDB). The committee is to determine the number of channels required for TACAN operation when used in the Common System in the United States. (UNCLASSIFIED)

Colonel John E. Frizen has been designated as Alternate for Major General Gordon A. Blake on the Executive Committee of the Radio Technical Commission for Aeronautics (RTCA). Lt Colonel D. J. Freund has been designated as Air Force Member of the RTCA Steering Group.

AIRCRAFT CONTROL AND WARNING BRANCH
HISTORICAL REPORT
COVERING THE PERIOD
1 JAN - 30 JUN 1955

SECTION I

A. Functions

This branch provides guidance, technical direction and advice to the Air Staff and to major air commands in the formulation of plans and operating procedures for the installation, operation, and maintenance of the ground and airborne electronics equipment required within aircraft and missile control and warning systems for air offense and air defense.

It is responsible for the establishment of quantitative requirements and for the programming of the electronics equipment required for the conduct of the above air operations.

It establishes policies for the allocation of headquarters-controlled ground and airborne radar equipment and components required for aircraft and missile control and warning systems.

It maintains liaison with agencies engaged in research and development, reviews military characteristics of electronic equipment being developed for use within aircraft and missile control and warning systems, and monitors service tests of this equipment.

It provides guidance to the Air Staff in the preparation and amendment of Tables of Organization and MEAL's pertaining to aircraft and missile control and warning organization.

It represents the USAF on Joint, Combined, and civil committees within the area of responsibility of this branch.

B. Organization

The personnel assigned as of 30 June 1955 to the Aircraft

Control & Warning Branch were as follows:

Colonel Joe a Bennett, Chief of Branch
Lt Colonel Joseph G. Buel, Branch Executive
Major Robert G. Rushforth, Plans Section
Major Henry T. Eldridge, Plans Section
Major Robert O. Voight, Plans Section
Major Lowell D. King, Equipment Section
Major Thomas F. Meehan, Equipment Section
Major Caspar M. Thompson, Equipment Section
Captain Rex L. Brouillard, Equipment Section
Mrs. Carrie Lee Hinshaw, Secretary
Miss Rita A. Homa, Secretary
Miss Patricia A. Mathey, Secretary

During the period covered by this history, Lt Colonel J. G. Buel was assigned 1 February 1955 from Armed Forces Staff College to AFAC-E/A, Branch Executive.

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SECTION II

ACTIVITIES

A. Radar Equipment

AN/MPS-11 Radars for 17th Air Force

In a meeting called by Directorate of Operations on 14 January 1955 on the North African complex, it was agreed to provide two (2) AN/MPS-11 radars for sites Y-6 and Y-7. These two (2) sets will replace two (2) AN/TPS-1D's previously programmed for these sites and will provide the coverage required by 17th Air Force.¹ (SECRET)

Allocation of Initial AN/MSQ-1A Radar Sets

On 17 February 1955, an allocation of the first thirteen (13) AN/MSQ-1A radar sets was made. This allocation was necessary to insure that the most urgent requirements be met prior to shipping additional sets to the Tactical Control Groups and fulfilling the AF-GEN and ANG requirements.² (UNCLASSIFIED)

Use of World War II Radar Equipment

In order for AMC to compute logistical support for WW II radar equipment, this directorate outlined the type and quantity of radar sets for which logistical support would be required thru FY-56.³ (UNCLASSIFIED)

AN/MSQ-1 Operational Capability for MDAP

After much deliberation, USAFE requested that MDAP not be given full automatic control capability with their AN/MSQ-1 equipment. At the same time, USCINCEUR (Gen Norstad) desired that MDAP be given full

1. Memo for Record, dtd 20 Jan 55, Subj: "French Morocco ACGM System."
2. Memo to AFMSS, dtd 17 Feb 55, Subj: "Priority of Delivery for AN/MSQ-1A."
3. Memo to AFMSS, dtd 14 Feb 55, Subj: "Planned Phase Out of World War II Radar Sets."

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automatic control capability. The Directorate of Operations made an operational decision based on all knowledge available, that MDAP countries would not be given the automatic capability. As a result of this decision, MDAP will be given AN/MSQ-1 radar sets less certain modification kits, whereas the AN/MSQ-1A's will be given to USAF elements only.^{4,5}

(SECRET)

Loan of AN/FPS-8 Radars to CAA

During this period representatives of CAA and members of this directorate met from time to time in an endeavor to satisfy traffic control requirements within the New York and Chicago areas.

To accomplish this mission, the USAF loaned and installed an AN/FPS-8 search radar and basic IFF equipment at Mitchel Air Force Base, New York. The installation became operational 1 April 1955. Informal information presently available indicates that this installation has proven very satisfactory in the control and expeditious handling of both military and civilian aircraft within this area. A final operation evaluation report is forthcoming as a result of this installation. The USAF and CAA are presently negotiating a similar installation at Idlewild Airport, New York, and Midway Airport, Chicago. Anticipated completion dates for these installations is January and February 1956, respectively.⁶

(UNCLASSIFIED)

B. IFF

Project "PIN BALL"

Operational suitability testing of the Selective Identification

4. Memo to AFOOP, dtd 20 May 55, Subj: "(U) AN/MSQ-1 Capability for MDAP."
5. Msg to USCINCEUR, AFOAC 50499, dtd 11 April 55.
6. CAA conference memos filed AFOAC-E/A, 10-4A.

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Feature of Basic IFF Mark X was originally directed by letter from Headquarters USAF (AFDRQ-AD/C), dated 16 April 1955. This letter has recently been superseded by a letter from the same office which has been implemented by AFGC Test Directive, dated 10 May 1955.⁷ Testing will be conducted in the 30th Air Division of the Air Defense Command with test team headquarters at Brookfield AFS, Brookfield, Ohio. Seven (7) AC&W sites and three (3) Fighter Interceptor Squadrons are involved in the test. Testing will be accomplished by a test team composed of representatives from all interested agencies. 5 July 1955 is the official starting date for the OST. (SECRET)

Ground Selective Identification Feature (SIF) Equipments for Heavy Radars. AN/GPA-16

Each type of basic radar requires an SIF kit fabricated for its specific installation. Since the AN/GPA-16, as such, does not identify itself with a basic radar, the AN/GPA-16 type designation has been dropped. In order to avoid a complete new series of nomenclature, the SIF ground components are now included as a supplement to the basic AN/GPX-() interconnection by addition of the suffix "A" (i.e., AN/GPX-7A for AN/FPS-3). (CONFIDENTIAL)

To allow delivery of the equipments to the Air Force as an installation package, action has been taken to furnish the contractor the requirement by specific type radars. The contractor in turn has been authorized to make typical site installations at AN/MPS-7, AN/FPS-3 and

7. AFDRQ-AD/C ltr to AFGC, Subj: "Operational Suitability Test of SIF for the IFF Mark X System," dtd 25 Feb 55.

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AN/FPS-10 operational locations. This action should be completed by September 1955 and installation kits ready for delivery to the Air Force.⁸ (CONFIDENTIAL)

Basic IFF Mark X at CAA Air Traffic Control Center

Approval has been obtained for the employment of Basic IFF Mark X at all such installations wherein the beacon techniques are considered as adjunct to flight safety and traffic control. This to be contingent upon CAA's ability in each instance to meet the security criteria specified in Executive Orders 10501 and 10450. To date, installations have been made at Washington National Airport and Mitchel Air Force Base, New York.⁹ (CONFIDENTIAL)

Air-to-Air IFF

The USAF X-band system and the Navy "Black Maria" cross-band system (X-L bands) are the two (2) competitive air-to-air IFF systems under consideration for Joint Service use. These air-to-air IFF systems are incompatible for Joint Service use but will be available in approximately the same time period. The Office of the Assistant Secretary for Defense (R&D) is closely monitoring the development of the two systems. The Air Staff attaches considerable importance to this problem for the following reasons:¹⁰ (SECRET)

- a. Procurement of Air Force and Navy systems are at present limited to service test quantities only.
- b. Upon completion of the evaluation of the Air Force and Navy systems, the JCS are requested to make a decision adopting the sole system for Joint Service use.

8. AFMPP Msg 52250, dtd 10 Apr 55, filed AFMPP-EQ-4.

9. CECM-554-55, dtd 5 May 55.

10. (U) Ltr by Gen Chidlaw on Requirements for an Acceptable Air Defense.

c. The important facts of the air-to-air IFF problem are coordinated and reviewed by the Joint Services.

d. Service tests of both systems are to be completed by October 1956.

Declassification Airborne Components of the Basic IFF Mark X System

Combined concurrence has been obtained on the declassification of the airborne component of the basic IFF Mark X system as submitted by the Air Force. This provides for a more realistic security classification policy in light of the compromise of the AN/APX-6 equipment in Korean operation. It also allows Mode I and II of the basic system to be designed into the Civil Traffic Control Transponder to provide the ground work for a compatible civil/military beacon and identification system.

(UNCLASSIFIED)

Revised IFF Security Classification Policy

Due to the many difficulties in interpreting the IFF Security Classification Policy contained in OCB-29-21, the subject policy was revised to provide a detailed policy covering all possible questions of security. This policy has received Joint approval, and Combined approval is expected in the near future. (UNCLASSIFIED)

C. Ground/Air Data Link

JCS 1734/17 set forth the Air Force frequency-division data link as the interim link for Joint use pending the development of an integrated system. Subsequently, the Air Force, upon examination of requirements of a data link system for SAGE, determined that a time-division data link would be required for full SAGE implementation.

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The availability date of a time-division data link would not meet the requirements of the AN/GPA-37 and the associated F-86D retrofit program. Thus, to assure that both the present (AN/GPA-37) and near future (SAGE) requirements were met in support of NSC directives, the Air Force was forced to proceed with the frequency-division data link equipment on an interim basis with a subsequent conversion to a time-division system. To support this course of action this branch prepared a staff study for the JCS. This was approved as JCS 1734/18. Subsequently, this branch prepared a presentation outlining the present Air Force data link program and recommending a course of action that would meet the present (AN/GPA-37), near future (SAGE), and future (Joint Compatibility) requirements. This presentation was given to the Air Staff and all major commands on 24 May 1955. The recommendations of the presentation were adopted by the major commands and a data steering group was established to assure proper implementation of the data link program in relation to present (GPA-37) and near future (SAGE) requirements. Upon completion of an operational plan for the conversion to a time-division system a more specific cost determination will be made on the conversion problem and a presentation will be given to executives of OSD, OSAF. (SECRET)

D. AN/GPA-37 Program

In light of possible delay in the availability of the Tac Phase II System, consideration is now being given to providing overseas areas with AN/GPA-37 equipment. If approved, initial provisioning of the GPA-37 will be less data link due to the conversion to a time-division data link system. At such time as a time-division data link is available, it will be adapted to the AN/GPA-23 computer component of the AN/GPA-37. In

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considering the minimum date for add-on procurement to satisfy the overseas requirement, the Air Staff has agreed to withhold action pending results of the 1st Article testing of the AN/GPA-23 computer.

(CONFIDENTIAL)

E. Radar Improvement

This branch initiated action for the funding of a second high power long range radar. This radar, a service test model, is to be deployed somewhere in Texas for experimental observation of missile test ranges. An additional funding was included for the procurement of extremely high powered low frequency transmitter tubes for this equipment. Air Defense Command was informed by message of this development testing, and requested to participate in coordination with Air Research and Development Command. (SECRET)

The light-weight low frequency tactical radar (reference previous historical report) was assigned the nomenclature AN/TPS-22. This has become a Joint development with the Marine Corps. Several conferences were held at Headquarters USAF and ARDC with representatives of USAF, USMC, and the contractor (Westinghouse). A production prototype of this radar is expected in March of 1956. Quantitative requirements have been received from USAF and TAC. (SECRET)

F. Radar Repository

The Joint CAA-USAF Air Defense Planning Board considered that it was of national interest that a central repository be established for information on all radar installed in the Continental U.S. This branch took action in the creation of this repository. USAF directed that this radar repository be established at CONAD Headquarters. All major air

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force commands in the ZI were ~~informed~~ of this action. Interested civil agencies were requested to participate, as well as the Departments of the Army, Navy, and Marine Corps. As of 30 June, better than 50% of the information expected to be deposited in the repository was on hand at CONAD Headquarters. The creation of this repository was well received by all military and civil agencies. (UNCLASSIFIED)

G. Radar Interference

This branch prepared a memorandum in coordination with AFDRD, which established lines of action and an initial Air Force position on radar interference.¹¹ The memorandum had six (6) recommendations. They were as follows:

- a. That a radar frequency control board be established at CONAD.
- b. That Rand Corporation accomplish a signal density study for CONAD similar to the one they are presently completing for the European theater.
- c. That CECM-274-55 be implemented and that the Joint Study Group be established at CONAD.
- d. That ARDC revise magnetron and radar receiver specifications.
- e. That a jointly staffed organization at JCS level be organized and charged with the responsibilities for allocating frequencies within the entire military establishment.
- f. That new frequency bands for military radar be obtained.

The Plans and Policies Division was given the responsibility for implementing the above recommendations and also for directing Air Force management of the entire radio spectrum. (SECRET)

11. Memo for Maj Gen Blake, dtd 13 May 1955.

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H. Project Lamp Light

Project Lamp Light, an air defense study under the guidance of MIT, was completed in February. Representatives of this branch participated in preparation of the Air Force position on Project Lamp Light report.

(UNCLASSIFIED)

I. SAGE

A memorandum was prepared for AFODC which recommended that a management review of SAGE be conducted. This was recommended on the basis of the huge sums of money which would be expended prior to receipt of any system test results. This management review, sometimes called the Risk Study, was approved and this branch is now acting as the focal point for all interested Air Force agencies in the direction of this effort.

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NAVIGATIONAL AIR TRAFFIC CONTROL AIDS BRANCH
HISTORICAL REPORT
COVERING THE PERIOD
1 JAN - 30 JUNE 1955

SECTION IA. ORGANIZATION

The Navigational Air Traffic Control Aids Branch is organized with a Branch Chief and four (4) Sections: Long Distance Section, Terminal Section, Short Range Section and Communications Section. The personnel assigned to this branch as of 1 January 1955 are as follows:

Colonel John E. Frisen
Lt Colonel Barral J. Freund
Lt Colonel David E. Myers
Lt Colonel Charles K. Swanson
Major George L. Madara
Major Royce E. Van Gorden
Captain John C. Woodward
Mr. Phillip E. Nash

Lt Colonel Fred K. Durzi, formerly Chief, Short Range Section, was reassigned on 1 June 1955. Major Alva L. Conner, Terminal Section, was reassigned on 30 June 1955.

B. FUNCTIONS

The functions of the Navigational Air Traffic Control Aids Branch are as follows:

Provides technical guidance and advice for the planning and implementation of Navigation and Air Traffic Control Aids.

Exercises staff surveillance; initiates requests for procurement, installation, and operation; formulates and coordinates operational plans

and policies; maintains liaison with developmental, engineering, and testing agencies; and programs, allocates, and controls the installation of Navigation and Air Traffic Control Aids.

Establishes requirements for Air Force participation in the Common Systems Air Traffic Control and Navigational Program.

Participates in civil and military committees as necessary to insure coordination on Navigation and Air Traffic Control Aids.

SECTION IIACTIVITIES

TACAN IN THE COMMON SYSTEM: The ANDB (Air Navigation Development Board) completed its evaluation of TACAN (Tactical Air Navigation System) as an element of the Common System during February 1955. Substance of the recommendations was that accelerated development and refinement of TACAN should be accomplished with the view to inclusion of TACAN in the Common System by 1965 and that the interim military TACAN program should proceed. VOR's (Visual Omni-directional Range) were to be continued at least until 1965 but operation of civil DME (Distance Measuring Equipment) was not to be guaranteed beyond 30 June 1955 because of its possible deleterious effect (frequency-wise) on TACAN. Considerable controversy developed between the military agencies and certain civil users of the airspace over the validity of the ANDB decision. The ACC (Air Coordinating Committee) was asked to review the ANDB recommended course of action and determine a policy acceptable to all users. The ANDB recommendations were largely substantiated by the ACC during April 1955 except that Civil DME was to be available to possible users until 1960.

The controversial aspects of this whole subject caused congressional concern and a series of hearings was held by the House Committee on Interstate and Foreign Commerce and the House Committee on Government Operations. The former group reported in May 1955 that it concurred generally in the ACC program with the exception that it recommended that after 1958 DME ground equipment be continued in operation on a year-to-year basis only. The latter group, however, in its report recommended

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that a joint Senate-House committee be formed to completely restudy the entire problem and that no system of navigation in conflict with VOR/DME be implemented until the entire problem area was reviewed and resolved. In addition it recommended that acceptance of TACAN equipment be limited to that required for technical development. (Unclassified)

TACAN EVALUATION PROGRAMS: Reliability testing and operational suitability evaluation of the TACAN system was continued during the period of this report. The Alaskan project, "TACAN IMP" (TACAN Implementation), was expanded in scope by provision of additional AN/ARN-21 (TACAN Airborne Equipment) sets to the theatre as they became available from current limited production allocations. More ground facilities (AN/TRN-6) were installed and made operational. There are now 12 stations operating, 2 installed but not yet flight checked, and the remaining 4 (total program - 18 stations) should be on the air by fall. The effort to date has provided valuable data but results are not conclusive and AFR 80-6 action has not yet been accomplished. The project in Alaska is being continued and other types of evaluation are being conducted by the Air Research and Development Command. The ground equipment in Alaska shows encouraging performance; one station, McGrath having a longest operating period between failures of 1436 consecutive hours. The airborne equipment, however, has averaged only 21 hours between failures. A point of interest in this connection is that the U.S. Navy, evaluating identical type equipment at Atlantic City Naval Air Station, reports a between-failure average of almost 50 hours. (Confidential)

VOR PROGRAM EXPANSION: Delays in TACAN program implementation and increasing evidence of low frequency system unsuitability for jet aircraft

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led to major Air Staff decisions to increase the USAF interim VOR navigation capability. Both ground and airborne aspects were reviewed and subsequently made the subject of headquarters policy guidance which was published by the Directorate of Requirements, Headquarters USAF. Requirements for additional ground VOR facilities were consolidated and FY-55 funds made available for procurement of 81 Class "B" VOR for terminal use. Out of the total number of 81 sets, 55 will be installed in the United States, 8 in USAFE (Europe), and 18 are scheduled for AACS (airways and Air Communications Service) Mobile Squadrons to satisfy emergency or unprogrammed requirements. Procurement directive was issued in March 1955, contract was awarded 30 June 1955, and delivery of all sets is scheduled prior to 1 November 1955. Program implementation details have been coordinated with AACS and the major commands involved. Operational target date for programmed fixed facilities is 15 November 1955. (Unclassified)

OPERATIONAL SUITABILITY TEST OF 618S-1: An OST (Operational Suitability Test) of the 618S-1 high frequency transceiver was conducted using three squadrons of C-124 aircraft at Westover Air Force Base.

The purpose of this test was to determine the reliability of the 618S-1 under normal operational environment, determine logistical requirements, and determine the feasibility of the maintenance concept for which the set was designed. This concept is: change only complete sets at organizational level; change complete sub-assemblies and plug-in items (including tubes) at field level; and make any repairs requiring soldering operation, major adjustments, etc., at major base shop or depot level. This method of maintenance takes full advantage of the 618S-1 modularized

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construction and allows employment at the squadron level of airman mechanics with a minimum of training.

Although formal test report has not been received, preliminary reports indicate that this set has a mean life failure rate of over 600 hours.
(Unclassified)

UHF (ULTRA HIGH FREQUENCY) PROGRAM: During the first six months of 1955, the UHF program progressed to a point where rather firm completion dates can be forecast. AMC (Air Materiel Command) has estimated a target date of September 1955 for completion of the airborne retrofit program. All production aircraft are being equipped with UHF. The presently programmed ground environment, both AACS and GAA (Civil Aeronautics Administration), is expected to be completed by 30 June 1956. The UHF in ACAW (Aircraft Control and Warning) sites is better than 80 percent complete with the shortage occurring in back-up equipment. As a result of the firmness of these dates, we were able to issue a letter to all major USAF commands on 8 April 1955, titled, "VHF to UHF Conversion of the Ground Environment". This letter details Air Force policy for phase-out of installed VHF equipment from 1955 through 1963. (Unclassified)

REMOVAL OF LOW AND HIGH FREQUENCY FACILITIES FROM CONTROL TOWERS, GCA'S (GROUND CONTROL APPROACH) AND RAFCOM'S (RADAR APPROACH CONTROL):
A letter to all major USAF commands was dispatched 31 May 1955 setting forth Air Force policy on removal of LF and HF from control towers, GCA's and RAFCOM's. This policy is: that the operational requirement for these facilities at Air Force operated bases will be determined by the major air command having jurisdiction taking cognizance of the following:

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- a. Where USAF aircraft with only this capability are based.
- b. Where search and rescue missions are conducted requiring this capability.
- c. Airbases where this capability is required because of ICAO commitments.
- d. Where this capability is required because of local civil operations.

In addition, overseas theater commands are responsible for determining requirements for these facilities arising from agreements with foreign nations. (Unclassified)

CAA USAF REIMBURSEMENT PROGRAM: This program, initiated in March 1954, is conducted on a quarterly revision status. It consists of monitoring the USAF requirements for CAA services or facilities. FY 1955 reimbursements amounted to \$5,047,000 with an anticipated increase in FY 1956 to \$10,000,000. Since many of these requirements were funded by the Air Force solely because they were not made known to CAA in time for inclusion in their routine budget procedures, an educational program within the Air Force Staff was effected; consequently, five items, formerly requiring USAF financing, will be funded by the CAA in FY 1956. (Unclassified)

NSU (RUNWAY SUPERVISORY UNITS): For the past ten years there has been a recognized requirement for a mobile control tower facility for use in training pilots during the take-off and landing portion of flight. The requirements for this equipment were formalized by major air commands. During the early part of January 1955, upon approval, the title "Runway Supervisory Unit" was assigned to designate equipment to meet the

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requirements. The equipment is designed to aid pilot instruction; assess damage to landing aircraft; expedite landings and take-offs, and to provide a back-up capability for the primary tower. The Director of Operations and Director of Requirements approved the AN/MRN-15 as standard equipment for this purpose, with the exception of the Air Training Command. The Air Training Command in conjunction with ARDC is developing a unit for use at training command bases. RSU equipment will be authorized, either in the FC (Program Communications-Electronics) or the NEAL (Master Equipment Authorization Lists). Major air commands are to initiate requests for NEAL authorization in accordance with routine procedures. FC authorization is being entered by this headquarters. The AN/MRN-15 as of 30 June 1955 has just entered its developmental testing. Expected deliveries may commence by the 3rd quarter FY 1957; consequently, no units will be programmed for delivery prior to that date. Estimated production lead time for the special ATC (Air Training Command) unit is anticipated to be approximately 18 months. RSU procurement action was initiated in June 1955 to insure dollar availability for production of the equipment when developmental testing and OST's have been completed. (Unclassified)

MOBILE GCA (GROUND CONTROLLED APPROACH): AN/MFN-11B (Ground Control Approach Radar), serial number 113, was delivered to the USAF. This is the last set on the current contract. This branch was advised that first delivery of the new AN/MFN-11(C) were programmed for delivery in September 1955. The accelerated turn-in by Air Force Bases of AN/MFN-1 (Ground Control Approach Radar) equipment has provided AMC (Air Materiel

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Command) with a backlog of equipment for depot overhaul. This action was designed to provide AN/MPN-1 GCA sets for depot stocks so that AN/MPN-1's can be replaced immediately on a one for one basis when the need arises. (Unclassified)

STATUS OF RAPCON INSTALLATIONS: The joint USAF/CAA RAPCON (Radar Approach Control) Center at Tinker Air Force Base was commissioned during June 1955. (Unclassified)

GROUND CONTROLLED APPROACH FOR "DEWLINE PROJECT.": Five mobile GCA sets were provided for support of the Tactical Air Command airlift for Project Dewline. The equipment was located in Alaska and Canada. (Unclassified)

UHF EQUIPMENT FOR AN/MPN-1 GCA: A standard modification was developed during this period to provide UHF (Ultra High Frequency), VHF (Very High Frequency), and HF (High Frequency) capability for the AN/MPN-1 GCA. This modification includes the installation of the AN/ARC-27 (UHF), AN/ARC-49 (VHF) and AN/ART-13 (HF) for this set. Rome Air Force Depot began assembly of the equipment. In the meantime two AN/ARC-32, UHF sets, were provided for each AN/MPN-1 for temporary UHF communications until the modification can be completed. (Unclassified)

ILS (INSTRUMENT LANDING SYSTEM): The first sets of the new USAF Instrument Landing System AN/IRN-7/8 were delivered to the USAF. Installation was begun at three locations; Lockbourne, McClellan, and Langley Air Force Bases.

Four SCS-51 type ILS systems were also installed during the period at Travis, Oxnard, Barkadale, and MacDill Air Force Bases. (Unclassified)

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RADAR AIR TRAFFIC CONTROL PLAN FOR THE UNITED KINGDOM: This plan, submitted by Headquarters United States Air Forces in Europe was formally approved by this headquarters. It involves the use of four long range radars by which aircraft are fed to short range and precision approach radars in the particular sector concerned. The long range radar coverage encompasses those portions of the United Kingdom where the operation of United States Air Force Aircraft and British Aircraft have created a very serious Air Traffic Control Problem. (Unclassified)

USE OF OLATHE KANSAS AIR CONTROL AND WARNING RADAR FOR RADAR AIR TRAFFIC CONTROL: Representatives of this headquarters together with representatives of the Civil Aeronautics Administration and Central Air Defense Force Headquarters originated a plan for use of the Olathe Kansas AC&W radar for control of air traffic in the Kansas City, Missouri, area. The plan was designed to provide expedited scramble and recovery of Air Defense Command jets operating from Grandview Air Force Base, Missouri, expedited approach procedures for Strategic Air Command B-47 traffic operating out of Forbes Air Force Base and Smoky Hill Air Force Base, Kansas, and blocked altitudes for civilian airline traffic operating out of Kansas City. Plans were made by this branch for the installation of the necessary communications equipment and radar scopes for use by the CAA personnel who will operate the terminal radar air traffic control from the Olathe Kansas GCI (Ground Control Intercept) site. The significance of this project is that it represents the first joint USAF/CAA use of Air Defense Radars for Air Traffic Control for actual operations. (Unclassified)

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LORAN (LONG RANGE NAVIGATIONAL AID): Transfer of the Gulf Coast Loran Chain from the USAF to the USCG (United States Coast Guard) was completed on 18 February 1955. Although the USAF is primary user of this chain, the USCG is the proper agency to operate and maintain Loran under authority of 14 US Code 81. All USAF operated Loran had been transferred in prior years except this one chain which was retained by the USAF for training purposes. Pressure in the USAF to transfer the Gulf Loran Chain had increased in recent years because the personnel problems and maintenance costs to operate a single chain were excessive. Since the transfer, the USCG has become the only U.S. agency operating Loran equipment. The USCG provides Loran coverage for civil and military aviation and for marine interests. (Unclassified)

The Navigational Aids Branch participated in preparing a staff study for the JCEG, JCS (Joint Communications-Electronic Committee, Joint Chiefs of Staff), on the Revised Loran Installation Plan. This plan outlines the present and future world-wide Loran requirements for the US, CAN-UK-US, and NATO. The plan requires JCS approval before becoming effective. (Confidential)

CONSOLAN (LONG RANGE NAVIGATIONAL AID): The status of the Consolan program is as follows: Four Consolan stations are planned to provide the corridors for the Air Defense Command, Multiple Corridor Identification System (MCIS). The stations will be installed, operated and maintained by the CAA for the USAF. At present, all sites have been selected and cost estimates submitted by CAA. Program clearance for FY 56 funding has been received from the Office, Secretary of Defense and the Bureau of the

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Budget, and request for apportionment of funds has been made by USAF. It is expected that funds will be available by August 1955. Contracts for construction can be let by CAA immediately after funds are approved. The Consolan electronic equipment is on hand and in storage. It is anticipated that all four Consolan stations should be completed by the 4th quarter of FY 56.

HF/DF: During June 1955, an AN/TRD-4 HF/DF (High Frequency Direction Finder) set was placed in operation at Lowry Air Force Base. This completed the AACS domestic U. S. net of 10 stations and one evaluation center. The net is now doing balloon tracking operations for Air Research and Development Command and special fixing operations for Strategic Air Command. The net will also be used in the near future for evaluation of the Crash Locator Beacon (ART-27). (Confidential)

A total of 28 AN/TRD-4's have been shipped to, or earmarked for, USAF Security Service for Project 119L. It was possible to obtain these sets on short notice without seriously affecting the command requirements in the PC (Program Communications-Electronics) document because the MDAP (Mutual Security) program for these sets was reduced from 30 to 6. Other than Project 119L, the Northeast Air Command, USAF, is the only overseas area where HF/DF equipment is being extensively used by the USAF for aircraft navigation and rescue. (Confidential)

CXTAC (LONG RANGE NAVIGATIONAL AID): Cytac was cancelled as a USAF development program on 25 May 1955. This was a hyperbolic, pulsed transmission long range navigational aid. It was to be used for TAC (Tactical Air Command) bombing at ranges up to 1,000 miles. The system did not have

sufficient mobility for TAG operations, the airborne environment (wing-tip pod installation) was not feasible, the system was too vulnerable to ECM and the availability date of 1962 was too far in the future. (Secret)

DOPPLER RADARS: Great emphasis was placed on the doppler navigators during this reporting period. A requirement was established for APN-82's in the WB-50 and for the APN-66 in the RC-121. Both the APN-66 and APN-82 are in production. Other aircraft scheduled for doppler radars are the RB-57 and the RB-66. Up to the present time, weight has been the large factor preventing installation of doppler systems in USAF aircraft. The APN-82 weighs 407 pounds and the APN-66 weighs 693 pounds. However, sets under development are expected to weigh under 150 pounds and will be suitable for fighters. (Confidential)

The doppler navigators and inertial systems are the most significant advances in long range navigation in recent years. This branch has initiated action to determine the direction in which the Air Force should take with these sets and how the equipment should be integrated with the available ground based aids to navigation. When a USAF position is determined, the matter will be introduced into the JCEC (Joint Communication-Electronic Committee) and ACC (Air Coordinating Committee) for consideration. (Unclassified)

AIR SEA RESCUE: The Navigational Aids Branch has participated in the USAF program on air sea rescue communications equipment. The present standard equipment is the URC-4. A miniaturized version (URC-11) started production during this reporting period and will gradually replace the URC-4's. The next set after the URC-11 is the URC-10 which is a transistorized sub-miniature set. After the URC-11, miniaturization will be

difficult because the power supply is larger and heavier than the radio set. Substantial reduction in battery size does not appear possible through product improvement and will probably have to depend on new battery concepts and developments. (Confidential)

CRASH LOCATOR SYSTEM: The USAF has had an urgent need for a system to locate aircraft accurately and quickly after a crash has occurred. The Crash Locator System is being developed to fulfill this need. The system comprises two main components. One component is a beacon which is to be installed in every USAF aircraft. The beacon (AN/APT-27) ejects from the aircraft automatically when an accident occurs and can operate on land or sea. The second component is a ground direction finding net which picks up the signals from the beacon and determines the location of the crash. The direction finding stations are unattended and automatically transmits the bearings to an evaluation center. A special direction finder (AN/TRD-8) has been developed for this purpose.

The present status of the Crash Locator Program is as follows: The equipment, both airborne and ground, has been developed and is now undergoing OST (Operational Suitability Test) at Air Proving Ground Command. A plan for the Crash Locator System is now being finalized by MATS (Military Air Transport Service). The results of the OST and the MATS plan will be evaluated by Headquarters USAF and a decision made regarding implementation of the system.

PUBLICATION OF MANUAL "PROGRAMMED NAVIGATIONAL AIDS AND FLIGHT FACILITIES.": A need has existed for closer coordination between programming of new navigational aids and the construction of buildings for

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these aids. Examination of the PC (Program Communications-Electronics) Document revealed approximately thirty types of navigational aids which require land acquisition and building construction. Office of Statistical Services was asked to extract and tabulate these navigational aids from the PC Document. This resulted in a convenient manual for insuring that each need for building construction is brought to the attention of Assistant Chief of Staff, Installations. This manual entitled "Programmed Navigational Aids and Flight Facilities" will be revised and republished automatically four times a year using the information contained in the PC Document machine cards. It also will be used as a basis for semi-annual conferences where differences are resolved between PC operational requirements, AACS installation capabilities, and construction schedules.

In furtherance of this effort, a study has been implemented to determine the best way to collate in this manual construction funding and equipment delivery information. This study is active but incomplete as of 30 June 1955.

CHANGE IN INTERIM UNF AIRCRAFT CHANNELIZATION: In order to relieve congestion and interference on certain UNF channels, a letter to all domestic USAF commands was dispatched on 22 April 1955. This interim plan consisted of removing the secondary control tower channel and replacing it with a command assigned frequency; removing the Navy control tower channel and replacing it with a common aircraft ground control frequency.

(Unclassified)

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HISTORY OF THE ELECTRONIC WARFARE BRANCH

COVERING THE PERIOD

1 JANUARY 1955 to 30 JUNE 1955

SECTION IORGANIZATION

The personnel assigned to the Electronic Warfare Branch as of 30 June 1955 are as follows:

Lt Colonel John M. Van Arsdell

Major James A. Trutter

Major Frank Witry, Jr.

Major John F. Floyd

Major Frank R. Lindberg

Major Lindberg was assigned to this branch on 12 January 1955 after having completed four years of duty in Headquarters Strategic Air Command.

Captain Robert E. Holmes was released from duty with this branch on 4 March 1955 and assigned to duty as a student, Ohio State University.

FUNCTIONS

The functions of the Electronic Warfare Branch are as follows:

1. Provides technical guidance and advice for the planning and implementation of electronic warfare systems.
2. Formulates and submits to the Air Staff, electronic warfare plans and policies, and reviews existing plans and policies for adequacy and applicability.
3. Furnishes personnel for Joint and Combined Electronic Warfare Boards and Committees.

4. Establishes and monitors quantitative Air Force electronic warfare equipment needs and controls the issue of critical items.

5. Maintains close liaison with electronic warfare development, procurement and intelligence activities in order to provide consonance of electronic warfare systems with the Air Force mission.

6. Assists in the determination of electronic warfare personnel requirements and assignments, and in the preparation of programs for the training and utilization of electronic warfare personnel.

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SECTION II

ACTIVITIES

CHAFF

During routine training missions and experiments, it was discovered that RR-44/AL chaff did not dispense and blossom properly from high speed jet aircraft. Further development resulted in an improved chaff (RR-44A/AL) which performs satisfactorily when dispensed from high speed aircraft.

The necessity for stockpiling adequate chaff for emergency use and training purposes, both in the ZI and overseas, has resulted in a severe storage problem. Experiments were directed to determine whether or not outside storage would have a detrimental effect upon chaff. The experiments have not been concluded as yet, but if it is determined that outside storage is adequate, it will naturally result in considerable savings to the government.

A new problem has recently developed in the field of automatic chaff dispensing. It was discovered that the splicing tape which is used to splice tapes of adjacent cartons of chaff together, loses its adhesure properties with the passing of time. Several ideas have been advanced to overcome this, including the use of Metal Snap fasteners.

The final decision on proper remedial action has not been made.

A new security policy was established by this branch in

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February. Previous to this time, all characteristics and data pertaining to chaff were Confidential until it was dispensed. Retention of Confidential classification for all aspects of chaff became impractical due to the large quantities, common usage and storage problem. The new policy establishes that dispensed and packaged chaff, as such, is Unclassified, but that information pertaining to procurement and contractual details, military characteristics and technical data are classified Confidential.

In order to establish a basis for procuring Chaff for Fighter Bomber and Light Bomber aircraft which use the AN/ALE-2, Sub-Section L-11a, Wartime Planning Factors Manual, was published. This Sub-Section established that Chaff should be procured for 20% of Fighter-Bomber and Light Bomber Sorties, which would be flown in Wartime. This 20% figure was established for procurement planning only and should not be considered in planning combat missions except as a limiting factor. Use of chaff is optional to commanders. The 20% planning factor was considered by this branch to be conservative in view of the fact that the Air Force is modifying practically all aircraft mentioned above for a chaff dispensing capability and purchasing enough dispensers to equip approximately 50% of the aircraft. The Directorate of Plans has contested the 20% planning factor, stating that it is too high. The Directorate of Operations has been asked to determine whether or not 20% is too high, and if so, to establish a new planning factor. (CONFIDENTIAL)

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GROUND BASED JAMMERS

No outstanding accomplishments have been made in the field of Ground Based Spot Jamming during the past six months other than what was accomplished in the Carcinotron area. A Joint Army-Air Force Steering Committee for ground based jamming has been established on which this branch is represented.

A revision to military characteristics of the AN/MIA-7 (principal ground based jammer now in development) has been prepared. These characteristics have not yet been reviewed in joint session of the Steering Committee, but such is scheduled in July.

Personnel of this branch assisted the Directorate of Requirements in the preparation of General Operational Requirement (GOR #CE-4a-60) for a Ground Based Pulse Jamming Support System. The GOR had not been published officially by the end of this reporting period.

Air Research and Development Command is continuing their work in this field. The following quotation was taken from the 10 Jan edition of Newsweek:

"The Air Force has just about perfected an ingenious radar device that automatically tunes in on the radar bomb-sight of an enemy plane and then sends out a counter-pulse of electronic energy that 'blinds the sight'".

The magazine further stated that the information came from Air Research and Development Command at Baltimore. Release of

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this information was definitely a breach of security and the matter was referred to the Directorate of Special Investigations for action. Also, the Distributed Area Jamming Program at Rome Air Development Center has progressed to the point of development testing. (SECRET).

PROGRESS ON RB-26 FERRETS

The last of the RB-26C (27 total) Ferrets were completed by the Ogden Air Materiel Depot in May and delivered. Tactical Air Command now has nine (9), FEAF has nine (9), and USAFE has nine (9).

There were several items of ECM equipment which were not available at delivery time; therefore, many of the aircraft are still incapable of performing their mission. This is of special concern to USAFE, where the ECM recon capability is extremely limited. The particular equipment needed to make these aircraft operational is the AN/APA-17B Direction Finder. Strategic Air Command has directed Ellsworth AFB to release thirty-two (32) sets of this equipment for the B-26 program. This number will be sufficient. SAC was able to release this equipment because the 28th Strategic Reconnaissance Wing is replacing the AN/APA-17B Direction Finder with a newer type (AN/ALA-6). (CONFIDENTIAL).

SAFE (SEMI-AUTOMATIC FERRET EQUIPMENT)

Notable progress was made during the past six months by Martin Aircraft Corporation on the development of the Semi-Automatic Ferret System. Although this system was originally conceived for use in the Tactical Air Command RB-66C, the first four systems

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have been programmed for the RB-57D-2 (Special SAC Mission), and there is a possibility that SAC may use the system in other aircraft.

This system, referred to in the previous history as the Automatic logging system, was designed to log and store, by the use of digital computers, all important signal characteristics and the approximate location of signal source. It has been estimated that the system will increase the signal handling capability by 400%; that the system will be available for installation in the RB-66C during the 4th Quarter, calendar year 1957. (SECRET).

PROGRESS ON QRC-T-13

Development of QRC-T-13 (combination passive detection and ground jamming facility installed in vans) has progressed satisfactorily. The three units which were fabricated at Rome Air Development Center for Tactical Air Command have undergone preliminary tests which indicate that they will be satisfactory. An equipment component list for equipment authorization has been prepared, action has been initiated to augment T. O. 1-2135 for authorization of additional personnel and arrangements have been made for technical representatives to work with the unit in the field during the first six months of operation. The three units have been located at Macon, Georgia; Greenville, S. C.; and Myrtle Beach, S. C. (CONFIDENTIAL).

PROGRESS IN ECM CAPABILITY IN FIGHTER TYPE AIRCRAFT

Major commands and the Directorate of Requirements have agreed

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that there is definitely a requirement for Electronic Countermeasures for Fighter type aircraft. Plans have been formulated to provide all fighter aircraft (not including day fighter) with the capability of dispensing chaff from external dispensers (AN/ALE-2), and a radar warning receiver (AN/APS-54) to assist in detecting enemy gun-laying radars. Also, approximately 50% of all Fighter-Bombers and Recon-Fighters have been programmed for a radar homing device (AN/ARD-9) to enable the pilot to "home-in" on radars and destroy them.

Until recently, it has not been considered practical to install electronic jammers on fighter type aircraft, but with the advent of wind driven generators and reduction of weight of equipment, considerable thought has been given during the past few months to installing electronic jammers in these aircraft. Aircraft manufacturers have been requested by ARDC to prepare feasibility studies on this project. If such installation appears feasible, preliminary tests will be made by ARDC for Tactical Air Command, utilizing the F-84F and F-100C. (SECRET).

CHAPTER 15, COMMUNICATIONS ELECTRONICS INSTRUCTIONS

This branch received a draft copy of Chapter 15, CEI (Electronic Warfare), from the Air University for comment. Although the draft copy contained a wealth of information, some of it was obsolete, some was of the type which changes rapidly, requiring numerous revisions, and much of it was considered too technical to be appropriate in a CEI. Comments and suggestions for improvement

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by the branch were quite voluminous and have not yet been forwarded to the Air University. (UNCLASSIFIED).

BROWN CRADLE FOR B-66B

When the B-66B Brown Cradle was proposed to Tactical Air Command by Hq AMC in December 1954, the configuration called for flexibility in that the Cradle could carry nothing but chaff or half chaff and half jamming. Subsequently, this headquarters published modification request #338 (FS-461/B-66B) which required provision for four chaff dispensers. Later, Hq AMC altered these plans, calling for only two dispensers. This was highly unsatisfactory, in TAC who insisted on the flexible configuration originally proposed. After several messages were exchanged between Hq AMC, TAC and this headquarters, the misunderstanding was resolved, resulting in the flexible type Cradle desired by TAC. (SECRET).

USAF ECM PROGRAM DOCUMENT

The ECM Program Document was published 15 February. This document is for planning purposes and is the basis for procurement computations. It lists all aircraft and projects for which ECM equipment is programmed, listing type of equipment (broken down by component), and basis of issue. (UNCLASSIFIED).

JANAF 163

Proposed JANAF 163 (ECM Equipment Directory) which has been in the process of preparation for publication for several years, was reviewed. It was determined that it was not ready for publication in its present form, therefore, a contract was let to

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Hayes Aircraft Corporation, Birmingham, Alabama, to complete the work. (UNCLASSIFIED).

PROPOSED REVISION OF ACP-165

It has been determined that Section VIII, ACP 165 (ECM Brevity Code) should be revised. This code is for use in jamming training exercises between Allied countries. All major commands have been requested to submit their suggestions on improving the brevity code. (UNCLASSIFIED).

PASSIVE DETECTION

Headquarters ADC stated that they have no requirement for a Passive Detection System, averring that present systems do not increase aircraft detection range over conventional radar capability. It was requested by that Headquarters that the P. D. Program which had been initiated for them, be cancelled. This headquarters has not cancelled the P. D. Program, but has asked ADC to reconsider the requirement for passive detection in view of recent developments and improvements in P. D. equipment. (CONFIDENTIAL)

ECM TRAINING

This branch initiated a request for a Special Refresher Course for ECM Officers at Keesler AFB. This course would provide special class-room and in-flight instruction on current equipment which has been developed and placed into operation during recent years. The major commands concerned, including Air Training Command, have agreed that this training requirement exists and action has been initiated by Directorate of Training to get the

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course started. (UNCLASSIFIED).

AN/APD-4 (XA-1) READ OUT DEVICE

The AN/APD-4(XA-1) is not presently supported by an acceptable readout device. The Air Technical Intelligence Center has been the most consistent complainer. Action has been taken to procure ten commercial type devices (BOBCAR) for use with the APD-4(XA-1) until an adequate standard equipment is produced. (CONFIDENTIAL).

AN/APD-4(XA-1)

The AN/APD-4(XA-1) (combination wide-open receiver and direction finder) has not been as effective as the prototype model (Della Rosa). The range and reliability has been a disappointment. For this reason, and because the RB-36 is being phased out of inventory by 1958, the modification of 120 RB-36 aircraft to include AN/APD-4 equipment was cancelled. This action reduced the amount of money required for ECM equipment in FY-1955 by \$10,000,000. The AN/APD-4 type system is still considered to be desirable and approximately \$1,000,000 is to be spent in improving the system during the next year. A detailed account of the AN/APD-4 situation is attached. (Attachment No. 1). (CONFIDENTIAL)

AN/ALT-6 VERSUS AN/ALT-8

The AN/ALT-6 and the AN/ALT-8 are Electronic Jammers having the same frequency coverage and practically the same capability. The ALT-6 is manufactured by General Electric Corporation and the AN/ALT-8 by Raytheon. The reason for continuing with two contractors is to gain military advantage by competition.

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In May, serious consideration was given to cancelling the AN/ALT-8 program since that equipment was behind the other in development and production. It was proposed by AFEDD that production of the AN/ALT-8, as such, should be discontinued and should be converted into a Carcinotron Jammer.

In order to determine a correct course of action, a conference was held at this headquarters in June. It was decided that both contracts should continue, since there is a definite shortage of jammers, and that there are still some improvements which may be expedited by further competition. It was not considered necessary nor advisable to convert the AN/ALT-8 to a Carcinotron Jammer due to a "beefed-up" Carcinotron development as follows:

- a. AN/ALQ-6 Jammer by Sylvania Electric Corporation.
- b. ECM Sub-System for B/RB-58 by Sylvania.
- c. Carcinotron Jammer, Task 40402, Project 4040 by ARDC.
- d. Airborne Carcinotron Jammer QRC-23 by ARDC
- e. Distributed Area Jamming System by ARDC.
- f. False target repeaters, Project 4038 by ARDC. (SECRET)

NATO ECM POLICY

Requirement for U. S. assistance in developing a NATO ECM directive was established by the Director C-E of the Joint Staff. A draft directive has been prepared and is now under consideration by the JCEC. Eventual approval should lead to the publication of this paper with any necessary changes by the standing group NATO. Upon approval by NATO, countries, the directive would become

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effective. (UNCLASSIFIED).

JCS ELECTRONIC WARFARE POLICY

The current USAF policy on this subject is based upon JCS policies 35 and 85. The passing of time, together with provisions of NSCID 9 (Revised), indicated a need for bringing both JCS Memo 35 and 85 up to date. A proposed paper issued by the JCEC in March 1955 was furnished to JIC for coordination. To date, JIC has not coordinated. (UNCLASSIFIED).

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Briefing for Conference on Evaluation of AN/APD-4(XA-1) Systems
Headquarters USAF 13-15 June 1955

Introduction

The purpose of this discussion is to clarify the impact electronic intercept systems have upon the functions of the Air Technical Intelligence Center. In order to give proper perspective to this impact, this presentation is divided into these three parts: (1) a brief summary of pertinent aspects of the ATIC mission within the over-all Air Force electronic intelligence program, (2) an indication of the requirements for intercept systems that evolve from this mission, and (3) a summary of our appraisal of the AN/APD-4(XA-1) intercept system against this background of mission and requirements.

Mission

Air Technical Intelligence Center's established mission may be simply stated as being (1) to deny any enemy the opportunity to employ technological surprise against us, and (2) to provide the technical intelligence required for planning national defense, military operations and weapons systems research and development. This includes, of course, research and development of intercept collection and analysis systems.

At the outset let me distinguish clearly between the two principal types of intelligence efforts of interest today. One is the tactical, operational or ECM type of activity. The other is the technical or technological planning-support activity typical of ATIC's efforts.

With respect to operational intelligence, Strategic Air Command and theatre analysis groups have established, or are in the process of establishing, their capabilities to acquire electronic intelligence data in the field, process these data quickly and apply the results at once to modify, extend or generate orders for employment of aircraft. The information of particular interest most often in this situation is (1) the types of enemy electronic equipment in use (2) the location of the equipment, (3) the purpose for which the equipment is being used, and (4) the manner in which it is being used.

This is Radar Order of Battle intelligence. It is operational type information. It is primarily concerned with the effect the enemy might have upon the success of our day-to-day or short-range operations.

Although this information is of interest, it is not of primary concern to ATIC. If radiations that supply this operational intelligence can frequently be intercepted by reconnaissance missions, and successive intercepts show that the characteristics of the radiating equipment have remained unchanged, the existence of the enemy equipment is of no technological surprise. Capable people will have already determined safe routes for our aircraft past these barriers, or specific bombing runs that will eliminate the equipment, or techniques that will neutralize their effectiveness.

In a situation of this sort, ATIC will monitor signal analyses of other Air Force activities. It will confirm that the characteristics of intercepted signals emanating from known equipments actually have remained unchanged. Thus, the Air Force will be apprised of the enemy's progress in his state of the electronic art, and in his technical capabilities.

Opposed to tactical intelligence, ATIC's technical intelligence efforts deal specifically with the enemy's technological capabilities to wage war, maintain defense and increase his military potential. The Center, therefore, is seldom concerned with the signals that are usually intercepted. We are primarily concerned with unusual non-communication electromagnetic radiations regardless of their origins whether they be radars, navigational aids or manufacturing plants.

Within the structure of the Directorate of Intelligence, ATIC is required to determine the significance of unusual signals, and to interpret their characteristics into precise identifications of the source. The products of these efforts, which may be reports, advice and counsel, are then used by the Air Force and other agencies of the National Establishment in assessing our own position with respect to enemy capabilities, identifying specific areas of effort where special emphasis must be programmed and supporting basic long-range operational planning.

Because the ATIC analyst functions in the field of technology, he continually is searching among intercept data for variations -

they may be small, obscure variations - in signal characteristics. He works with new intelligence information that may occur only infrequently in any mission report, or for only a short duration at any one time. In this respect the analyst is a researcher hunting for elusive facts as any other scientist. The payoff is, however, whenever he can identify a new signal or an increase in enemy potential, our national, military and R&D planners will be sufficiently warned so that they can offset any potential with our own resource.

In addition to performing this technical analysis, ATIC contributes to the over-all Air Force ELINT program by continually evaluating collection and analysis operations, techniques and systems. The goal here is to assure that the Air Force has at all times the necessary capability to acquire, collate and distill the data required in both tactical and technical intelligence. As a logical follow-up to this, ATIC is also called upon to provide guidance for research and development efforts within the electronic intelligence program. Thus, ATIC specifically reports on, for example, the trends of enemy research and development, and points out directions for our own R&D efforts and emphasis.

In this manner ATIC, in conjunction with other Air Force and non-Air Force agencies, contributes to the total organization of our national resources to counter any threat from abroad.

Requirements

The severity of this mission directly imposes certain characteristic requirements upon the nature of the intercept systems that supply the data with which ATIC works. These requirements are not in themselves unique, although they may differ in degree in certain respects from tactical intelligence requirements. The differences that do exist are inherent in the distinction between ECM and technological intelligence.

No attempt will be made here to recite a formal list of requirements. This has been done at other times in the past, and will probably be done again in the future. Instead, the following paragraphs will indicate the types of tools that are needed as dictated by the ATIC mission.

First, the "wide-open", omni-directional type of intercept system is a necessary and sound ELINT concept. The system must be responsive to any type of emitter regardless of its azimuthal location or carrier frequency. That means that the system must be broad in frequency range, quickly responsive to any short duration signal and sensitive to any weak radiation. It must be capable of relating successive signals of a given set of characteristics to the emanations from a particular source.

The system must be able to record the characteristics of intercepted signals on a single, convenient, at least semi-permanent medium. In reception, recording and playback of these characteristics,

the system should introduce no error or influence of its own.

(Perhaps each of us has experienced at some time the utter frustration of learning that the phenomenon we have been knocking ourselves out to solve has been stray capacity in a circuit or a tube operating at a critical point.)

The ATIC analyst depends upon every detail of information, therefore, the system must not distort pulse shapes for example, or add ripple. In other words, a high fidelity system is required.

Moreover, a high reliability system is required. Not only must the data be intercepted accurately, but the technical conditions under which the intercept was made must be known, consistent and reproducible. For example, a reference time base must be provided in the system to assure that time markers are as stated, or that a type of radar that is known to have a PRF of, say 1500 p.p.s. has not suddenly and inexplicably jumped to 1900 p.p.s.

The analyst cannot be expected to do his job if his information is inaccurate, inconsistent or incomplete. For the purposes of ATIC, no information may well be better than inaccurate information. It is not enough to know of the presence of any enemy radar as in the case of operational intelligence. It may be too late for technical intelligence by that time. It is essential to have a precise knowledge of the nature of the radar.

Furthermore, the system should provide the means to separate

the known, redundant signals from the unusual signals. Obscure details should not be masked or made even more obscure by the overlap of extraneous information.

Some Air Force commands may go along with and support some of these requirements that have been only highlighted here. Perhaps some ATIC needs go beyond those of other agencies. Perhaps also, within the state of the electronic art there is no immediate answer for some ATIC requirements. However, the solution of such problems is also an ATIC requirement.

An analysis of these requirement may establish a need for specialized reconnaissance systems, facilities and flight operations specifically tailored to meet ATIC objectives. For example, a high sensitivity, narrow pass-band receiver may be needed in addition to the "wide-open" system. Regardless of what the best solution of the intercept problem may be, the value of technical intelligence to the total intelligence product should not be lost because of equipment limitations.

AN/APD-4(XA-1)

These requirements have been brought into sharper focus by the history and results to date of the AN/APD-4(XA-1) intercept equipment. ATIC has seriously considered this system as engineers and as processors and analysts of intelligence information over the past several years. Two system appraisal reports have been issued, one in December

1953, and the other in May 1955, which contain ATIC's conclusions and recommendations. The following paragraphs briefly summarize the recent XA-1 evaluation.

The Della Rosa equipment was the prototype of the present AN/APD-4(XA-1). It was flown for test purposes in Korea in 1952, and its film recordings and analyses were studied by ATIC. The present XA-1 is a later version of the first system and is also the predecessor of the production system, which is designated AN/APD-4.

Because these three versions are the same in function and similar in circuit design, an analysis of the XA-1 will provide an accurate forecast of the APD-4.

From the point of view of the intelligence data processor and analyzer, the XA-1 in its present form is an unsuccessful translation of the concept of airborne instantaneous direction finding into an equipment system. Reliability and usefulness are severely limited by significant deficiencies in four principal areas:

1. Equipment design.
2. Installation and maintenance provisions.
3. Operating procedures.
4. Photographic processing of the film recordings.

The sum of these deficiencies is apparent in the quality of the final film record which is (1) the end product of the field collection effort, and also (2) the starting point and information source for the processing and analysis effort. The recordings are obscure in

detail, inconsistent in presentation, difficult or impossible to interpret in analysis, and generally unreliable as an intelligence data source. Excess expenditures of manpower, effort and time are required in processing the film, and only meager intelligence yields have been obtained.

Most of the XA-1 film received to date at ATIC has been either poor or unusable. Very little, only about 5 percent, has been suitable for any degree of reliable intelligence analysis.

On the basis of these facts, ATIC's technical evaluation of the equipment and discussions with personnel at several Air Force commands concerned, ATIC has come to the following conclusions regarding the XA-1 system:

1. The basic concept of a "wide-open" omni-directional intercept system is sound and in line with Air Force objectives in the area of electronic intelligence.
2. The XA-1 system produces much poorer results than the "Della-Rosa" system.
3. The XA-1 is an unreliable source of intelligence information.
4. The operation of the XA-1 equipment is inconsistent and unreliable.
5. XA-1 sets now in operation are considerably below the sensitivity required, and below that claimed for the system.
6. The XA-1 requires the constant attention of a skilled

operator during flight operations.

7. Excessive data reduction effort is required to process XA-1 film in comparison with the yield of useful intelligence data.
8. Considerable engineering effort will be required to make the XA-1 an acceptable, dependable electronic intelligence tool.

These conclusions do not overlook the fact that there are many positive features in the XA-1. Specifically, basic design principals are in line with present and future needs of the Air Force in the area of electronic intelligence. The system maintains a continuous radio watch around 360 degrees in azimuth. It encompasses a broad band of the radio frequency spectrum. Its total output is permanently recorded on a convenient single medium. This one equipment includes the principal functions of an intercept receiver, direction finder, pulse analyzer and data recorder.

Circuitry is logical, straightforward and uncomplicated. However, the film records that have been received and analyzed by ATIC indicate that circuit stability and reliability have not yet been achieved. Considerable engineering development is yet required to realize the potentialities of the XA-1.

ATIC believes the XA-1 system can be brought to an acceptable state of operation. Whether this can be accomplished within a time consistent with Air Force electronic intelligence requirements and responsibilities cannot be estimated. Nevertheless, it is clear that maximum engineering effort is desirable and should be applied to prove

out the XA-1. This step is an essential prerequisite to assure the performance of the ultimate D-4 sets.

ATTC, in recent months, has examined approximately 1432 feet of XA-1 film produced by equipment aboard three Strategic Air Command ferret aircraft: ERB-29 #855, RB-50G #150 and RB-50G #156. None of the film can be described as of good intelligence data quality. The entire produce could be assigned percentage-wise to these quality categories:

Good	0%
Fair	5%
Poor	30%
Very Poor	40%
Unusable	25%
	<hr/> 100%

Figures 1 through 4 are representative photographs illustrating these quality categories.

The most common shortcomings of XA-1 film have been faintness and poor definition of signal detail, as shown in Figure 5. The typically "washed-out" appearance of XA-1 film contrasts sharply with the relatively good video definition of the "Della Rosa" film of 1952 (See Figure 6).

Poor detail of data is the greatest single factor hampering analysis of XA-1 film. It is the principal explanation of why routine read-out of the relatively sparse detail on any 50 feet of average XA-1 film consumes at least 10 man-hours of processing time. This does not include about five more manhours of machine data-reduction processing and intelligence analysis time.

Because major design, installation, maintenance, operation and film processing problems still remain unresolved, the XA-1 cannot

yet be considered a satisfactory electronic intelligence tool. Several weaknesses pointed out in the ATIC report of 1 December 1953 are still apparent in the XA-1. In addition, more recent experience with the output from the system reveals other faults. Major among these are the following:

1. Although the rated frequency coverage of the XA-1 is 2,000 - 10,000 mc., the system has only limited usefulness above 5,000 mc. This is borne out by the contractor's graph. Figure 7, which relates the sum of the heights of the pulses on the azimuth indicator to radio frequency of the incident signal. Thus, at about 6,000 mc the XA-1's signal response may either be too small to measure accurately, or have insufficient video pulse display from which to derive any signal bearing information. At frequencies closer to 10,000 mc. little or no video response is indicated.
2. According to the contractor, an approximation of the frequency of the incident signal can be made from the fact that, as the signal frequency increases, the antennas become increasingly directive. Therefore, S band radars will show a wider display of video pulses than will X band radars.

The XA-1 data thus far studied by ATIC rarely have contained recognizable evidence of X band energy, although X band radars were known to be operating in the vicinity and at the time of the attempted intercepts. (One of these rare

cases is pictured at the right of Figure 9. In this instance, the X band signal source was a missile control aircraft located very near the ferret aircraft, and was deliberately directing energy at the ferret.) Moreover, known S band radars have been intercepted and recorded by XA-1 with the pulse presentation described by the contractor as that typical of X band radar.

3. The XA-1 appears to have a generally poor sensitivity at all frequencies, even those below X band. In comparison with the APR-9 receiver which is operable with signals of the order of -90 to -80 dbm, the sensitivity of the XA-1 reportedly varies from -60 dbm, in the best case to -20 dbm in the worst. This wide discrepancy is not adequately explained or justified by the contractor's acknowledgement of the inherent difference in sensitivity between superheterodyne and crystal-video receivers, or by his assertion that this difference is offset by the nature of XA-1 operations. His claim that the countermeasures aircraft is able to detect a radar signal at a range of at least 5% greater than the radar will detect it is not borne out by field experience with this type of equipment.

4. At irregular times during a recording period, one or another of the 12 antenna channels and two polarization channels appears to go "fead". Inasmuch as a typical signal response involves only two or three video channels, the non-operation of one of them drastically reduces the

possibility of making a satisfactory signal interpretation. Furthermore, the intermittent nature of this non-operation reduces any confidence in the reliability of the system.

5. The time reference of the XA-1, the 2 second markers and the 10 second strobe flash, is inconsistent and unreliable. In the records of two mission flights the 2 second marker dots were approximately 1.4 seconds apart. On other flights there have been other variations in the time interval.

6. Base line clutter, noise effects and other unwanted, extraneous details appear on much of the XA-1 films. Particularly in areas of dense signal activity, these effects mask a good deal of the wanted signal detail. It appears that these effects are in large part due to a poor adjustment of the set by the operator at the start of the flight, or a lack of attention by the operator to the re-adjustment of the set as its operating conditions change during flight.

7. The XA-1 has only two film speeds provided in the camera. They are 10 or 20 inches per minute ($1/6$ or $1/3$ inches per second). However, in one second of time the azimuth indicator's electronic beam sweeps across the tube approximately 30,000 times. In other words, as a maximum 30,000 traces of video pulses would be crowded into $1/6$ or $1/3$ of an inch of film.

Although this maximum of signal activity is not expected to be reached, the film transport speed is slow compared with the amount of signal activity that is encountered frequently in mission flights. The result is that much signal detail is lost in the confusion and overlap of a complex of various signals all of which appear in a small area of the film.

8. The electronic beams that traces the video pulses and pulse repetition rate spots in the indicator tube do not always start at the same point at the left edge of the tube. Intermittently, the starting point may shift to the right or left. When this occurs, the entire video display may move as much as 30 degrees in indicated direction finder bearing. Unless the beams have a constant starting point, bearing measurements may be grossly inaccurate.

9. K_{own} square-wave radar pulses are considerably distorted in contour and width by XA-1 circuits, as indicated in Figure

9. This valuable radar "fingerprint" is badly deteriorated and the measurement of pulse duration is made unreliable. The video amplifiers of the XA-1 reportedly were designed to have a 4 megacycle frequency response. However, it appears that insufficient video peaking, considerably stray circuit capacity and non-uniformity of cascade amplifiers and delay lines have narrowed the response considerably below this value. The XA-1, therefore, is limited particularly with

respect to the presentation of pulses of less than one microsecond width.

10. As with the "Della Ross", the XA-1 distorts the presentation of signals that have pulse widths greater than 2 microseconds. Above this limit, pulses become additive and true ratios of amplitudes become unmeasurable. This factor reduces or destroys the capability for accurate direction finding and reasonable estimation of radio frequency for the many electronic devices that transmit energy in pulses that are wider than two microseconds.

11. In the typical XA-1 film record, even when substantial pulse amplitudes occur at several antenna positions, polarization indicator pulses are either extremely short or absent altogether. A malfunctioning of the system is indicated in this situation inasmuch as the amplitudes of the individual video pulses contribute directly to the composite amplitude of the polarization pulses, according to the reported circuit design.

12. The pulse repetition rate sweep in the indicator tube is nonlinear, at times to a great degree, in all of the film inspected to date. This is shown by the extreme variations in the intervals between spots in the PRF trace.

13. The sweep rate of the electron beam that traces the pulse repetition rate spots is reported to be "approximately" 60 cycles per second. This rate has been found to be variable,

and at least in one case as low as 48 cycles per second.

The absence of any precise time or frequency standard in the XA-1 makes accurate measurements, at best, improbable.

14. Repeater compass readings of the XA-1 in one large sample of film were far out of agreement with the navigator's master compass readings. Discrepancies as large as 116 degrees were noted. ATIC data processors report, "We generally disregard the repeater compass. It's much too inaccurate."

15. Fuzzy, obscure signal detail is a common deficiency of XA-1 film recordings. ATIC has attempted to improve detail on some of the film by experimenting with various degrees of over-development. The results show that under-development is a factor in the "washed-out" appearing film that has been received.

Nevertheless, even when over-developed to the maximum practical limit using standard reconnaissance technical squadron solutions and machines, the XA-1 film is still substandard as an intelligence data record. An improvement might be obtained through use of faster emulsion, higher contrast film and special development techniques.

16. Much of the XA-1 film received by ATIC shows evidence of improper handling during flight operations and photographic processing. Partial exposure and fogging appear to occur frequently during camer loading. Surface scratching

and spotting also occur frequently. These defects add further to the difficulties encountered in reading and interpreting the recorded data.

17. The audio recording capability requested in ATIC's 1953 report has been provided with the installation of an audio jack in the XA-1. Audio recordings, for example, those particularly requested of ERB-29 missions, have been verified by experienced as important, complementary means for uncovering signal intelligence which may not be evident or obtainable from film recordings. They are especially valuable in areas of dense signal activity.

As a recording medium, film reaches data saturation sooner than audio tapes. For example, ten coincident signals may "black out" film, but are readily separable from tape by audio techniques. The relationship between film and audio recordings is illustrated in Figure 10. Although empirical units of measure are used in this figure, the chart indicates that more useful intelligence information can be derived from the use of both recordings media. Even in cases of dense signal data, the probability of signal identification is significantly increased.

From this it appears desirable to investigate the development of an alternate recording medium that possesses the advantages of both film and tape, but which is not limited by the characteristics of film.

This evaluation of the XA-1 system points up the need for highly skilled operators, both in flight and in data reduction operations. It points up, too, the need for operator personnel to be carefully trained, not only in intercept techniques, data reduction methods and analysis procedures, but also in the details of system operation. High caliber personnel are required inasmuch as such accuracy of intelligence information as is obtainable from the XA-1 is directly dependent upon their conscientiousness, perseverance, interpretive skill and technical judgment. Should many XA-1 or B-4 installations be made, such personnel would be required in large numbers to handle the data output in any reasonable time.

In summary, up to this time XA-1 data output has been much inferior to that of the "Della Rosa", which also had serious limitations. The XA-1 is unsatisfactorily low in sensitivity and its data presentations are obscure, indistinct and inconsistent. Because of this, an excessive amount of data reduction and analysis effort is required even for only meager intelligence yields. The system is unreliable in operation and requires constant operator attention in flight. Nevertheless, the basic concept of an airborne instantaneous signal, intercept system is sound.

An improvement in the XA-1 system appears to be technically feasible within the present state of the art. The reported modifications and improvements already achieved in the past couple weeks at WADC by the contractor's design engineering personnel bear out this point of view. Although no attempt has been to estimate the engineering time or cost that might be involved in completing all of the improvements required, ATIC nevertheless regards the effort as both

desirable and necessary.

HISTORY
of
OFFICE OF THE DIVISION CHIEF
PLANS AND POLICIES DIVISION
for Period of
1 January 1955 - 30 June 1955

PLANS AND POLICIES DIVISION
DIRECTORATE OF COMMUNICATIONS-ELECTRONICS

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HISTORY
PLANS AND POLICIES DIVISION
OFFICE OF THE DIVISION CHIEF
CHAPTER I
ORGANIZATION AND FUNCTIONS

During the period 1 January through 30 June 1955, the following personnel changes were made in the Office of the Division Chief:

On 3 January, Mrs. Elde W. Kreamer was assigned to fill a new civilian personnel space (GS-3) allocated to this office. Her duties include routing correspondence, filing, typing and general administrative work. (UNCLASSIFIED)

On 26 January, Lt Colonel Paul H. Long replaced Lt Colonel Robert J. Hennessy as Assistant JCEC Coordinator. Lt Colonel Hennessy was reassigned to "Operation Bootstrap". (UNCLASSIFIED)

On 8 June, Lt Colonel Long replaced Colonel Oliver W. Miller as JCEC Coordinator. Colonel Miller was reassigned to the 3535th School Squadron, Air Training Command. (UNCLASSIFIED)

On 8 June, Major Edward M. Vaughn was reassigned from the Programs and Standards Branch of this division to the position of Assistant JCEC Coordinator, replacing Lt Colonel Long. (UNCLASSIFIED)

CHAPTER II

ACTIVITIES

The historical record of the Division Chief's Office is best couched in the terms of staff supervision, staff monitorship and direction, and staff coordination of the division and directorate effort. This embraces the management of men, material and frequencies for USAF C-E. It extends across a spectrum which reaches from intra-Air Force, through joint and combined effort, and on to national and international areas of interest. It includes budgetary defense, programming, planning, allocations, authorizations and negotiation. These are continuing activities representing the long term investment of the USAF in the C-E field. They are designed toward an overall objective of better support to the aircraft we launch, through a sound, thorough, well considered approach to the plans and policies we create. (UNCLASSIFIED)

PLANS BRANCH
HISTORICAL REPORT
FOR PERIOD
1 JANUARY 1955 - 30 JUNE 1955

PART I
ORGANIZATION AND FUNCTIONS

There has been no change in the organization of the Plans Branch of the Plans and Policies Division since the submission of the last historical report. (UNCLASSIFIED)

In substance, the function of this branch is to formulate USAF Communications-Electronics (C-E) policies and plans as guidance for other activities in the Air Staff and for subordinate commands; participate in joint, inter-departmental and international activities involving C-E plans, doctrine and operations; and approve and monitor the development and implementation of the C-E portion of the Mutual Defense Assistance Program. (UNCLASSIFIED)

During the reporting period the following personnel changes have occurred:

a. Arrivals

- (1). Lt Colonel M. E. Niccolini
- (2). Lt Colonel F. K. Durni (UNCLASSIFIED)

The following change in panel and committee representation has occurred:

- a. Lt Colonel M. E. Niccolini has been appointed as an alternate on the Telecommunications Planning Committee. (UNCLASSIFIED)

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PART II
ACTIVITIES

EXERCISE SAGE BRUSH. Exercise SAGE BRUSH is referred to as a joint Army-Air Force maneuver scheduled to take place in the Camp Folk, Louisiana area during the period 1 November to 15 December 1955. Its purpose is to provide means for advancing doctrine to fulfill requirements for joint air/ground operation; to conduct operational suitability tests for new weapons; and provide an opportunity for maximum training of all participants. The Commander, Tactical Air Command is the Maneuver Director while Colonel R. O. Akre, USAF, is the C-E Officer in the maneuver headquarters. (UNCLASSIFIED)

Lt Col Shafer of AFOAC-P/P was appointed the SAGE BRUSH Project Officer for this directorate. The branch action to date includes conferences involving discussions on the ever-all C-E problem areas; and includes action that has been initiated to resolve these problems. (UNCLASSIFIED)

ESCAPE AND EVASION COMMUNICATIONS PLAN. AACS Plan 502A-54 was approved for implementation. This plan will provide a series of radio monitoring stations, at strategic overseas locations, which can communicate with aircrews downed behind enemy lines. (SECRET)

C-E SUPPORT OF THE 1957 USAF STRATEGIC OBJECTIVES MOBILIZATION PLAN (WPM-57). A review of the WPM-57 indicated that the C-E equipment presently in the Air Force inventory and programmed was far short of that required to support WPM-57. A listing of Standard Equipment Facility Lists (SEFL's) were developed as support requirements

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for WPM-57 as the result of close working with other staff officers in this directorate. The cost of this requirement is approximately \$40 million; and the compilation was published as Appendix A to PC-57-1-III. (SECRET)

The method of computing the requirement for appropriate budget entry was settled by conferring with representatives from this headquarters and Air Materiel Command. (UNCLASSIFIED)

A study pertaining to the C-E support of the WPM-57 was prepared by this branch. After being approved by the Director of Communications-Electronics, the study was reviewed and commented on by Colonel Barrow (AFMPP) and Colonel Kaufmann (AFMSS) prior to development of policy. It is contemplated that the above requirement will be included in the 1956 supplementary budget. (CONFIDENTIAL)

COMMAND COMMUNICATIONS-ELECTRONICS (C-E) PLAN. A letter to each major air command, 18 April 1955, directed the submission of an over-all C-E plan to reach this headquarters by July 1955. The purpose of this action was to obtain information on the types of C-E facilities and systems now held throughout the USAF; and the means by which each command intends to fulfill its C-E mission within the next three (3) years. (UNCLASSIFIED)

Interim replies to this letter have been encouraging. However, most of the major air commands have requested an extension of their submission date. This branch intends to review each plan, use them as required and come up with a plan format designed to best assist future C-E plan submissions. (UNCLASSIFIED)

USAF DISPERSAL PROGRAM. During November 1954 Lt Colonel Almond,

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Headquarters USAF, handcarried a letter to this headquarters outlining the communications and navigational aids requirements for the USAFE Dispersal Program. A briefing team arrived from USAFE during February of this year and briefed the Air Staff on the broad aspects of this program. The Air Council approved a concept of dispersal for USAFE combat air units compiled for the purpose of surviving an enemy air attack. USAFE has been advised of the detailed operational programming action required and of our recommended C-E revisions to the USAFE Dispersal Program. (SECRET)

During June of this year the first list of C-E equipment for PC action in support of the USAFE Dispersal Program was received from Headquarters USAFE. This list has been forwarded to the appropriate air staff agencies for programming and implementing action. (CONFIDENTIAL)

UNITED KINGDOM MICROWAVE PLAN. The United Kingdom Microwave Plan was originally approved for implementation in 1953 (O.P.C.-53-1). The purpose of this plan was to completely back up that portion of the British General Post Office (GPO) communication system used by the U. S. 3rd Air Force. (SECRET)

This UK Microwave Plan was later deleted from the program since its implementation involved details yet to be worked out (JCS and USCINCEUR approval, etc.). After much correspondence between this headquarters and USAFE, the latter headquarters was directed to take further planning and liaison action before re-submitting their plan. The directed action included continued meetings with the GPO for the purpose of integrating USAF trunking requirements into the

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GPO microwave back-up system; the determined USAF requirements over and above the GPO plan are to include mobile type equipment; and to develop a plan to allow maximum use of this mobile equipment pending the completion of the GPO microwave system. (SECRET)

The purpose of the UK Microwave Plan is now twofold. It will supplement that portion of the GPO communications system now used by the USAF in the UK as well as provide a back-up for this GPO system. (SECRET)

DISPOSITION OF COMMUNICATIONS-ELECTRONICS EQUIPMENT AS A RESULT OF THE AUSTRIAN PEACE TREATY. During May of this year this office was advised by Major Macken of the Directorate of Plans (AFOPD) that some disposition might have to be made of those C-E facilities installed in and those programmed for Austria. The cost of USAF C-E facilities now installed at Tulln and Linz, Austria, exclusive of telephone plant costs, was estimated at \$100,000. No decision as to its disposition has yet been determined. However, those C-E facilities programmed for Austria are to be re-programmed for USAF. (SECRET)

SPANISH TELEPHONE CONTRACT. The Commander, Spain Air Materiel Area concluded a contract with the Spanish National Telephone Company (CTNE) which provides that the USAF will assist the CTNE in an expansion program so that they can satisfy our telephone and teletype circuit requirements in Spain on a circuit lease basis. This contract implements the objectives outlined by this office to the Chief, JUSMG Spain. (UNCLASSIFIED)

NEGOTIATIONS FOR ADEN GLOBECON SITE. The Department of State entered into negotiations with the British government for military

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rights in the Aden Crown Colony. Some difficulties were experienced in negotiating customs and criminal jurisdiction clauses and also in determining an appropriate site for the GLOBECOM transmitters. The transmitter site selected by Commander, AACS is partially in the Aden Protectorate and therefore, has created additional political and monetary problems. Commander, AACS was requested to determine if a new site, located wholly within the Crown Colony, can be selected.

(SECRET)

ADANA GLOBECOM PROGRAM. On 11 March 1955 JCEC approved the communications plan for Turkey, including the Adana GLOBECOM station. USCINCEUR, CINCSAC, CINCUSAFE, Commander, AACS, Commander, AFSS, and Chief JAMMAT were so advised. (SECRET)

TRANSFER OF FEAF MICROWAVE FACILITIES TO THE ARMY. Headquarters Far East Air Force (FEAF) advised this headquarters by letter, 27 April 1955, that action had been taken to place all USAF microwave facilities in FEAF under the control of the Army (AFPE). The Department of the Army was advised by memorandum, 29 June 1955, that we concur in principle with the proposal to transfer the Air Force microwave responsibilities in Japan to the Army. However, we also advised that more detail is required before a final commitment can be made. For example, AACS firmly believes that the microwave keying circuits are an integral part of the USAF radio stations and as such should remain under the control of the station commander. (CONFIDENTIAL)

JOINT USE OF RECEIVER SITE AT OWADA JAPAN. During April of this year this headquarters was notified by Headquarters FEAF that Army Forces Far East (AFPE) protested against the use of the Owada receiver

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site on a joint basis. It appeared that the Air Force requirement for forty (40) rhombic aerials and six (6) disc cone aerials could not be accommodated at this site. It was finally agreed that the USAF would move from Owada to Toyooka, Japan in view of the Army Communications Administrative Network (ACAN) expansion. (CONFIDENTIAL)

FORMOSA AREA PLANNING. During the latter part of December 1954 and throughout January 1955, this directorate (AFDAG) received information copies of messages originated by MAAG Formosa, stating an urgent need for communications personnel. Some messages were directed to CINCPAC and others to the Department of the Air Force, Army and the Chief of Naval Operations (CNO). Headquarters USAF also was an info addressee on a number of messages between CNO and CINCPAC, and in addition AFFMP had received an action message from CNO requesting that 5 officers and 25 airmen be provided immediately to MAAG Formosa in response to his urgent request. (SECRET)

Since most of the personnel requested by MAAG Formosa were communications types this directorate called meetings with representatives of other air staff agencies to determine appropriate action to be taken. The conferees decided that the required Air Force personnel should be sent to MAAG Formosa on temporary duty immediately from FEAF in view of the Tachen situation then extant. (SECRET)

JCS 2147/142 approved by the JCS on 22 April 1955 and the Secretary of Defense on 6 May 1955, included authority to increase the MAAG ceiling by an additional 300 USAF personnel for Aircraft Control & Warning (AC&W) and Airways and Air Communications Services (AACS).

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These additional personnel were to be divided as follows:

AACS	14 Officers	85 Airmen
AC&W	39 Officers	161 Airmen (SECRET)

On 20 May 1955 the JCS approved JCS 1966/104. This paper resulted from an item introduced by the Department of the Army which requested the JCS to determine the responsibility for the support of the MAAG and Formosa Liaison Center. This paper was acted upon by the JCEC in collaboration with the Joint Strategic Plans Committee (JSPC) and Joint Logistics Plans Committee (JLPC) and all important objectives which the Air Force desired to achieve are contained therein. (SECRET)

It is felt that the 300 additional MAAG, AACS and AC&W spaces provided by JCS 2147/142 and the re-definition of communications responsibilities contained in JCS 1966/104 eliminates the problem of providing additional Air Force Communications personnel on Formosa. Therefore, we believe that no further action will be required by this office in this connection. However, this branch will continue to monitor C-E problems in the Formosan Area in order to insure that adequate communications are provided in support of Air Force activities in this area. (SECRET)

PLANS BRANCH ORGANIZATION. By the end of June, a staff study to determine the effectiveness of the existing Plans Branch organization had neared completion. The study analyzes the present organization pointing out observed weaknesses; and recommends that the Plans Branch be organized into three homogeneously grouped sections. The functional breakdown of each proposed section has been detailed in this study.

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We anticipate that the proposed organizational chart and functional breakdown will be submitted to the Plans and Policies Division Chief for approval during the first week of August 1955. (UNCLASSIFIED)

MUTUAL DEFENSE ASSISTANCE PROGRAM (MDAP) EQUIPMENT DELIVERIES.

Delivery to respective countries of equipment programmed in previous years continued very well in most categories. Delivery of all programmed radars, except the AN/TPS-10D, is nearly complete but there is still some delay in supporting items, such as radomes and artic towers. Further shipments to some countries have been suspended or delayed until a capacity to install and operate is demonstrated.

(CONFIDENTIAL)

MDAP PROGRAMMING. A recommended MDAP C&E Program for FY-55 was submitted to the Assistant for Mutual Security. Except for certain South American countries this program has been approved and, after re-refinement, will be released for procurement. A tentative FY-56 C&E Program was also submitted but there has, as yet, been no action taken toward approval, funding or submission of requirements by Title I and II countries. (CONFIDENTIAL)

MDAP REQUIREMENTS. Re-programming action was taken to establish an expedited retrofit for Formosan Aircraft to provide an improved combat potential and compatibility with the USAF. Very substantial progress has been made in the installation of IFF and UHF equipment and it is estimated this program will be completed by October 1955. Expedited action was also taken to provide the electronic equipment necessary for the ground installation and for a modern AC&W system capable of operating with, and controlling USAF aircraft. Delivery

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of C&E equipment (except that for AAA) to Formosa is virtually complete, including items added to a special FY-55 Program. (SECRET)

A re-distribution of communications equipment, excess to other MDAP countries, was made to various South American countries which are eligible for Grant Aid. This re-distribution is expected to result in considerable improvement in communications capability in that area. (UNCLASSIFIED)

Efforts were continued to establish an MDAP aircraft retrofit program for a modern, combat capable C&E configuration. Considerable equipment for this purpose was already in the FY 50-54 MDA Program and a substantial portion of the remaining requirements were added by the FY-55 Program. Retrofit of MDAP C-119's, RF-84's and C-47's have been included in the "List of Modifications, April 1955, revised 15 June 1955" as published by the Directorate of Requirements, DCS/M, Headquarters USAF. All other aircraft type approval is expected imminently. (CONFIDENTIAL)

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HISTORY
of
FREQUENCY BRANCH
for period of
January 1955 through 30 June 1955

CHAPTER IORGANIZATION AND FUNCTIONS

A. ORGANIZATION:

Personnel changes during this period were:

Major Lewis L. Bradley was assigned to the University of Maryland under Project Bootstrap on 28 January 1955.

Major James E. Ogle replaced Major Bradley as Chief of the VHF Section on 28 January 1955.

The organization of the Branch as of 30 June 1955 is shown in Appendix I.

B. FUNCTIONS:

The functions of the Branch remain unchanged since submission of the January to June 1954 history.

CHAPTER IIACTIVITIES

A. HF Section

OUT-OF-BAND FREQUENCIES. The HF Section has continued to move USAF operations out of the frequency bands which were allocated to other types of services at the Atlantic City ITU Conference. Approximately 80% of all Air Force operations are now in-band in conformance with the Atlantic City Table of Allocations. Due to the insufficient number of replacement frequencies it appears that about 10% of USAF operations will have to remain out-of-band. The task is, therefore, about 90% completed. (UNCLASSIFIED)

PROJECT (C) GRAYBACK. CINCPAC on 8 February 1955 proposed 25 frequencies for the Tokyo to Hokkaido, Korea, Okinawa, Manila, Guam, Midway, Wake, Attu, and Anchorage simplex, CW circuits to support this project. The power requested ranged from 400 watts to 3 kw. Clearance action was withheld until the project received final approval and actual coordination got underway about 1 April 1955. Since that time approximately 100 frequencies have been coordinated. As of 30 June, 12 frequencies were actually cleared and assigned, with the prospect of about 8 more clearing shortly. The two major blocks on this project have been the Japanese Radio Regulatory Bureau (RRB) which has objected to 53 proposals and the Navy which objected to 22 proposals. (SECRET)

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SAC PLAN 1000. Headquarters 8th Air Force moved from Carswell AFB to Westover AFB in June 1955. An estimated 74 frequency changes resulted from this move, and as of 30 June, 42 frequency changes had been completed. At least one frequency each way between all operational bases has been cleared and assigned. Most of the remaining requirements are for nighttime frequencies within the 2-5 Mc/s band, and even for emergency radio backup circuits, the problems of obtaining clearance within this part of the spectrum are becoming more and more difficult.

Overall, the SAC Plan 1000 requirements to date are for 155 frequencies, of which 101 have been cleared and assigned. (CONFIDENTIAL)

PROVISIONAL RADIO FREQUENCY ASSIGNMENTS. All major USAF Commands in the ZI and overseas have been advised of the new Interdepartment Radio Advisory Committee policy whereby all frequency assignments made to point-to-point radio circuits between 4 and 27.5 Mc/s, for transmission from the U.S. and possessions, are on a six (6) months provisional basis pending notification to IRAC of the date of activation.

If notification to IRAC of the date of activation is not made within six (6) months, the frequency assignment is reconsidered by the Frequency Assignment Subcommittee of the IRAC, and sufficient justification must be furnished to insure extension of the assignment.

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International frequency priority begins with the activation date, and since the USAF has many assignments which are from one (1) to four (4) years old and have not been activated, the U.S. and the USAF have lost priority rights to foreign countries on frequencies because of delays in activation. (UNCLASSIFIED)

GLOBECOM SUMMARY. The replacement of out-of-band frequencies in the GLOBECOM System may be considered completed. There are still some adjustments to be made, however, as some of the new frequencies have proven unsatisfactory, due to interference or propagation difficulties.

At the same time, the GLOBECOM plan has been growing in extent as well as in scope. The number of planned circuits has been increased, longer circuits are being put into operation, and the former voice and CW simplex circuits are expanded to radioteletype, multiplex, single-sideband or facsimile. Most of the Atlantic CW simplex nets have already been abolished. Also, the power of 1-5 kw is not sufficient on some circuits, and power increases to 10-40 kw and higher have been requested. Of course, clearing frequencies for such wide bandwidths and high power becomes a monumental struggle against antagonistic forces. The Frequency spectrum is already so overcrowded that it is very difficult to accommodate the new "plump and noisy" radio waves.

The cooperation of the Army and Navy is steadily improving; however, the civil authorities guard their wealth of frequencies very jealously. Sometimes, our own people in the theaters, by misapprehension, cause difficulties by objecting to our proposals, basing

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their objections on previous frequency assignments of lesser importance, or on frequencies which have not been used for years. More exchange of personnel between the theaters and Hq USAF might be very beneficial in this respect. A concrete example of cooperation is CINCEUR. The people over there are very understanding, prompt, and helpful.

International coordination presents the same old difficulties as before, due to the reluctance of individual countries to yield anything of their sovereignty, even for a common cause. The greatest difficulties in coordination are with France, whose objections are almost a rule, and agreement an exception. Canada is also a very difficult partner, who keeps our proposals on the shelf for a long time, and then comes back with objections, often without giving the reason for these objections. Great Britain seems to be realistic and does not cause much trouble. The importance of ERFA is increasing, particularly as more countries (Portugal) become members.

On the average, it requires 6 - 12 months for a frequency to be cleared, often even more. Cases of interference, caused and received, occurred in several instances. Each case has been studied and solved, either by replacing the frequency, sending a report to the authority responsible for the operation of the interfering station, or by monitoring the transmission or reception of our station in an effort to gather more particulars about the nature of the interference. Europe with her great number of comparatively small countries is a

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particularly vulnerable area in this respect. A special problem is interference caused by countries behind the Iron Curtain. In several instances, interference occurred on frequencies to which we have an old established right, which it would be unwise to relinquish. We are trying to solve this problem through the Department of State. So far, we cannot boast any positive results.

The gradual implementation of the GLOBECOM Plan becomes increasingly difficult as more and more circuits and stations, whose efficiency rests upon well balanced families of frequencies, are being activated. Generally, a circuit cannot be put into operation until all the required frequencies have been assigned. The time required for the clearance of different frequency bands varies, and while one frequency can be assigned within a very short period of time, other frequencies resist all attempts for clearance, with the result that the circuit cannot be put into operation.

It is not only the wide-band and high power frequencies that are so difficult to clear, but also frequencies for circuits and stations with non-directive antennas, such as weather or facsimile broadcasts. These radio waves radiate in all directions covering everything within their reach, and proposed frequencies have little chance to be approved by other interested parties, and implementation of the plan must be postponed again and again.

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To insure early operation of planned circuits we have resorted to an auxiliary, temporary measure. As the implementation of individual channels is to be gradual, we have decided, after agreement with Headquarters AACS, to coordinate, at first, frequencies which have some chance of being cleared; namely, those with a narrower bandwidth and lower power. Instead of SSB we clear MIX and instead of 40 kw power we go down to 10 kw, and start there. The first objective is to make the circuits operative. Later, when the circuits are operating and the stations properly technically equipped, we will gradually clear SSB high power frequencies. (CONFIDENTIAL)

FREQUENCIES ASSIGNED THE ELMENDORF AFB-McCLELLAN AFB SSB CIRCUIT.

A complete family of five (5) high frequencies have been assigned to each terminal of the Elmendorf AFB-McClellan AFB single-sideband GLOBECOM circuit. Extensive coordination and clearance action has been in progress since 1952 to obtain these wide-band emission channels. (CONFIDENTIAL)

FORWARD SCATTER CIRCUITS - NEAC AND NORTH ATLANTIC AREAS: A

continuing and concerted effort has been made to obtain regular and permanent frequency assignments for the USAF ionospheric forward scatter circuitry from Loring AFB, Maine, to Thule Air Base, Greenland and, via Iceland, to the United Kingdom. Approximately 80% of the currently projected circuitry is now in operation, and is employed to carry operational traffic with a highly satisfactory degree of reliability; nevertheless, many of the assigned frequencies are

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authorized on a "temporary," "experimental," or "non-interference" basis. A solution to the problem of accommodating scatter circuits within the 25 - 60 Mc/s portion of the spectrum, at the same time minimizing interference problems to and from existing low power tactical equipment, has been under active consideration by this branch, in connection with several programs initiated by such agencies as the Telecommunications Planning Committee, the Inter-department Radio Advisory Committee, and the Frequency Allocation Panel of the USJCEC. (CONFIDENTIAL)

FORWARD SCATTER CIRCUITS - EUROPE. In April 1955 the European Military Communications Coordinating Committee (EMCCC) established a working group to study, in general terms, the technical and operational factors relating to employment of the forward scatter technique by NATO forces in Europe. Mr. L.S.F. Meaker of this branch participated in the working group discussions, after which he discussed similar matters with communications personnel of USAFE. It was apparent that many of the NATO nations are eager to exploit the scatter technique, but feel the United States holds most of the technical "know-how" and is somewhat reluctant to furnish the information. This situation is being partially alleviated by a program now underway whereby published documents and circuit performance reports are being released, through JCEC channels, to Canada, U.K., Denmark, Norway, and other requesting administrations. USAFE expressed a

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strong interest in scatter, and has definite plans for a limited number of ionospheric circuits and a larger number of shorter distance tropospheric scatter links. Specific locations and frequencies, however, were not discussed, and final assignments are contingent upon resolution of policy matters within the USJCEC.

(CONFIDENTIAL)

FORWARD SCATTER - DISTANT EARLY WARNING (DEW) LINE. Air Research and Development Command, and the DEW Project Office, have presented requirements for sixteen discrete frequencies, utilizing the ionospheric scatter technique, for communications and data transmission between the North Canada DEW line and southerly base stations. The frequencies have been informally cleared through a DEW Project Office - RCAF channel, and are now being proposed to the Frequency Allocation Panel and Wave Propagation Sub-Committee of the Canadian Joint Telecommunications Committee for formal approval. Lateral communications between DEW stations will, in general, be provided by tropospheric circuitry; specific requirements for this phase of the program have not yet been presented, however the allocation problem is considered to be less critical and controversial than for the ionospheric circuits. (CONFIDENTIAL)

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REVISION OF RADIO PROPAGATION PREDICTION CHARTS. Since 1947 the Signal Corps has been furnishing the USAF with monthly radio propagation prediction charts for all major Air Force high frequency circuits, world-wide. The charts have been of the conventional type, showing optimum traffic frequencies (OT) and lowest useful high frequencies (LUF) for each circuit as a function of time of day.

To increase the usefulness and accuracy of these charts, representatives of AACS and this branch have developed a revised presentation which, in brief, replaces the LUF curve by curves showing actual values of received field intensity to be expected on each assigned frequency. These received values may then be compared directly with the required values of signal, as determined by circuit constants, to assess circuit performance. In May 1955 "Pilot Run" production of the new charts was begun for certain selected AACS circuits. This will continue for approximately six months, at the end of which time a re-evaluation will be made.

(UNCLASSIFIED)

REORGANIZATION OF THE CENTRAL RADIO PROPAGATION LABORATORY EXECUTIVE COUNCIL. The Executive Council of the Central Radio Propagation Laboratory (CRPL) was established in 1946 to advise the Director of the National Bureau of Standards of radio propagation requirements of government agencies, to offer guidance in formulating the CRPL Program, and to lend support in budgetary

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matters. The Frequency Branch has provided continuous membership and participation in the Council since its inception.

At the request of the Secretary of Commerce, the Council undertook to reorganize its membership and charter to provide more positive and mutually beneficial liaison between the CRPL and agencies using its services. The Council was reconstituted as the "Interdepartment Council on Radio Propagation and Standards," and its charter was approved by the Secretary of Commerce in June 1955. Principal USAF membership is to be provided by AFORD, and alternate representation by Mr. L. S. F. Meaker of this Branch. (UNCLASSIFIED)

SECTION WORKLOAD. Mr. E. C. McCarley was transferred from the HF to the VHF Section on 15 March 1955 to distribute personnel more equally between these two sections. This made it necessary to redistribute responsibility for ADC, AAC and CINCAL frequency matters to the 2 officers and 3 engineers that remained in the HF Section. The overall shortage of personnel is becoming more acute daily, and is reflected in delay in answering correspondence, inadequate monitoring of the activities of major commands, and inability to concentrate on future plans. (UNCLASSIFIED)

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B. VHF-UHF-SHF-EHF SECTION

TAC FREQUENCY PLAN. The Tactical Air Command VHF radio relay communications plan has been completely revised. The Tactical Air Command revamped their VHF radio relay system to interconnect TAC bases and provide support facilities to ADC installations. A total of 140 frequency assignments, using 29 different frequencies were made to satisfy TAC's requirements. (UNCLASSIFIED)

INTERFERENCE ON GCA FINAL APPROACH FREQUENCY. The Frequency Branch worked closely with the Federal Communications Commission to resolve an interference problem on the GCA final approach frequency at Langley AFB, Virginia. The interference resulted from a strong third harmonic radiated by WGH-FM, operating on an assigned frequency of 96.5 Mc/s. The third harmonic of 96.5 Mc/s is 289.5 Mc/s, the standard USAF final approach frequency. The FCC investigated our report of interference on the GCA final approach frequency and confirmed our belief that the interfering signal was being radiated by WGH-FM. On 13 April 1955 the FCC granted authority to WGH-FM for a change in operating frequency from 96.5 to 97.3 Mc/s. Any harmonic radiation from 97.3 Mc/s will not interfere with USAF frequencies in the Langley AFB area. (UNCLASSIFIED)

OPERATION SAGE BRUSH. A conference was held on 10 May 1955 at the Pentagon to determine problem areas in connection with Operation SAGE BRUSH. One of the chief problems discussed was frequency allocations for this operation. It was agreed that there will be definite frequency allocation problems in view of the very large number of

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radio systems to be used in the maneuver. Most of these problems will be in the 100-400 Mc/s band. It was also agreed that wherever possible and where distance permits, duplicate frequencies will be assigned to more than one unit. It was further agreed that a joint frequency control board would be required within the Maneuver Headquarters. This was further agreed to in the radio relay frequency conference for SAGE BRUSH in the Office of the Chief Signal Officer on the following day (11 May 1955). At this conference it was decided that a joint Army-Air Force working group would be established at USAF-USA level to handle SAGE BRUSH requirements. The USAF will be the mailing address for this group.

The SAGE BRUSH Joint Frequency Working Group at the USAF-USA level will assign blocks of frequencies, for communications requirements, to the Maneuver Headquarters Joint Board in the one hundred (100) and above Mc/s band. The Maneuver Headquarters Joint Board will make specific assignments of communications frequencies within blocks assigned by the USAF-USA Working Group. Frequencies in the 25 - 100 Mc/s band will be procured by the Maneuver Headquarters Board from the local FCC office through Headquarters 4th Army. Additional communications frequency requirements, other than those initially allocated in the 25 Mc/s and below and the 100 Mc/s and above bands, will be submitted by the Maneuver Board to the USAF-USA Working Group for action. Assignment of Radar Frequencies will be controlled by the SAGE BRUSH Joint Frequency Control Board. (UNCLASSIFIED)

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TEXAS TOWERS. Headquarters, ADC requested tropospheric scatter frequencies in the 400-800 Mc/s band. Since at least 25 Mc/s separation between channels is required and the government band in this region of the spectrum extends only from 400 to 420 Mc/s, a decision was made to develop tropospheric scatter equipment for the 1700-1850 Mc/s band. The first Texas Tower, however, is to be in place on site at least a year before the 1700-1850 Mc/s equipment will be available. The FCC has agreed to temporary Air Force use of 902 and 952 Mc/s for the first Texas Tower tropospheric scatter circuit, with the understanding that these frequencies will be replaced as soon as the 1700-1850 Mc/s equipment is available. The remaining four east coast Texas Towers have been scheduled for 1700-1850 Mc/s frequency assignments since the on-site date for these towers is subsequent to the expected delivery date of the 1700-1850 Mc/s equipment. (SECRET)

SEMI-AUTOMATIC GROUND ENVIRONMENT (SAGE). Headquarters, ADC in a letter dated 9 March 1955 advised that SAGE would require 174 tactical UHF channels for communications and 128 UHF channels for control of guided missiles. The Frequency Branch cannot support this large frequency requirement from resources currently available to the USAF within the Joint UHF Allocation Plan. Since the joint plan allocates only 212 UHF channels to the Air Force and the SAGE requirements alone total 302 channels, it is obvious that additional

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channels must be obtained from the other Services, or technical advances in equipment must be made to obtain more channels from the presently available spectrum space.

The Joint UHF Allocation Plan does allocate 210 channels for joint use. Of this number, only 66 channels are currently in use. The remaining 144 joint channels, plus the 56 Air Force channels presently allocated to ADC, have been proposed for possible use in meeting the SAGE requirement. The concurrence of the Army and Navy will be required, however, before use of these joint channels for SAGE can be authorized.

A meeting was held at Headquarters USAF on 23 June 1955 of personnel associated with SAGE from ADC, AMC, ARDC, TAC, RADC, AFRCR, Lincoln Laboratories, Joint Project Office ADES (Bell Telephone Laboratories), and Headquarters USAF. At this meeting the problems of providing frequencies to fulfill SAGE requirements were discussed. The Joint Project Office (ADES) was asked to make a study on the frequencies considered by Headquarters USAF as available for SAGE.

A follow-up conference is scheduled for 14 July 1955 to continue action on this problem. (SECRET)

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HARMON AFB GLOBECOM MICROWAVE FREQUENCIES. Four frequencies in the 7125-8500 Mc/s microwave band have been coordinated with Canada and assigned to CINCPAC for use in the Harmon GLOBECOM system. The microwave facility is used to interconnect the remote receiver site, remote transmitter site, and the communications center. (UNCLASSIFIED)

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C. RECORDS

INTERNATIONAL FREQUENCY REGISTRATION OF USAF ASSIGNED FREQUENCIES.

A check of the International Frequency Records against USAF frequency assignments has been made to improve the U. S. position with regard to international protection of our assigned frequencies. In the past, frequencies have been assigned too often without requesting international registration. This practice automatically eliminated international protection for these frequencies and in many instances resulted in the USAF losing priority rights to foreign countries on frequencies which we had been using for many years. During January 1955 the Frequency Branch forwarded more registration requests to the IFRB than during the entire year of 1954. Action to insure registration of all appropriate USAF frequencies is continuing.

(UNCLASSIFIED)

FORWARD SCATTER FREQUENCIES REGISTERED WITH IFRB. Ten frequencies in the 30 to 40 Mc/s band, used for forward scatter circuits in the NEAC area, have been submitted to the International Frequency Registration Board, Bern, Switzerland, for registration in the International Radio Frequency Record. Registration of these frequencies is necessary to insure that the USAF will receive international protection from harmful interference if other countries use the same frequencies and interference is encountered. (UNCLASSIFIED)

AFR 100-50 REVISED. Air Force Regulation 100-50, "Monthly Frequency Utilization Report", has been revised so that information received

on the report may be easily transcribed to an IBM card. This regulation provides information which is very helpful in controlling assignment and usage of frequencies between 1605 kc/s and 27,500 kc/s.

(UNCLASSIFIED)

D. MISCELLANEOUS

RADIO FREQUENCY REQUIREMENTS FOR RADIO ASTRONOMY. All federal government agencies were requested by the IRAC to determine whether any requirements exist for the use of radio frequencies for the new science of "radio astronomy".

Inquiry by the Frequency Branch revealed that within the Air Force there is an interest, centered in AFORD, for a program of observations to be made by the Air Force Upper Air Research Observatory at Sunspot, New Mexico. It appears that widespread interest centers about radio signals which are received near 1420 Mc/s from outer space. This frequency has been named the "hydrogen line" because of the generation of radio frequencies caused by action on the hydrogen gas in the atmosphere. (UNCLASSIFIED)

ARTICLE PUBLISHED IN "SIGNAL" MAGAZINE. The March-April 1955 issue of Signal, published by the Armed Forces Communications and Electronics Association, contained an article written by Mr. John D. Corley and Major Verden McQueen. The article was entitled, "Wanted: A Radio Frequency" and outlined the procedures and major problems encountered in obtaining and assigning radio frequencies for the USAF. (UNCLASSIFIED)

WRIGHT AIR DEVELOPMENT CENTER FREQUENCIES. The WADC Radio Frequency Authorization has been completely revised to conform to organizational changes of the various laboratories within WADC. A total of 219 frequencies, in all portions of the spectrum, were assigned. (UNCLASSIFIED)

CANADIAN LICENSING OF US MILITARY RADIO INSTALLATIONS IN CANADA.

Lt Col Andrew H. Weigel and Major Verden McQueen attended an informal meeting between representatives of the USJCEC and the Canadian Ministry of Transport, held at Ottawa, Canada, between 11 and 14 April 1955. The purpose of the meeting was to discuss Canadian licensing of U. S. Military radio installations in Canada. The requirement for this licensing arose from changes in Canadian law resulting from the expiration of the Canadian War Powers Act of 1950. The meeting resulted in improved relations with the Canadians through informal agreements concerning the licensing problem and mutual understanding of radio frequency coordination problems in general. (UNCLASSIFIED)

FAP MESSAGES. Approximately 2500 FAP USJCEC messages were processed through the Frequency Branch during the first six months of 1955. These messages involve joint frequency coordination with unified commands and foreign military agencies. Each of these messages require active coordination and research, and many generate additional action within the Air Force. (UNCLASSIFIED)

AFR 100-53 REVISED. Air Force Regulation 100-53, "Radio Frequency Allocation Training", has been revised. The revision contains the following changes:

- a. Increased the Number of students from 2 to 3 per year.
- b. Provides for the training of Master Sergeants holding reserve warrant officer appointments in frequency allocations.

c. Includes a course description so that personnel submitting applications are aware that this is an on-the-job training course and not a separate school.

Training conducted under the provisions of AFR 100-53 is designed to provide the Air Force with officers, warrant officers, and airmen with a knowledge of radio frequency allocation procedures and problems.

(UNCLASSIFIED)

INTERNATIONAL GEOPHYSICAL YEAR (IGY) PROGRAM AT THULE AIR BASE.
The International Geophysical Year (IGY) Program, 1957-1958, will consist of a coordinated series of tests and measurements of ionospheric, atmospheric and terrestrial phenomena by private and governmental scientific agencies of thirty-eight nations. In support of this program the USAF has been approached with a view to establishing an ionosphere measuring station at Thule Air Base, Greenland, during the summer of 1955.

Preliminary discussions with the Signal Corps and members of the U. S. National IGY Committee revealed that the Signal Corps could provide personnel and equipment for operation of such a station, and Northeast Air Command was queried as to availability of housing and other logistic support. At the suggestion of NEAC, Mr. L. S. F. Meaker of this Branch visited Newfoundland and Greenland during the period 13-18 May 1955 to acquaint personnel with the requirement and to accomplish a site survey at Thule. As a result of this visit we are continuing the attempt to place the station in operation during 1955 as originally proposed. (UNCLASSIFIED)

FREQUENCY BRANCH

Lt Col Weigel - Chief
Mr. Corley - Chief Engineer
Mrs. Lewis - Steno

RECORDS SECTION

1st Lt Flesner - Chief
Mrs. Pershing
Mrs. Dwyer

HF SECTION

Maj McQueen - Chief
Mr. Neaker - Ass't Chief
Mr. Simmons
Mr. Dvorsky
Maj Powell (Stu Off)
Miss Hannold

VHF-UHF SECTION

Maj Ogle - Chief
Mr. McCarley
Capt Diver (Stu Off)
Mrs. Crook

HISTORY
of
PROGRAMS AND STANDARDS BRANCH
for Period of
1 January 1955 - 30 June 1955

CHAPTER I
ORGANIZATION AND FUNCTIONS

There were no changes of organization or functions in the Programs and Standards Branch during the period 1 January 1955 to 30 June 1955. (UNCLASSIFIED)

Personnel changes and additions during this period were as follows:

Colonel Russell A. Purviance was assigned as Branch Chief on 25 January 1955. He replaced Lt Colonel M. E. Niccolini, who was assigned to the Plans Branch of this division on 28 February 1955. (UNCLASSIFIED)

Major Robert L. Burke was assigned to the Branch on 28 February 1955. He filled the officer space of Major which had been vacant since 1 July 1954. (UNCLASSIFIED)

Major Edward M. Vaughn left the branch and was reassigned as Assistant AF JCEC Coordinator on 15 June 1955. He was replaced by Captain Richard P. Beatty on 28 June 1955. (UNCLASSIFIED)

Mr. Bruner T. Honeycutt, GS-12, was assigned to the Branch on 2 January 1955. (UNCLASSIFIED)

Two secretarial type positions became vacant during this period. One position was filled 27 March 1955 and the other was filled on 13 June 1955. (UNCLASSIFIED)

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CHAPTER II
ACTIVITIES

TYPE CLASSIFICATION OF MAJOR END ITEMS OF C-E EQUIPMENT - The Historical Report for the period July 1954 - December 1954 indicated that type classification action was to be taken by Air Research and Development Command on 174 items of C-E equipment listed in the MEAL but not type classified in accordance with AFR 80-6. Of the 174 items, 90 Signal Corps items remained to be type classified. ARDC had estimated that type classification action would be completed on 15 March 1955. On 31 March 1955, a follow up letter was sent to ARDC requesting advice as to current status. A letter from ARDC, dated 26 May 1955, subject, "Status Classification of C-E Equipment now Authorized in the MEAL," was received. Attached to the letter was a list of C-E items each annotated to indicate, (a) new estimated date of initiation of type classification action for those items still unclassified, and (b) classification of items for which type classification action had been completed. (UNCLASSIFIED)

Although previous information received from ARDC indicated that approximately 90 out of the original 174 items still required type classification action, the referenced list showed 105 items required this action. This information was furnished the Directorate of Requirements and a check will be made by that directorate on the difference in quantities of items still to be type classified. (UNCLASSIFIED)

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TACTICAL C-E AIR TRANSPORTABLE ENGINE GENERATORS - During this period an evaluation report and a development plan was received from Air Research and Development Command pertaining to the establishment of a standard family of engine generators for tactical communications-electronics. Such action was based on our staff study and its QOR which pointed out the need for development to correct present deficiencies. ARDC, in their development plan, proposes to survey the diesel engine industry and select the line or lines of engines, in being, to meet our QOR. Selection would be based on technical and production considerations. ARDC did not believe development of a complete line of new engines to be necessary. Further they considered that, by taking advantage of commercial development, they could provide the desired solution in the shortest period of time. Interchangeability of parts has been considered and may be accomplished by either of two ways: (UNCLASSIFIED)

1. Procure necessary license rights.
2. Effect standardisation by manufacturer's part number which would entail sole source procurement action consistent with armed services procurement regulations.

ARDC requested an Operational Support Directive be issued implementing their development plan. They pointed out that if development of a complete line of new engines and associated ancillary equipment becomes necessary, such a program may cover a period of seven to ten years. (UNCLASSIFIED)

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The Director of Research and Development was notified that the proposed development plan appeared to generally fulfill the requirements stated in our QOR. However, since the present unsatisfactory tactical power situation is, in a large measure, a result of past indiscriminate adoption of commercial units, our requirements would not be relaxed or lowered to permit wider selection of commercial units. (UNCLASSIFIED)

PRIMARY AND SECONDARY LISTINGS OF C-E EQUIPMENT - Our attempt to provide operational and logistical activities information pertaining to acceptable substitutes for primary C-E items has not yet borne fruit. As mentioned in the July-December 1954 Historical Report, a memorandum was sent to the Director of Research and Development on 17 December 1954 which redefined our objectives and requested that all possible efforts be exerted to insure that the required information is assembled and published at an early date. Follow-up action on 28 March 1955 revealed that the memorandum had been forwarded to the Director of Supply and Services and Director of Communications-Electronics (In Turn) by AFDRD. On 6 May 1955 follow-up action was again taken since no comments had been received from AFMS. During the resulting conference it was decided that AFMS would prepare a reply to Deputy Chief of Staff, Development to be signed by Deputy Chief of Staff, Materiel since AFDRD appeared to be reluctant to take aggressive action. The reply would be submitted to AFOAC for coordination. Before the close of the reporting period AFMS was again asked the status of our memorandum. We were informed

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that Air Materiel Command had established a list of family groupings which would serve to fill our requirement. As soon as this list is received it would be forwarded for our comments. (UNCLASSIFIED)

TACTICAL AIR COMMAND MANEUVER STOCKPILE AND "PROJECT WAGON

WHEELS" - A conference was held at Tactical Air Command during this period to discuss in detail the various requests submitted by TAC for C-E equipment for the maneuver stockpile and Project Wagon Wheels. This conference was convened since a review made by this branch of past TAC correspondence requesting C-E equipment showed the quantities requested would more than satisfy their needs. (UNCLASSIFIED)

TAC had requested not only equipment actually required for the maneuver stockpile but also had included quantities already authorized in the MEAL and additional non authorized items required by their units to implement the second phase of Project Wagon Wheels which consists of 39 vans for the 18th Air Force. (UNCLASSIFIED)

TAC concurred in our recommendation that the quantities of equipment already authorized in the MEAL and the quantities of equipment requested for the 39 vans be deleted from their requests since supply action was being taken by Air Materiel Command. This action resulted in a savings to the Air Force of approximately \$5,760,780.00. (UNCLASSIFIED)

A memorandum was forwarded to the Director of Supply and Services summarizing the actions taken and requesting that action be initiated to supply certain equipment still required for the TAC maneuver stockpile and the second phase of Project Wagon Wheels. (UNCLASSIFIED)

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REVISION OF T/O 1-2233 - T/O 1-2233, dated 1 January 1952, has been replaced by T/O 1-2233, 1 June 1955. A large percentage of the communications squadrons previously organized under the old T/O have been reorganized. Reorganization action on all Communications Squadrons should be completed within the first two quarters of FY 56.

(UNCLASSIFIED)

REORGANIZATION OF MICROWAVE RELAY SQUADRONS - The 7th and 8th Radio Relay Squadrons were reorganized effective 18 June 1955. Concurrently the 15th Communications Squadron-Air Force was inactivated. Reorganization of the two Radio Relay Squadrons required an increase of 1 officer and 135 airmen. Spaces saved by inactivating the 15th Communications Squadron resulted in an overall savings of 7 officers and a cost of 25 airmen. (UNCLASSIFIED)

ACTIVATION OF COMMUNICATIONS SQUADRON IN SUPPORT OF THE 7TH AIR FORCE - The 12th Communications Squadron-Air Force was activated 15 May 1955 at Hickam AFB, T.H. at a strength of 8 officers and 66 airmen. This squadron was subsequently moved to Wheeler AFB, T. H. and is currently supporting the 7th Air Force. (UNCLASSIFIED)

INACTIVATION OF COMMUNICATIONS SQUADRONS SUPPORTING INTERNATIONAL HEADQUARTERS - The 5th Radio Relay Squadron and the 6th Communications Squadron-Air Force, supporting Allied Air Forces Central Europe, and the 34th Communications Squadron-Air Force, supporting Allied Air Forces Southern Europe have been inactivated. This action in no way reduces the communications support provided these international headquarters by USAF. The required

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communications support is now provided by communications personnel assigned to Headquarters Command non-T/O units in support of International Headquarters. (UNCLASSIFIED)

ACTIVATION OF ORGANIZED RESERVE UNITS - During the last two quarters of FY 55, the 12th AACS Mobile Squadron with 7 detachments and 2 AACS Flights (Facility Checking) were activated. This action completed all activations of AACS type organizations scheduled for FY 55 in the Organized Reserve. (UNCLASSIFIED)

G-E AIRMEN PERSONNEL - From the overall quantitative aspect, the G-E Airmen career areas, as of 30 April 1955, were fairly well manned except for the Radio-Radar Systems Field (30). However, when required versus assigned skills are considered, the picture is rather dark. For example, the authorized skill distribution in the Air Traffic Control and Warning Field (27) was 1.2% unskilled (1), 27.9% semi-skilled (3), 47.5% skilled (5) and 23.4% advanced (7). The distribution follows a similar pattern in the other G-E fields i.e., overages in the unskilled and semi-skilled areas and shortages in the skilled and advanced areas. (CONFIDENTIAL)

In the 30 Field (Radio & Radar Maintenance) there is a quantitative shortage of 6,430 or 11% of the authorization. 2,300 were Ground Radio Repairmen and over 1,500 were AC&W Repairmen. (CONFIDENTIAL)

Air Training Command can provide most quantitative requirements in the form of technical school graduates (semi-skilled). It was pointed out to the commands however that upgrading must be accomplished at the using level. Such units should establish aggressive

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OJT programs. Contractor Technicians are generally provided and should be used to conduct upgrade training. Use should also be made of the Air Training Command's OJT advisory service as required. (CONFIDENTIAL)

The lack of aggressive OJT programs can be traced to the pressure of maintaining facilities in an operational status which leads to neglect of upgrade training. Airmen with "know-how" needed on the job are the same airmen who are most qualified to conduct upgrade training. In many cases, airmen with "know-how" would rather do the job than provide guidance to a young semi-skilled airman. (CONFIDENTIAL)

USE OF WARRANT OFFICERS IN THE C-E FIELD - In the past, there has been no firm USAF Warrant Officer program. W/O spaces did not appear in manning documents. However, W/O's were used to fill officer spaces. Funding for W/O pay was lumped with that of the officer area. The result was a lack of airmen interest in applying for warrant. Also, W/O's had no idea of their status or what to expect next. The Air Force is now required by law to determine where W/O's will be used. A team has been formed in the Directorate of Manpower and Organization, with representation from the Directorate of Communications-Electronics, to survey positions and determine what Warrants will fit. The team has now surveyed many positions at Barksdale and McMill Air Force Bases. Several airmen and junior officer positions were found suitable for Warrants. (UNCLASSIFIED)

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The Directorate of Manpower and Organization is finalizing criteria to send to the field. Commands will convert to Warrant Officer spaces based on the criteria we will furnish. (UNCLASSIFIED)

NEW WIRE MAINTENANCE CAREER FIELD - A new Wire Maintenance Career Field was implemented during this period. The following changes were made: (UNCLASSIFIED)

1. Maintenance of carrier repeater equipment transferred to the Radio-Radar field because of better compatibility.
2. Three specialties were established replacing the old outside plant specialty. They are lineman, cable splicer, and installer-repairman.

These changes will provide better utilization of personnel and will reduce training costs. (UNCLASSIFIED)

C-E OFFICER PERSONNEL - Communications-Electronics Staff Officers, AFSC 3016 and Communications Officers, AFSC 3034 have been removed from the list of limited resource specialties. The following statistics clearly show the reason for this action. This leaves only the Ground Electronics Officer, AFSC 3044 as a limited resource specialty. This action does not mean that our C-E skill level is satisfactory. There may be officers holding C-E duty AFSC's who are not qualified. A careful study of C-E officer qualifications is needed at all echelons. Those officers found to be unqualified should be encouraged to apply for technical training, to pursue C-E study through extension courses and other means of off-duty education. Reclassification action should be taken as appropriate. Hq USAF has no choice but to consider those officers reported under

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C-E duty AFSC's as fully qualified. All commands have been asked to look into this problem. (CONFIDENTIAL)

The following was the status of Permanent Party only at the middle of the reporting period: (CONFIDENTIAL)

	<u>AUTHORIZED</u>	<u>ASSIGNED</u>
3016 C-E Staff Officer	1,502	1,485
3024 ECM Officer	790	740
3034 Communications Officer	2,665	2,652
3044 Ground Electronics Officer	1,085	954
3054 Air Electronics Officer	796	723

REVIEW OF 16-1A TECHNICAL ORDER SERIES - A review of the old 16-1A Technical Order Series revealed that some of the technical orders were out of date and did not include many major end items of equipment contained in SFEL packages. The Directorate of Maintenance Engineering was requested to initiate action to include these items in a revision to the 31 Technical Order Series, previously 16-1A Series, titled, "Fixed Communications Equipment Directories." (UNCLASSIFIED)

REVIEW OF ARMY TECHNICAL MANUALS - Results of a review of Army Technical Manuals previously considered applicable to the Air Force indicated that 35 of the manuals could be dropped as they were no longer applicable. This action will result in a monetary savings to the Air Force since some of the manuals were scheduled for procurement by Headquarters Air Materiel Command. (UNCLASSIFIED)

PROPOSED AFM 100- "USAF CEI EXTRACTS" - Since initial distribution of the USAF Communications-Electronics Instructions in

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August 1952, experience has shown that this document has proven to be a valuable tool for communicators. However because of its classified registered status, the dissemination of information and instructions contained therein has been restricted. As a result of action taken during this period, the Air Adjutant General has tentatively approved the publication of an Air Force Manual 100- to be titled "USAF CEI Extracts." The proposed manual will contain selected unclassified information taken from the classified CEI and can be distributed without regard to security directives. The manual will supplement but not replace the existing CEI. Project AU 4736, Air University, will be charged with the responsibility of preparing the manuscript for this manual. Changes will be accomplished once every three months and will be extracts of the material contained in revision letters to the basic USAF CEI. (UNCLASSIFIED)

PRINTING OF USAF CEI REVISIONS - Because of difficulties in the production of classified printing at the Government Printing Office, arrangements were completed early in January 1955 transferring the printing responsibilities for the USAF CEI Revisions from GPO to the Air Force Field Printing Plant at Kelly Air Force Base. During the period that the CEI revisions were being printed at the GPO, distribution problems had been resolved and revisions were being shipped to all holders on schedule. (UNCLASSIFIED)

However, numerous delays have been encountered in the printing of CEI Revision Letters at the Air Force Field Printing Plant, Kelly Air Force Base. Action was initiated during this period by the branch to obtain a waiver from the GPO to permit procurement of camera-ready

copy or negatives from RCA. (the present Editorial Contractor for the USAF CEI). If approved, the delays presently experienced in publishing the CEI revisions would be eliminated thus permitting revisions to be printed on a scheduled basis. (UNCLASSIFIED)

USAF COMMUNICATIONS-ELECTRONICS INSTRUCTIONS (CEI) - Revision Letter No. 14 was printed and distributed during this period. This Revision contained page inserts for Chapters 2, 6, 8, 10, 12, 20, 23 and minor pen and ink corrections. Revision Letter No. 15 was in the process of being printed during this period and included Master Contents, a new type Master Index, Chapter 14 and Chapter 48. In addition, Chapters 5, 10, 11, 12, 18, 29 and 37 were reviewed by the USAF CEI Review Board and will be included in future revisions. (UNCLASSIFIED)

CHANGES IN MEMBERSHIP OF USAF CEI REVIEW BOARD - As a result of reassignment of personnel, the USAF CEI Review Board was reconstituted as shown below. The new members are Lt Colonel J. B. McKensie vice Lt Colonel W. J. Retsbach and Lt Colonel Mario E. Niccolini vice Colonel W. H. Lyle. (UNCLASSIFIED)

Colonel C. W. Gordon, Chairman

Lt Colonel C. R. Gajan

Lt Colonel J. B. McKensie

Lt Colonel M. E. Niccolini

ELECTRONICS MANAGEMENT WITHIN THE AIR STAFF - Increased attention to management problems in electronics was in evidence throughout the air staff during this period. At present, responsibilities for

electronics management are delegated to various directorates. Most of the programming responsibility belongs to the Directorate of Communications-Electronics. There is a need for closer unification and time-phasing of actions and planning and greater emphasis upon electronics problems - at least on a par with emphasis accorded aircraft problems. (UNCLASSIFIED)

Three solutions have been proposed. One suggestion proposed by the Director of Procurement and Production is that a working group be set up to discuss mutual problems and situations as they develop, and to institute coordinated, concerted action. All affected directorates would be represented. This group was eventually established as an interim measure but its present terms of reference do not extend to "phasing team" functions. (UNCLASSIFIED)

A second suggestion proposed that a permanent electronics committee be established to follow program implementation, recommend corrective action, and to serve as an official presentation group on electronics plans. This committee would serve both the Aircraft and Weapons Board and the Weapon Systems Teams. (UNCLASSIFIED)

A third suggestion, advanced by the Weapon Systems Committee, would establish an Electronics Committee and make it a permanent segment of the Aircraft and Weapons Board. Simultaneous with this, the weapon systems teams, as now organized in each DC/S, would be eliminated and their function transferred to the Aircraft and Weapon Systems Board. This would avoid duplication in the preparation of data on weapon progress. (UNCLASSIFIED)

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The Directorate of Communications-Electronics endorsed the third proposal in a memorandum to the Assistant for Programming, DCS/O on 29 June 1955. (UNCLASSIFIED)

PROPOSAL TO IMPROVE RESEARCH MANAGEMENT - This branch, in June 1955, studied a proposal by the Assistant for Development Programming, DCS/D, to improve the planning and management procedures for research and development in the Air Force. The need for this became evident because of misphasing and dislocations in operations between various elements of research activities. It was difficult to prepare a sound, phased budget program because quantitatively or dollar-wise it was difficult to relate (a) the article to be tested with, (b) the test beds required, (c) other test materials (mission support), (d) personnel needs, (e) housekeeping expenses, etc. (UNCLASSIFIED)

It is believed that the proposal will remedy this by re-grouping expenses under new titles. The branch, after a survey of the Communications-Electronics Directorate, prepared detailed comments as to how this might affect electronics. A list of proposed changes to the categories was prepared, and several suggestions were made to clarify definitions. The basic plan is sound and the objectives are desirable. (UNCLASSIFIED)

AIR FORCE COMMUNICATIONS-ELECTRONICS NEWS LETTER - The objective of the News Letter is to provide Communications-Electronics officers throughout the Air Force with important information affecting their activities and actions that are being taken by Headquarters USAF relating to Communications-Electronics. (UNCLASSIFIED)

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Numerous requests for additional copies were received from the field during this period. Action was therefore initiated by the branch which resulted in an increase in distribution from 700 to 1300 copies. Pages per issue were also increased from 32 to 36 which will result in additional current information being printed in the News Letter. (UNCLASSIFIED)

SPEECHES ON COMMUNICATIONS-ELECTRONICS - During this reporting period the branch was responsible for collecting material and preparing speeches on the following subjects: (UNCLASSIFIED)

1. Air Force Utilization of Leased G-E Facilities - Delivered before the Armed Forces Communications-Electronics Association at Dayton, Ohio on 20 January 1955. (UNCLASSIFIED)
2. Management of Communications-Electronics in the Air Force - Delivered before the Armed Forces Communications-Electronics Association at Fort McPherson, Georgia on 14 February 1955. (UNCLASSIFIED)
3. Future Problems in Military Communications - Delivered before the Joint Symposium of the Radio Technical Commission for Aeronautics and the Institute of Radio Engineers at Los Angeles on 5 April 1955. (UNCLASSIFIED)
4. Problems in Communications - Delivered before the Armed Forces Communications-Electronics Association at Kansas City in April 1955. (UNCLASSIFIED)

5. Air Force Communications and Electronics Systems and Networks
Delivered before the Annual Convention of the Armed Forces
Communications-Electronics Association at New York City on
19 May 1955. (UNCLASSIFIED)

COMMUNICATIONS-ELECTRONICS ARTICLES FOR PUBLICATION - The following articles relating to communications-electronics activities were processed by the branch for publication during this period:

1. An Introduction to Radio Telemetry (UNCLASSIFIED)
2. Wanted: A Radio Frequency (UNCLASSIFIED)
3. Tactical Air Command's Use of Electronics (UNCLASSIFIED)
4. Communications-Electronics in the Strategic Air Command
(UNCLASSIFIED)
5. USAF Strategic Communications System (UNCLASSIFIED)
6. Communications-Electronics in Continental Air Defense
(UNCLASSIFIED)
7. USAF Communications-Electronics Technical Orders
(UNCLASSIFIED)
8. Command Communications-Electronics Activities in Air Materiel
Command (UNCLASSIFIED)
9. Communications-Electronics Trends in Air Warfare (UNCLASSIFIED)

RELATIONS WITH ELECTRONICS INDUSTRY - Magazines and trade publications during this period reported considerable dissatisfaction by the electronics industry over Air Force contracting policies. This arose from the weapons system concept as expressed in AFR 70-9 which placed considerable new responsibility in the hands of airframe manufacturers for procuring components, including electronics airborne equipment.

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The electronics industry feared that (a) the airframe industry would launch into the manufacture of electronics, (b) that the airframe industry could successfully compete with the electronics industry because airframe manufacturers are highly subsidized, and (c) that various other undesirable and threatening developments would generate from AFR 70-9. (UNCLASSIFIED)

To determine what should be done by the Air Force to combat this incorrect interpretation by the electronics industry, a committee, with representation from AFOAC, was suggested by the Director of Procurement and Production. (UNCLASSIFIED)

The committee made a preliminary survey of the problem and arrived at a recommended solution. The principal suggestion constituted the initiation of an educational campaign by means of speeches, principally by general officers, to scientific, professional and trade associations of the communications-electronics industries. A coordinated position on the detailed issues was established by the committee between Hq USAF, AMC and ARDC. This position was supported by a considerable volume of source material. This material will be kept up-to-date and permanently filed in AFMPP for use by speech writers. (UNCLASSIFIED)

STATUS OF FY 1955 PROCUREMENT - FY 1955 directed procurement in P-230 as of 30 June 1955 amounted to \$614.0 million as compared with FY 1955 Budget Estimate of \$405.0 million. (CONFIDENTIAL)

FY 1956 BUDGET - The Air Force Budget, as approved by the Congress, included \$436.9 million for P-230. (UNCLASSIFIED)

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FY 1956 C-E BUYING PROGRAM - The FY 1956 C-E Buying Program in P-230 was computed by Headquarters AMC at \$811.8 million. The program will be reviewed at Headquarters USAF during August 1955 and a firm program will be directed soon thereafter. (CONFIDENTIAL)

PC-57-1 - PC-57-1, based on PD-57-1, was published in January 1955. (UNCLASSIFIED)

INCLUSION OF AN/VRC-19 IN PC - Requirements for Vehicular Radio Set, AN/VRC-19 as part of a Base Non-tactical Radio System are now programmed in accordance with AFR 100-46 and included in the PC along with the fixed station equipment. The total PC program for this equipment was developed from an Air Force-wide report on requirements and assets. (UNCLASSIFIED)

AF FORMS 1295 AND 1295A - Two new AF forms, 1295 and 1295A, were placed in use during January 1955. Form 1295 is required for submission of all new facility requirements, deletions, or changes which will require additional equipment. It provides considerable detailed information not previously available in consideration of requirements by Headquarters USAF. (UNCLASSIFIED)

Form 1295A is substantially the same as the pages of the PC document. It is used to list the detailed equipment requirements in support of facility requests. It is also used for submission of routine and administrative changes to the PC. (UNCLASSIFIED)

PROGRAMMING FOR CERTAIN FIXED METEOROLOGICAL FACILITIES - Programming for certain fixed meteorological facilities now falls under the provisions of AFR 100-46. This policy was established by Headquarters USAF message ALMAJCOM 785/55, 17 June 1955. AFR 100-46,

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HOI 100-6, and other related directives will be revised to reflect this policy. Authority for approval of facility requirements will rest with the Director of Operations, DCS/O, based on the Approved Weather Service Facilities Program submitted by Commander, Air Weather Service. (UNCLASSIFIED)

DIRECTORATE ADMINISTRATIVE INSTRUCTION 10-7 - DAI 10-7, "Processing of Requirements for Fixed C-E Facilities," was published on 27 June 1955. Its purpose is "to establish procedures for the receipt, processing and control of fixed C-E facility requirements submitted on AF Forms 1295 and 1295A, under the provisions of AFR 100-46 and Instructions to PC document." This is the first time the internal procedures and guidance for administration of the PC has been formalized. (UNCLASSIFIED)

TAC SHORAN PLAN - At a conference held at this headquarters on 30 July 1954, it was decided that the problem of modernizing the operational concept of Shoran units supporting a Tactical Air Force should be solved by Tactical Air Command. In February 1955, we were informed by TAC that they were completing a plan which will cover the reorganizing and equipping of Shoran units on a world-wide basis. The plan would be coordinated with all interested commands prior to dispatch to Headquarters USAF. The plan was received in this headquarters during the early part of April 1955. It appeared to be well prepared. Complete coordination was not obtained, however, due to geographic and other differences between FEAF and USAFE. Therefore, provisions had been made to allow commanders to support

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their organizations under any variation of climate, geographical and tactical requirements. The plan was forwarded to the Director of Manpower and Organization recommending approval. (UNCLASSIFIED)

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