THIS FILE IS MADE AVAILABLE THROUGH THE DECLASSIFICATION EFFORTS AND RESEARCH OF:

THE BLACK VAULT

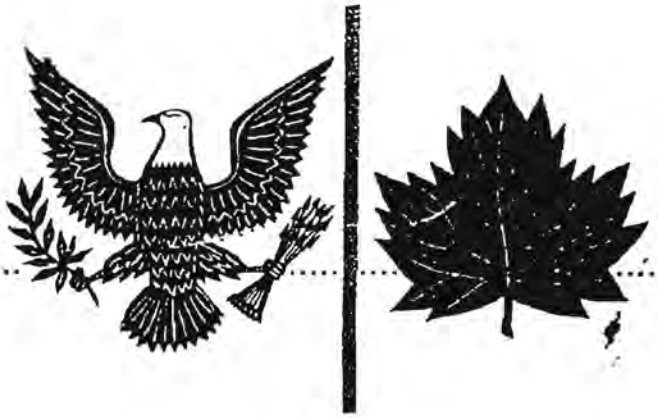
THE BLACK VAULT IS THE LARGEST ONLINE FREEDOM OF INFORMATION ACT / GOVERNMENT RECORD CLEARING HOUSE IN THE WORLD. THE RESEARCH EFFORTS HERE ARE RESPONSIBLE FOR THE DECLASSIFICATION OF THOUSANDS OF DOCUMENTS THROUGHOUT THE U.S. GOVERNMENT, AND ALL CAN BE DOWNLOADED BY VISITING:

HTTP://WWW.BLACKVAULT.COM

YOU ARE ENCOURAGED TO FORWARD THIS DOCUMENT TO YOUR FRIENDS, BUT PLEASE KEEP THIS IDENTIFYING IMAGE AT THE TOP OF THE .PDF SO OTHERS CAN DOWNLOAD MORE!

~~CONFIDENTIAL~~

[redacted]



norad/conad

HISTORICAL SUMMARY

UNCLASSIFIED

JANUARY – JUNE 1961

[redacted]

~~CONFIDENTIAL~~

~~DOWNGRADED AT 12 YEAR~~
~~INTERVALS; NOT AUTOMATICALLY~~
~~DECLASSIFIED. DOD DIR 5200.10~~
See NSA Memo, 17 Jun 97

FF NO N-2K200.E

DEC 14 2006

MEMORANDUM FOR HQ NORAD/USNORTHCOM/HO

FROM: HQ NORAD/J3

SUBJECT: Declassification Review of Histories

1. The NORAD/CONAD histories for the periods specified in your 30 October 2006 memo have been reviewed and are now declassified except for the following sections below. The justification for retaining the classification follows each description.

a. NORAD/CONAD Historical Summary, July—December 1958, page 65. Document still has information based on today's concepts tactics and objectives.

b. NORAD/CONAD Historical Summary, July—December 1958, pages 110-111. Document describes readiness conditions that are still valid today.

c. NORAD/CONAD Historical Summary, January—June 1959, pages 67-71. Document describes some current rules of engagement.

d. NORAD/CONAD Historical Summary, January—June 1959, pages 73 and 74. Document describes some current tactics and rules of engagement.

e. NORAD/CONAD Historical Summary, July—December 1959, pages 55-58. Document describes some current capabilities and procedures.

f. NORAD/CONAD Historical Summary, July—December 1959, pages 59-61. Document describes current rules of engagement.

g. NORAD/CONAD Historical Summary, January—June 1960, pages 37-39. Document describes readiness conditions that are still valid today.

h. NORAD/CONAD Historical Summary, January—June 1961, pages 23-26. Document describes some current tactics and rules of engagement and also could reveal information that would impact the application of state of the art technology.

i. NORAD/CONAD Historical Summary, January—June 1961, page 37. Document describes information that would impact the application of state of the art technology.

j. NORAD/CONAD Historical Summary, January—June 1962, pages 35 and 36. Document describes information that would seriously and demonstrably impair relations between the United States and a foreign government.

k. NORAD/CONAD Historical Summary, July—December 1962, pages 47 and 48. Document describes current tactics.

l. NORAD/CONAD Historical Summary, July—December 1963, pages 59 and 60. N/J3 does not have the authority to declassify these pages. Recommend deferring to NSA for resolution.

m. NORAD/CONAD Historical Summary, July—December 1963, pages 63-65. Document describes current capabilities and tactics.

n. NORAD/CONAD Historical Summary, January—June 1964, pages 57-

58. Document describes capabilities, limitations and deficiencies of warning systems.

o. CONAD Command History, 1968, pages 111 and 112. Document describes current limitations, tactics, and capabilities.

p. CONAD Command History, 1968, page 117. Document reveals current vulnerabilities of systems or projects relating to the national security.

q. CONAD Command History, 1968, pages 171-173. N/J3 doesn't have the technical expertise to evaluate the classification of Chapter VII, Communications. Please refer to N-NC/J6.

2. The POC for this review is Mr. Michael Allen, 4-3607.

BRETT D. CAIRNS
Major-General, CF
Director of Operations

NORTH AMERICAN AEROSPACE DEFENSE COMMAND
AND
UNITED STATES NORTHERN COMMAND

30 October 2006

MEMORANDUM FOR HQ NORAD/J3

FROM: HQ NORAD-USNORTHCOM/HO

SUBJECT: Declassification Review of Histories

1. HO requires the attached documents to be reviewed by 30 November 2006. Executive Order (E.O.) 12958, "Classified National Security Information," as amended by E.O. 13292 requires a review of classified documentation more than 25 years old. The attached documents have undergone prior declassification review, however, the E.O. requires that the still classified sections be reviewed again by the end of this calendar year, to prevent them from being automatically declassified.

2. The NORAD-USNORTHCOM History Office (HO) maintains NORAD, Continental Air Defense (CONAD), and Air/Aerospace Defense Command (ADCOM) histories, studies, and other documentation that fall into this category. In order to comply with the Executive Order, HO will forward these documents on a systematic basis to functional experts within the NORAD staff to complete this review.

3. During the review process, if any of the material within the documentation still requires protection, please mark those portions (e.g., words, phrases, sentences, paragraphs, pages) with red brackets([ ]). Justification must be rendered for any material that is determined to be exempt from the 25-year declassification process per E.O. 12958, as amended (E.O. 13292) Section 3.3 (b) -- An agency head may exempt from automatic declassification ... the release of which could be expected to:

-b(1) reveal the identify of a confidential human source, or a human intelligence source, or reveal information about the application of an intelligence source or method;

-b(2) reveal information that would assist in the development or use of weapons of mass destruction;

-b(3) reveal information that would impair U.S. cryptologic systems or activities;

-b(4) reveal information that would impair the application of state of the art technology within a U.S. weapon system;

-b(5) reveal actual U.S. military war plans that remain in effect;

-b(6) reveal information, including foreign government information, that would seriously and demonstrably impair relations between the United States and a foreign government, or seriously and demonstrably undermine ongoing diplomatic activities of the United States;

-b(7) reveal information that would clearly and demonstrably impair the current ability of United States Government officials to protect the President, Vice President, and other protectees for whom protection services, in the interest of the national security, are authorized;

-b(8) reveal information that would seriously and demonstrably impair current national security emergency preparedness plans or reveal current vulnerabilities of systems, installations, infrastructures, or projects relating to the national security; or

-b(9) violate a statute, treaty, or international agreement.

4. Once the declassification review is complete, please prepare a memorandum for the director's / vice director's signature, i.e., the directorate's Original Classification Authority (OCA), which states:

a. The CONAD/ADC/ADCOM/NORAD/USSPACECOM (as appropriate) history(ies) for the period(s) have been reviewed and are now declassified; or

b. The CONAD/ADC/ADCOM/NORAD/USSPACECOM (as appropriate) history(ies) for the period(s) have been reviewed and are now declassified except for the following sections: _____. The justification for retaining the classification is *(per paragraph 3)*.

5. Request the NJ3 staff review the attached documents per Executive Order 12958 and the instructions in paragraphs 2 and 3 above. HQ NORAD/HO POC is Patricia Goude at 4-5999. Please complete the review by 30 November 2006.

THOMAS FULLER
Command Historian

Attachments:

a. NORAD/CONAD Historical Summary Jul 58 to Dec 58 — p. 65 remains (C); pp. 110 & 111 remain (S)
Pages: 57-59, 64-66, 68, 69, 76, 89 (CONFIDENTIAL); 110, 111 (SECRET) pp. 57-59, 64, 66, 68, 69, 76 & 89 (U)

b. NORAD/CONAD Historical Summary Jan 59 to June 59 - all pages remain (C)
Pages: 67-71, 73, 74 (CONFIDENTIAL)

c. NORAD/CONAD Historical Summary Jul 59 to Dec 59 - pp. 55-56(C), 57-58(S)
Pages: 55-65 (CONFIDENTIAL) pp. 60-62 remain (C) pp. 63-65 (U)

d. NORAD/CONAD Historical Summary Jan 60 to Jun 60 - pp. 37-39 remain (C)
Pages: 37-39 (CONFIDENTIAL)

e. NORAD/CONAD Historical Summary Jul 60 to Dec 60 pp. 45-50 (U)
Pages: 45-50 (CONFIDENTIAL)

f. NORAD/CONAD Historical Summary Jan 61 to June 61
Pages: 20, 22-26, 28-32, 37-39 (CONFIDENTIAL)
pp 23-26 remain (c)
p 37 remains (c) pp. 20, 22, 28-32, 38, 39 (u)

g. NORAD/CONAD Historical Summary Jul 61 to Dec 61
Pages: 17, 18 (CONFIDENTIAL)
pp. 17 & 18 (u)

h. NORAD/CONAD Historical Summary Jan 62 to Jun 62
Pages: 35, 36 (CONFIDENTIAL)
pp. 35 & 36 remain (c)

i. NORAD/CONAD Historical Summary Jul-Dec 62 / Apr 63
Pages: 47, 48 (CONFIDENTIAL)
pp. 47 & 48 remain (c)

j. NORAD/CONAD Historical Summary Jul 63 to Dec 63
Pages: 59, 60, 63-65 (SECRET)
pp. 59 & 60 - refer to NSA
pp. 63-65 remain (s)

k. NORAD/CONAD Historical Summary Jan 64 to Jun 64
Pages: 57, 58 (SECRET)
pp. 57 & 58 remain (s)

l. NORAD/CONAD Historical Summary Jan 68 to Dec 68
Pages: 6-10, 43, 44, 67-70, 81-88, 93-96, 98-122, 147-154, 159-162, 171-174
(CONFIDENTIAL/SECRET)
pp. 6-10, 43, 44, 67-70, 81-88, 93-96, 98-110, 113-116, 118-122, 147-154, 159-162, 174 (u)
pp. 111 & 112 remain (s), 117 remains (s)
pp. 171-173 refer to N-NC/JH

NORTH AMERICAN AIR DEFENSE COMMAND and CONTINENTAL AIR DEFENSE COMMAND

HISTORICAL SUMMARY

JANUARY – JUNE 1961

1 NOVEMBER 1961

Directorate of Command History
Office of Information
Headquarters NORAD/CONAD

NORTH AMERICAN AEROSPACE DEFENSE COMMAND
AND
UNITED STATES SPACE COMMAND

NORAD/USSPACECOM
Office of the Joint Secretary
250 S. Peterson Blvd Ste 116
Peterson AFB CO 80914-3010

30 JUL 1997

Mr. Hans M. Kristensen
6435 Hazel Avenue
Richmond, CA 94805

Dear Mr. Kristensen

This correspondence is in response to your requests to review, declassify and release NORAD/CONAD Historical Summary for the period Jan - Jun 61.

For your information, Title 5 United States Code (U.S.C.)., Section 552, the Freedom of Information Act (FOIA), is a United States (US) statue and is only applicable to US agencies as defined in Title 5 U.S.C., sections 551 and 552. NORAD is a binational command established by 33 United States Treaties, (UST) 1277, subject to control of both Canadian and US Government agencies as defined in the Act and consequently is not subject to the US FOIA.

However, it is our policy under NORAD Instruction 35-17, Processing Requests for NORAD Records, to release records or information where documents or information are not security classified or considered "NORAD Sensitive" and are cost efficient to provide. In this case, we are pleased to provide you with the attached declassified NORAD/CONAD Historical Summary Jan-Jun 61. The only items still considered security classified are those areas which are blocked out on pages 20, 22 to 26, 28 to 32, and 37 to 39. We hope this historical summary helps you with your research efforts as a DoD Category Two (educational/news media) writer.

If you have any further questions and/or comments, please contact Major Jamie Robertson, Deputy Director of NORAD Public Affairs at (719) 554-5816 or Mr. Scott Johnson, Chief, Products Branch, at extension 3714.

NORTH AMERICAN AEROSPACE DEFENSE COMMAND

17 JUN 1997

MEMORANDUM FOR HQ NORAD/HO

FROM: N/J3

SUBJECT: NORAD Information Request - NORAD/CONAD History, Jan-Jun 61

1. We have reviewed the subject document and are pleased to provide a large portion of it for release. The NORAD/CONAD History (Jan-Jun 61) is declassified with the exception of sections marked with brackets on pages 20, 22-26, 28-32 and 37-39.

2. If you have any questions concerning this document please contact Major Hamlett, 554-5186.

G. KEITH McDONALD
Major-General, CF
Director of Operations

Thank you for your continuing interest in the North American Aerospace Defense Command.

Sincerely

RODNEY S. LUSEY
Colonel, USA
Joint Secretary

Attachment:
NORAD/CONAD Historical Summary
Jan - Jun 61 (less classified portions)

cc:
NJ3
HO

FOREWORD

This historical summary is one of a series of semiannual reports on the North American Air Defense Command and the Continental Air Defense Command. These summaries bring together in a single document the background and progress of key activities of NORAD/CONAD. The purpose of these reports is two-fold:

First, they provide commanders and staffs a continuing reference and orientation guide to NORAD/CONAD activities.

Secondly, they preserve for all time the record of NORAD/CONAD activities.

1 November 1961

LAURENCE S. KUTER
General, USAF
Commander-in-Chief

[redacted]

SECURITY NOTICE

CLASSIFICATION

This document is classified [redacted] in accordance with paragraph 10b (11), AFR 205-1, and Canadian Air Publication 425. It will be transported, stored, safeguarded, and accounted for as directed by AFR 205-1, AR 380-5, OPNAV Instruction 5510.1B, CAP 425, CAO 255-1, and CBCN 5101.

WARNING

This document contains information affecting the defense of the United States and Canada within the meaning of the U. S. Espionage Laws, Title 18, U. S. C., sections 793 and 794, and Canadian Air Publication 425. The transmission or revelation of its contents in any manner to an unauthorized person is prohibited by law.

CONDITIONS OF RELEASE

Information in this document is obtained from U. S. and Canadian Sources. It incorporates data from documents developed in support of war plans for which the JCS and COSC are responsible by statute. It is furnished upon the conditions that:

Distribution or release of information contained herein to agencies not listed is prohibited. Requests for further distribution will be submitted to the JCS for consideration.

It will be used only for purposes of national security.

Individual or corporate rights originating in the information, whether patented or not, will be respected.

The information will be provided substantially the same degree of security afforded it by the Department of Defense of the United States and the Department of National Defence of Canada.

*This page is marked [redacted] in accordance with paragraph 34a, AFR 205-1. However, its actual classification is UNCLASSIFIED.

[redacted]

NI-24206-E

CONTENTS

FOREWORD		v
MAPS & CHARTS		ix
HIGHLIGHTS OF THE PERIOD		xii
CHAPTER		
I	ORGANIZATION	1
	REGIONS AND SECTORS	1
	NORAD/CONAD HEADQUARTERS	13
II	BALLISTIC MISSILE AND SPACE DEFENSE	15
	SPACE DETECTION AND TRACKING SYSTEM	15
	BALLISTIC MISSILE EARLY WARNING SYSTEM	27
	MISSILE DEFENSE ALARM SYSTEM	30
	NIKE ZEUS	32
III	SURVEILLANCE - MANNED BOMBER DEFENSE	34
	LAND BASED RADARS	34
	OFF-SHORE FORCE	41
	DEW LINE EXTENSIONS	43
	NUCLEAR DETONATION REPORTING	45
	CHEMICAL AND BIOLOGICAL WARNING SYSTEM	47
IV	WEAPON FORCE - MANNED BOMBER DEFENSE	48
	INTERCEPTOR FORCE	48

	MISSILE FORCE	56
V	COMMAND AND CONTROL STRUCTURE	61
	SYSTEM SURVIVABILITY	61
	NEW NORAD COMBAT OPERATIONS CENTER	65
	ALTERNATE COMMAND POST	67
	SAGE/MISSILE MASTER INTEGRATION TESTS	69
	ALRI AND SLRI PROGRAMS	72
	NORTHERN AREA COMMUNICATIONS	75
VI	OPERATIONAL POLICIES AND PROCEDURES	78
	TRAINING	78
	CONTINGENCY PLANNING (SOUTHERN TIP)	81
	IDENTIFICATION AND AIR TRAFFIC CONTROL	89
	WARNING SYSTEMS AND AGREEMENTS	93

MAPS AND CHARTS

NORAD Operational Boundaries, 1 August 1961 2

U. S. Army Air Defense Command Assigned Areas of Responsibility, 1 August 1961 4

NORAD Region Headquarters Organization 7

NORAD Sector Headquarters Organization 10

NORAD Surveillance Systems - Manned Bomber Defense, 30 June 1961 35

NORAD Interceptor Force, 30 June 1961 49

NORAD Missile Force, 30 June 1961 58

[redacted]

HIGHLIGHTS OF THE PERIOD

ORGANIZATION

The NORAD plan for the organization and manning of NORAD/CONAD region and sector headquarters (excluding those in Canada and Alaska) was approved by JCS on 3 April. It was to be implemented on 1 August 1961.

NORAD/CONAD regions were cut from nine to eight with the discontinuance of the 33d Region on 1 July. The 29th Headquarters was moved to Richards-Gebaur AFB, Missouri, and the 33d's area divided between the 29th and 32d Regions. This marked about the end of major, continuous organizational changes.

NORAD/CONAD Headquarters was authorized an increase of 39 manpower spaces by JCS on 19 June for use in performing newly-assigned SPADATS mission.

BALLISTIC MISSILE AND SPACE DEFENSE

On 12 June, the SPADAT function, performed by the USAF facility at Hanscom Field, was assumed by the SPADAT Center at Ent AFB.

JCS told NORAD on 5 April that the assignment of SPADATS was not to be restricted to the two existing systems - Spacetrack and Spasur. NORAD could plan for, and request operational control of, additional sensors and systems necessary for the SPADATS mission.

NASA and DOD concluded an agreement on 16 January which

[redacted]

[redacted]

further amplified NORAD's authority and responsibility in space detection and tracking. In general terms, the agreement gave NASA the non-military responsibilities in space activities and DOD the military.

On 20 April, CONAD submitted to JCS a composite requirements document for a space surveillance system which comprised the requirements of NORAD/CONAD, the military departments, the unified and specified commands, NASA, and the U. S. Intelligence Board. The document contained the qualitative requirements for an advanced system as well as the requirements for an interim system capability.

BMEWS achieved a two-site detection capability on 30 June when Site 2 at Clear, Alaska, attained an initial operational capability.

USAF informed USAF ADC on 12 June that no tracking radar was programmed for the Clear, Alaska, BMEWS site. Operational capability for the Thule, Alaska, tracking radar was scheduled for 31 December 1961.

The Secretary of Defense told Air Force on 16 January that MIDAS, when developed, would be operated by ADC under the operational control of CINCNORAD and operational command of CINCONAD.

SURVEILLANCE - MANNED BOMBER DEFENSE

First of the new frequency diversity FPS-26 height finder radars was installed at Hunter AFB, Georgia, in mid-May.

Six gap-filler stations in the Goose NORAD/CONAD sector were closed down by 1 July.

Continuance of the Pacific Barrier was directed by the Secretary of Defense in March.

[redacted]

Limited implementation of the Seaward Extension Transition Program (SETP) began on the west coast in February with the repositioning of APS-95-equipped AEW&C aircraft inboard of picket ships.

NORAD WEAPON FORCE - MANNED BOMBER DEFENSE

Two Canadian interceptor squadrons were disbanded during April and May. Two more were to be dropped during the last half of the year, cutting the Canadian interceptor force from nine to five squadrons.

Canadian and U. S. Governments agreed on 12 June to a transfer of 66 F-101B aircraft from USAF ADC to RCAF ADC. The transfer was to begin in July 1961.

Final selection was made of 25 ANG squadrons which would give NORAD a first-line interceptor augmentation. As of 1 July, all 25 squadrons had a 24-hour alert commitment.

The Army National Guard air defense augmentation force became totally missile-armed on 1 March.

The programmed force of 76 Army National Guard Ajax fire units was achieved in April.

First Bomarc B squadron became operational on 1 June. Six of the 10 Bomarc squadrons were now operational.

COMMAND AND CONTROL STRUCTURE

Excavation for the NORAD hardened COC in Cheyenne Mountain began on 18 May.

A revised NORAD ALCOP plan was issued on 22 May in

[redacted]

compliance with a JCS directive. A requirements plan to improve the existing NORAD ALCOP was submitted on 22 June.

An initial plan for extensive expansion of the manual backup to SAGE was submitted in April. The requirement for a broader backup system resulted from the cancellation of the SCC program in 1960.

Evaluation testing of the effectiveness of the SAGE/Missile Master System against manned bombers employing ECM was initiated early in the year and was to continue throughout 1961. Bearing the code name DEEP RIVER, the operation was the third phase of a program begun in 1958 to test and improve the SAGE/MM System.

NORAD's efforts in June to re-instate the ALRI program for west coast AEW&C units met with defeat because of fund limitations.

OPERATIONAL POLICIES AND PROCEDURES

USAF stopped all practice intercepts against SAC aircraft on 8 April because of the shooting down of a SAC B-52 by an ANG F-100. SAC/NORAD intercept training was resumed on 15 June with unarmed interceptors only.

To find a solution to its ECM training problem, NORAD sent a requirement to USAF ADC for a detachable pod that could be carried by any faker aircraft. Recent development in electronics had made it feasible to package enough ECM equipment in pods to exercise all NORAD forces.

CONAD, at JCS direction, ordered the 32d CONAD Region to begin test of the "Southern Tip" contingency plan on 12 April. This plan employed augmentation forces to increase the air defenses of the Southern Florida area. More permanent defenses for the area were planned at mid-year.

[redacted]

On 13 February, JCS approved the discontinuance of the basic Mark X IFF in the continental aircraft control and warning system on 1 July 1961.

SAC recommended to JCS, on 19 July, immediate implementation of the NORAD-proposed limited Mark XII system. NORAD had asked JCS on December 1960 for a limited implementation of the system.

At the request of USAF, NORAD forwarded on 12 April a reevaluation of the requirement for an ADIZ along the Mexican border. NORAD said the requirement remained but was of lesser significance, since the Southern ADIZ was now a less probable avenue of enemy approach.

On 6 June, NORAD told its regions to develop, in agreement with DOT regional directors, procedures for the implementation, ending, and testing of the Canadian ESCAT Plan.

A Memorandum of Understanding between NORAD and Canadian Army, defining the responsibilities of the NORAD regions and the Canadian Army Regional Warning Information Centers, was signed by NORAD on 13 March and Canadian Army on 17 July.

[redacted]

ONE
ORGANIZATION

REGIONS AND SECTORS

REORGANIZATION

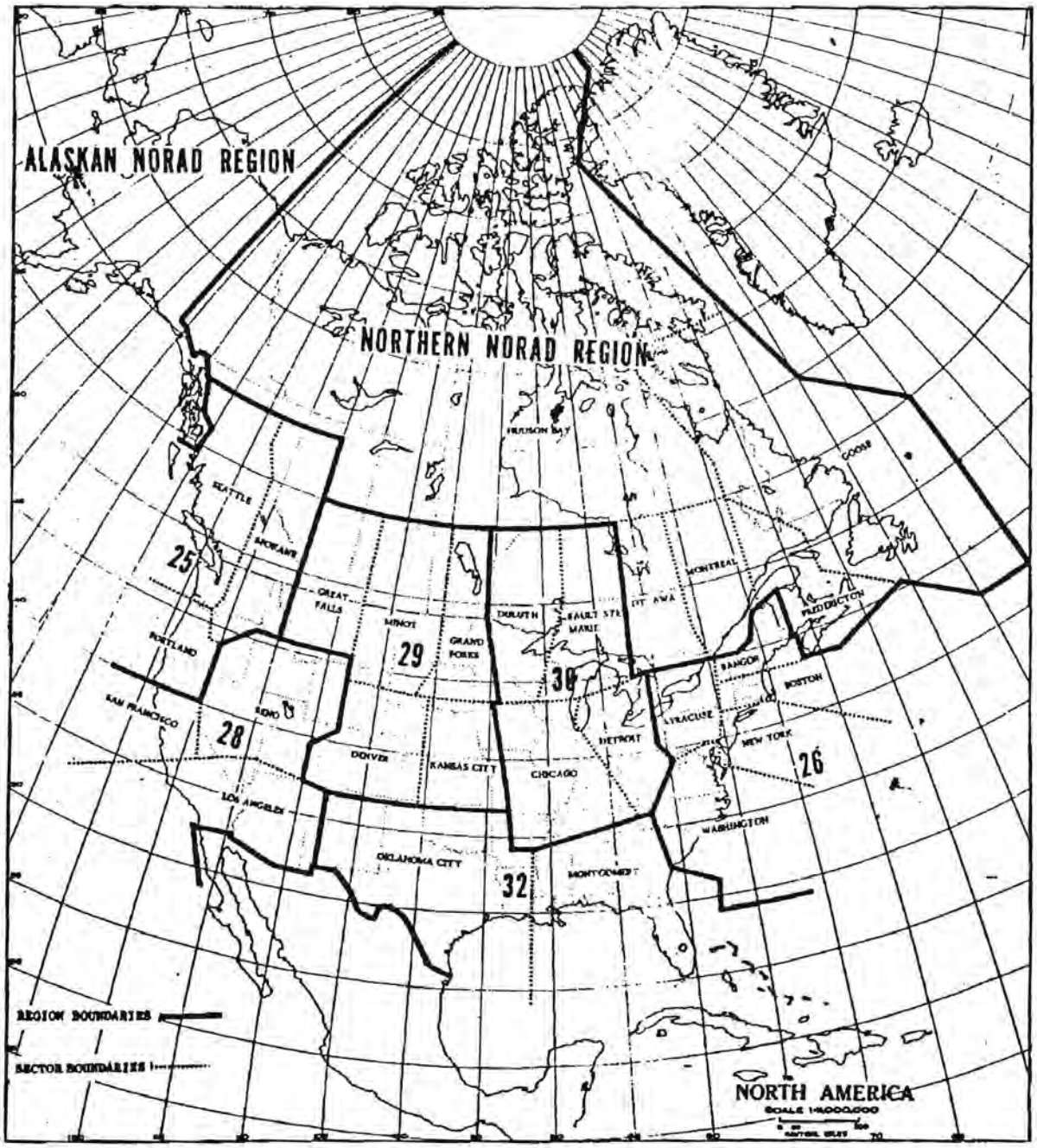
Background. To accommodate the semi-automatic ground environment (SAGE) system, the original plan of NORAD/CONAD was to establish a seven-region structure within the continental U. S. Seven numerically-designated regions had been established in the continental U. S. by July 1960 (there were also the Alaskan NORAD/CONAD Region and the Northern NORAD Region). USAF Air Defense Command had similarly reorganized its structure and established seven SAGE divisions by July 1960. The U. S. Army Air Defense Command established a sixth region, the 7th Region ARADCOM, at McChord AFB, Washington, on 26 July 1960.

Back in 1959, NORAD/CONAD and USAF ADC had changed their organization plans when they adopted, and USAF approved, a plan to install improved SAGE computers in hardened facilities at nine combat centers within the continental U. S. These were to be called Super Combat Centers. After reaching seven regions/divisions, they planned to add two more for a total of nine. However, the Super Combat Center program was cancelled by the Air Force in 1960 and the organization plans had to again be revised.

A new organization plan was developed by NORAD calling for six regions within the continental U. S. Since as of 1 July 1960 there were already seven regions in the U. S., this meant that one region had to be discontinued.

In addition to the seven regions within the U. S.

[redacted]



NORAD OPERATIONAL BOUNDARIES
1 August 1961

[redacted]

as of 1 January 1961, the reorganization actions taken by this date had established 20 sectors (there were also four sectors in Canada).

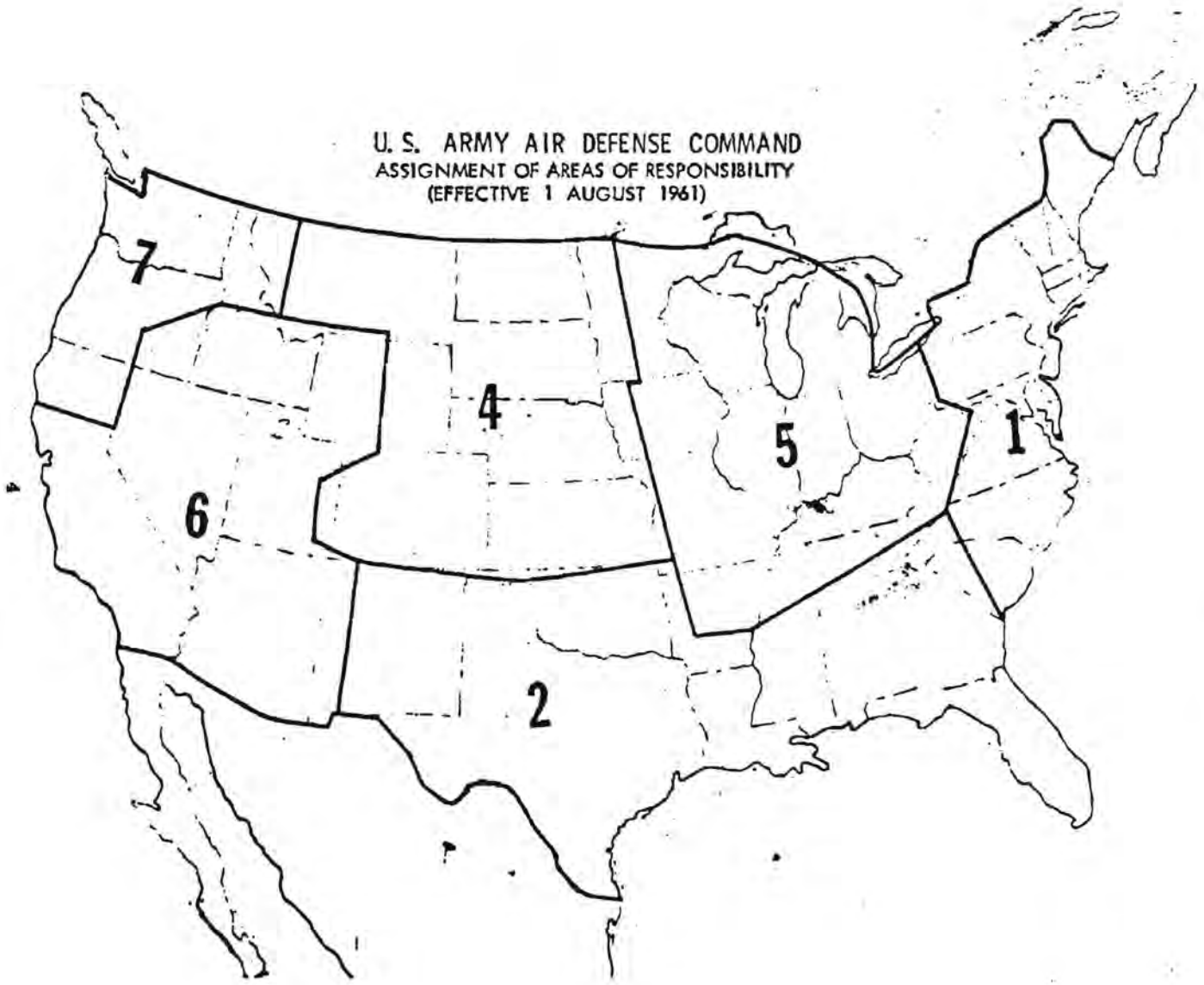
NORAD/CONAD Organizational Changes and Status (1 January to 1 August 1961). In keeping with the plan for six regions in the U. S., effective 1 July 1961, the 33d NORAD/CONAD Region, Richards-Gebaur AFB, Missouri, was discontinued. USAF ADC also discontinued its 33d Air Division (SAGE) on the same date. The 33d Region area was to be divided between the 29th and 32d Regions. So on 1 July, the headquarters location of the 29th NORAD/CONAD Region was changed from Malmstrom AFB, Montana, to Richards-Gebaur AFB. The 29th Air Division (SAGE) Headquarters also was moved to the latter base at this time. Then, on 1 August 1961, the headquarters of the 32d NORAD/CONAD Region and the 32d Air Division (SAGE) were moved from Dobbins AFB, Georgia, to Oklahoma City AFS, Oklahoma. The map on the preceding page shows the boundaries as of 1 August, following these moves.

The U. S. Army Air Defense Command moved its 2d Region Headquarters from Fort George G. Meade, Maryland, to Oklahoma City on 1 August. ARADCOM also readjusted its region boundaries to coincide with those of NORAD/CONAD.

1 August 1961 marked about the end of three years of major, continuous organizational changes in the NORAD/CONAD system. For the foreseeable future, this was about the end of region establishment or discontinuance and changes in region boundaries. As of 1 August 1961, NORAD/CONAD, USAF ADC, and ARADCOM had six major subordinate commands each in the U. S. and common boundaries.

Four new sectors were named by 1 August 1961. These were the Sioux City NORAD/CONAD Sector and the Phoenix NORAD/CONAD Sector established on 1 August 1961 (neither had yet become operational); and the Hudson Bay NORAD Sector established on 16 January 1961 and the Denver NORAD/CONAD Sector designated on 1 July 1961. Neither the Hudson Bay Sector nor the Denver Sector had a headquarters. Both were established so that all areas would have a designation. The term "sector" was used

[redacted]


U. S. ARMY AIR DEFENSE COMMAND
ASSIGNMENT OF AREAS OF RESPONSIBILITY
(EFFECTIVE 1 AUGUST 1961)
7
4
5
1
6
2

[redacted]

rather than some other name, such as "area," so as to avoid confusion and to keep the NORAD/CONAD subordinate structure uniform.

As of 1 August, there were a total of 28 NORAD sectors.

REGION AND SECTOR HEADQUARTERS

In a memorandum dated 3 April 1961, the JCS approved, with some minor changes, the Plan for the Organization of NORAD/CONAD Region and Sector Headquarters. This plan had been submitted on 28 October 1960.* NORAD's plan covered six regions and 21 operational sectors within the continental U. S. It did not apply to the Alaskan NORAD/CONAD Region which was organized in accordance with the desires of the Commander-in-Chief Alaskan Command or to the Northern NORAD Region which was organized on an integrated basis 1 November 1959.

The JCS approved an implementation date of 1 April 1961 as requested by NORAD. However, NORAD set 1 August 1961 as the date that the region and sector headquarters would be officially established. This allowed time for planning. Letters were sent to each region on 18 May 1961 advising them of the JCS approval and providing a revised plan for the region/sector organization (which incorporated the JCS modifications) and region and sector joint headquarters tables of distribution. Region commanders were told to implement their portions of the plan, to include sectors, on 1 August. Then after six months operation, they were to submit recommendations for improving the operational capability of the organization. NORAD would keep control and accountability of the manpower resources reflected on the JTD and publication of the JTD's.

---

* See NORAD/CONAD Historical Summary, Jul-Dec 1960, pp 8-10, for a discussion of this plan and its predecessor submitted in February 1960.

[redacted]



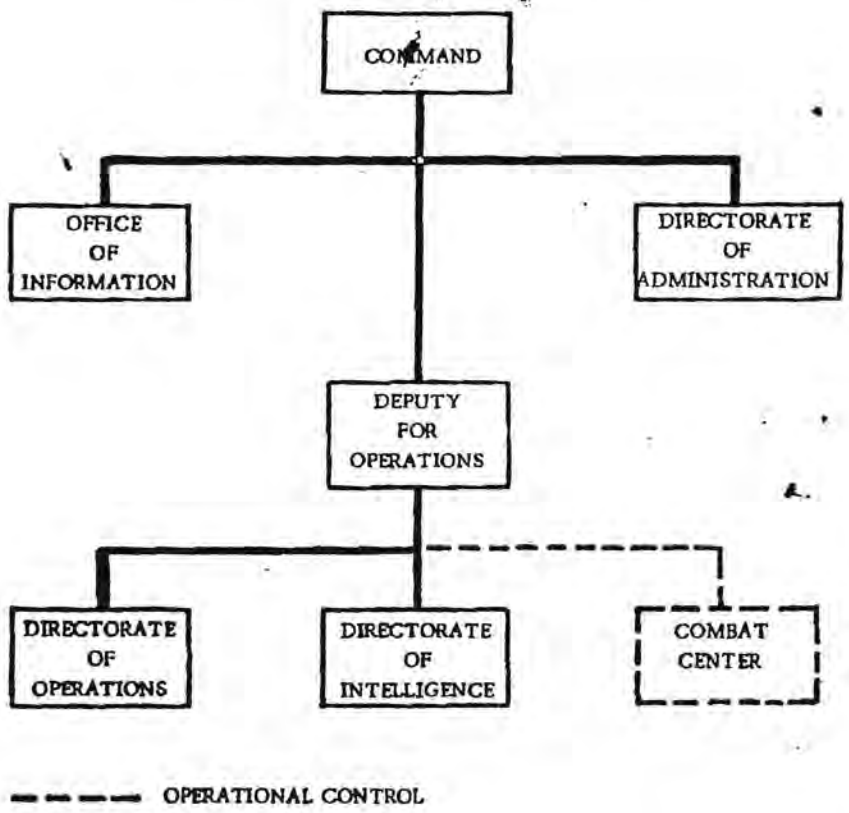
This new organizational plan, which incorporated the JCS changes, dated 1 April 1961, laid down the following guidelines and principles. Regions were to have an integrated joint staff. However, because of the shortage of general officers, there was to be a dual-role arrangement for the command positions (this was a provision that NORAD had placed in its February and October 1960 plans). The region commander, by prior agreement with and approval by CINCNORAD, could be additionally designated as the commander of his service component at region level. The commander of the NORAD region, being a U. S. national, was also to be designated as the CONAD region commander.

One region, the 28th, Hamilton AFB, California, would have an Army general officer as its commander. He would also command the 6th Region ARADCOM under this dual-capacity arrangement. The other five regions in the U. S. were to be commanded by USAF general officers. Northern NORAD Region was commanded by an RCAF officer and Alaskan NORAD/CONAD Region by a USAF officer.

The deputy commander of a region was to be an additional-duty designation of an officer of the service other than that of the region commander. The senior officer of the appropriate service assigned to the NORAD region staff or service component was to be so designated. To be qualified, the officer had to be eligible for command and present for duty. Because this was an additional duty position, it was not to be carried on the NORAD Joint Table of Distribution. In those regional headquarters where a Canadian was named for a deputy command position (25th, 29th, and 30th Regions), he was to be known as the NORAD Vice Commander. The dual-capacity U. S. deputy commander was to be under the Vice Commander.

The region combat center was an Air Force-provided facility, manned and operated by the USAF component, except that in certain regions a complement of RCAF personnel were to man some positions. The USAF ADC Director of the Region Combat Center facility was to serve in a dual capacity, i. e., he would also be designated NORAD Director of the Combat Center as an additional

NORAD REGION HEADQUARTERS ORGANIZATION



[redacted]



duty. As such, he was to be responsible to the NORAD Deputy for Operations for those functions of the combat center which fell within the area of responsibility of the NORAD commander's operational control authority. The NORAD Deputy for Operations was to exercise supervisory control over the daily activities of the combat center and to assume direct control during emergencies and hostilities and during joint exercises and NORAD evaluations. The region headquarters organization is shown on the chart on the preceding page.

The total manpower requirements for manning the six region headquarters was 362. This included 203 officers, 98 enlisted men, and 61 civilians. Of the total, 63 were RCAF spaces, 77 were Army, 11 were Navy, and 211 were USAF. The number of personnel per region varied from 45 for the 32d Region to 75 for the 25th Region.

There was apparently to be more additional duty for USAF officers on the region staffs than was spelled out in this plan, however. ADC's Commander, Lieutenant General Robert M. Lee, requested on 1 June that CINCNORAD agree to additional duty for certain Air Force officers that were to be carried on the NORAD manning documents. He pointed out that the USAF manning for NORAD regions had to come from ADC and that the latter had no way of securing replacement personnel for ADC functions which had to continue. For this reason, it would be desirable, he stated, for those Air Force personnel transferred to NORAD to continue to perform dual functions for both NORAD and ADC as in the past. What officers this would affect would vary from region to region, General Lee said. So he requested that the prerogative of naming officers to additional duties for ADC be delegated to the region commanders.

General Kuter approved this concept on 8 June in regard to subordinate organizations. But he stipulated that it was not to be used as a precedent for the NORAD COC (425L) manning.

ADC then advised the division/region commanders of this concept. Stated General Lee:

[redacted]

[redacted]

I consider the separation of all functional areas between NORAD/CONAD and ADC at region and air division headquarters level virtually impossible. In consideration of this fact, Commander-in-Chief, NORAD, has approved the use of Air Force personnel on the NORAD region headquarters manning documents in additional duty capacities. Air Force personnel so designated will continue to perform in their corresponding functions in the ADC division headquarters.

...the determination of which Air Force personnel on the NORAD region headquarters manning document are to be designated to perform ADC division functions as additional duty is at the discretion of the NORAD region/ADC air division commanders concerned.

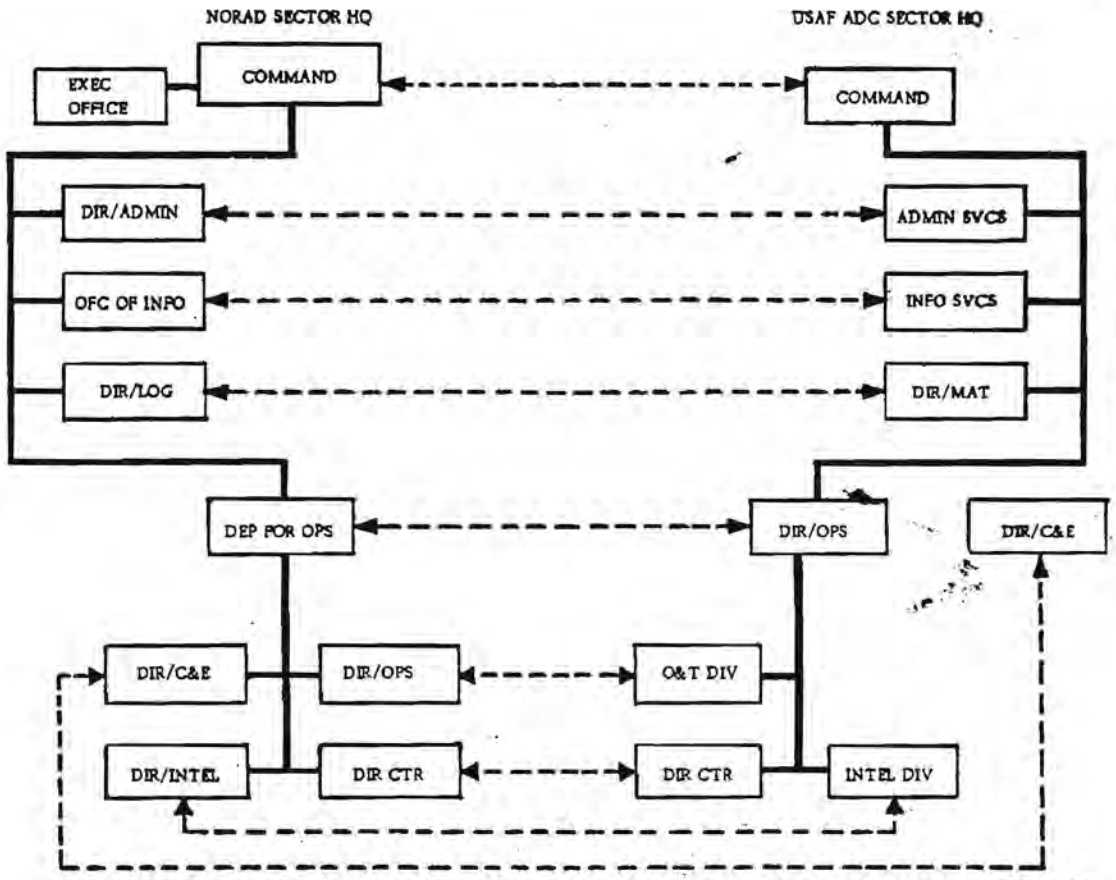
For the sector headquarters, NORAD had a dual-role plan for most of the staff in its 1 April plan. USAF ADC sector officers were to be used extensively in additional-duty designations. This dual use is shown on the chart following.

There were also to be 366 NORAD personnel on the sector staffs that were to be carried on the NORAD Joint Table of Distribution.* Also, there was to be an

---

* This would increase to 369 when the Bangor Sector was expanded (1963) and placed under the operational control of the Northern NORAD Region. The RCAF would then furnish the commander. These three spaces, authorized at that time, were for the commander (an air commodore) and his aide and chauffeur. These spaces were included in a plan submitted on 20 December 1960 by NORAD to the RCAF calling for a total of 346 RCAF spaces (63 in the region headquarters and 283 in the sector headquarters). This total was approved by the RCAF as Executive Agent for the Chiefs of Staff Committee on 11 January 1961.

[redacted]



APPLICABLE TO THOSE SECTOR HEADQUARTERS ORGANIZED UNDER THE PLAN FOR ORGANIZATION OF NORAD/CONAD REGION AND SECTOR HEADQUARTERS (APRIL 1961).

— — — — INDICATES UTILIZATION OF COMPONENT STAFF



ARADCOM complement in certain sectors to man some console positions in the direction centers. These personnel, totalling 214, were authorized on ARADCOM tables of distribution.

Of the NORAD personnel total of 366, only 86 were U. S. spaces, consisting of 63 USAF, 11 Army, and 12 Navy. The rest, 280, were RCAF spaces. The RCAF personnel were to man certain positions in the direction centers and provide officers to staff sections in a number of sectors. RCAF staff positions included the assistant deputy for operations in eight sectors and the deputy commander in three sectors (Seattle, Syracuse, and Grand Forks). The Army and Navy personnel were to serve on staff positions in several sectors. Army officers were to be in the position of assistant deputy for operations in nine sectors.

The 63 USAF personnel were to form a three-man NORAD Executive Office Section in each of the 21 sectors. These personnel were a lieutenant colonel, an enlisted administrative supervisor, and a civilian stenographer. As stated in the NORAD/CONAD plan cited above, this NORAD section would do the following:

(1) Permit establishment of a NORAD sector headquarters organization.

(2) Provide a degree of organizational uniformity throughout all NORAD sectors.

(3) Provide the commander and deputy commander with an administrative and control capability for NORAD functions.

(4) Provide the commander with a NORAD senior officer to be used at the commander's discretion.

The sector direction center was an Air Force-provided facility, operated by the USAF ADC sector staff.

[redacted]

As noted above, in certain sectors, a complement of RCAF personnel were to man some positions in the direction center in place of USAF ADC personnel. Also, as noted above, ARADCOM personnel were to man some console positions in the direction center. Both the RCAF and ARADCOM personnel were to be responsible to the NORAD Director of the Direction Center.

The latter was to be an additional designation for the USAF ADC Chief of the Direction Center. The NORAD Deputy for Operations (USAF ADC Director of Operations) was to exercise supervisory control over the daily activities of the direction center and to assume direct control during emergencies and hostilities and during joint training exercises and NORAD evaluations.

REORGANIZATION OF NORTHERN NORAD REGION HEADQUARTERS

In October 1960, NNR Headquarters proposed a new organization for itself. The NNR Headquarters had been organized for approximately one year (November 1959) and the NNR Commander said that the experience gained during this year led him to make this proposal. This was to be an interim organization prior to going into operation under SAGE.

NNR Headquarters had two deputies: operations and plans. Under the Deputy for Operations were five directorates. Plans had two directorates. NNR's proposal was to eliminate the deputies and set up five directorates: operations, intelligence, combat center, plans, and operational research. In the command section, NNR proposed to add a chief of staff. NNR said that it wanted to man this organization by 1 September 1961.

NORAD replied on 26 January 1961 that it had some minor changes to the NNR plan that would more closely align the interim organization with the SAGE organization. Among these changes was a switch in the spaces for the Director of Operations and Director of Plans. NNR proposed that Plans be under a USAF colonel and Operations under an RCAF group captain. NORAD wanted to reverse this.

[redacted]

The NNR Commander, A/V/M MacBrien, did not agree with this switch. He replied that while he was willing to accept a USAF officer as Director of Operations when his headquarters was in the SAGE facility at North Bay, he considered the situation quite different prior to that time. He said that a detailed knowledge of the manual air defense system was most essential for this position to obtain maximum effectiveness and that it required an officer with great experience in air defense as a station and sector commander and one that had a comprehensive knowledge of the problems in operating in Canada. NORAD concurred in retention of a group captain as NNR Director of Operations.

On 3 April 1961, the JCS gave final approval to the current U. S. manpower requirement in NNR Headquarters. Back in December 1958, the JCS had concurred in NORAD's need for the U. S. manpower spaces at NNR, and the Army and Air Force had been asked to provide the spaces. NNR was informed of this final approval and on 4 May, NNR's commander asked that he be given formal approval for the proposed new headquarters organization. He also asked that the effective date be 1 August 1961.

On 15 May, NORAD advised NNR that it could proceed, within currently authorized manpower resources, to reorganize effective 1 August 1961.

NORAD/CONAD HEADQUARTERS

INCREASED MANPOWER AUTHORIZATIONS

NORAD wrote to the JCS on 31 March 1961, advising that the assignment of operational control of the Space Detection and Tracking System had generated requirements for additional manpower.* There were two

* See Chapter II, Ballistic Missile and Space Defense, for a detailed discussion of these requirements.



requirements: one was for a small increase of eight in the Deputy for Operations; the other was for an increase of 52 in the Deputy for Intelligence. In all, NORAD asked for an increase of 60.

The JCS authorized, in a memorandum dated 19 June 1961, an interim augmentation of 39 manpower spaces (23 USAF, nine Navy, and seven Army). This provided eight spaces for Operations and 31 for Intelligence. The JCS stated that it was recognized that a maturing SPADAT System might dictate adjustments, so NORAD could make new recommendations after gaining experience with the system.

[redacted]

TWO BALLISTIC MISSILE AND SPACE DEFENSE

SPACE DETECTION AND TRACKING SYSTEM

NORAD/CONAD AUTHORITY AND RESPONSIBILITY

Assignment to NORAD/CONAD. On 10 October 1960, the Secretary of Defense told the Air Force and Navy that he had directed the JCS to assign operational control to NORAD and operational command to CONAD of the space detection and tracking system. For this reason, he was transferring responsibility for the two components of this system, Spacetrack and SPASUR, to the Air Force and Navy, respectively, from the Advanced Research Projects Agency.

In Memorandums dated 7 November 1960, the JCS directed CINCONAD to assume operational command and CINCNORAD to exercise operational control of the Space Detection and Tracking System. The assumption of this responsibility was made effective 26 November 1960 by CONAD/NORAD general orders.

The Secretary of Defense's memorandum had stated that operation and further development of these systems was to be in consonance with user requirements as defined by CINCONAD and the operational procedures as developed by CINCNORAD. Also, CINCONAD was to be responsible for integrating Spacetrack and SPASUR in the Space Detection and Tracking System (SPADATS).

Additional guidance was provided to NORAD by the JCS on 5 April 1961. They said that the assignment of SPADATS was not to be interpreted as restrictive to the two systems of which it currently consisted. It was expected, the JCS continued, that CINCNORAD would plan for and request operational control, and

[redacted]

TF NO N1-24200-E

[redacted]

CINCONAD operatic al command, of such additional military sensors or s stems, or modifications thereto, that were necessary tc perform the SPADATS mission as identified by CINCNORAI

The JCS st ted further that assignment of operational responsibi ity to CINCNORAD/CONAD of SPADATS was predicated on the concept that the central control facility would be manned and operated as an integral part of the existing NORAD COC. Present and future user requirements were t be submitted to the JCS for review, approval and trans mission to the JCS.

NASA/DOD Agreement. Further guidance to NORAD's authority and responsibility was provided in a National Aeronautics and Space Administration and Department of Defense agreement concluded on 16 January 1961.

This agreement divided NASA/DOD responsibilities as follows. NASA was responsible for the direction and control of U. S.-sponsored space activities except those peculiar to, or primarily associated with, the development of weapons systems, military operations, or the defense of the U. S. DOD was responsible for space activities peculiar to, or primarily associated with, the development of weapons systems, military operations or the defense of the U. S.

The agreement stated that DOD had given CINCNORAD operational control of the military space detection and tracking. The central data collection and cataloging center to meet the DOD requirement was to be established within the NORAD COC. All information from BMEWS, SPASUR, MIDAS and other military surveillance equipment with initial detection and tracking capability was to be fed directly into the NORAD COC for processing and analysis.

The objective of the NORAD space detection and tracking system, the agreement stated, was to detect and to establish track on the first orbit of all satellites and space vehicles launched by foreign countries. The NORAD COC was to provide NASA, on request, information concerning satellites and space vehicles within its

[redacted]

[redacted]



catalog. The NORAD system would accept from NASA updated ephemeris and tracking information on vehicles covered within its system.

The DOD program would provide for augmentation of its space vehicle intelligence efforts, including electronic surveillance and examination of foreign space vehicles and improved photographic and other methods for determination of potential military capabilities of the foreign objects. This intelligence operation was to be coordinated with the NORAD system and, where appropriate, supply information directly in real time. Ultimately, the agreement said, the DOD program might be expanded to include counter weapon capability for neutralization of enemy military space objects.

NASA had assigned operational control of its data collection and dissemination to the control center at the Goddard Space Flight Center, Beltsville, Maryland. This center was to provide observation and/or up-dated data from its computer catalog to the NORAD COC. The latter was to provide timely data from its catalog to the Goddard Center.

Unclassified data was to be sent periodically in a routine fashion. Classified data was to be sent only upon a "need to know" request from NASA. On 13 February 1961, NORAD asked the Electronic Systems Division (formerly the Air Force Command and Control Development Division) at L. G. Hanscom Field, Massachusetts, to provide unclassified information to the Goddard Center. NORAD told ESD that classified information was to be sent only upon a need to know request from NASA and that NORAD reserved the right to release all information regarding the military significance of all objects of foreign origin in space whenever such action was indicated.

NORAD also drafted an agreement covering specific working arrangements with NASA and sent it to the latter for signature. NASA had not signed the agreement as of the end of June 1961.

Proposed Change in Terms of Reference. Because

[redacted]

of the added responsibility for existing and future military space detection and tracking systems, NORAD asked the JCS on 5 May 1961 for a change in its Terms of Reference. NORAD asked that its terms be amended to include specific responsibility for space defense. NORAD said this was needed to clarify the various directives and to enable it to provide user requirements and operational guidance to research and development agencies.

The JCS replied on 12 May that their initial reaction was that the existing NORAD terms, together with the guidance given by the memorandums in November and the message in April (discussed above), were broad enough to accommodate NORAD's request for an amendment without an immediate change. The JCS said, however, that the proposal would be considered further and they asked for specific word changes. The latter had not yet been provided at mid-year.

ESTABLISHMENT OF THE SPADATS CENTER

NORAD issued an integration plan for SPADATS on 20 February 1961. This plan stated that integration of SPADATS was to be considered to be in two phases. Phase I was to be the period from that time until the NORAD COC at Colorado Springs achieved a computer capability for the central functions of the SPADATS. Phase II would begin when the NORAD SPADAT center was moved to Ent Air Force Base.

During the first phase, the plan provided, CINCNORAD would be responsible for space detection, tracking and identification and the furnishing of space object data as directed. A NORAD officer was to represent CINCNORAD at Hanscom Field, Bedford, Massachusetts. When a facility was available at the NORAD COC, the SPADAT Center was to be absorbed into the NORAD COC, with the center at Bedford acting in a back-up capacity. The Ent AFB facility was then to be used for NORAD space surveillance operations until such time as the programmed hardened COC became operational.

On 9 February 1961, USAF Headquarters directed ADC to rent a computer for installation at Ent AFB. ADC was also to provide communications from the Bedford center and the Navy SPASUR center. ADC was to assume full technical operating responsibility for the center operations of the SPADATS on 1 July 1961. USAF provided that ADC was to serve as its agent with CINCNORAD for this system.

Following the recommendation of the Air Force Command and Control Development Division (Electronic Systems Division), ADC directed the procurement of a Philco 2000 computer system (plus IBM peripheral equipment). It was decided to place the SPADATS center in Building P-1 which was adjacent to the current C&C building, Building 4. The former was redesignated Building 4 (East Wing). The project for the necessary work to convert the building was approved by USAF on 7 March and the work was begun on 13 March. The first floor of the building was to accommodate the computer and allied equipment. Located on the second floor was to be the SPADATS Operations Room, the SPADATS Director, the NORAD SPADAT Operations Officer, the 1st Aerospace Squadron Commander, and others.*

The Philco computer was moved into the building in April. On 12 June 1961, the SPADAT function performed by the USAF facility at Hanscom Field was assumed by the SPADAT center at Ent AFB. On 6 July, ADC advised USAF that the mission given ADC to establish a SPADAT center at Ent AFB and have it operational by 1 July had been accomplished.

In the meantime, NORAD issued a new integration plan on 27 March for Phase II of the integration of SPADATS. A phase III was now listed also which was to involve R&D improvements to the SPADATS to meet military requirements. This plan stated that the SPADAT Data Processing Room was functionally a part of the

---

* ADC established the 1st Aerospace Surveillance and Control Squadron (ADC) on 14 February 1961.

UNCLASSIFIED

(U) NORAD COC. Its function was to receive satellite and space object data from sensors, to compute orbital parameters of satellites, and to generate satellite and space object bulletins and look-angle bulletins. The room was to be technically operated by USAF ADC under the operational control of CINCNORAD. The latter's representative on a continuous shift basis was the NORAD SPADAT Operations Officer.

(U) NORAD MANNING OF THE SPADAT CENTER

(U) On 31 March 1961, NORAD made a request to the JCS for the additional manpower required as a result of the assignment of operational control of SPADATS.* A total of 60 spaces were requested: eight for the Deputy for Operations and 52 for the Deputy for Intelligence.

(U) NORAD explained to the JCS that the eight for Operations would provide personnel to establish a SPADAT Section Operations Division (COC). These personnel included six officers -- an Air Force lieutenant colonel and two Air Force captains, and a Navy commander and two Navy lieutenants. Also, there was to be an enlisted administrative specialist and a civilian stenographer. The chief of this section was to be responsible to the Chief of the Operations Division (COC) for insuring the effective exercise of operational control over the SPADAT System and associated sensors. The intelligence spaces were required to carry out the expanded intelligence activities to support the Phase II SPADAT operation plus the additional space intelligence functions to be assumed in consonance with the NASA/DOD agreement.

(U) On 4 May 1961, NORAD received a briefing from USAF ADC on plans to implement the SPADAT Center. NORAD

(U) * In March, NORAD stationed a representative, an Air Force lieutenant colonel, at L. G. Hanscom Field to represent CINCNORAD in exercising operational control of the SPADATS.

Declassified per
14 Dec 2006 Memo

UNCLASSIFIED

learned that ADC had neglected to make any provision for the placement, communications, or functioning of the NORAD SPADATS Officer. NORAD immediately asked for accommodations, pointing out that it was necessary for the NORAD SPADATS Operations Officer to be physically located at an appropriate location in the SPADATS Center.

Before this matter was settled, the JCS authorized, on 19 June 1961, an interim augmentation of the headquarters of 39 spaces for accomplishment of the SPADATS mission. The eight spaces for Operations were approved. For Intelligence, 31 of the 52 spaces requested were approved. The JCS stated, however, that it was recognized that a maturing SPADATS might warrant adjustments to these authorizations, so after some operating experience, recommendations for adjustments could be made.

The matter of accommodations for the NORAD SPADATS Operations Officer or the NORAD SPADATS Section had not been settled at mid-year. Office space had been provided on the second floor of Building 4 (East Wing) and a desk had been placed in the SPADAT Center for the NORAD SPADATS Officer. But the question of manning, location, and function for NORAD was still being discussed and studied.

REQUIREMENTS FOR IMPROVEMENT OF SPADATS

NORAD Requirements Document. When the Secretary of Defense transferred Spacetrack to the Air Force, he charged the latter with submitting a detailed development and funding plan for improvement of the national space surveillance system. This plan was to satisfy the requirements of the JCS and their designated operational command (CONAD) and have the coordination of the Army and Navy. On 10 November 1960, USAF asked NORAD to submit its operational requirements and to compile and submit the requirements of the military departments, the unified and specified commands, NASA, and the U. S. Intelligence Board. In

addition, on 5 April 1961, as noted earlier, the JCS asked NORAD/CONAD to submit present and future user requirements.

(U) NORAD submitted its operational requirements to USAF on 2 December 1960. Then CONAD obtained the requirements of all other user agencies and prepared a composite requirements document which it submitted to the JCS on 20 April 1961.*

(U) The qualitative requirements submitted for an advanced system included the following.

(U) * The North American Air Defense Objectives Plan FY 1963-FY 1967, 31 March 1961, included objectives for an improved SPADATS. NORAD stated that an improved system required sensors with coverage to provide detection, tracking, and identification in sufficient time to permit the destruction or neutralization of a hostile space object prior to its accomplishing a hostile act on its first pass over the NORAD area. Accuracy of the sensor system must be sufficient, the plan stated, to utilize it as the environment for active space defense and satellite inspection systems. NORAD said that a single type of sensor would not accomplish the total requirement and that its plan included funds for a family of sensors geographically deployed to provide detection of all space objects launched on any orbital inclination during the first orbit. NORAD listed the following summary for SPADATS Improved:

	FY 63	FY 64	FY 65	FY 66	FY 67
SPASUR Sensors	5	5	5	5	5
Electronic Sensors	9	9	9	9	9
Optical Sensors	--	2	8	14	14
Advanced Radar	--	--	1	3	4

(U) In June, the JCS pointed out to NORAD that the Air Force was coordinating system development plans with the Army, Navy, and NORAD. Since this was still in process, the equipment and funding in NORAD's NADOP did not represent an agreed requirement.

Declassified per 14 Dec 2006 memo

[redacted]

2. Control Center: An operation control center will be employed to provide for control of all system elements. The center will house a computer complex of appropriate capacity which is expandable; and which is compatible with associated inputs and outputs.

3. Communications: A highly reliable

[redacted]

[redacted]

automatic communications subsystem must be provided to support the SPADATS (Improved).

NORAD also listed requirements for an interim system capability required by 1964. The requirements for all elements except the sensor system were the same. For the latter the requirements included the following.

USAF ADC Recommendations for Improvement. ADC sent USAF a list of recommendations on 12 June 1961 for sensors currently being operated by the USAF or NASA which were needed by the SPADATS in order to perform its mission. ADC said it had analyzed the SPADATS mission versus its capability. The preliminary conclusions were that the SPADATS had to rely on agencies and equipment not under the operational control of NORAD to adequately perform its mission.

ADC recommended the following:

a. Retention of the AN/FPS-49 at Moorestown, New Jersey, for completion of BMEWS testing and for ultimate integration into the SPADATS.*

b. Continuation for SPADATS of the current agreement between the Hanscom Center and the Trinidad, B. W. I., Experimental Site, operated by the Rome Air Development Center.**

c. Assurance that any future disposition of USAF-controlled Baker-Nunn cameras include the stipulation that data would be supplied to the SPADATS center in accordance with requirements listed by ADC.

d. Deferral of assignment of the mission for the PINCUSHION AN/FPS-62 radar until 1 July 1961 pending recommendations from ADC.

SPASUR Low-Altitude Improvement. In April 1961, the commanding officer of the Navy SPASUR system wrote to inform NORAD of a requirement for improvement of the low altitude coverage of the SPASUR system. This was submitted in accordance with a directive in NORAD's February integration plan that recommendations be submitted for improvement of system operation.

NORAD told the SPASUR commanding officer on 2 May that it had asked for an improved capability in a plan submitted to the JCS on 20 April (discussed above). Also, the Navy had submitted a proposal for six gap filler sites, which would provide complete coverage over the continental U. S. to the Defense Department. A Navy Department representative had informed NORAD that if this was approved by DOD, the Navy would implement the program with FY 1962 funds.

Out of this came a request from ADC that it be given assignment of the Shemya radar and that NORAD be given operational control. ADC said that fulfillment of the Security Service mission would not be jeopardized. NORAD advised the JCS on 19 April that it concurred with the ADC proposal.

NORAD also gave

assurance that the USAF security mission would not be jeopardized.

The matter had not been settled at mid-year, however, as to whether or not ADC would get the Shemya facility.

BALLISTIC MISSILE EARLY WARNING SYSTEM

GENERAL STATUS

The Ballistic Missile Early Warning System (BMEWS) achieved a two-site detection capability on 30 June 1961 with the attainment of an initial operational capability (IOC) at the Clear, Alaska, site, as scheduled. Clear's detection capability was achieved by the use of all sectors of the detection radar working in conjunction with a simplex missile impact predictor (MIP) set. Warning information was read out of the simplex computer and manually transmitted to the central computer and display facility (CC&DF) at the NORAD COC via rearward communications voice and/or teletype links. The information was manually inserted into the BMEWS display at the CC&DF.

Operational capability (OC) was scheduled to be reached at the Clear site on 30 September 1961. At that time, all sectors of the radar would be working with a duplex MIP computer. Warning information would be automatically transmitted to the CC&DF via the rearward communications links.

At the Thule, Greenland, site, IOC was attained on 30 September 1960 and fully automatic operation was begun on 31 January 1961. Along with the Thule site, IOC was achieved for the CC&DF at NORAD Headquarters and the display facility at SAC Headquarters on 30 September 1960. Similarly, automatic operation was begun on 31 January. A BMEWS display facility at the Pentagon was scheduled to attain operational capability on 7 November 1961.

UNCLASSIFIED

[redacted]

(u) The third BMEWS site, located at Fylingdales, England, was scheduled to reach operational capability in April 1963.

(u) TRACKING RADARS FOR THULE AND CLEAR

(u) In May 1958, an interim configuration for BMEWS was announced by USAF which included two tracking radars (AN/FPS-49) for both Thule and Clear. But a year later, USAF announced that these trackers were deferred. The following year, June 1960, the Director of Defense Research and Engineering concurred with a recommendation to provide one tracking radar at each of these sites when the Air Force was satisfied that the equipment showed a satisfactory reliability. On 4 August 1960, USAF advised that it approved immediate implementation of a tracker at Thule.

(u) This went ahead and as of 30 June 1961, operational capability for this radar was scheduled for 31 December 1961.

(u) At the time USAF said it approved immediate implementation of a Thule tracker, it said that fund limitations would delay a tracker for Clear. The matter dragged on until 12 June 1961 when USAF told ADC that "installation of a tracking radar at Site II, Clear, Alaska, is not approved at this time."

(u) NORAD had repeatedly urged installation of trackers at both sites, feeling that they were absolutely essential. In NADOP 63-67, 31 March 1961, NORAD had recommended two tracking radars at both sites. NORAD stated that trackers would increase credence of attack warning and also serve as back-up to cover outages of the primary surveillance system. In May 1961, NORAD told the JCS, in connection with information being provided on the significance of BMEWS alarm levels, that installation of trackers at Thule and Clear was mandatory to insure the required increased effectiveness of BMEWS as an early warning system. The most significant role of the tracker, NORAD stated, was as a verifying

[redacted]

Declassified per
14 Dec 2006 Memo

UNCLASSIFIED

[redacted]

source of information on threatening objects which penetrated either or both detection fans. In this role, the tracker could increase warning time when brought into play on objects penetrating the lower detection fans.

(u) On 29 June 1961, after USAF said it disapproved installation of the Clear tracker, NORAD wrote to the Air Force to reaffirm the requirement and to request reconsideration. NORAD pointed out that:

> (u) Early warning against ballistic missiles has been and will continue to be one of this nation's primary requirements. In order to be effective, an early warning system must be highly reliable and function with a high degree of confidence. To this end, we feel that trackers are required at the forward sites to provide the degree of reliability and credence of information essential for CINCNORAD to carry out his early warning mission.

(u) BMEWS-SPADATS INTEGRATION

(u) A special report by the Radio Corporation of America (SR-36) in August 1960 proposed a three-phased integration of the BMEW and Spacetrack systems. Both ADC and NORAD favored integration. On 25 April 1961, NORAD told ADC it recommended starting implementation of the RCA proposal. NORAD also asked for information on the scope and status of the integration program.

(u) ADC replied that on 2 May 1961, USAF had given approval to proceed with the proposal contained in the RCA SR-36.

(u) Phase I of the planned integration would provide BMEWS radar observation by adjusting the program of the MIP set to automatically send satellite detection data to the CC&DF. It was expected that BMEWS Phase I participation in the SPADATS program would begin in February 1962.

Declassified per 14 Dec 2006 memo

[redacted]

[redacted]

(U) MISSILE DEFENSE ALARM SYSTEM (MIDAS)

(U) In April 1958, NORAD recommended acceleration of the development of an infrared-sensing system for use as a means of ICBM detection. NORAD again urged development of this system in December 1958. In March 1959, NORAD reaffirmed the requirement and sought assignment of operational control. In June 1960, NORAD once again stated its requirement for this system, now called MIDAS, and for operational control.

(U) MIDAS was for a time under the Advanced Research Projects Agency, but in November 1959 was transferred to the Air Force. When MIDAS was transferred, the Secretary of Defense directed the Air Force to prepare an operational plan for it. In December 1960, NORAD learned that a preliminary Air Force operational plan had been approved by the JCS and sent to the Secretary of Defense.

(U) Soon thereafter, the Air Force advised that on 16 January 1961 the Secretary of Defense had informed the Air Force of his approval of this preliminary plan. The plan provided, USAF stated, that MIDAS, when developed, would be assigned to ADC. Upon assignment, MIDAS would be operated by ADC under the operational control of CINCNORAD and operational command of CINCONAD.

(U) NORAD issued a preliminary operational employment concept for MIDAS on 15 April 1961 although operational control had not yet been assigned. This document described the NORAD concept for operational control and employment of MIDAS and was to serve as a guide for future operational planning, system design and integrating MIDAS into the NORAD aerospace defense system.

(U) NORAD described the system as consisting of a network of orbiting satellites and a ground complex. The space system would consist of a minimum of eight satellites, each carrying an infrared scanner. The ground complex would be made up of a launch complex, a tracking and control center, three or more data readout

[redacted]

Declassified per
14 Dec 2006 Memo

stations, and a target and system status display center integrated into the NORAD COC and other locations as required. The tracking and control center was to be located in the central U. S. at Ottumwa, Iowa.

(u) At first, the system was to have two readout stations, one at Fort Greeley, Alaska, and one at Kirkbride, England. Later, a backup station was to be added between the two, probably at Thule, Greenland. In its NADOP 63-67, NORAD included, as an objective for the MIDAS program, three readout stations by FY 1964 and six by FY 1965.

(u) ADC suggested to USAF the collocation of BMEWS sites and MIDAS readout stations. USAF replied, on 14 February 1961, that any change in location could not be accomplished without delaying the MIDAS schedule. Both Fort Greeley and Kirkbride were firmly established, USAF said. Construction had not begun on Kirkbride, but the U. S. had possession of the site by agreement with the United Kingdom. And it was unlikely, USAF said, that the latter would approve any additional real estate near Fylingdales for a MIDAS readout.

(u) USAF also told ADC that it concurred with the idea of integrating BMEWS and MIDAS displays at the NORAD COC to provide added confidence. On 14 April 1961, USAF directed the Air Force Systems Command to prepare a plan, in coordination with ADC, for the technical and operational integration of the BMEWS and MIDAS at the current NORAD COC and eventually with the 425L System. Air Force said that it had been, and continued to be, its policy that the MIDAS and BMEWS were complimentary systems and should be developed and implemented in recognition of the capabilities of each other.

(u) As of mid-year, MIDAS was still considered to be a research and development program by the Office of the Secretary of Defense. As of this time, NORAD had decided not to take any further action to obtain formal JCS assignment of operational control until the R&D program indicated success and the OSD considered MIDAS to be an operational system.

Declassified per
14 Dec 2006 memo

(u) However, in the meantime, CONAD sought to use data from the MIDAS R&D program. There had been two R&D launches up to this time and many others were scheduled. In a letter on 22 May, CONAD asked ADC to investigate the possibility of transmitting data from the R&D readout facilities or the satellite test center to the NORAD COC. This would not only provide data to enhance NORAD's ballistic missile and satellite early warning capability, but would also give NORAD and ADC experience with MIDAS.

NIKE ZEUS

(u) The 1962-1966 NORAD Objectives Plan (NADOP 62-66), submitted in March 1960, stated a requirement for Zeus deployment at seven locations by FY 1966, and at 27 locations by FY 1969 comprising 70 firing sites. The deployment schedule listed in the plan was based on initial production funds becoming available in FY 1962. However, production funds were not forthcoming and Zeus remained in the research and development stage.

(u) In October 1960, the Army set up an Ad Hoc Advisory Committee chaired by Mr. Richard S. Morse, Department of Army Director of Research and Development, to determine the feasibility of getting an interim Zeus program. NORAD and ARADCOM assisted in the study. The result was that the Morse Committee recommended an interim Zeus program to the Secretary of the Army, which was forwarded to the Secretary of Defense.

(u) The interim program called for the production of Nike Zeus batteries at the rate of four per year. In December 1960, NORAD told the JCS that it supported the proposed interim program as an initial step towards early production. But NORAD reaffirmed the military requirement for a system of larger scope as set forth in NADOP 62-66.

(u) In March 1961, NORAD submitted NADOP 63-67, reaffirming again its requirement for 70 Zeus firing sites. The new plan modified the deployment schedules to

Declassified per
14 Dec 2006 memo

incorporate revised production rates resulting from phasing the Morse Committee recommendations into the overall plan. NORAD's force deployment plan was predicated upon initial production funds becoming available in FY 1961, follow-up funds in FY 1962 to support the Morse Committee interim production plan, and funds in FY 1963 to support the NORAD plan for 70 firing sites.

However, NORAD learned that the Morse Committee recommendations had not been approved. No money was allotted for FY 1961 or 1962 production. Thus, Nike Zeus still remained a high priority research and development project as of mid-1961. Consequently, it was decided to defer publication of the Zeus Operational Employment Concept which NORAD had prepared.

NORAD was encouraged, however, to learn that the Army for the first time had included Nike Zeus production in its program/budget estimates. The Army's Program Estimate 1962-1970, 26 June 1961, called for Zeus production funds starting FY 1963. The first year was for a total of $246.7 million in all appropriations. In this document the Army recommended "a program for the production and deployment of Nike Zeus to fulfill the stated requirements of CINCNORAD." The program was for 29 Zeus defense centers, 70 battalions (firing sites) and 3,610 missiles, in the defense of 27 defense areas against ICBM, IRBM, and submarine-launched ballistic missiles by FY 1970.

Another milestone was that the Army awarded a development contract to Sylvania on 1 June 1961 to produce a radar called ZMAR (Zeus Multi-purpose Array Radar) which was to replace all four radars required in the Zeus system.

[redacted]

THREE SURVEILLANCE-MANNED BOMBER DEFENSE

LAND BASED RADARS

STATIONS: ASSIGNED AND PROGRAMMED

There were 174 prime radar stations operational at mid-1961 -- 124 on the U. S. mainland, 31 in Canada, 18 in Alaska, and 1 at Thule, Greenland. Gap-filler stations, all within the CONUS, numbered 104.

According to the NORAD Program Document of 1 June 1961, the service programs called for the build-up of the surveillance net to 188 prime radar and 190 gap-filler stations by June 1965. This was three prime radar and three gap-filler sites short of the NORAD 1965 objective.

USAF RADAR IMPROVEMENT PROGRAM

The USAF radar improvement program called for the installation of new frequency diversity height finders by April 1964 and FD search radars by the following July.*

During the first six months of 1961, 10 medium-range radars (FPS-8 and FPS-3) were removed and 11 additional frequency diversity, long range radars (6 FPS-20, 3 FPS-7, 2 FPS-35) installed. The most significant development in the height finder program was the installation of the first of the new FD long range FPS-26's. Installation was completed and the radar

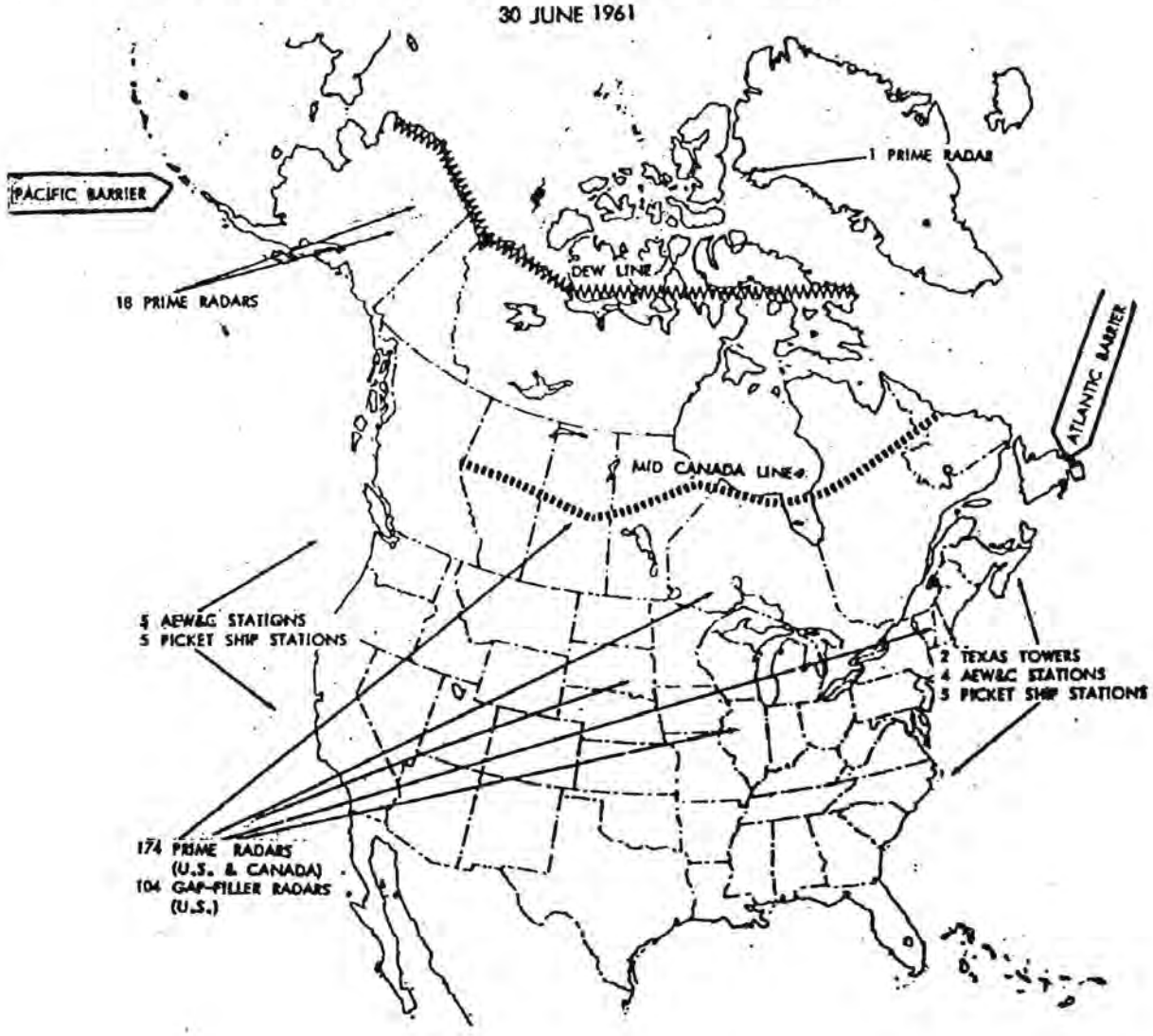
---

* See NORAD/CONAD Historical Summary, Jan-Jun 1960, for background.

[redacted]

NORAD SURVEILLANCE SYSTEMS: MANNED BOMBER DEFENSE

30 JUNE 1961



[redacted]

[redacted]

officially accepted by the 702d ACW Squadron at Hunter AFB, Georgia, in mid-May, well ahead of schedule. By the end of June, three additional FPS-26's had been installed in the system.

The radar equipment status and the program, according to USAF ADC, as of the end of June 1961, was as follows:

	OPERATIONAL	PROGRAMMED			
TYPE	Jun 61	Jun 62	Jun 63	Jun 64	Ultimate* Program
FPS-8	21	9	3	1	0
FPS-3	30	18	13	6	0
CPS-6B	10	3	2	0	0
ARSR-1A/2	7	7	21	19	18
FPS-20	95	90	102	94	93
FPS-7	14	27	30	30	30
FPS-24	0	11	12	12	12
FPS-27	0	1	13	37	37
FPS-35	3	11	12	12	12
FPS-6	261	283	269	237	237
FPS-26	4	26	61	97	97

A possible setback to NORAD's frequency diversity radar objective cropped up in early 1961 when NORAD learned that USAF, because of fund limitations, had deferred procurement of the FPS-27 radar and the FY 61-62 construction program supporting its installation. In answer, NORAD pointed out that the FPS-27 was essential to the achieving of a balanced minimum frequency diversity capability in the surveillance system. The matter was still undecided at the end of June; meanwhile, NORAD officers were at work on possible alternate solutions to NORAD's FD needs in the event the FPS-27 program was cancelled.

---

* A term used by USAF ADC in its V-20 Report.

[redacted]

One possibility was to modify the FPS-20 to an FPS-20/30 combination. NORAD notified USAF in March that it supported immediate action to proceed with a prototype procurement and test of such an item.

NORAD GROUND ENVIRONMENT AREA DEPLOYMENT CRITERIA

The spate of changes in the NORAD programs which occurred in 1960 prompted NORAD to develop and issue on 8 January 1961 guidance policy for the future area deployment of ground environment facilities. The new instruction was basically a summary and affirmation of previous deployment policies. But NORAD sought to "go one step further by providing...specified priority areas for guidance in the implementation of all fixed C&E ground environment."

The new guidance instruction established the Priority I area as the vast territory bordered by a line running from a point northeast of Churchill, Manitoba, on the 60th parallel, south to Sedalia, Missouri, east to Norfolk, Virginia, northeast to a point off Nova Scotia, northwest through Cabot Strait and the Gulf of St. Lawrence to the 55th parallel northeast of Knob Lake, Quebec, then due west.

Priority II area encompassed all of the 25th Region plus the Los Angeles and San Francisco NORAD Sectors of the 28th Region. The remaining SAGE facilities were placed in Priority III: (1) the SAGE

UNCLASSIFIED



sectors of the 29th Region; (2) the Montgomery sector of the 32d Region; (3) those areas of the 30th and 26th Regions which were not included in the Priority I area; and (4) the Reno and Phoenix Sectors of the 28th Region.

(U) The Alaskan Region and the Goose NORAD/CONAD Sector were placed in Priority IV; the Denver and Oklahoma City Sectors in Priority V.

NORTHERN AREA RADAR DEVELOPMENTS

(U) Delayed Inactivation of Northeast Radar Stations. In the revised air defense planning which took place in late 1960, USAF ADC recommended that three prime radar stations in the northeast area be inactivated. Since the fighter forces in the Goose Sector were reduced to one squadron, there was no further justification for C-31 (Frobisher) or C-30 (Resolution Island) for either early warning or weapons control. C-22 (Redcliffe) had also outlived its usefulness. Tied in to the Newfoundland-Azores Line, its low level coverage would no longer be required when the Greenland-Iceland-United Kingdom (G-I-UK) Line became operational. And its high altitude coverage was almost completely duplicated by C-25 (Gander).

(U) By early 1961, NORAD and RCAF had concurred in the recommendation and agreed to 1 July 1961 as the inactivation date for these sites. This was the date the G-I-UK Line was scheduled to become operational. However, because of a delay in operation of this warning line (discussed later in this chapter), the radar stations, on NORAD's direction, were kept in temporary operation.

(U) Meanwhile, USAF ADC had proposed the inactivation of a fourth northeast station -- C-29 at Saglek. But NNR submitted a firm requirement for the coverage it afforded, and NORAD concurred. Accordingly, NORAD asked USAF ADC to keep it in permanent operation.

(U) Phase-Out of Goose Sector Gap-Filler Radars. USAF ADC, NORAD, and RCAF were also agreed by early 1961



Declassified per
14 Dec 2006 memo

UNCLASSIFIED



(u)

that the six gap-filler stations in the Goose Sector were no longer required. They were the only manned gap-filler stations in the system and cost $2 million a year to operate. The G-I-UK Line, when completed, would cover the early warning function of these stations. And they were too poorly located to be of any value for weapons control. In short, they were costing far more than they were worth to the system.

(u) The G-I-UK Line was delayed, however, so their official inactivation was temporarily postponed. But plans for shutting them down proceeded according to schedule. The six gap-filler stations were taken out of the active surveillance system in late June 1961.

(u) Proposed Discontinuance of the Mid-Canada Line. In February 1961, NNR recommended that the western portion of the MCL (Bird, Cranberry Portage, Stoney Mountain and Dawson Creek) be discontinued by 31 March 1962. By this time, several of the new heavy radar stations scheduled for this area under the CADIN program would be operational and could assume the warning functions of the western half of the line. Elimination of these MCL stations would, therefore, save considerable money with no important loss of security. As for the eastern half of the line (Winisk, Great Whale River, Knob Lake and Hopedale), NNR recommended that it be closed down when the two heavy radar stations, which NNR and NORAD had earlier agreed were required, at Winisk and Knob Lake, became operational.

(u) NORAD replied in late March that it agreed in principle with NNR's proposals. However, NORAD did not agree with the March 1962 date for shutting down the western half of the Line. The 1960 program reductions had set the CADIN construction and operational dates back nine months to a year. Consequently, it would be early or mid-1963 before the new western stations were completed. Once they were in and fully operating, however, NORAD could foresee no reasons why the western portion of the line could not be discontinued.

(u) The question of when (and if) the eastern half



Declassified per
14 Dec 2006 Memo

of the line could be discontinued became a bit more complex. NNR and NORAD now felt that three stations, equipped with the FPS-20/30 combination radar, were needed in this area rather than two stations with FPS-24 radars. The third station was to be built at Whale River. A complication, however, was the fact that construction of the three stations was not authorized in current programs. As an initial step toward obtaining them, NORAD expressed its need in its 1963-67 Objectives Plan as follows:

> Expansion of radar coverage is required north of the vital Northeast area to cover the ASM threat. Three prime radars along the eastern Mid-Canada Line at Winisk, Great Whale and Knob Lake will provide the forward coverage required to achieve intercept of hostile aircraft prior to their reaching the ASM release line. Without this coverage, the defense is faced with the much more difficult problem of detecting and intercepting multiple ASM's of small radar cross section.

Another complication was whether the three heavy radar stations would provide adequate low level data for the making of tactical decisions on the commitment of the BOMARC weapons being deployed in this area. The only way to settle this question was to build the stations and then assess their capability to perform this function. In short, no plans for discontinuing the eastern part of the MCL could be made until the heavy radar stations were operational and had proved their ability to meet both high and low level surveillance requirements.

On receipt of this guidance, NNR recommended that future issues of the NORAD Objectives Plan include the closing of the western portion of the MCL as of 31 March 1963. This extended NNR's original recommended discontinuance date a full year. NNR also proposed that the NORAD Objectives Plan show the closing of the eastern half of the Line when the three heavy radars became operational. However, NORAD would not be so specific on the future of the Line as to include such a statement

[redacted]

in its official objectives document. The most it would promise was to give consideration to discontinuing the MCL "when the five western radars are operational and when the three MCL radars are installed in the east."

OFF-SHORE FORCE

AEW&C OPERATIONS

Seaward Extension Transition Program (SETP). It was planned that when the AEW&C aircraft were equipped with the new AN/APS-95 radar they would be repositioned inboard of the picket ships. This redeployment, dubbed operation "Flip Flop," would greatly increase overwater low altitude detection and control.

On 3 February 1961, the 28th Region, whose RC 121's were over 50 per cent equipped with the APS-95 by this time, made the first repositioning, moving AEW 7 to inboard station and PS 7 to outboard station. Later, the 28th Region's AEW 5 and PS 5 similarly traded positions. Off the east coast, AEW-2A station was established inboard of PS 12 on an evaluation basis. Because of height finder shortages resulting from the ALRI retrofit (see Chapter 5), further implementation of the east coast SETP plan was postponed.

An important matter restricting repositioning of the seaward forces was the continued shortage of parts for the APS-95. The high failure rate of certain components of the radar exceeded AMC's ability to keep the AEW&C squadrons stocked with them. By diverting production items as maintenance spares, by-passing routine supply procedures, affording contractor overtime, and allocating priority transportation to APS-95 parts, USAF ADC made every effort to meet the crisis. Meanwhile, a study group (Special Engineering Panel) was set up by Wright Air Development Division "to search vigorously for the real source of the high failures."

As for the capability of the new radar, preliminary observations by NORAD staff officers showed that

[redacted]

[redacted]

when the APS-95 was working properly it was a considerable improvement over the APS-20, successfully detecting and tracking target aircraft between 500 and 60,000 feet.

Height Finder Modification. While the APS-95 radar would increase the detection and tracking capability of the AEW&C force, thereby extending the intercept control potential of the RC 121's, this advance would be of little value unless an adequate height finder were provided. The extremely short-ranged AN/APS-45 height finder was not suited for the task.

The APS-103 height finder retrofit program for the east coast AEW&C force was underway during the first half of 1961. On the west coast, however, height finder improvement hopes had died when the Airborne Long Range Input (ALRI) project was deleted for Pacific AEW&C forces in the 1960 program reductions.

To rectify this situation, NORAD requested ADC in September 1960 to provide an improved height finder for the west coast AEW&C squadrons. USAF replied that it could not support the request. In April 1961, ADC, with NORAD's concurrence, submitted a reclama for this sorely needed program.

Non-Air Defense Burden on RC-121's. The 552d AEW&C Wing had the task of operating five stations off the west coast. However, with current equipment and personnel and with the additional mission of furnishing RC-121's in support of SSD's (Space Systems Division) Project DISCOVERER test and recovery operation -- which the 552d has supported since early 1959 -- the Wing had never been able to man continuously more than four stations. When NORAD learned in early 1961 that similar support for Project SAMOS could be expected, a mission that threatened to double the present load, it recommended to USAF that either RC-121's be furnished SSD from other sources or that USAF ADC be given enough AEW&C forces to carry out both its air defense and special missions. USAF replied that it had started a study of the matter and requested NORAD to continue special support until the study was completed.

[redacted]

[redacted]

Because no let-up in these demands had occurred by mid-1961 and, in NORAD's opinion, had reached a point where they seriously degraded offshore air defense operations, NORAD repeated its request for relief, this time to the JCS. Meanwhile, General Kuter informed his 28th Region Commander, General Stevenson, that NORAD had asked the SSD to submit future RC-121 support requests for each individual mission for approval.

LOSS OF TEXAS TOWER 4

Following the collapse of Texas Tower 4 into the Atlantic on 15 January 1961, the 26th Region sought and received NORAD's permission to readjust the location of picket ship stations 16 and 14 in an effort to compensate for the resulting degradation of SAGE low altitude radar coverage. Since the tower could not be restored before the AEW&C improvement program (APS-95/ALRI) was completed in early 1962, NORAD had no plans for rebuilding it.

DEW LINE EXTENSIONS

DELAY OF THE G-I-UK LINE

The Greenland-Iceland-United Kingdom (G-I-UK) Line had been scheduled to come into operation on 1 July 1961.* On 23 June, however, USAF ADC informed NORAD that the DEW East segment (running from Cape Dyer across the Greenland icecap to Iceland) would not become operational until 1 August 1961. Too many difficulties had been encountered with installation and test of radar and communications equipment.

Accordingly, it became necessary for General

---

* See NORAD/CONAD Historical Summary, Jul-Dec 1960, pp 23-24.

[redacted]

Kuter to ask Admiral Robert L. Dennison, CINCLANT, to put off activation of the Navy portion of the barrier and to continue temporary operation of the Argentia-Azores barrier. Because the Navy had already begun to inactivate and release crews preparatory to the shift to the new line, Admiral Dennison notified General Kuter and the JCS that it would be necessary to operate the old barrier through July with three airborne stations and one DER. This was one less AEW station. "This change of plans on short notice with the attendant relocation of personnel will be costly to the Atlantic Fleet, but requirement for 4 airborne stations or further delay of shift beyond 1 August would require a much more expensive effort in recommissioning aircraft and reorientation of personnel," Admiral Dennison wrote.

This reduced force was authorized. In expressing his appreciation for Naval cooperation in the matter, General Kuter wrote Admiral Dennison: "I realize that the change...necessitated drastic alterations in your plans.... The slippage of the operational date... is of extreme concern to me, and I have taken all possible action to attain an operational date of 1 August 1961." USAF ADC assured NORAD that the new operational date would be met.

CONTINUANCE OF PACIFIC BARRIER

In late December 1960, the CNO solicited NORAD's views on discontinuing the Navy early warning barrier (4.5 AEW stations and 2 SAR/NAVAID ships) operating between Midway Island and the Aleutians.* General Kuter replied that he was firmly opposed to the move. If fund limitations, the cause of the CNO's request, did demand withdrawal of the AEW stations, General Kuter asked that the two navigational ships be retained and augmented with two DER's and that a heavy radar be

---

* See NORAD/CONAD Historical Summary, Jul-Dec 1960, pp 22-23.

[redacted]



installed on Midway Island. This would afford a "substantial degree" of medium and high altitude coverage and, at the same time, effect a considerable savings in funds and manpower.

In a letter to the JCS, General Kuter then stated that, in his opinion, "the importance of the Pacific barrier cannot be over emphasized. ... As long as we are faced with a mixed threat of air-breathing vehicles and ICBMs, the requirement for the Pacific barrier remains valid." He recommended to the JCS that the barrier be kept until MADRE or other adequate equipment was installed in that area. If the Navy could not continue to afford operation of the barrier, General Kuter asked that USAF's capability to handle the task be explored.

The matter was resolved in March 1961. The Secretary of Defense directed that the Pacific barrier be continued "at the current level of operations."

NUCLEAR DETONATION REPORTING

NUDET REPORTING SYSTEM

NORAD had in operation a manual nuclear detonation (NUDET) reporting and fall-out warning system. However, NORAD was to get an automatic system. In October 1960, the Secretary of Defense approved the Air Force's development plan for an automatic system to be operational by 1 July 1962. But despite NORAD's urging, no funds were appropriated by the end of 1960. Finally, on 27 February 1961, USAF authorized ARDC to proceed with the initial study portion (Phase 1) for NUDET Reporting System 477L. Phase 1 was to be the development and testing of a prototype system.

BOMB ALARM SYSTEM

Another automatic system for reporting nuclear

[redacted]



explosions, a bomb alarm system, was being developed for the Air Force. This would automatically detect nuclear detonations in the vicinity of detectors or sensors and report the exact time and approximate location of the detonation to Headquarters NORAD and other key military and civilian agencies. But the system fell short of NORAD's requirements. NORAD wanted the additional data of yield and height of burst.

The system was being developed by Western Union for the USAF, but once it became operational, CINCNORAD was to be assigned operational control. NORAD published an Operational Employment Concept on 23 January 1961. The system was to be installed in two phases. Phase 1 was to include instrumentation of 97 sites in CONUS and was to be operational by 1 September 1961. However, this date was expected to slip to 30 December 1961.

Phase II was to expand the system to the BMEWS sites at Thule and Clear, and such sites in Canada as the Canadian Government wanted. No schedule had been established for Phase II. And it had not been determined to what extent Canada would participate in the program. USAF told NORAD on 1 March 1961 that no funds were available or programmed for FY 1961 for the expansion of the Bomb Alarm System beyond CONUS.

However, on 27 February 1961, NORAD endorsed a SAC request to USAF to instrument the Thule and Clear BMEWS Sites for nuclear bomb alarm as soon as possible. NORAD had previously requested this action in May 1960. On 1 March 1961, USAF told NORAD that Western Union was being directed to instrument these sites with bomb alarm detectors, to tie the detectors in with the ZI bomb alarm network, and to complete the installation in CY 1961.

SAC advised NORAD on 5 July 1961 that the Thule BMEWS Site would be kept under visual or electronic surveillance by its airborne alert aircraft for an average of 22 hours each day. This plan was devised, because of the possibility of the Thule Site being destroyed by surprise attack, as an interim measure pending installation of the bomb alarm system at Thule.



[redacted]

NORAD had obtained USAF approval on 17 April 1961, for bomb alarm displays in the NORAD COC and the Alternate COC, which had been omitted in the USAF plan.

CHEMICAL AND BIOLOGICAL WARNING SYSTEM

On 5 May 1961, NORAD submitted a qualitative requirement to the JCS for an automatic Chemical and Biological Rapid Warning System. The requirement was based on intelligence reports of increased Soviet activity in the development of chemical and biological agents and the announced intentions of the Soviet to employ them in future warfare. NORAD said it required the system for operational use as soon as possible, but not later than 31 December 1963.

The purpose of the system was to detect, identify and report to NORAD enemy employment on all toxic chemical and biological agents against NORAD personnel and facilities. The system was to be used in conjunction with radiological and nuclear detonation and fallout reporting and warning systems. Chemical and biological attack warning data was to be passed via existing communication links and displayed automatically in the NORAD COC and in region and sector centers.

[redacted]

FOUR
WEAPON FORCE-
MANNED BOMBER DEFENSE

INTERCEPTOR FORCE

CURRENT FORCES

The NORAD regular interceptor force consisted of 50 squadrons deployed over 46 bases as of 30 June 1961. Forty-one of these squadrons were assigned to USAF ADC, 7 to RCAF ADC, 1 to AAC, and 1 to the US Navy. Seventeen of the USAF squadrons were equipped with F-101's, 14 with F-106's, and 11 with F-102's.* The RCAF squadrons flew CF-100's, and the Navy squadron F-4D's. Total assigned aircraft in the NORAD force was 1,153.

Twenty-eight Air National Guard squadrons, deployed over as many bases, provided the first-line augmentation of the regular forces. Nine squadrons were equipped with F-89's, 7 with F-86's, 6 with F-102's, 3 with F-104's and 3 with F-100's. Authorized strength was 700 aircraft.

Some 1300-1400 additional interceptors assigned to the USAF Tactical Air Command and US Navy and Marine Corps also provided an augmentation potential.

LONG RANGE INTERCEPTOR

In November 1960, USAF ADC asked NORAD's opinion of a draft QOR it had prepared for a Long Range

---

* The last F-89J in the regular inventory was released in January 1961 when the 76th FIS began preparations for conversion to F-106's.

[redacted]

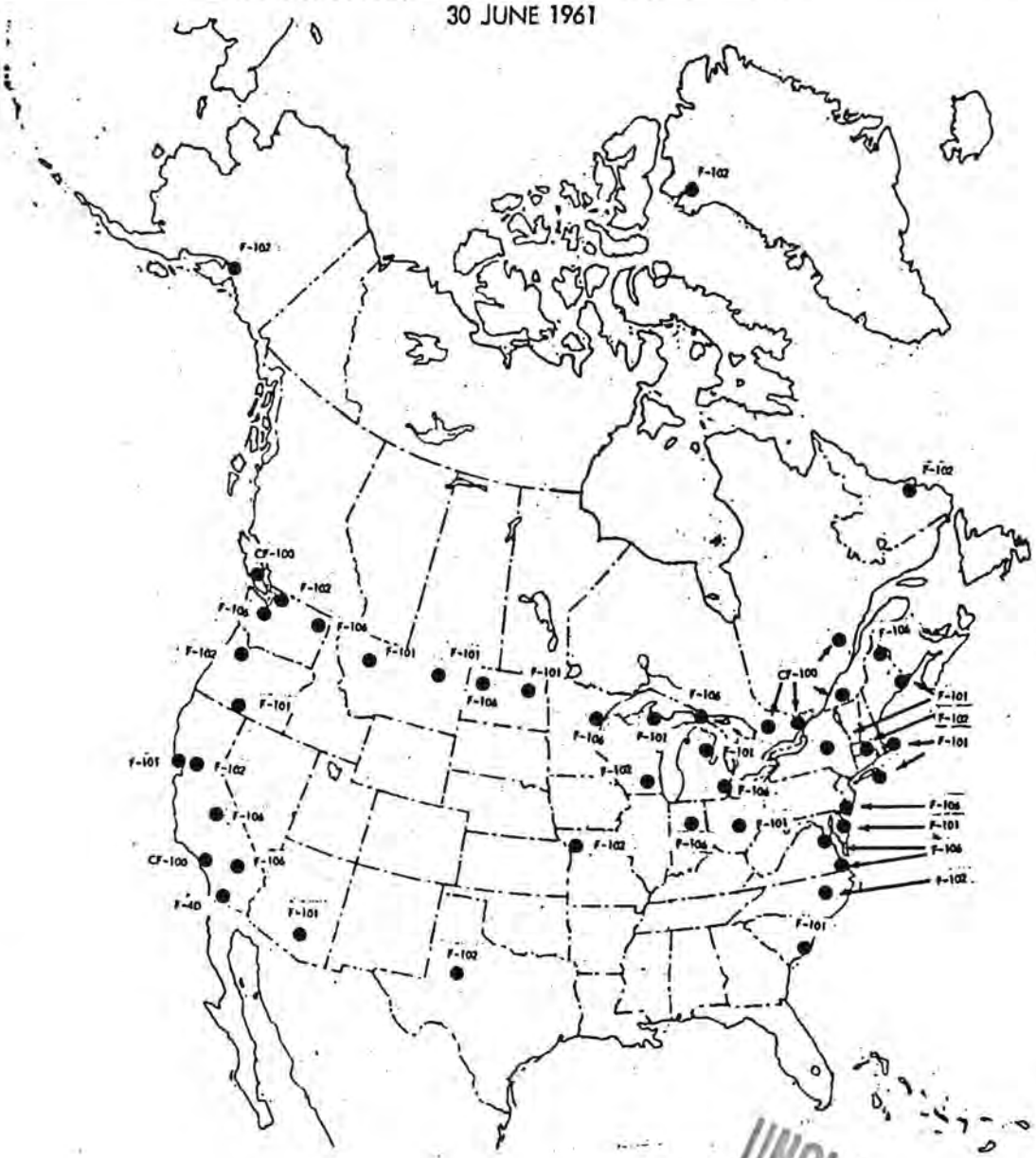
~~CONFIDENTIAL~~

UNCLASSIFIED

Declassified per
21 Sep 06 memo

NORAD REGULAR INTERCEPTOR FORCE DEPLOYMENT

30 JUNE 1961



~~CONFIDENTIAL~~

UNCLASSIFIED

[redacted]

Advanced Piloted Interceptor. ADC wanted it to be capable of operating at 100,000 feet altitude at Mach 5 speed, possess a range of 1500 nautical miles, and be able to make three kills with a 500-mile missile against all post-1966 threats except the IRBM and ICBM. The operational date was to be no later than 1966.

In its reply, NORAD posed a series of questions which, in essence, wondered if the proposed interceptor were not too complex to meet the imminent threat of the supersonic bomber. Any realistic proposal for solving the problem would receive NORAD's heartiest blessing and support. But this particular design did not seem to fit the bill.

In the light of NORAD's comments, USAF ADC modified its QOR, lowering the speed and operating altitude to Mach 4.5 and 90,000 feet, and including more detailed information on the concept of employment. In April 1961, USAF ADC sent the QOR to USAF for study and action. At the same time, it asked NORAD to submit its comments on this revised version for forwarding to USAF.

These were furnished by NORAD on 31 May. While agreeing that the post-1966 threat called for a drastic increase in range, speed, and endurance of interceptors, NORAD expressed doubt that the proposed system was the answer. It appeared to go too far into the ballistic defense area, thereby over-complicating fire control and armament requirements and, perhaps, over-lapping projects already in the mill under the "family of weapons" concept of air defense. Also, the 3-kill capacity was too low for NORAD's requirements. Thus, NORAD's criticisms remained the same: the proposed system appeared to be too complex and too expensive. NORAD doubted that it could be developed in time to meet the threat.

Here the matter rested at mid-1961. The situation seemed to be that nothing further would be done until a study underway in DOD was completed on a super-interceptor capable of meeting the requirements of all the services.

[redacted]



CHANGES IN THE CANADIAN INTERCEPTOR FORCE

Disbandment of Squadrons. Air Marshal Hugh Campbell, Chief of the Canadian Air Staff, informed NORAD in February 1961 that a study of the "operational, financial, logistic and personnel factors in connection with the continued operation of CF-100 aircraft in RCAF Air Defence Command" had prompted the Canadian Air Staff to reduce the RCAF ADC interceptor force from nine to five squadrons. Accordingly, the 425th squadron was disbanded in April and the 428th the following month.* Two additional squadrons would be disbanded in the last half of the year.

The decision took NORAD by surprise. As Air Marshal Slemon explained to Air Marshal Campbell: "... we have always believed that such disbandment would be contingent upon and implemented only upon re-equipment of the other five squadrons with high performance supersonic interceptors." A/M Slemon then expressed NORAD's view that until supersonic fighters were delivered, the remaining five squadrons should keep as many CF-100's in combat readiness as possible. He also asked that any planned future reductions in the Canadian force consider the increased logistical and tactical load that conversion to the advanced aircraft would entail.

Assignment of F-101B's to RCAF ADC. Meanwhile, General Kuter learned that there was consideration being given to adding to the negotiations to assign F-101B's to RCAF ADC a proviso to the effect that the aircraft would have to be armed with nuclear weapons. In a wire to the USAF Chief of Staff, General Kuter pointed out that NORAD considered the deployment of these supersonic fighters to northern bases so urgent that it had recommended they be reassigned from U. S. squadrons. Since the present Canadian administration

---

* The 432d Squadron would be redesignated the 425th in October 1961.

was not in a position to make a commitment on nuclear armament, the proviso could only serve to delay matters. Besides, it was "inconceivable" to him, General Kuter continued, " that the RCAF, when the uncertainty is removed concerning their acquisition of adequate carriers, would fail to use the most effective warheads that their carriers could handle." Consequently, General Kuter urged that the subject of nuclear armament of the F-101's be dropped.

This was the policy finally adopted. In an exchange of diplomatic notes on 12 June 1961, the Canadian and U.S. governments agreed on a transfer of 66 F-101B aircraft from USAF ADC to RCAF ADC. No strings were attached as to the type of weapons the fighters could employ. In recompense, Canada would assume the cost of manning, operating, and maintaining of radar stations in Canada formerly staffed by USAF ADC. RCAF ADC was scheduled to receive the first of the F-101's in late July 1961, with the last fighter to be delivered by the end of April 1962. Meanwhile, selected USAF ADC interceptor units were alerted to assist with the task of combat-qualifying the RCAF pilots in their new supersonic all-weather fighters. So far as the impact of the transfer on the USAF ADC squadrons was concerned, the programmed number of F-101 squadrons would remain the same. But the authorized number of aircraft in most of the squadrons would have to be reduced from 24 to 18.

INTERCEPTOR RECOVERY BASES IN CANADA

In order to engage enemy bombers as far from target areas as possible, NORAD planned to use certain Canadian air bases for interceptor recovery bases. Ten selected bases were listed in NADOP 62-66. These were Bagotville, Comox, North Bay, Chatham, St. Hubert, Val d'or, Uplands, Saskatoon, Portage la Prairie, and either Cold Lake or Namao. USAF ADC had completed agreements with RCAF ADC during the last part of 1960 and the first part of 1961 to use these bases for recovery.

A requirement for an additional two Canadian

[redacted]

recovery bases arose from a request from the 26th NORAD Region on 10 March 1961. The 26th wanted two bases in Nova Scotia, RCN Station Shearwater and RCAF Station Greenwood. Its reason was to provide a flight safety factor for interceptors that over-extended their fuel range while operating in the eastern seaward approach areas of the Boston and Bangor Air Defense Sectors.

Inquiry by NORAD to the RCAF and RCN revealed that these bases could be made available. Accordingly, on 26 June 1961, NORAD instructed USAF ADC to initiate agreements with RCAF ADC and the RCN to make Greenwood and Shearwater available as recovery bases.

AUGMENTATION INTERCEPTORS

Selection of the Category I Force. NORAD's plan, developed in 1960, for the organization, equipping and employment of the interceptor augmentation forces divided them into three categories. Category I was defined as those non-regular, or regular forces not assigned to NORAD, responsive to NORAD control twenty-four hours a day. These forces would be mainly ANG units. Category II forces were those "with a first-line air defense capability" whose employment NORAD might count on in an emergency. These would include ANG units not in Category I and regular USAF and RCAF fighters assigned a D-Day mission of air defense under NORAD's operational control. Regular US Navy and Marine Corps and Royal Canadian Navy fighters based ashore at the time of attack might also be placed in this category. Finally, Category III forces were all the other regular and reserve fighters not included in the first two groups which conceivably would be available at the time of emergency. The basic intent of the plan was to provide NORAD with a force ready for immediate employment with weapons suited to their mission.*

---

* See NORAD/CONAD Historical Summary, Jul-Dec 1960, pp 37-40.

[redacted]

[redacted]

The list of ANG squadrons picked by a joint NORAD-USAF ADC committee for a Category I role was approved by the JCS on 1 December 1960. They numbered 25 squadrons, the most that could be equipped with first-line weapons at the time. The selection of a unit depended primarily on how effectively it filled a gap in coverage and otherwise bolstered the protection afforded by the regular interceptor forces. The new program left in its wake at least one disappointed ANG squadron not picked for a Category I role. NORAD could only explain the circumstances of the selection to the commander and refer him to USAF ADC and the National Guard Bureau for any further claim he might care to make for a Category I mission for his command.

The squadrons selected are indicated on the following table. All had a 24-hour alert commitment as of 1 July 1961. While this force was not the maximum desired, CONAD considered that it "affords the best defense posture with the forces available."

AIR NATIONAL GUARD CATEGORY I SQUADRONS

Unit	Acft Asgd 30 Jun	Base	Sector Asgmt
123d FIS	F-89	Portland Intl Arpt	Portland
116th FIS	F-89	Spokane Intl Arpt	Spokane
132d FIS	F-89	Dow AFB, Me	Bangor
134th FIS	F-89	Burlington MAP, Vt	Bangor
118th FIS	F-100	Bradley Fld, Conn	Boston
*146th FIS	F-102	Greater Pittsburgh Arpt	Syracuse
*157th FIS	F-104	Congaree ANGB, S.C.	Wash DC
196th FIS	F-86	Ontario Intl Arpt, Calif	Los Angeles
152d FIS	F-100	Tucson MAP, Ariz	Phoenix
197th FIS	F-104	Sky Harbor MAP, Phoenix	Phoenix
190th FIS	F-86	Boise Air Terminal	Reno
194th FIS	F-86	Fresno Air Terminal	SF
178th FIS	F-89	Hector Arpt, Fargo	Grand Forks

* Not standing alert on 1 July 1961 due to conversion.

[redacted]

Unit	Acft Asgd 30 Jun	Base	Sector Asgmt
175th FIS	F-102	Foss Fld, Sioux Falls	Grand Forks
186th FIS	F-89	Great Falls MAP	Great Falls
173d FIS	F-86	Lincoln AFB	Sioux City
176th FIS	F-89	Truax Fld, Wisc	Chicago
124th FIS	F-86	Des Moines MAP	Chicago
*151st FIS	F-104	McGhee-Tyson Aprt	Chicago
179th FIS	F-89	Duluth MAP, Minn	Duluth
159th FIS	F-102	Imeson MAP, Fla	Montgomery
122d FIS	F-102	New Orleans NAS	Montgomery
111th FIS	F-102	Ellington AFB, Tex	Okla Cy
182d FIS	F-102	Kelly AFB, Tex	Okla Cy
188th FIS	F-100	Kirtland AFB	Okla Cy

* Not standing alert on 1 July 1961 due to conversion.

Nuclear Arming of the ANG. NORAD has long held to the position that the first-line ANG fighter force had to be equipped with nuclear weapons. When the JCS approved the Category I augmentation plan on 1 December 1960, they also promised to sanction arming the Guard fighters with nuclear weapons once they received definite NORAD recommendations on the matter. By the end of 1960, USAF ADC and NORAD had agreed on the following points: (1) all USAF ADC Category I ANG F-89J's should utilize the MB-1 rocket as their primary weapon; (2) all USAF ADC regular and ANG Category I F-102's should be armed with the GAR-11 rocket; and (3) suitable base storage should be provided the ANG F-102 and F-89J squadrons employing these weapons.*

On 1 February 1961, CONAD submitted detailed recommendations to this effect to the JCS, asking that they be approved and funded. The JCS subsequently

---

* See NORAD/CONAD Historical Summary, Jul-Dec 1960, pp 37-40.

forwarded the recommendations to OSD, which approved them on 23 May. Thus the road was cleared for developing the ANG Category I squadrons into a truly effective D-Day force.

There were still problems to overcome. In mid-June, USAF wrote that in the face of limited GAR-11 production "there appears to be no prospect of providing the ANG F-102 squadrons a nuclear capability in the near future unless CINCONAD will share GAR-11 warheads between ADC and the ANG as they become available." CONAD answered that nuclear storage facilities should be constructed on all non-collocated ANG Category I bases.* If this were done, the regular and ANG forces could then operate from either regular or Guard bases. This would provide the emergency dispersal of forces and flexibility of operations which CONAD sought to provide its interceptor force. In other words, CONAD saw no reason why ANG F-102's could not employ GAR-11's assigned to the regular forces. To "ensure maximum flexibility of operations," CONAD would store the available GAR-11's where they were needed. This could be on ANG as well as regular airbases.

MISSILE FORCE

NIKE

Regular Forces. The NORAD missile force moved steadily toward its programmed goals with the conversion of 16 additional fire units to the Hercules missile during the first half of 1961. At the end of June, the total NIKE regular Army force stood at 123 Hercules fire units and 56 Ajax.

National Guard. In the Army National Guard missile

---

* A base on which there was no regular squadron located with an ANG squadron.

force, two milestones were attained: (1) Battery "B" of the 1st Missile Battalion, 126th Artillery, traded its guns for Ajax on 1 March making all of the Guard force missile-armed for the first time; (2) the programmed force of 76 Ajax-armed ARNG units was reached in April.

Total missile authorization at the end of June was 1385 Hercules and 3747 Ajax.

Program. As shown in the following table, the programmed RA NIKE Hercules force would soon be completed.* NORAD's objective for the ARNG missile force differed from the service program, however. NORAD would convert 48 of the 76 Ajax fire units to Hercules by June 1963. It would phase-out the 28 Ajax fire units altogether by June 1965. NORAD's reason was expressed in NADOP 1963-67: "With this phase-out, the National Guard will take over the operation of forty-eight of the programmed NIKE HERCULES fire units, in order to provide Regular Army personnel for NIKE ZEUS."

NIKE PROGRAM: June 1961-June 1965

	June 1961	June 1962	June 1963	June 1964	June 1965
RA NIKE HERCULES FIRE UNITS					
Continental U.S.	113	126	126	126	126
Alaska	9	9	9	9	9
Greenland	4	4	4	4	4
TOTAL	126	139	139	139	139
NG FIRE UNITS					
NIKE AJAX	76	76	76 (28)*	76 (28)	76 (0)
NIKE HERCULES	0	0	0 (48)	0 (48)	0 (48)

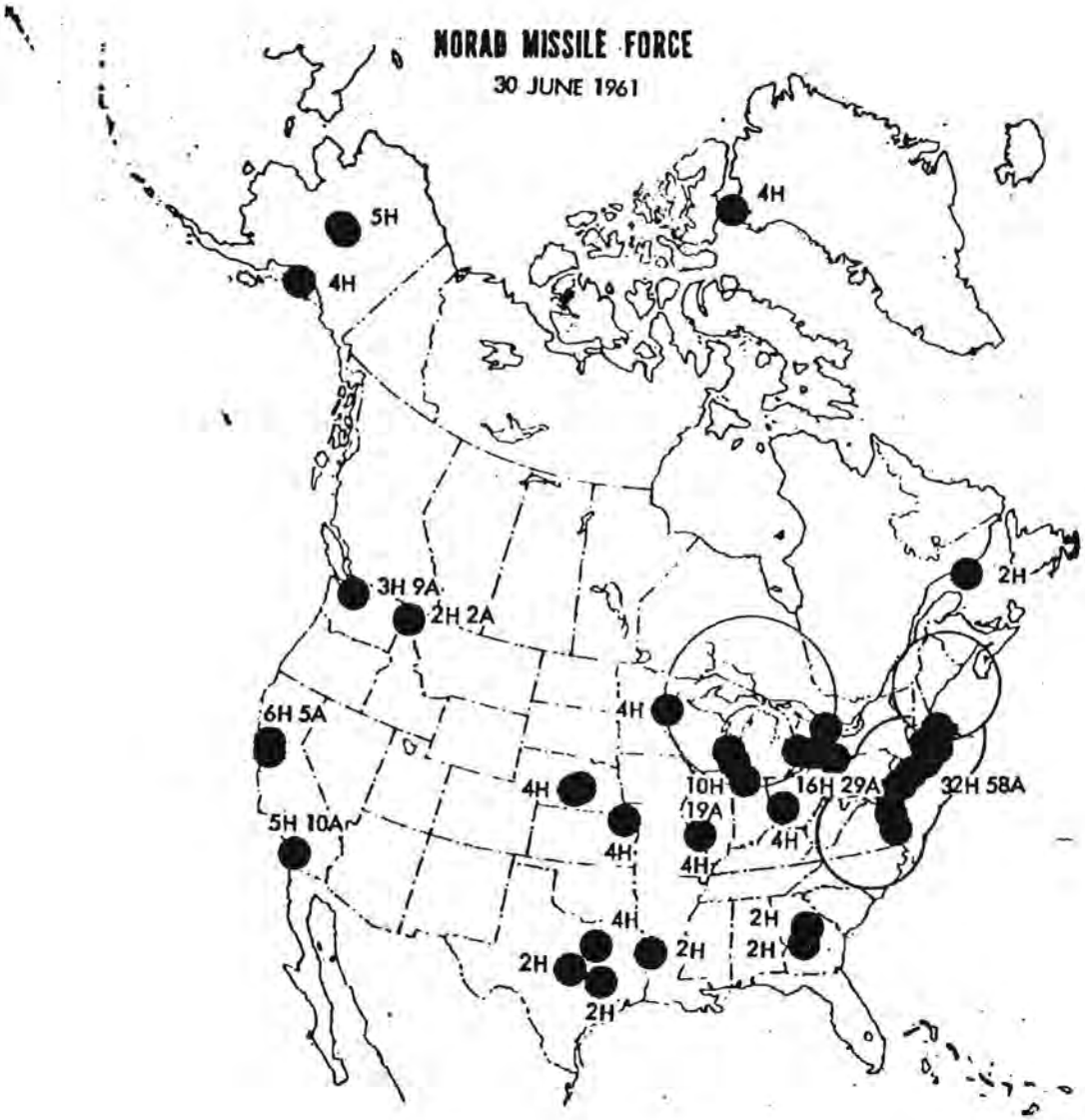
* NORAD objectives in parenthesis.

* The remaining RA Ajax units were to be phased out by FY 62.

[redacted]

NORAD MISSILE FORCE

30 JUNE 1961



● NIKE AJAX HERCULES

○ BOMARC A

◯ BOMARC B

[redacted]

[redacted]

BOMARC

Current Forces. One more Bomarc squadron became operational on 1 June, bringing the total number of operational squadrons to six. The new squadron, the 37th Air Defense Missile Squadron (ADMS) at Kincheloe AFB, was armed with the first of the B missiles to be assigned the system. Missiles on hand at the end of June 1961 numbered 207A and 19B.

Helium tank modifications on the A missile continued to lower the operational readiness of these sites. Following a helium tank failure with a resultant fire at McGuire AFB in June 1960, the Air Force asked for a thorough investigation of the helium tank system by Boeing Aircraft Company, the prime contractor. Meanwhile, as a safety measure, the A missiles were reduced to one-half helium pressure (2150 pounds per square inch).

The Boeing investigation revealed that the tanks required modification. They were unsafe for long term storage in their present configuration. Accordingly, a "fix" was selected and implemented as Engineering Change Proposal (ECP) 391-4. In October and November 1960, USAF ADC returned the A missiles to full helium pressure. When further tank failures occurred in the Boeing test program, however, USAF ADC again reduced the missiles to half pressure. They were kept in this state throughout the first half of 1961.

In June 1961, both the helium tank fix and an automatic check-out system modification were underway on the A missiles.

Program. NORAD continued to hold to its position that four Bomarc sites were needed on the west coast in addition to the 8 sites in the eastern U. S. and the 2 in eastern Canada. NORAD also stated an objective (in NADOP 63-67) for 398 B missiles in addition to the 252 tactical inventory B missiles currently programmed. NORAD would locate 218 of these in the vicinity of the eastern sites and the remaining 180 near the four proposed western sites.

[redacted]

[redacted]

BOMARC PROGRAM: June 1961-June 1965

	June 1961	June 1962	June 1963	June 1964	June 1965
A Squadrons	5	4	2 (1)*	2 (1)	2 (1)
B Squadrons	1	4	5 (4)	5 (4)	5 (4)
A/B Squadrons	0	1	3 (9)	3 (9)	3 (9)
TOTAL	6	9	10 (14)	10 (14)	10 (14)

* NORAD objectives in parenthesis

[redacted]

FIVE
COMMANDANDCONTROL STRUCTURE

SYSTEM SURVIVABILITY

EXPANDED MANUAL BACKUP PLAN

The cancellation of the Super Combat Center (SCC) program in early 1960 required NORAD to completely revise its manual backup to SAGE.* With the destruction of many of the SAGE defenses in the first attack now a certainty, it was obvious that a broader manual backup system had to be devised. It had to be one that would afford the NCC greater centralized control and, at the same time, extend weapons control far beyond the NCC local radar coverage. This meant equipping and manning selected radar stations that were not in a target area for GCI operations.

Preliminary discussions found the NORAD staff agreed that a new plan for an emergency system would have to provide for all three of the essential features of survivability -- hardening, redundancy, and diversity. Factors which would influence the initial shaping of the plan would be (1) the limited funds and manpower currently available to support the plan, and (2) the continued lack of firm plans for weapon survival.

On 25 November 1960, NORAD staff and region officers met in Colorado Springs to discuss the problem. A first step was to authorize the regions to keep certain manual equipment originally scheduled to be phased out when the SAGE system became operational. Then,

---

* See NORAD/CONAD Historical Summaries, Jan-Jun 1960, p 6, and Jul-Dec 1959, pp 24-30.



aided by the region suggestions, the NORAD staff prepared a guide titled "NORAD Concept of Manual Operations for Backup to SAGE." This was sent to the regions in February to help them develop their individual manual operations orders and plans. NORAD's concept of the emergency system was summarized as follows: "We can expect portions of SAGE operations to be ineffective for unknown periods of time /after the initial attack/... The orderly transition from one mode to another is essential so that continuity of operations will be retained, whether degrading or upgrading our defense capabilities."

Also in February, USAF ADC forwarded a copy of this concept and guide to USAF for whatever advice that headquarters might offer. In answer, USAF noted that it would be difficult to support expenditures on emergency equipment at locations whose survival of the initial nuclear attack was questionable. USAF then requested that the initial emergency backup system plan on which the NORAD staff was working be completed and submitted to Washington by 10 April.

Meanwhile, USAF recommended that $37 million be included in President Kennedy's recommended adjustments to the FY 1962 military budget for the construction and operation of an emergency system. However, OSD reduced this to $23 million, eliminating provisions for the manual backup for the control of Bomarc and limiting funds for the manual control of other weapons. The $23 million would be used for additional air-ground and ground-ground communications, construction of fall-out protection at selected GCI sites, backup power facilities, and increased maintenance, communications and operating costs.

From 4-6 April, USAF ADC, ARADCOM and NORAD officers convened to complete the details of the initial plan within the general deployment and fund framework set forth by USAF. On 7 April, the finished plan was forwarded to ADC which hand-carried it to USAF to meet the 10 April target date. In forwarding the plan, NORAD pointed out that it "has been developed within





definite budgetary restrictions and, as a result, is considered as an initial step toward meeting a realistic backup system for SAGE. BOMARC control and fighter interceptor dispersal have not been fully exploited. Also, proposals for newer and more sophisticated control and communication equipments...are still under study."

RETENTION AND RE-INSTALLATION OF MANUAL EQUIPMENT

When work on a plan for emergency backup to SAGE was begun in mid-1960, NORAD asked USAF ADC to put a freeze order on the scheduled release of GPA-37's in the ground stations. This manual control equipment would be needed in the expanded Mode III operation.

Following the November 1960 meeting of NORAD region and headquarters officers on the backup plan, NORAD trimmed its requirement to 16 stations, thus enabling GEEIA to begin removal of GPA-37's where they were not needed. At the same time, NORAD asked that GPA-37's be re-installed in two stations. Additional guidance was provided the regions in early 1961 on the retaining of plotting boards, air ground transceivers, and other manual equipment.

In May, USAF ADC recommended that the GPA-37 program be reduced to GPA-23's. NORAD's initial reaction was to disagree, and to insist that the original program -- now incorporated in the 10 April Manual Backup Plan -- be adhered to. However, subsequent strong assurance by ADC that the GPA-23 proposal would afford equal operational capability at considerably less expense, changed NORAD's point of view. On 29 June, NORAD concurred in the substitution of the GPA-23's for the GPA-37's.

APPROVAL OF AN AUTOMATIC SWITCHING PLAN

The automatic switching of soft commercial communications would greatly enhance the survivability potential of the system as well as provide an increased



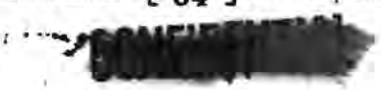


flexibility and economy of operations during peacetime. In September 1960, NORAD sent an AT&T proposed plan on the subject to USAF ADC for implementation action. The plan called for the use of presently installed SAGE communications to the maximum extent, with the switching capability to be provided through existing Bell Telephone switching centers. Target date for the system was 1962. NORAD summarized the need and characteristics of the system as follows:

> To assure reliable communications and to provide diversity under damage conditions, an automatic four-wire switching system is required for the NORAD network. This system must have the ability to provide automatic alternate routing, overflow to and from the commercial direct dialing system, and have high-quality four-wire circuits to permit voice, data, or teletype communications.

Copies of the plan were submitted to JCS at a briefing on the proposed system in April 1961. The JCS and Defense Communications Agency (DCA) representatives agreed that the concept was valid and the system should be implemented as soon as possible. However, they felt that since the network was part of the overall defense communications system any changes had to be first reviewed and approved. In a personal message to General Lemnitzer, General Kuter stressed the urgency of this system and requested expeditious action on its approval. "We have developed the philosophy that...communications must be equally as hard as the environment that it serves," General Kuter said.

> By providing automatic switching to our network we will have the capability of automatically by-passing damaged areas and restoral of communications, thereby assuring that the surviving elements of the soft environment can communicate and those truly hard portions of the environment can control all the surviving elements.



On 7 July, NORAD was informally notified by the J-6 staff of the JCS that the Automatic Switching Plan had been approved.*

NEW NORAD COMBAT OPERATIONS CENTER

In March 1959, the JCS made the decision to locate the new NORAD COC in Cheyenne Mountain, south of Colorado Springs. The Air Force was made responsible for carrying out the hardened COC project in collaboration with NORAD. The land was purchased and the access roads to Cheyenne Mountain were completed.

However, in November 1959, NORAD learned from USAF that construction of the COC system was to be deferred, pending further review of the project, including additional studies on the systems design for the COC. The funds scheduled for the COC were to be used for other programs.

Studies continued and the COC remained in a deferred status for almost a year. Finally, NORAD learned in October 1960, that USAF had approved the project and had requested DOD to reprogram the necessary funds. Since the funds originally programmed for the COC excavation phase had been rescheduled, Congressional approval for release of funds was required.

Also in October, USAF directed its Systems Command to proceed with the COC systems design study. This included authority to engage the MITRE Corporation and the Systems Development Corporation to produce performance specifications suitable for negotiating a systems contract. USAF released $500,000 for this project which was to continue for six months.

---

*Due to economic considerations, the system to be installed would be a combination two and four-wire one.

[redacted]

On 6 January 1961, the JCS gave their approval for the COC project with only minor changes, and submitted it to the Secretary of Defense. The request for release of $8.5 million for the excavation phase was forwarded to Congress on 9 January 1961. On 3 March 1961, USAF informed NORAD that $8.531 million had been released for the COC excavation. The balance of $12.4 million for completion of the COC project was to be requested in the FY 1962 Military Construction Program.

Excavation for the NORAD hardened COC in Cheyenne Mountain began on 18 May 1961.

On 22 May 1961, NORAD published its Operational Employment Concept (OEC) for the COC. The document described in detail the manner in which the NORAD COC was to operate in 1964 when it would attain initial operational capability. It updated previous studies which had been done at the time the JCS first approved in principle the concept of the hardened automated operations center. However, the document contained essentially the same general requirements as earlier expressed by NORAD, with the addition of the new systems which had been assigned to CINCNORAD's operational control.

On 5 July 1961, CINCNORAD issued a policy memorandum to the subordinate and component NORAD commanders on the manning of the new COC. It established manning principles as follows:

> a. The pattern set in the present COC has been effective and should set the general tone.
>
> b. Service systems which terminate in the COC may have personnel located in the facility. The duties of these service personnel are to assure that the service system functions in accordance with technical criteria established by the service and operating instructions issued by CINCNORAD.

[redacted]

[redacted]

c. Maintenance of communications and technical operation of electronic equipments, including data processors, will be a service responsibility.

d. The central computer will be technically operated by USAF ADC; but instructions for programming the computer, insofar as CINCNORAD's operational requirements are concerned, will emanate from CINCNORAD.

e. In the COC, the NORAD chain of operational control will extend at least to the positions at which degrees of credence are assigned to the end product of the separate systems.

f. Administration, maintenance and logistic support of the plant facility will be the responsibility of USAF ADC.

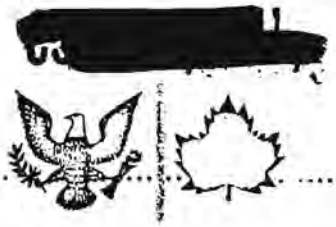
g. The extent to which NORAD control must finally extend into components' systems can be determined only by time and experience.

ALTERNATE COMMAND POST

On 20 October 1960, the JCS directed all unified and specified commands and the services to have prelocated alternate command elements in hardened, dispersed, or mobile facilities by 1 July 1961. The purpose was to insure survivability and continuous exercise of command under conditions of general war. The JCS directed that plans be submitted which would include organization of the alternate command element, terms of reference, and prelocation plans.

To meet these requirements NORAD rewrote its alternate command post (ALCOP) plan, contained in Annex G

[redacted]



to ADNAC 1-60, dated February 1960, using the existing NORAD ALCOP as the dispersed facility. The existing ALCOP was located at Richards-Gebaur AFB, Missouri, and was collocated with the 33d NORAD Region (which became the 29th NORAD Region on 1 July 1961) command post. It was manned and operated by the 33d NORAD Region Commander. He was to immediately assume operational control of all NORAD forces and act as alternate NORAD commander pending arrival of CINCNORAD or proper assumption of command by the Deputy CINC or next eligible officer.

The new Annex G to ADNAC 1-60 was issued 22 May 1961, entitled "Continuity of Operations." There were three major sections added to comply with the JCS directive. Terms of reference were provided for the Alternate NORAD commander. A manning table for the ALCOP, along with more organization details, were added. Finally, plans were included for the reconstitution of Headquarters NORAD in the event of its destruction or isolation. This would be achieved by a Strategic Alert Cadre composed of selected key personnel from NORAD staff sections and NAVFORCONAD. The cadre would serve as a nucleus to reconstitute Headquarters NORAD at the ALCOP during the post-battle stage.

A further result of the JCS directive of 20 October 1960 was for NORAD and ADC to prepare justification plans to improve the existing ALCOP. The ALCOP at Richards-Gebaur AFB was basically a manual plotting board that displayed the NORAD air-breathing threat. It was incapable of processing or displaying BMEWS, SPADATS, NUDETS, or MIDAS information.

Accordingly, an ALCOP requirements plan dated 22 June 1961 was prepared by NORAD and ADC and submitted by ADC to USAF. The plan stated that "the purpose of the NORAD ALCOP was to insure continuity of operational command and control." The ALCOP was to be located in the Command Post of the Kansas City SAGE Direction Center. USAF had already approved the use of the Kansas City AN/FSQ-7 computer to provide an RCC function.



[redacted]

SAGE/MISSILE MASTER INTEGRATION TESTS

BACKGROUND

Back in January 1957, the Secretary of Defense had asked that CONAD prepare an over-all plan for testing SAGE/Missile Master integration and to monitor tests and studies. CONAD's plan was approved early in 1958.

Phase I of the testing was held in the Washington Air Defense Sector which was the first to include both Missile Master and SAGE.* It was run from September 1958 to the end of January 1959. This test was designed to provide data for certifying that the inter-connected equipment was technically compatible. The test proved, according to the NORAD report, that the equipment was technically compatible on an integrated systems basis.

The second phase of the testing was conducted with the Evaluation SAGE Sector (ESS) and the Boston/Providence Nike fire units and their associated missile master at Fort Heath, Massachusetts (the early portion was run with a partial missile master system at Fort Banks). The purpose of the test was to verify the design of the Automatic Target and Battery Evaluation (ATABE) function of the SAGE computer program, to determine its compatibility with system equipment, and to establish basic operating procedures. Phase II was completed on 21 October 1960.

PHASE II TEST REPORT

On 1 June 1961, NORAD published a test report on Phase II SAGE/Missile Master Integration. The NORAD report summarized the results of the tests as follows:

---

* For background on early planning of SAGE/Missile Master Integration Tests, see NORAD/CONAD Historical Summaries, Jul-Dec 1958, and Jan-Jun 1959.

[redacted]

[redacted]

a. The ATABE function was coded in accordance with the operational design specifications.

b. The equipments of the SAGE/Missile Master/NIKE System operated as specified and when connected together were basically compatible.

c. The ATABE function served to integrate the Missile Master/NIKE fire unit configuration into the SAGE System.

d. The test standard operating procedures (SOP's) that were devised for the test were adequate for integrating the operator functions of the system.

DEEP RIVER

The third phase of the SAGE/Missile Master integration testing was assigned the name Deep River. It was to take place in the 26th NORAD Region, using the operationally integrated SAGE/Missile Master Systems of the Boston and New York NORAD Sectors.

The purpose of Deep River was to evaluate the operational effectiveness of an integrated SAGE/Missile Master System against a manned bomber with varying degrees of ECM capability. NORAD's Operations Order 9-60, dated 5 December 1960, stated that the test objectives were to determine:

a. The operational capability of an integrated SAGE/Missile Master System to cope with various attack situations in each of its two operating options (ATABE and Reference Data).

b. The most desirable method(s) of exercising operational control of Army air defense weapons.

[redacted]

c. Equipment, program, and/or procedural modifications which would be required to enhance the operational effectiveness of an integrated system.

d. The capabilities and the techniques of employing various ECM and ECCM equipments.

Deep River was to continue for the entire 1961 calendar year at the rate of one mission per month. SAC was to supply 40 aircraft for each mission. The first four missions were designed for light ECM, the second four for moderate ECM, and the last four for heavy ECM.

The first three Deep River Missions were run during the first three months of CY 1961 as scheduled. Deep River IV for April was postponed because of ECM fix limitations to the ARSR-1 Radar at Fort Heath. NORAD planned to run this mission later in the year. The May mission had to be modified. The June mission was cancelled because of weather. Hence, only four Deep River missions, of the six scheduled for the first half of CY 1961, were accomplished. No evaluation of, or conclusions from, the four test missions had been published.

Earlier on 5 April 1961, SAC told NORAD that it was necessary to indefinitely postpone the balance of the exercises scheduled from May to December 1961. SAC said the equipment designed to duplicate the B-52 retrofit ECM capability would not be available during that period and SAC test objectives could not be achieved. Instead, SAC proposed running alternate Deep River tests from May to August using light ECM, and cancelling the remaining year's program unless SAC's modern ECM equipment became available.

On 7 April 1961, NORAD concurred in the alternate Deep River missions. However, NORAD told SAC it still needed the Deep River missions scheduled for September through December to satisfy its SAGE/Missile Master test requirements and to avoid serious problems

with already funded contractor assistance. SAC asked USAF to expedite the ECM equipment for the B-52's. But at mid year, NORAD had no assurance that the Deep River tests would be completed.

ALRI AND SLRI PROGRAMS

AIRBORNE LONG RANGE INPUTS (ALRI) PROGRAM

The Burroughs Corporation was awarded the contract for the programmed ALRI retrofit of the east coast AEW&C force. Lockheed, under sub-contract to Burroughs, would perform the actual aircraft modification at its Long Island plant. Once ALRI-equipped, the RC-121's would function as long-range radar stations, forwarding surveillance data automatically and possessing a SAGE intercept control capability.

By late June, the ALRI #1 prototype aircraft, flown to Otis AFB from the Lockheed plant in Los Angeles on 23 June, had commenced data-gathering flights in conjunction with the P-10 North Truro, Massachusetts, ALRI ground receiver station and the Evaluation SAGE Sector computer. The ALRI prototype #2 aircraft was scheduled to begin east coast tests about 15 July. By the end of June, the overall test program was running about three weeks behind schedule.

Meanwhile, NORAD staff officers felt that such excellent progress was being made on construction of the P-10 and P-56 (Cape Charles, Virginia) ground stations that they might possess limited operational capability by January 1962. Since the first RC-121's of the 551st AEW&C Wing were due out of modification in October 1961, five to nine of them should be available by January 1962 for employment with these stations.

In June, USAF ADC, on NORAD's request, reiterated NORAD's desire to ALRI-equip the west coast stations. USAF turned the request down, however, because of fund

[redacted]

limitations. USAF estimated that it would cost $39 million to re-instate the ALRI program for the west coast units.

A further attempt to improve west coast AEW&C capability was made in a request for the installation of single side band (SSB) radio communication equipment in the west coast RC-121's. The original SSB request was withdrawn in favor of the ALRI program. But when the west coast ALRI modification was deleted, the requirement for SSB was never restated. Meanwhile, the one HF circuit on the aircraft had to be time-shared for navigation fixes, pilot operational reports, surveillance reports, and handover of interceptors. Consequently, surveillance data transmission was often dangerously delayed.

NORAD's view was that the requirement for SSB equipment on the east coast could be held in abeyance pending evaluation of the adequacy of the ALRI UHF communication capability. However, an immediate and urgent requirement existed for the equipment in the west coast units. USAF felt, however, that demands of high priority modification projects in other areas made it impossible for them to approve the SSB modification at the present time.

SURFACE LONG RANGE INPUTS (SLRI) PROGRAM

On 12 April 1961, NORAD submitted to the JCS a QOR for the automatic processing, transmitting and injection into SAGE of picket ship surveillance. NORAD set July 1962 as the desired operational date, pointing out that to meet this date, equipment already in use would have to be adapted to the SLRI system.

To satisfy NORAD's operational needs, the SLRI computer had to automatically process the shipborne radar surveillance data and feed it automatically in digital form into the shipborne communications system for automatic relay to the ground receiver station. Here it had to be automatically accepted and relayed into the SAGE computer. The track processing capacity

[redacted]



for the picket ships had to be equivalent to that of the ALRI airborne radar platform and the SAGE radar sites (300 messages per scan). And the bit-per-second rate had to be compatible with that of the SAGE FSQ-7 computer, if possible, with a 98 per cent reliability factor.

Meanwhile, USAF ADC had proposed that as an interim measure to speed the flow of picket ship information through the system, IBM transceiver equipment be installed in the picket ships and direction centers. The equipment -- consisting of punch card message composers on the picket ships and receiver-converter punch card equipment in the SAGE direction centers -- would be rented from IBM and used with HF SSB transceiver equipment.

A test of such a system in late 1960 had shown it to be far superior to the conventional teletype presently in use, cutting the track message ship-to-computer time from six to three minutes or less. And USAF ADC had found the IBM Corporation's plan for operating with the equipment to be "feasible, practical, and readily adaptable to present and planned Seaward Extension communications." Further, the equipment was on hand for immediate lease from IBM.

Accordingly, USAF ADC asked NORAD in February 1961 to approve the plan and to arrange with the Navy to lease the IBM equipment for the picket ships in time to meet a 1 July 1961 operational deadline. ADC had already insured that Air Force funds were available for installing it in the ground stations.

NORAD approved the project on 20 March. On the same date, it asked NAVFORCONAD to act on the Navy portion of the system. While ADC and NAVFORCONAD could not meet the original 1 July target date, there was every promise they would have the system in operation sometime during the first quarter of FY 1962.



[redacted]



NORTHERN AREA COMMUNICATIONS

BACKGROUND

In December 1957, NORAD submitted to the JCS a seven-point plan for improving northern area (Canada-Alaska-Greenland) communications. It called for various improvements in the existing routes which extended along the eastern and western coastlines and varied in length from 4,000 to 7,000 miles. It also established the need for a new north-south axis of communications through central Canada. This new route would link the DEW Line and Mid-Canada Line, with an extension to Thule, Greenland. Once in operation it would (1) shorten many channels, sometimes as much as 4,000 miles, (2) be less vulnerable to damage by natural or hostile causes than the coastal routes, and (3) provide alternate route capability in case of damage to the others.

The requirement for this central route was reiterated to the JCS in September 1958 and again in March 1959. Following a May 1959 conference on the subject attended by JCS, NORAD, SAC, RCAF, and Alaskan Command officers, the blueprint for the new route was re-drawn to reflect the needs of all these potential users. This was submitted to the JCS the following month.

Early in 1960, the JCS returned the central Canadian route plan to NORAD for restudy in the light of the current program and budget upheavals occuring at that time. Not being able to reach firm agreement on the priority of importance of the route, the NORAD staff pigeon-holed the plan for several months. In August 1960, however, because of the "extensive and extended deliberations /then taking place within the defense establishment/ as to the ultimate air defense environmental configuration," a detailed re-examination of the plan was begun by the NORAD staff.

INTERIM COMMUNICATIONS IMPROVEMENTS

Meanwhile, a number of improvements had been made or were programmed in northern communications, most of which were achieved as by-products of the BMEWS program.

In the Alaskan area, two reliable, high quality, geographically-separated communications routes were planned. One route would follow the western coast, while the other would follow the Alcan Highway. Designed to support the Clear, Alaska, BMEWS operation, they would, at the same time, improve the general NORAD-Alaska tactical communications environment.

BMEWS communications between Thule and the ZI would improve general communications in the northeast area. A highly vulnerable communications complex was created in the Cape Dyer area by this activity, however. Also, the submarine cables between Thule, Cape Dyer and Newfoundland in the Thule-NORAD rearward communications route were being cut by icebergs in the shallow water cable route approaches to Cape Dyer. The cable was towed to deeper water after the latest iceberg cut on 3 October 1960 and restored to service three weeks later. But this presented problems since it now by-passed the Cape Dyer Terminal, thus preventing the patching in of alternate routes at the Cape Dyer Switching Center.

Finally, considerable improvement was made, or planned, in the White Alice System -- the basic intra-Alaska communications system. This included extensions from Fort Yukon to Barter Island and along the Aleutians to Shemya. It also included additional inter-communications between Fairbanks and Anchorage.

CONTINUED REQUIREMENT FOR CENTRAL ROUTE

Despite these improvements, NORAD's position on the Canada north-south communications axis remained the same: the route was needed and not enough attention was being given to fulfilling the need.

[redacted]

The mid-1961 justification for the central route was considerably stronger than it had been in 1957. It was still needed to reduce the path length of northern circuits and for alternate operational use in the event the coastal routes were bombed out. By now, however, it was vitally needed to take the pressure off the Cape Dyer communications complex, thus reducing Cape Dyer's value as a prime target.

Also, while the interconnection that would be made between the DEW Line and the Mid-Canada Line was not an operational necessity, this link would afford vastly improved ground control of long range fighters.

Finally, the central route would contribute greatly to the vital SAC positive control system.

In reiterating its need for the central Canada route to USAF in March 1961, NORAD also stated a requirement for a reliable communication link between FOX, on the DEW Line, and Thule AFB. This would further relieve pressure on the overloaded Cape Dyer complex. The installation of this link and a central Canada route would, in NORAD's opinion, greatly enhance "the reliability and survivability of BMEWS and other communications" in the northern area.

[redacted]

NI-21200-E

[redacted]

SIX
OPERATIONAL POLICIES AND PROCEDURES

TRAINING

NORAD/SAC INTERCEPT TRAINING

On 8 April 1961, the Air Force suspended all practice intercepts against SAC aircraft. USAF Headquarters did this because of the shooting down of a SAC B-52 bomber by an Air National Guard F-100 interceptor on 7 April. The F-100 was practicing an intercept on the B-52 when a GAR-8 (sidewinder) missile accidentally fired. The cause of the accident was attributed to a design deficiency in the GAR-8 armament pod.

NORAD asked USAF on 3 May, to reinstate joint training with SAC on an interim basis with unarmed interceptors. It also asked that restrictions be lifted against using conventionally-armed interceptors for intra-command intercept training for units which had demonstrated weapons proficiency. And finally, NORAD recommended resumption of all training with armed interceptors as soon as possible.

USAF replied on 6 May that intercepts against SAC planes with unarmed interceptors could be made when SAC agreed. But USAF said it would not authorize intercepts with armed aircraft until all armament systems had been checked. On 17 May 1961, CINCSAC agreed, subject to assurance from CINCNORAD that all NORAD units and augmentation forces had been briefed on employing only unarmed aircraft. SAC/NORAD intercept training with unarmed interceptors was resumed on 15 June 1961.

[redacted]

NORAD/SAC JOINT EXERCISE AGREEMENT

During the planning of Exercise Sky Shield in 1960, SAC and NORAD agreed that the exercise should not be used to evaluate the relative effectiveness of the strategic air forces or the air defense forces. Thus, no exercise data was to be collected for this purpose.

But NORAD sought to liberalize this policy for outside organizations. On 22 May 1961, NORAD asked SAC to agree to permit any other command or agency (than SAC and NORAD) to collect, analyze, or report on any aspect of the 1961 exercise. NORAD made the proviso that an outside command or agency would have to submit the proposed analysis project in advance and the concurrence of both NORAD and SAC would be necessary. NORAD asked that this statement of policy constitute a joint SAC/NORAD exercise agreement.

SAC agreed on 3 June 1961.

ECM TRAINING

A major problem was NORAD's inability to provide adequate electronic warfare training for its forces. To solve its problem, NORAD was exploring the possibility of obtaining an airborne electronic jamming system that could provide effective ECM against all of the NORAD system and be carried in a self-contained detachable pod by any faker target aircraft. Recent developments in electronic tubes made it feasible to package ECM equipment of sufficient power-output in a detachable pod.

Accordingly, NORAD wrote a qualitative requirement for an Airborne Electronic Jamming System. The document described the system as follows:

> 1. Basic Considerations. The proposed system must provide an electronic jamming capability that can be readily attached, when needed, to trainer, support, and combat aircraft of the component and augmentation forces.

a. The system must be capable of covering all ten of the NORAD radar frequency bands with a degree of effectiveness in each band that nearly duplicates the capability of the Soviet bomber threat.

b. The system must be configured into a self-contained, detachable pod shell, which could be readily attached to any jet aircraft in the NORAD system without major modifications to the aircraft.

Each ECM pod was to contain four transmitters with a total output of 1000 watts minimum. Its size was to be approximately 120 inches in length by 12 inches in diameter, with a maximum gross weight of approximately 400 pounds. NORAD's requirement called for the pod to be operational as soon as possible but not later than FY 1963.

On 17 May 1961, NORAD sent its requirement for the ECM pod to ADC. NORAD stated that during 1960, 63,000 faker target sorties were conducted against the air defense forces. Of these, 85 percent (53,000 sorties) were provided by component and augmentation forces and 15 percent (10,000 sorties) by SAC. The 85 percent provided by the NORAD forces had no electronic jamming capability. The 15 percent provided by SAC had only a limited electronic jamming capability because the SAC equipment was designed for use against the Soviet air defense system.

In the meantime, NORAD and SAC agreed to revise their joint ECM training program named "Big Blast." The revised Big Blast program divided the U. S. and Canada into three geographical air defense training areas. These areas were to be aligned with SAC numbered air forces. Each of the latter was to provide one exercise each month to the applicable air defense area. In addition, SAC's 801st Air Division was to augment the numbered air forces in each exercise.



The detailed planning for and implementation of the plan was to be carried out by the 32d CONAD Region at Dobbins AFB, Georgia. The friendly forces listed by CONAD in its plan were as follows:

(1) Key West Naval Air Station - provides radar and fighter aircraft on 5-minute status at Key West for the operational control of CINCONAD.

(2) SAC - provides air field support for aircraft temporarily stationed at Homestead AFB.

(3) TAC - provides GCI capability in the Miami-Homestead area for the operational control of CINCONAD.

The 32d Region was to deploy F-102's from the 4756th Air Defense Group to Homestead AFB. Also, when the plan was implemented, the 26th CONAD Region was to provide a picket ship from RADRON 2 for deployment off the southern coast of Florida.

On 6 January, CONAD advised the JCS of the plan, stating that it would be implemented only on their direction. CONAD pointed out that its current capability in the southern Florida area was limited to detection of medium and high altitude targets and identification by flight plan correlation. It was impossible, CONAD said, to detect and identify low-flying aircraft. Interception at any altitude was not feasible until a target approached the Tampa-Canaveral areas.

The 32d Region was provided with the plan (as were all agencies that were expected to participate) on 13 January. The 32d was told to go ahead with local planning and coordination, but to implement the plan only on CONAD direction.

TEST OF SOUTHERN TIP

On 7 April 1961, the JCS advised CONAD that prior



[redacted]

Each monthly exercise was to consist of a minimum of 20 SAC aircraft using maximum ECM at specified portions of the route.

On 28 June 1961, SAC directed its numbered air forces and 801st Air Division to change to the new Big Blast program effective 1 October 1961.

CONTINGENCY PLANNING

CONAD CONTINGENCY PLAN SOUTHERN TIP

Following increasingly hostile actions toward the U. S. by Cuba, the U. S. severed diplomatic relations on 3 January 1961. Shortly thereafter, CONAD prepared a contingency plan for increasing the air defenses of the southern Florida area with augmentation forces.

The situation described by CONAD in this plan was as follows:

> While Cuba poses no major air threat to the United States, it does have the capability of conducting nuisance raids against heavily populated areas in Florida. Further, air field construction has provided Cuba with the ability to receive and make operational in short periods of time high performance aircraft from Communistic sympathizer nations. Nuisance raids of this type while not affecting the overall capability of the United States to wage war could have political implications which would result in redeployment of CONAD forces into a configuration less capable of meeting the major Soviet threat. It is therefore necessary that surveillance and defensive capability against the nuisance type raid be improved within the CONAD present structure utilizing Augmentation Forces.

[redacted]

[redacted]

to approval of the contingency plan, it was desired that the plan be field tested for about two weeks beginning 12 April.* USAF was told to arrange for the participation of Tactical Air Command, and CINCLANT and CINCSAC were told to support CONAD as specified in the Southern Tip plan.

CONAD then advised the 32d and 26th Regions of this test. The 32d was directed to implement actions outlined in the plan in coordination with the other action agencies. The arrangements were then made by the 32d for the test. These included the following:

(1) augmenting with Air Force personnel the Key West radar (TARPON) which was to serve as a direction center,

(2) deployment of F-102A aircraft and crews from the 4756th Air Defense Group to Homestead AFB to provide alert aircraft in the Miami area,

(3) deployment of a TAC height finder radar and a detachment of TAC's 507th Communications and Control Group with ground to air radio equipment to Homestead AFB,

(4) stationing of a picket ship off southern Florida,

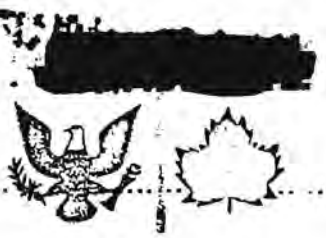
(5) provision of Navy fighter aircraft at Key West NAS to provide alert aircraft in the Key West area, and

(6) arranging for use of the Montgomery Sector SAGE computer and operational control of the Southern Tip forces by the Montgomery CONAD Sector.

---

* On 17 April, exiled anti-Castro Cuban forces invaded Cuba in a vain attempt to topple the Castro government.

[redacted]



When all arrangements had been completed, the 32d advised CONAD, stating that no forces would be deployed until so directed by CONAD Headquarters. On 10 April, CONAD told the 32d to "execute CONAD Operational Plan 1-61, nickname Southern Tip, effective 0500Z 12 April 1961." The 32d advised on 12 April that all forces were in place, except the picket ship, U.S.S. Protector, and that Southern Tip was implemented at 0500Z. Protector arrived shortly thereafter (and was joined later by the U.S.S. Searcher for rotation of this duty).

The Montgomery CONAD Sector assumed operational control of the Southern Tip forces at the same time. The 32d Region decreed that these forces would not operate in any area that could be construed as Cuban sovereign territory. The Montgomery Sector was to issue instructions that would insure that all Southern Tip forces were under positive control at all times and that they did not under any circumstances fly south of a line of demarcation set by the sector. The Montgomery Sector then issued these instructions, setting 23 degrees, 40 minutes north as the line of demarcation.

On 13 April, CINCLANT advised that he had voluntarily sent three WV-2 airborne early warning aircraft to Key West for the duration of the test to provide a capability at low altitude. CINCLANT explained that this had to be done at the expense of the Argentia-Azores barrier and might result in reduction of barrier aircraft to three for up to 12 hours per day. The JCS approved CINCLANT's action.

A notification that the test would be terminated as of 0500Z 26 April was sent by the 32d Region to CONAD on 22 April unless otherwise directed. According to the original instructions, the test, which started on 12 April, was to be run for two weeks. But CONAD told the 32d not to stop the test until further notice. And on 27 April, the JCS advised all concerned that the test was to continue. No termination date was given. The JCS said that a date would be considered periodically.

An interim evaluation of Southern Tip was sent





to the JCS on 12 May. CONAD reported that the general workability of the plan was satisfactory. Personnel augmentation, deployments, and other actions were carried out promptly and efficiently. Cooperation of all participating agencies was excellent.

CONAD also pointed out a number of deficiencies. Low level coverage was weak. Two Cuban B-26's penetrated the defenses undetected until their pilots declared an emergency by radio. This deficiency was temporarily remedied by the use of Navy WV-2 aircraft and Navy AD aircraft on continual airborne alert during daylight hours. Timely passage of flight plan information on flights entering the ADIZ from Miami and New Orleans areas was a problem and caused many unnecessary interceptor scrambles.

CONAD said that if the test were prolonged there would be an adverse affect on the augmentation forces participating because of the diversion of these units from their primary mission. The F-102A unit that was operating at Homestead would have to be moved to Miami International Airport, CONAD said, because the runway at the former base was to be closed on 3 July. Arrangements would have to be made for this.

Recommendations for phased improvement of the Florida air defenses had already been made in a letter to the JCS on 28 April.

RECOMMENDATION FOR PERMANENT
IMPROVEMENT IN FLORIDA AIR DEFENSES

CONAD told the JCS on 28 April that because it felt that an increase in the air defenses of the southern Florida area would continue to be necessary and that prolonged use of augmentation forces was not desirable, development of the defenses on a more permanent basis was necessary. CONAD reiterated, however, that this should not be done at substantial expense to the air defenses of more critical areas in Canada and the U. S.

CONAD now proposed a four-phased plan for build-



[redacted]

up of Florida defenses. Phase I was the Southern Tip Plan currently being field tested. Phase II was an extended contingency operation. It provided for the same concept of weapon and environment dispositions, but a larger proportion of the equipment and personnel was to be furnished from CONAD resources. Key West was to be augmented by F4D aircraft from the CONAD Navy squadron at North Island, San Diego. Fighters for the Miami area were to be provided by a detachment from Seymour-Johnson AFB, South Carolina. The TAC radar was to be replaced by an ADC-operated radar, if a mobile height finder could be obtained. Continuous operation of the Key West radar by Navy forces was required, however, and other requirements would remain the same.

Phase III would provide minimum capability with permanent installations. This would involve the transfer of the Navy F4D North Island Squadron to Key West, stationing an F-102 squadron at Homestead AFB or Miami Airport, installation of an ADC radar at Key West, and installation of three gap fillers in the area. Aircraft being phased out of the Atlantic barrier would be used to provide low-altitude coverage.

A permanent, full capability would be developed in Phase IV. All environment would be integrated into the Montgomery SAGE Sector on an automated basis. Nike Hercules units would be reprogrammed from less critical areas to the Miami and, possibly, Patrick AFB areas. Bomarc at Eglin would provide an augmentation with warheads available at that site. Interceptor squadrons at Key West and Miami would be kept after their scheduled phase out dates in FY 1963 and FY 1964.

In its letter, CONAD invited comment from CINCSAC and CINCLANT. The former replied on 11 May that he concurred with the Phase I and Phase II proposals. CINCSAC added that no degree of implementation of CONAD proposals should jeopardize the SAC primary mission. He also pointed out that as implementation progressed into Phases III and IV, adequate lead time had to be allowed for additional construction of facilities at Homestead AFB.

[redacted]

[redacted]

CINCLANT said he agreed with the desirability of providing some warning and possibly a limited air defense capability against possible nuisance raids. However, because of his needs in training to maintain readiness and other requirements in carrying out his mission, assignment of forces except on a temporary basis was not feasible unless additional resources were provided. CINCLANT said that he did not concur in any provisions of CONAD's plan which would impose a requirement for the following:

a. Assign the Key West radar TARPON as a CONAD control center or long range radar.

b. Provide for a full time operation of Key West radar by Navy personnel.

c. Assign the NAS Key West as a fighter base for CONAD.

d. Assign WV-2's to NAS Key West for air defense purposes.

e. Assign a Navy carrier fighter squadron to NAS Key West.

The JCS replied to CINCONAD's letter on 29 May. They stated that they considered that a level of air defense comparable to that provided by the CONAD Southern Tip Plan was required in the Florida area on a continuing basis. They added that they did not consider that a decision as to more permanent arrangements should be made at the time.

The JCS approved the implementation of Phase II of CONAD's plan submitted in April. Operations under the provisions of Southern Tip, they directed, were to be discontinued upon implementation of the Phase II plan. The JCS said that since AEW aircraft and a picket ship for gap-filler coverage and 24-hour manning of the Key West radar were difficult to provide from current resources, it was desired that other means of providing coverage be investigated, including the use of

[redacted]



Army FPS-36 radars. The JCS said they would reconsider more permanent arrangements as proposed in Phases III and IV in the light of future political and military developments.

IMPLEMENTATION PLAN - PHASE II

The JCS memorandum approving implementation of Phase II of CONAD's plan directed the latter to prepare an implementation plan with CINCLANT, CINCSAC, and other agencies involved and submit it to the JCS. Later, on 12 June, the JCS asked that, along with this implementation plan, CONAD prepare and submit alternative plans for achieving increased surveillance coverage on the order of that envisioned for Phase III.

CONAD submitted these plans on 23 June 1961. The implementation plan called for these actions:

a. Relief of the Tyndall fighters at Homestead by a detachment of four F-102's of the 482d Fighter-Interceptor Squadron at Miami International Airport on 1 July 1961.

b. Relief of CINCLANT fighters at Key West by a detachment of eight F-4D's of VFAW-3 on 10 July 1961.

c. Relief of TAC augmentation to CONAD/FAA radar at site Z-210 as soon as possible with an ADC MPS-14 radar and five-channel mobile ground-to-air radio equipment at Homestead AFB.

d. Augmentation of Key West radar on a TDY basis to continue until spaces authorized for PCS with 11 officers and 90 airmen.

e. SAGE/Manual control.

f. Provision of an on-call AEW&C station from CONAD resources.



[redacted]

g. Installation of three gap-fillers (FPS-14/FPS-18), one each at Boca Raton AF Auxiliary Field, Naples Army Air Field, and Marathon Island.

The gap-filler radar requirement for Phase II was new, for CONAD had included 3 gap fillers for Phases III and IV only in its plan submitted in April. So these had yet to be approved by the JCS. In regard to the choice of radar, CONAD said that it had investigated the use of Army FPS-36's, but had found that the FPS-14/FPS-18 radars were the most advantageous. The latter cost more to install but were unmanned and did not require housing and messing facilities and cut down on personnel requirements. Also, these radars were compatible with SAGE.

For the AEW&C station, CONAD stated in its implementation plan that construction of some facilities for turn-around at Key West was required. But this was not to be started until approved by the JCS. Key West was not satisfactory for AEW&C operations, however. Among other factors, the base was already overcrowded and the runway length was considered marginal. For these reasons, plus the fact that the JCS had asked for plans for increased surveillance which could mean a full-time station, CONAD was looking for another base at the end of June. ADC was asked to check bases in southern Florida, including McCoy AFB.

IDENTIFICATION AND AIR TRAFFIC CONTROL

AIR TRAFFIC IDENTIFICATION SYSTEMS

IFF Mark X (SIF). In October 1958, the JCS gave CINCNORAD operational control of the IFF Mark X Selective Identification Feature (SIF) system. CINCNORAD was also made responsible for the development of operational procedures for the use of the system by 1 January 1959. The IFF Mark X (SIF) system was turned on in the U. S., Alaska, and the Northeast Area on 31 January 1959.

[redacted]

[redacted]

g. Installation of three gap-fillers (FPS-14/FPS-18), one each at Boca Raton AF Auxiliary Field, Naples Army Air Field, and Marathon Island.

The gap-filler radar requirement for Phase II was new, for CONAD had included 3 gap fillers for Phases III and IV only in its plan submitted in April. So these had yet to be approved by the JCS. In regard to the choice of radar, CONAD said that it had investigated the use of Army FPS-36's, but had found that the FPS-14/FPS-18 radars were the most advantageous. The latter cost more to install but were unmanned and did not require housing and messing facilities and cut down on personnel requirements. Also, these radars were compatible with SAGE.

For the AEW&C station, CONAD stated in its implementation plan that construction of some facilities for turn-around at Key West was required. But this was not to be started until approved by the JCS. Key West was not satisfactory for AEW&C operations, however. Among other factors, the base was already overcrowded and the runway length was considered marginal. For these reasons, plus the fact that the JCS had asked for plans for increased surveillance which could mean a full-time station, CONAD was looking for another base at the end of June. ADC was asked to check bases in southern Florida, including McCoy AFB.

IDENTIFICATION AND AIR TRAFFIC CONTROL

AIR TRAFFIC IDENTIFICATION SYSTEMS

IFF Mark X (SIF). In October 1958, the JCS gave CINCNORAD operational control of the IFF Mark X Selective Identification Feature (SIF) system. CINCNORAD was also made responsible for the development of operational procedures for the use of the system by 1 January 1959. The IFF Mark X (SIF) system was turned on in the U. S., Alaska, and the Northeast Area on 31 January 1959.

[redacted]

[redacted]

Canada was not scheduled to receive the SIF until the following year.

By January 1961, NORAD, in coordination with the major commands and FAA, had decided there was no further requirement for NORAD to monitor the basic Mark X. By mid-1961, nearly all aircraft scheduled to receive the SIF would be modified. Accordingly, on 13 February 1961, the JCS approved the discontinuance of the basic Mark X IFF in the continental aircraft control and warning system on 1 July 1961.

IFF Mark XII. In June 1959, NORAD submitted a requirement to the JCS for a secure aircraft identification system, using the IFF Mark XII or any other secure IFF system. The cost was estimated at $450 million for a full capability. But the Mark XII lost out in the program reductions of early 1960.

On 15 December 1960, NORAD asked the JCS for a limited implementation of the Mark XII system, as proposed by the Hazeltine Corporation, at a cost of $69 million. This system would not fulfill the overall requirement, but it would greatly increase NORAD's capability to provide safe passage to the SAC EWO force, and to identify other essential traffic during hostilities.

SAC was reluctant to support the limited Mark XII system proposed by NORAD until its capability to provide safe passage was shown. SAC was particularly concerned with the capability of the Mark XII to identify aircraft during Mode IV operations when defense facilities would be acting autonomously. SAC was also concerned with what would happen when the Mark XII IFF airborne or ground equipment failed. NORAD told SAC that no system or procedures known could insure 100 percent safe passage, but that Mark XII IFF would greatly reduce the chance of engagement.

In addition, SAC was reluctant to place the Mark XII modification program in competition with other scheduled programs designed to increase SAC's operational capability. So on 16 June 1961, SAC recommended to

[redacted]

[redacted]

USAF a reevaluation of the limited Mark XII system as it affected all the military services.

On 18 July 1961, USAF endorsed SAC's recommendation, stating that it would ask the JCS to defer implementation pending studies to establish a joint services position. But in the meantime, the Mark XII Joint Services Test Force briefed SAC on the test results. The test results were highly encouraging and SAC reversed itself, recommending to the JCS on 19 July 1961 immediate approval and implementation of the NORAD-proposed limited Mark XII IFF system.

PRIORITIES FOR MOVEMENT OF AIR TRAFFIC

On 8 March 1961, NORAD asked the JCS for an amendment to the policy on priorities for movement of air traffic under Category One (movement of civil and military aircraft during imminent or actual war). During 1959, DOD and FAA had agreed to a system of priorities that had been established by the JCS at NORAD's request. The current procedures required that the JCS notify FAA Headquarters in Washington to move the system from peacetime Category Three to Category One. The FAA was then to issue the change to its field offices.

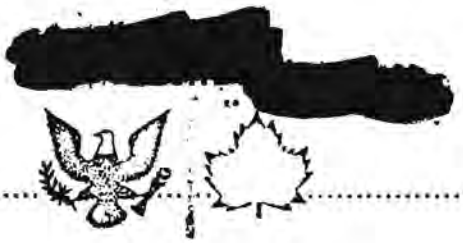
NORAD felt that this arrangement was not satisfactory because of the possible delays that could result outside of normal working hours in FAA Headquarters or through communications being out. Instead, NORAD asked that Category One become automatic upon declaration of an Air Defense Emergency.

NORAD got what it wanted. On 1 May 1961, the JCS stated that DOD and FAA had concluded an agreement to the effect that a declaration of Air Defense Emergency by CINCNORAD, Deputy CINCNORAD, or higher authority would automatically change the priority to Category One.

NORAD REQUIREMENTS ALONG U. S. - MEXICO BORDER

Overflight Requirements for SAGE Tests. On 13

[redacted]



January 1961, the 28th NORAD Region told NORAD that it needed to conduct flight tests that would require overflying Mexico. The Los Angeles Air Defense Sector was scheduled to become operational with SAGE on 1 April 1961. The Phoenix Sector was to become operational on 15 September 1961. The 28th said that the acceptance checks on these two SAGE facilities required flight tests from all approaches including Mexican territory.

NORAD requested USAF, on 18 January 1961, to start action to get Mexican authorization for the overflights. USAF then asked for details of the proposed flights, i.e., dates, routes, etc., which were furnished by the 28th. However, not early enough notice was provided, for the SAGE flight tests were scheduled for March. Consequently, they had to be postponed. USAF then asked the 28th to submit later dates for the SAGE tests well in advance to allow time for negotiations with Mexico.

ADIZ Requirements. For years, NORAD/CONAD had been seeking to improve its identification capability along the U. S.-Mexico border. However, no agreement had been achieved between the U. S. and Mexico to establish an identification zone with some depth. The existing zone, the Southern Border ADIZ, was just a thin line. Further, the exchange of flight plan data was inadequate.

On 8 April 1961, USAF told NORAD that although no progress had been made in negotiations, recent developments made necessary another evaluation of the ADIZ requirement. NORAD replied on 12 April, emphasizing that, along with the establishment of an ADIZ, there were two other essential requirements. There had to be a capability for both nations to exchange timely flight plan data. Also, permission for overflight of the U. S.-Mexico border by air defense interceptors to a reasonable depth was required for visual identification. NORAD said that without an overflight agreement the ADIZ would serve only as an alerting area.

As to the requirement for the ADIZ itself, NORAD told USAF that the Southern ADIZ was now a less probable



avenue of enemy approach than before. So NORAD said that the requirement remained, but it was of lesser significance than earlier.

CANADIAN ESCAT PLAN

In Canada, the Department of Transport and Department of National Defence jointly issued a plan for Emergency Security Control of Air Traffic (ESCAT), dated 1 November 1960. The plan provided uniform responsibilities and procedures applicable on a national basis during an Air Defense Emergency. ESCAT could be implemented on the declaration of an Air Defense Emergency by the air defense commander. It could also be implemented by a region/sector commander in the event of an air attack within his area of responsibility.

On 6 June 1961, NORAD instructed its regions to develop, in agreement with appropriate DOT regional directors, procedures for the implementation, termination, and testing of the Canadian ESCAT plan. NORAD told its regions that the ESCAT plan met the requirements in the NORAD Requirements for SCATER document, with the exception of control of navigation aids and priorities for movement of air traffic. NORAD said it was coordinating with Canada for inclusion of these two items in the ESCAT plan.

WARNING SYSTEMS AND AGREEMENTS

CANADIAN ATTACK WARNING SYSTEM

In 1959, the Canadian Army took over responsibility for the Canadian attack warning system. The following year, NORAD agreed to a Canadian Army plan to establish Regional Warning Information Centers in the 25th, 29th, and 30th NORAD Regions. All three centers were operating by early 1961.

On 11 January 1961, the RCAF forwarded to NORAD



a draft of a memorandum of understanding between the Canadian Army and NORAD. The draft agreement was prepared by the Canadian Army to establish and define the responsibilities, functions, and operational relationship of the NORAD regions and the Canadian Army Regional Warning Information Centers. The purpose of the agreement was to insure effective warning to the Canadian public of the imminence and likelihood of attack, and the reciprocal exchange of nuclear detonation and radiation fallout data between NORAD and the Canadian Army.

NORAD accepted the Canadian Army draft except for minor changes. A Memorandum of Understanding was signed by General Kuter and returned to the RCAF on 13 March 1961. Lieutenant General S. F. Clark, Chief of the General Staff, Canadian Army, signed the agreement in turn. It was sent back to NORAD on 17 July 1961 for publication in a NORAD regulation.

CONELRAD

In July 1959, NORAD recommended to the JCS that the CONELRAD plans published back in 1952 be reviewed and brought up to date. On 9 March 1961, the JCS directed NORAD to prepare a CONELRAD plan that would serve for the continental U. S. However, completion of the NORAD plan was deferred because the JCS later advised that they were reevaluating CONELRAD. They asked NORAD for its evaluation on 30 March 1961.

NORAD submitted its statement on 12 April 1961. NORAD said that control of electromagnetic radiation came under two basic plans, CONELRAD (control of electromagnetic radiations) and SCATER (security control of air traffic and electromagnetic radiations). NORAD felt that since SCATER involved the control of purely air navigational aids, it should not be reduced in scope or importance.

But CONELRAD was another matter. NORAD said it could not state irrevocably that there was a requirement for CONELRAD. Its importance was rapidly diminishing because of the changing technological characteristics





and capabilities of modern weapons. More sophisticated guidance systems were relying less on navigational aids operating in the low-frequency spectrum (200-1500kcs). In addition, NORAD pointed out that CONELRAD had some drawback for civil defense, for restrictions to broadcasting stations would result in the public receiving less attack warning information.

DISTRIBUTION

COSC	1
CAS, RCAF	5
CGS, Canadian Army	1
CINCLANT	1
CINCARIB	1
USCINCEUR	1
CINCPAC	1
CINCSAC	1
RCAF ADC	3
ARADCOM	3
NAVFORCONAD	2
USAF ADC	1
NORAD Regions	3
NORAD Sectors	1
Hq NORAD	54
TOTAL	125

Hq NORAD Internal Distribution:

NHCR	1
NAPA	1
NINT	1
NICD	1
NIRE	1
NIOI	1
NNFO	1
NOPS	1
NOOP	1
NOEV	1
NOST	1
NOCC	1
NOOA	1
NLOG	1
NPAP	1
NPPA	1
NPPP	1
NPSD	1
NPMO	1
NELC	1
NEEC	1
NECO	1
NEPP	1
NGAM	1
NASV-M (Stock)	10
NNCH	20