

17014 ✓ 958

[REDACTED]

UNCLASSIFIED



NORAD/CONAD

# HISTORICAL SUMMARY

(Unclassified)

UNCLASSIFIED

JANUARY-JUNE 1965

DECLASSIFIED 12 AUG 96, N3 MEMO

[REDACTED]

N5-15192-2

[REDACTED]

EXCLUDED FROM AUTOMATIC REGRADING;  
DOD DIR 10.10 DOES NOT APPLY

N5-15192-2

**SECRET**  
SECURITY NOTICE

1. This document is classified SECRET in accordance with paragraph 2-4, AFR 205-1, and CAP 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 51-1.

2. This document is classified SECRET because it contains current strengths and deployments, and operational capabilities, requirements, and plans which affect the national defense of the United States within the meaning of the Espionage Laws, Title 18 USC, Sections 793 and 794. The transmission or revelation of its contents in any manner to an unauthorized person is prohibited by law.

3. This document contains information affecting the national defence of Canada. The improper or unauthorized disclosure of this information is an offense under the Official Secrets Act.

4. This document contains information from documents developed in support of war plans for which the JCS and COSC are responsible by statute. Distribution or release of information contained herein to agencies not listed is prohibited.

5. Recipients of this document will afford it and its various parts a degree of classification and protection equivalent to, or greater than, that required by the originator.

6. This document will not be copied, photographed, or otherwise reproduced in whole or in part without the approval of this headquarters.

7. Destruction of this document will be accomplished in accordance with pertinent Service regulations and instructions.

**SECRET**



## NORTH AMERICAN AEROSPACE DEFENSE COMMAND

22 APR 1997

MEMORANDUM FOR N/SPHO

FROM: N/J3

SUBJECT: Declassification Review of NORAD/CONAD Histories

1. The following NORAD/CONAD histories were reviewed for downgrading/declassification:
  - a. NORAD/CONAD History, Jan-Jun 60: Document is downgraded to Unclassified except for pages 37-39, topics "Uniform Readiness Questions," and "Alaskan Readiness Conditions." Remains Confidential/Rel CANUS.
  - b. NORAD/CONAD History, Jul-Dec 60: Document is downgraded to Unclassified except pages 45-50, topics "Background," Site 1, Thule, Greenland," Central Computer and Display Facility," Site 2, Clear, Alaska," Site 3, Fylingdales, England," and "Need for an Improved Warning System." Remains Confidential/Rel CANUS.
  - c. NORAD/CONAD History, Jan-Jun 64: Document is downgraded to Unclassified except:
    - (1) Page 57, para entitled "Background on Tracker for Site II" through end of paragraph. Remains Secret/Rel CANUS.
    - (2) Page 57, last para starting with "(S) BMEWS..." through end of para "...65 degrees." Remains Secret/Rel CANUS.
  - d. NORAD/CONAD History, Jan-Jun 65: Entire document is downgraded to Unclassified.
  - e. NORAD/CONAD History, Jul-Dec 65: Entire document is downgraded to Unclassified.
2. Please refer any questions to Maj Hodges, N/J3WS, 4-6920.

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







**NORTH AMERICAN AEROSPACE DEFENSE COMMAND**

~~SECRET~~

~~RELEASED TO CANADA U.S.~~

19 Aug 96

MEMORANDUM FOR HQ NORAD/PA (MR. JOHNSON) *NPAD [Signature] JAG/PA*

FROM: HQ NORAD/HO

SUBJECT: History Declassification Review

1. References:

a. Ltr (U), Hans M. Kristensen, re: NORAD/CONAD Jan-Jun 65 History Declassification, 9 May 96 (Atch #1).

b. SSS (U), HQ NORAD/PA, "Classification Review," 26 Jun 96 (Atch #2).

c. Memorandum (U), HQ NORAD/J3, "History Declassification Review," 12 Aug 96 (Atch #3).

d. NORAD/CONAD Jan-Jun 65 Historical Summary (S) (Atch #4).

2. Per your request, the NORAD/J3 directorate has reviewed the NORAD/CONAD Jan-Jun 65 history and determined that "no items were found that are still considered classified." Based upon this review, J3 recommends (and HO agrees) that the entire document should be declassified and released by JS.

3. Please provide a copy of the signed JS declassification/release letter to NORAD/HO for retention. Please refer any questions to the undersigned or Dr. Fuller at 4-5999/3385. Thanks in advance for your assistance.

JEROME E. SCHROEDER  
Assistant Historian

4 Atch

1. Ltr (U), Hans M. Kristensen, re: NORAD/CONAD Jan-Jun 65 History Declassification, 9 May 96.

2. SSS (U), HQ NORAD/PA, "Classification Review," 26 Jun 96.

3. Memorandum (U), HQ NORAD/J3, "History Declassification Review," 12 Aug 96.

4. NORAD/CONAD Jan-Jun 65 Historical Summary (S).

**THIS MEMORANDUM IS UNCLASSIFIED**

FOR THE COMMON DEFENCE

POUR LA DEFENSE COMMUNE

~~RELEASED TO CANADA U.S.~~

~~SECRET~~

~~SECRET~~

~~SECRET~~

~~SECRET~~



## NORTH AMERICAN AEROSPACE DEFENSE COMMAND

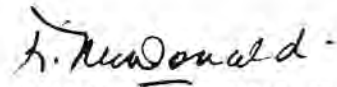
12 AUG 1996

MEMORANDUM FOR HO

FROM: J3

SUBJECT: History Declassification Review

1. A review of the Historical Summary, January - June 1965 (Atch) has been completed. No items were found that are still considered classified. Recommend the entire document be downgraded to unclassified.
2. Refer any questions to the J3 Historical Officer, Maj Hodges, J3WS, 4-6920.

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

Attachment:  
Historical Summary, Jan-Jun 65







Hans M. Kristensen  
2315 Huidekoper PL., N.W.  
Washington, D.C. 20007  
Phone: 202-342-9422 / Fax: 202-965-5664  
E-mail: hkristensen@igc.apc.org

9 May 1996

FOIA #: 96-50h

U.S. Army Center of Military History  
Freedom of Information Act Request  
FOIA: SPR/D  
1099 14th Street, N.W.  
Washington, D.C. 20005

Dear FOIA manager:

This is a request under the federal Freedom of Information Act, 6 USC 552, as amended. I request copies of the following:

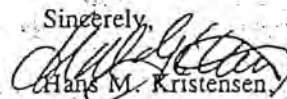
- \* North American Defense Command and Continental Air Defense Command, Command Public Affairs Office, Directorate of Command History, "NORAD/CONAD History Summary, January-June 1965," 1965. Catalogued in U.S. Army Center of Military History as 7-6 AA Jan-Jun 65 (S). 95 pages.

Through this request, I am gathering information on subjects of current and ongoing interest to the public. As an author and consultant to non-profit organizations (e.g., Greenpeace International) and the mass media (e.g., Danish daily Jyllands-Posten), I have both the experience and ability to disseminate information to the general public. I am a co-author of the *Neptune Papers* monograph series, several in-depth studies and reports as well as numerous articles on military and foreign affairs issues, most of which draw heavily on original documents obtained under the Freedom of Information Act.

As an author and representative of the news media I understand I am only required to pay for the direct cost of duplication after the first 100 pages. However, FOIA permits the waiver of search and copy fees where the release of information will solely be used to contribute to public understanding of the operations of the government, and the request is non-commercial. I request therefore that any applicable fees be waived. If you decline to waive fees under this request or on appeal, I am willing to pay all reasonable costs for the processing of this request.

Even in the event the information requested is currently and properly classified, I request that you release all segregable portions (unclassified and for official use only) pending further review. I also ask that you exercise your discretion to disclose any records if, as DOD 5400.7-R states, "no governmental interest will be jeopardized by the release..." As you know, an agency cannot rely simply on the markings of a document to deny its release. In order that a document be withheld under Exemption 1, it must be reviewed and found to be in fact properly classified pursuant to both procedural and substantive criteria found in the Executive Order. This requires an actual, substantive review of the materials.

I appreciate very much your help in obtaining this information and look forward to hearing from you within 10 days, as the statute requires. If you have any questions regarding this request, please feel free to call me at 202/342-9422, or communicate via fax (202/965-5664) or E-mail at hkristensen@igc.apc.org. Thank you in advance for your assistance.

Sincerely,  
  
Hans M. Kristensen




## Staff Summary Sheet

	To	Action	Signature (Surname), Grade, Date		To	Action	Signature (Surname), Grade, Date
1	HO	COORD		2	NJ3	COORD	
Name and Surname of Action Officer			Symbol	Phone			Suspense Date
Mr. Johnson			PAX	4-3714			30 Sept 96
Subject							SSS Date
Classification Review							26 June 1996

**Summary**

1. **PURPOSE.** To have HO research and NJ3 review five NORAD/CONAD Histories (all over 30 years old) for possible declassification and public release.
2. **DISCUSSION.** Mr. Hans M. Kristensen, an author from the Washington, D.C. area, submitted a request (Tab 1) for classification review and possible release of five NORAD/CONAD Histories.
3. History Office. Please research and provide copies of histories to NJ3 for classification review and possible downgrading for public release.
4. Director of NORAD Combat Operations. As one of the command classification/declassification authorities, please have a responsible individual(s) in your directorate (e.g. security manager, subject experts, etc.) review the histories (when provided by HO) page-by-page, line-by-line for possible downgrading and public release. Declassification review should be conducted using DOD Directive 5200.1 - Information Security Program, and applicable classification guides (if any) that would pertain to these particular histories. Again, these histories are over 30 years old and the information contained is quite probably obsolete and/or outdated.
5. **RECOMMENDATION.** NJ3 provide classification review and written comments to Mr. Johnson, Plans/policy officer, (4-3714), not later than 31 July 96.

  
 ROBIN A. ALFORD  
 Major, CF  
 Deputy Director of NORAD PA

Tab  
 Initial Request Package



**NORTH AMERICAN AIR DEFENSE COMMAND  
AND CONTINENTAL AIR DEFENSE COMMAND**

**HISTORICAL  
SUMMARY**

**JANUARY-JUNE 1965**

**1 NOVEMBER 1965**

**DIRECTORATE OF COMMAND HISTORY  
COMMAND PUBLIC AFFAIRS OFFICE  
HEADQUARTERS NORAD/CONAD**

**(This page is Unclassified)**

DISTRIBUTION

		<u>REDISTRIBUTED BY HQ NORAD</u>	
Chief of Defence Staff	8	NHCR	1
CINCLANT	1	NAPA	1
CINCPAC	1	NINT	1
CINCSAC	1	NNPA	1
		NOPS	1
		NOOP	1
		NOEV	1
CINCSRIKE	1	NOCC	1
		NOOA	1
CONARC	1	NLOG	1
		NPAP	1
RCAF ADC	3	NPPA	1
		NPPP	1
ARADCOM	3	NPMO	1
		NPSD	1
USAF ADC	1	NELC	1
		NGAM	1
NORAD Regions (except NNR)	3 each	NGPM	1
		NNCH	22*
NNR	4		
NORAD Sectors	1 each		
Hq NORAD	40		
	<u>102</u>		

\* Includes 12 copies for the JCS sent by separate submission. Distribution to the Services will be made by the JCS.



## 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 twofold:

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 1965

  
D. C. STROTHER  
General, USAF  
Commander-in-Chief

1000

1000

1000

1000

1000





## CONTENTS

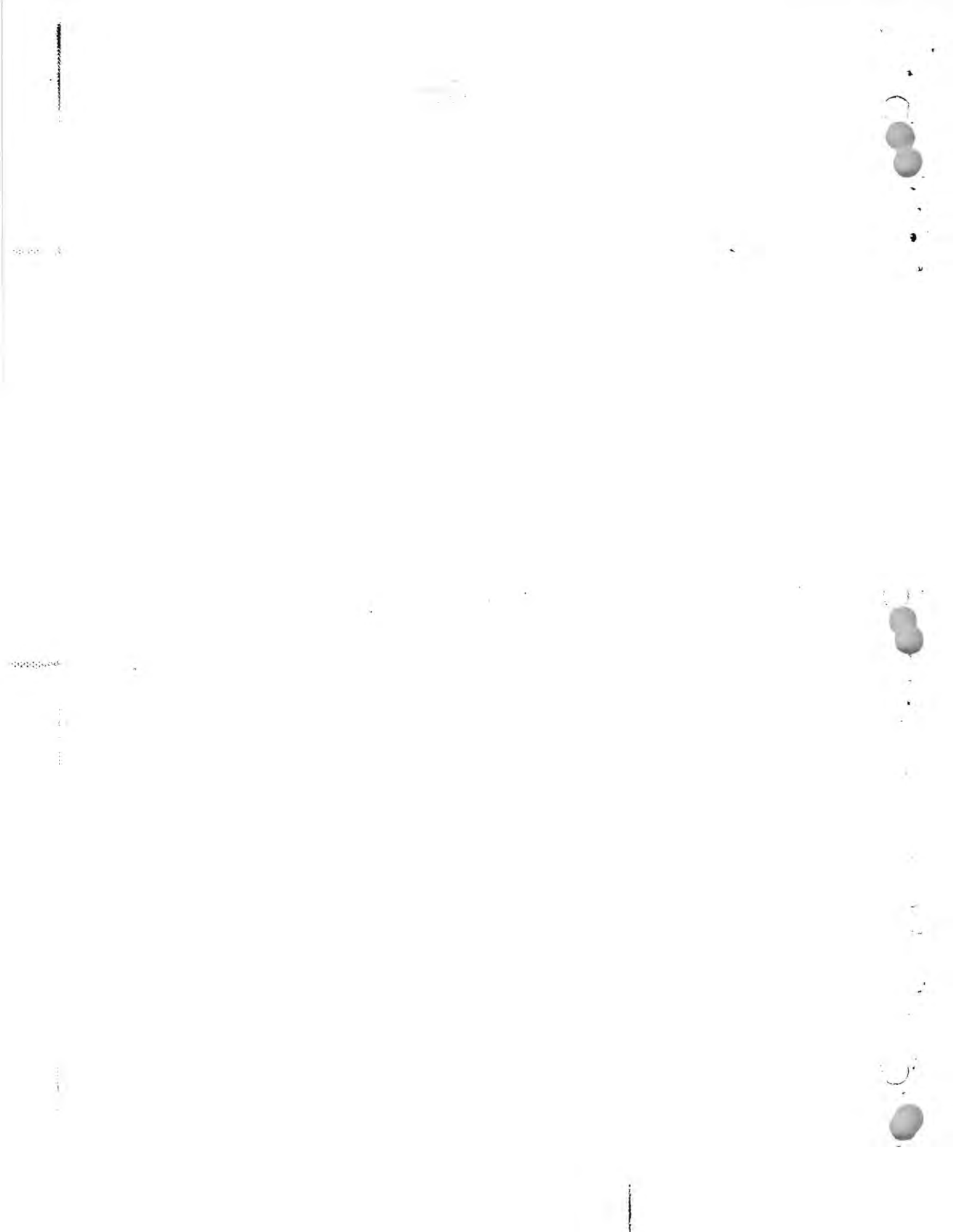
DISTRIBUTION	ii
FOREWORD	iii
MAPS AND CHARTS	ix
SUMMARY OF THE FORCES	xi
CHAPTER	
I ORGANIZATION AND MANNING	1
NORAD/CONAD HEADQUARTERS	1
DISESTABLISHMENT OF NAVFORCONAD	4
FY 1966 NORAD RECONFIGURATION	5
DELETION OF SPACES FROM REGION AND SECTORS	13
II COMMAND AND CONTROL SYSTEMS	15
SYSTEMS IN GENERAL	15
NORAD HARDENED COMBAT OPERATIONS CENTER	16
NORAD HARDENED MANUAL ALCOP	21
ALASKAN REGION COMBAT CENTER	23
BACKUP INTERCEPT CONTROL SYSTEMS	23
III COMMUNICATIONS	27
AUTOMATIC VOICE NETWORK (AUTOVON)	27
NORAD ALERT WARNING SYSTEM (NAWS)	29
SURVIVABLE LOW FREQUENCY/VERY LOW FREQUENCY COMMUNICATIONS SYSTEM	31
SATELLITE COMMUNICATIONS	32



IV	MANNED BOMBER DETECTION SYSTEMS	34
	RADAR REDUCTIONS AND PLANNING	34
	CONTINGENCY MANNING OF THE DEW	
	LINE	50
	PASSIVE DETECTION FOR NON-SAGE/ BUIC AREAS	51
V	BALLISTIC MISSILE AND SPACE WEAPONS DETECTION SYSTEMS	53
	SEA LAUNCHED BALLISTIC MISSILE DETECTION	53
	DOD SPACE DETECTION, SURVEILLANCE, TRACKING, AND DATA PROCESSING STUDY	55
	CANADIAN PARTICIPATION IN SPACE DETECTION AND TRACKING SYSTEM	57
	BMEWS SITE III COMMUNICATION TEST VIA SATELLITE	59
VI	NUCLEAR DETONATION DETECTION AND C/B REPORTING SYSTEMS	61
	CHEMICAL AND BIOLOGICAL RAPID WARNING SYSTEM	61
	NUCLEAR DETONATION DETECTION AND REPORTING SYSTEM	63
VII	WEAPONS	65
	STATUS SUMMARY	65
	INTERCEPTOR FORCE	66
	INTERCEPTOR DISPERSAL	67
	MISSILE FORCE	73



VIII. TRAINING AND PROCEDURES	77
ECCM TRAINING PROGRAM	77
IFF-MARK XII PROGRAM	79
GLOSSARY OF ABBREVIATIONS	83
INDEX	89





## MAPS AND CHARTS

NORAD Organization, 1 July 1965	7
NORAD Commanders, 1 July 1965	8
NORAD Organization FY 1966	11
ARADCOM Region and Sector Brigade/Groups FY 1966	12
NORAD Warning Systems, 1 July 1965	36
NORAD Long Range Radar Sites, 1 July 1965	39
NORAD Gap Filler Radar Sites, 1 July 1965	40
NORAD Fighter Interceptor Force, 1 July 1965	68
NORAD Missile Force, 1 July 1965	74

1952. 10. 20

1952. 10. 20



SUMMARY OF THE FORCES  
(AS OF 1 JULY 1965)

~~U~~  
(S) INTERCEPTOR FORCE

Regular:

40 Squadrons, 791 Aircraft

Squadrons	Type	-	F-101	F-102	F-104	F-106	CF-101
	No.		15	7	2	13	3

Augmentation (Category I):

21 ANG Squadrons, 408 Aircraft

Squadrons	Type	-	F-86	F-89	F-100	F-102
	No.		1	9	2	9

~~U~~  
(S) MISSILE FORCE

Regular:

8 BOMARC B Squadrons  
91 Hercules Fire Units  
8 Hawk Fire Units

Army National Guard:

48 Hercules Fire Units

~~U~~  
(S) SURVEILLANCE AND CONTROL

Surveillance:

Long Range Radars: 177  
Gap Filler Radars: 89  
ALRI Stations: 4 off East Coast  
AEW&C Stations: 5 off West Coast manned  
at random 30% of time under normal  
readiness conditions; 1 off Key West  
manned full time



DEW Line

Land-Based Segment: 29 Stations

Aleutian Segment: 6 Stations

Greenland Segment: 4 Stations

G-I-UK Barrier (under operational control  
of CINCLANT): 2 aircraft stations,  
2 Iceland-based radars.

BMEWS: 3 Stations

SPADATS:

SPADATS Center

SPASUR System (Navy)

Spacetrack System (Air Force)

Canada - Baker-Nunn Camera; Tracker  
radar (Prince Albert, Sask.) as  
required/as available

NASA - Atlantic Missile Range and  
Pacific Missile Range, data as  
available and/or on request

NBC Systems:

Bomb Alarm System:

99 Instrumented Areas

12 Display Facilities

6 Master Control Centers

NUDETS: Phase I System

Chemical and Biological Warning System:  
Interim Manual System

Control:

1 Combat Operations Center

1 Primary and 1 Secondary ALCOP

7 Region Combat Centers

1 Region without Combat Center (32d)

18 Sector Direction Centers

1 Sector without Direction Center (Hudson Bay)

30 NORAD Control Centers

1 CONAD Control Center





6 Missile Masters  
18 BIRDIE  
2 FSQ-34  
1 TSQ-38

↓  
(8) MANPOWER AUTHORIZATION

NORAD Headquarters - 853  
NORAD Regions and Sectors - 1,067



10  
100000



## CHAPTER I ORGANIZATION AND MANNING

### NORAD/CONAD HEADQUARTERS

#### REVISION OF THE JOINT MANPOWER PROGRAM - FY 1966

<sup>U</sup>  
(S) Requirements Submitted in December 1964. In its FY 1966 JMP submission on 22 December 1964, NORAD asked for 397 additional spaces for added responsibilities in command and control, intelligence, and nuclear, biological and chemical defense. Sixteen spaces would be made available from within the NORAD staff and 36 were RCAF spaces, leaving a balance of 345 U.S. spaces.

<sup>U</sup>  
(S) Most of the additional spaces, 282, were required for NORAD Headquarters. Twelve were for the Group III facility, 94 for the Space Defense Center, 79 for the Intelligence Data Handling System, five for the Current Intelligence and Indications Center, 24 for increased responsibilities in command and control, and 68 for the Directorate of Computer Program Control. The NORAD ALCOP at North Bay, Ontario, would require 79 spaces and the nuclear, biological and chemical warning and reporting system required 36 U.S. Army spaces for region and sector headquarters.

<sup>U</sup>  
(S) Space Defense Center. The first change was in the SDC requirement for 94 spaces. A DOD study group recommended that a single integrated space defense center be established and the JCS asked for a meeting with NORAD and ADC to discuss implementation (see Chapter II). CONAD asked that the meeting be delayed because NORAD and ADC were working to reach a coordinated position. Agreement was reached by the ADC commander and the NORAD Deputy Commander-in-Chief on 5 May and CINCNORAD approved on 8 May. NORAD withdrew its requirement

~~CONFIDENTIAL~~



for 94 spaces on 12 May. To implement the single integrated SDC, NORAD requested 23 spaces on its JTD (19 Air Force, three Navy and one Army). No additional spaces were required, however, for all spaces would be provided from currently-authorized resources. NORAD had nine spaces authorized in the current SPADATS Center which included the Navy and Army spaces listed above. The additional Air Force spaces required would be gained from ADC. All Air Force spaces on the NORAD JTD would be dual hatted.

<sup>U</sup>  
(e) Command and Control Systems Responsibilities. To adequately handle increased responsibilities in the development, acquisition and operation of command and control systems, NORAD had asked for 24 additional spaces. On 25 May 1965, the JCS asked NORAD to re-examine these requirements. NORAD replied on 8 June that with a year's experience, a re-evaluation showed that the requirement could be reduced. NORAD said its tasks could be performed with the addition of only 15 spaces rather than 24.

<sup>U</sup>  
(e) Computer Program Control. On 1 September 1964, a Directorate of Computer Program Control had been established to provide for NORAD control of computer programming.\* It was set up initially with six spaces from currently authorized NORAD Headquarters resources. NORAD asked the JCS to authorize 15 additional spaces as soon as possible. And in December 1964, a priority request was submitted for an overall requirement of 68 spaces, which, with the six authorized, would bring the total to 74. On 21 January 1965, the JCS approved the immediately-required 15 spaces.

\* (U) For background details, see NORAD/CONAD Historical Summary, July-December 1964, pp. 11-18.



(U) Over and above the NORAD spaces, USAF ADC said it needed an additional 20 spaces to provide program maintenance capability. Therefore, the originally-stated requirement was for a grand total of 94 spaces. However, through a number of conferences and agreements between USAF, NORAD, and ADC, the number was lowered. On 1 June 1965, NORAD told the JCS that by consolidating functions and streamlining the NORAD organization, the entire task could be done with 78 NORAD authorizations. ADC no longer needed the 20 spaces. This meant a cut of 16 spaces from the over-all total of 94 spaces.

RANK REQUIRED FOR THE GROUP III DIRECTOR AND ASSISTANT DIRECTOR

<sup>U</sup>  
(S) NORAD proposed in the Joint Manpower Program submitted in December 1964 to upgrade the director of the COC from brigadier to major general. In May 1965, the JCS asked if NORAD could provide the major general authorization from within its resources and for additional justification. NORAD replied on 8 June that it could provide a major general from within current authorization as a result of the planned region/sector reconfiguration and reorganization. Additional justification was provided which said in part that "The Director of the Combat Operations Center is essentially a tactical commander, nominally in control of the NORAD system on a day-to-day basis and through whom the Commander-in-Chief exercises control of his forces in times of increased readiness."

<sup>U</sup>  
(S) The COC deputy director was currently an RCAF group captain position. With the upgrading of the director's position to major general, NORAD wanted to raise the deputy's position to air commodore. On 7 July 1965, NORAD advised Canadian



Forces Headquarters of this requirement. NORAD proposed to provide the air commodore space by transferring this space from the 30th NORAD Region, which was to be discontinued on 1 April 1966, to NORAD Headquarters. The currently-authorized group captain space at NORAD Headquarters could be returned. NORAD wanted to transfer the A/C space on 1 September 1965. Canadian Forces Headquarters concurred on 23 July.

#### CHANGE OF COMMANDERS

(U) On 1 April 1965, General John K. Gerhart, USAF, Commander-in-Chief of NORAD/CONAD since August 1962, retired. He was succeeded by General Dean C. Strother, USAF.

#### TERMINATION OF NORAD/SAC LIAISON TEAMS

(U) Following an agreement between CINCNORAD and CINCSAC on the need for exchanging liaison teams, the first NORAD liaison officer reported to SAC Headquarters on 2 February 1961. Early in 1965, both NORAD and SAC agreed that there was no longer a need for permanently-assigned liaison officers. By this time there was much better communications and display facilities, satisfactory procedures had been worked out for joint training and operations, and there was thorough understanding of each other's headquarters operational problems.

(U) Effective 1 July 1965, the two SAC liaison officer positions were deleted at NORAD Headquarters, and on 15 July, the two NORAD liaison officer positions were deleted at SAC Headquarters.

#### DISESTABLISHMENT OF NAVFORCONAD

<sup>U</sup>  
(S) Because of the phasing out of the Navy forces from the DEW Line extensions and the off-shore



barriers (see Chapter IV), the JCS considered and asked CONAD's comments on disestablishment of the Naval Forces, Continental Air Defense Command. CONAD agreed to the discontinuance in view of the fact that there were no naval forces assigned to NAVFORCONAD and because of the elimination of advisory responsibilities on picket ship and barrier forces. There would be continued Navy participation in NORAD at headquarters, region and sector levels and the only significant change would be in the administrative channels for NORAD Navy personnel. Liaison on matters involving Navy ASW, augmentation forces and SPASUR would be handled by CONAD/NORAD with the commands concerned or the CNO. OSD and JCS approved disestablishment of NAVFORCONAD effective 1 September 1965.

(U) NAVFORCONAD had been established eleven years earlier, on 1 September 1954, at the same time as and as the naval component of CONAD, under Rear Admiral Albert K. Morehouse. The last commander was Captain Hoyt D. Mann.

#### FY 1966 NORAD RECONFIGURATION

#### BACKGROUND

<sup>U</sup>  
(S) Back in November 1963, the Secretary of Defense directed deletion of four SAGE direction centers in FY 1966, and two SAGE combat centers in FY 1968. At USAF's instruction, ADC began planning for the cuts. ADC's first plan (18 June 1964) called for eliminating the Los Angeles, Reno, Chicago, and New York Sectors and reorganization of the ADC CONUS structure under three numbered air forces. This would delete two combat centers at the same time -- at Truax AFB and McChord AFB. Under this plan, the Reno computer was to be kept to drive the Hamilton AFB combat center display, and backup facilities were to be added for the combat centers by using the computers of the deleted sectors.



U  
(S) NORAD concurred with the sectors selected and the combat center phase out, but did not agree with keeping the phased-out DC's computers as region ALCOP's. NORAD also said it wanted the Oklahoma City Sector tied to the Montgomery Sector to form a Southern Region. ADC's first plan was also turned down by USAF because it did not meet mandatory budget and manpower cuts.

U  
(S) ADC issued a revised plan on 1 September 1964 and later changes thereto. NORAD advised ADC of its concurrence with the plan in letters on 18 September and 27 October. NORAD also began preliminary planning of its own reorganization based on the ADC changes.

U  
(S) In the meantime, USAF submitted a PCP for a SAGE/BUIC follow-on system called PAGE (see Chapter II). The PCP included phase-out of two CC's and four DC's. On 2 December 1964, the Secretary of Defense approved a SAGE/BUIC III plan instead of the PAGE plan. The DOD guidance also provided for phase-out of two combat centers in FY 1966 and four direction centers by FY 1968.

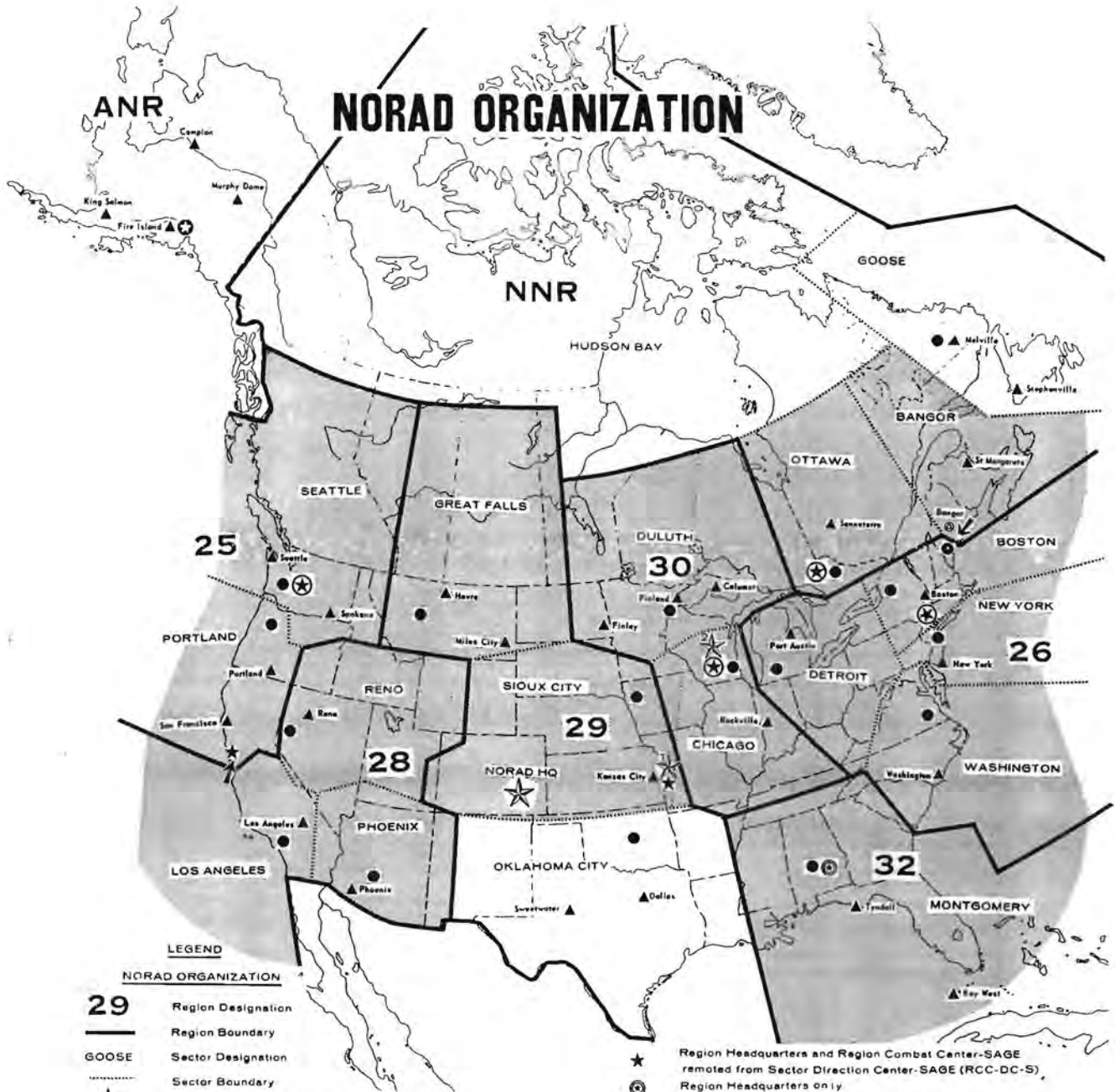
#### THE ADC PLAN

U  
(S) On 17 March 1965, ADC advised NORAD that USAF had approved the ADC organizational concept as proposed in its September plan and changes thereto. USAF had withheld approval of only the manpower requirements pending receipt of detailed manpower documents. The main outline of the ADC reorganization and reconfiguration were these. On 1 April 1966, the combat centers at McChord AFB (25th Air Division/Region) and Truax AFB (30th Air Division/Region) and the direction centers at Los Angeles and Reno Sectors were to be phased out. On this date, ADC would redesignate its numbered air divisions as numbered air forces and its city-named sectors as





# NORAD ORGANIZATION



## LEGEND

### NORAD ORGANIZATION

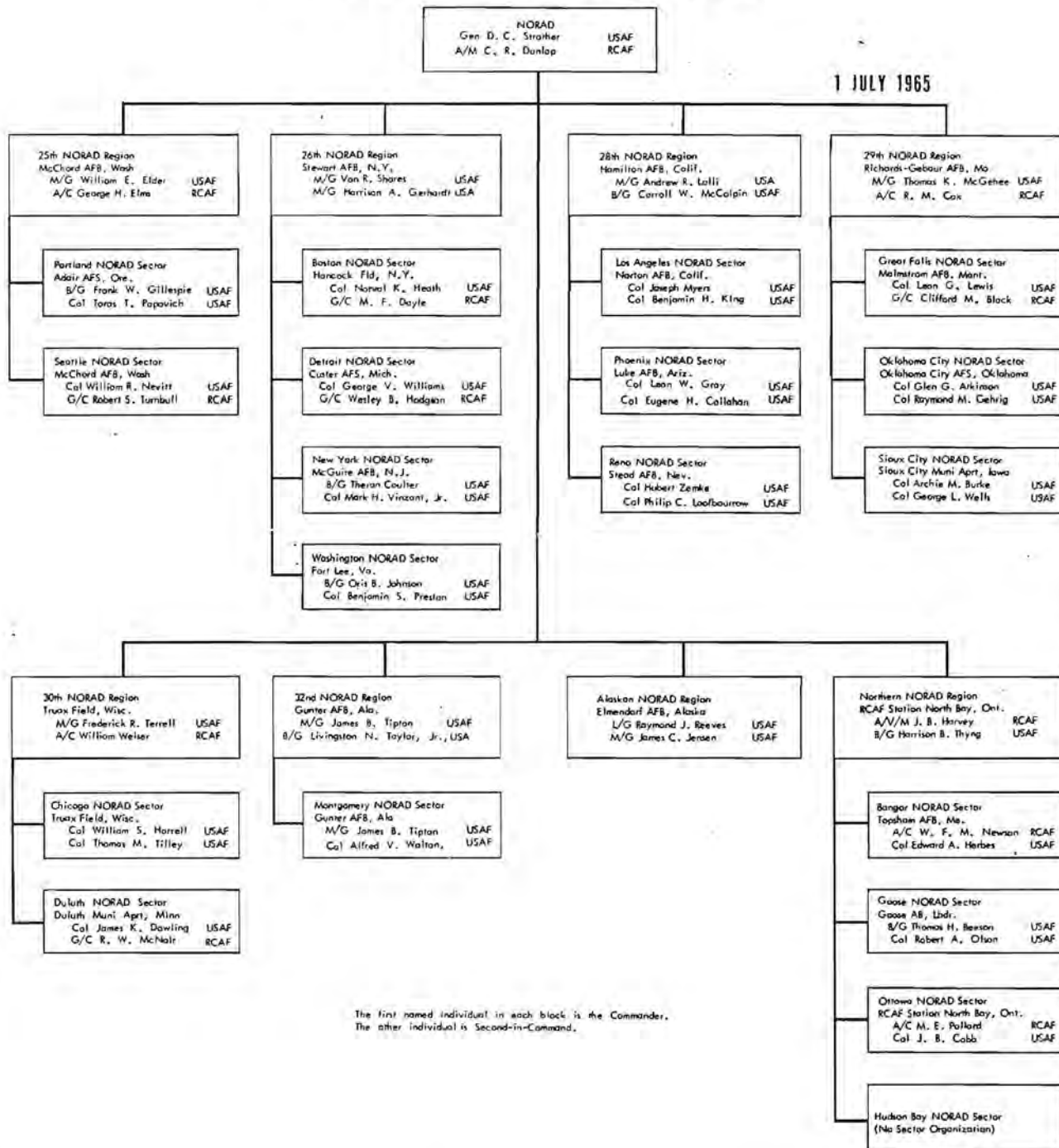
- 29** Region Designation
- Region Boundary
- GOOSE Sector Designation
- Sector Boundary
- ★ Combat Operations Center (COC)
- ★ Alternate Command Post (ALCOP)
- ★ (with circle) Region Headquarters and Region Combat Center-SAGE (RCC-S)
- ★ (with cross) Region Combat Center-Manual (RCC-M)
- Sector Direction Center

- ★ (with circle) Region Headquarters and Region Combat Center-SAGE remoted from Sector Direction Center-SAGE (RCC-DC-S), Region Headquarters only
- ▲ NORAD Control Center (NCC)
- ⊙ CONAD Control Center (CCC)
- ↓ Facility Located Outside of Own Area
- ▭ Sector whose Direction Center is SAGE operational (SDC-S)



# NORAD COMMANDERS

1 JULY 1965





numbered air divisions. There would be the 4th Air Force at Hamilton AFB, the 10th at Richards-Gebaur AFB, the 1st at Stewart AFB, and the 14th at Gunter AFB, Ala./Tyndall AFB, Fla. The latter headquarters would be split because of limited facilities at Gunter AFB. The commander and an operational staff would be at the latter base and the deputy commander and the rest of the staff at Tyndall AFB.

<sup>U</sup>  
(S) As noted above, ADC's first plan had called for using the computers at three of the deleted sectors as region backup and for retaining the computer at Reno to drive the Hamilton AFB region combat center display. Retention of these computers was dropped in the September plan. ADC proposed to provide for Hamilton by installing there a AN/GSA-51 computer (see Chapter II).

<sup>U</sup>  
(S) The two additional direction centers scheduled for phase-out, Chicago and New York, were to close in FY 1968. In the meantime, for a two-year period, these sectors would be redesignated as air divisions (20th and 21st).

#### NORAD PLANNING

<sup>U</sup>  
(S) In the meantime, NORAD was finalizing its plans for reorganizing and reconfiguring its structure. The NORAD changes were based on the ADC changes. On 1 April 1966, two regions, the 25th and 30th, along with the Los Angeles and Reno Sectors, would be phased out. NORAD would have four region headquarters remaining at the same locations as the ADC air forces in the CONUS, all with geographical designations. The 28th at Hamilton AFB (4th Air Force) would be redesignated the Western NORAD/CONAD Region; the 29th at Richards-Gebaur AFB (10th Air Force) the Central Region; the 26th at Stewart AFB (1st Air Force) the Eastern Region; and the 32d at Gunter AFB would be redesignated the Southern Region and established at Gunter AFB and Tyndall AFB as ADC's 14th Air Force.



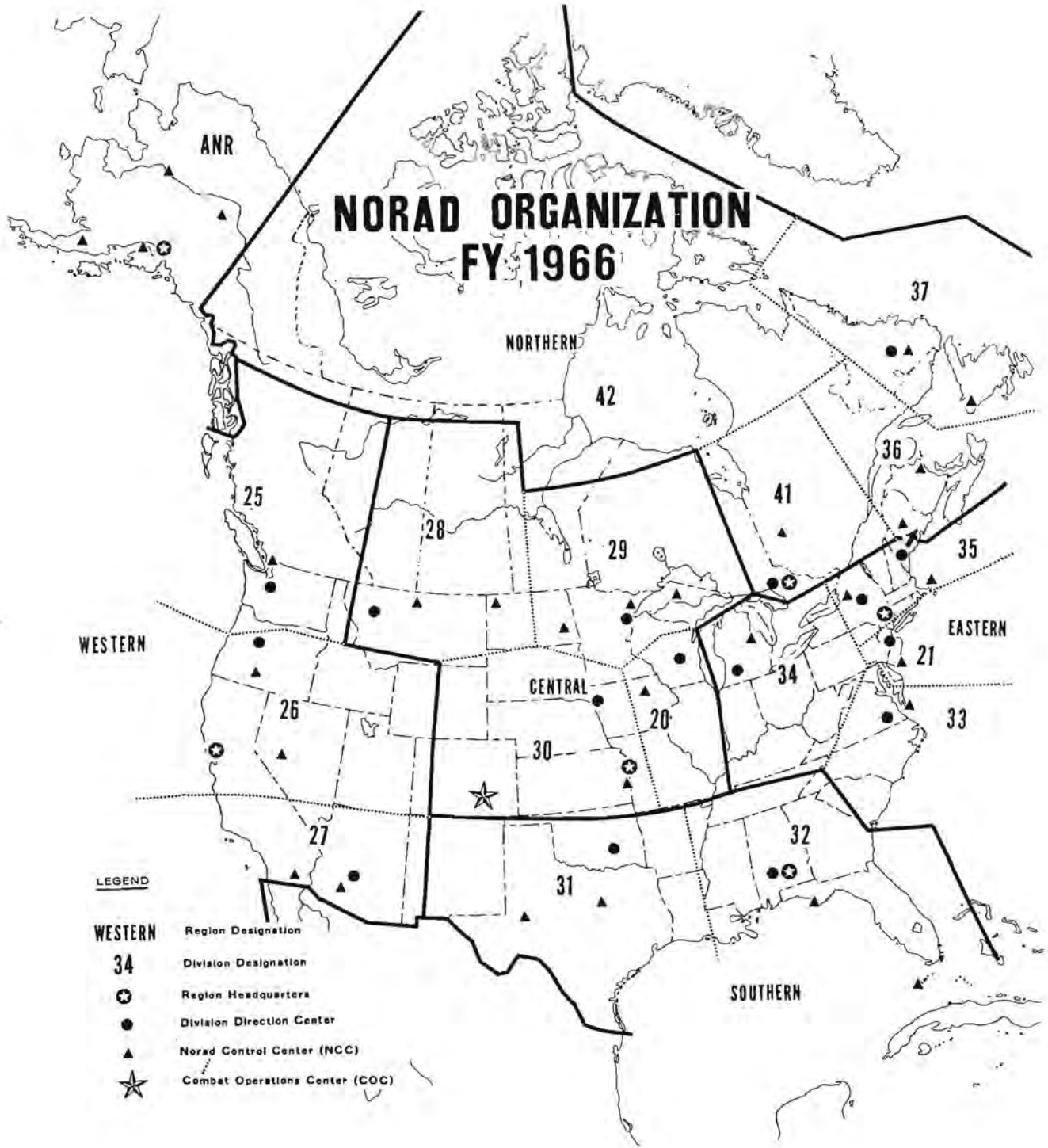
U  
(S) Along with these changes, NORAD would redesignate its remaining sectors, currently carrying city-name designations, as numbered divisions. The change to number designations was for several reasons. Few sectors were actually associated with the city of their name, the city names did not indicate the location or area of the sector, numbered units would not cause a problem when headquarters location or organization boundaries were moved, number designations would standardize units with ADC and eliminate confusion, etc. The division term was chosen over sector because the former was standard among all commands whereas the latter could not be compared and was not understood. Also, sectors were traditionally subordinate to divisions, therefore, to indicate the same level of command, NORAD had to adopt the division designation.

U  
(S) In addition to the above changes, region and division boundaries would be realigned, radars retied, etc. Two additional NORAD direction centers, Chicago and New York, redesignated as divisions for two years, were to be phased out in FY 1968.

U  
(S) On 14 April 1965, NORAD informed all of its region commanders of the FY 1966 phase outs and reorganizations. NORAD also had drafted a detailed reorganization and reconfiguration plan for issuance about 1 September.

#### ARADCOM PLANNING

U  
(S) ARADCOM planned to establish a four-region structure similar to that of NORAD and ADC in the CONUS. One of its currently-existing five regions, the 7th at McChord AFB, was to be discontinued effective the fourth quarter of FY 1966. The 5th Region Headquarters was to move from Ft. Sheridan, Illinois, to Maxwell AFB, Alabama, at the same time

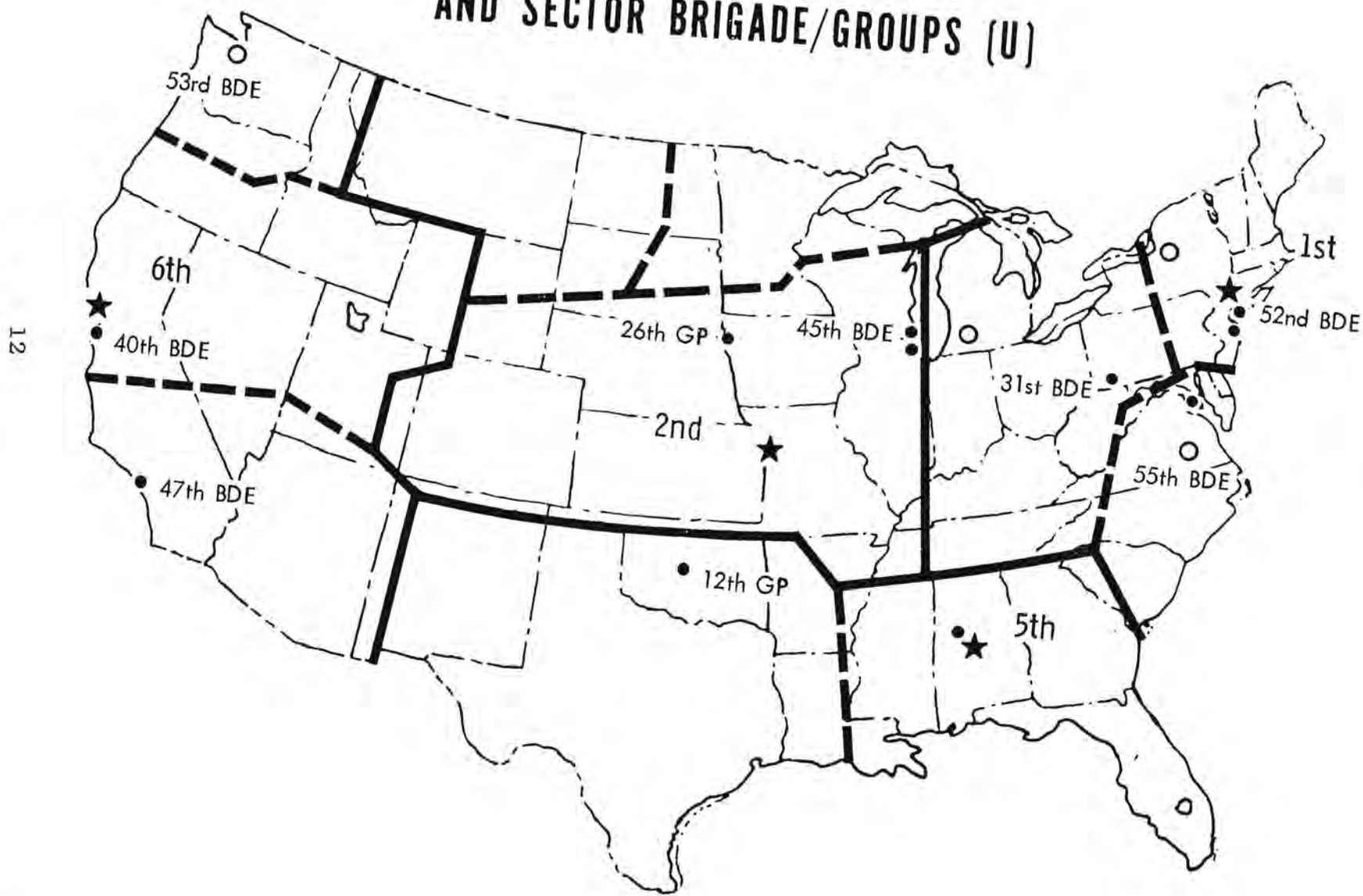


**LEGEND**

**WESTERN**

- Region Designation
- Division Designation
- Region Headquarters
- Division Direction Center
- Norad Control Center (NCC)
- Combat Operations Center (COC)

# ARADCOM REGIONS AND SECTOR BRIGADE/GROUPS (U)





or as soon as buildings were rehabilitated. The 53d Brigade Headquarters was to move from Maxwell AFB to McChord AFB and the personnel of the discontinued 7th Region transferred to it. The personnel of the 53rd at Maxwell AFB were to be transferred to the 5th Region. The 1st Region Headquarters was also moving from Ft. Totten, N.Y., to Stewart AFB, N.Y., as soon as facilities were available because DOD was closing the former base. Accompanying these changes would be a realignment of boundaries for a four-region structure.

(S) The reconfigured structure would be as follows. The 6th Region would be at Ft. Baker, California; the 2d Region at Richards-Gebaur AFB; the 1st Region at Stewart AFB; and the 5th Region at Maxwell AFB.

(U) Department of the Army approved for planning purposes the ARADCOM plan, which had been submitted in April, on 16 June 1965, with certain exceptions pending DOD decisions. DA asked for additional cost items which were being supplied by ARADCOM and final approval was being awaited.

#### DELETION OF SPACES FROM REGIONS AND SECTORS

##### NAVY SPACES

(S) The JCS informed NORAD on 10 March 1965 that the Navy recommended withdrawal and downgrading of certain Navy spaces in NORAD regions and sectors because of lowered Navy participation in air defense in view of the planned phase-out of the DEW Line extensions and contiguous barriers. This did not mean, the JCS pointed out, that the Navy desired to withdraw from the air defense mission, but that the residual Navy spaces were sufficient to provide for the liaison and planning for naval forces assigned as augmentation. The JCS said that the Navy had no plans for recommending a cut in its representation on the NORAD Headquarters staff.



U

(ϕ) In all, ten spaces were recommended for deletion and two for downgrading. NORAD queried its region commanders for their views and proposed to the JCS the deletion of only those spaces recommended by the regions. On 30 March, NORAD proposed deletion of a total of seven spaces and said it could not favorably consider the other three deletions or the grade adjustments. NORAD pointed out that these Navy positions performed overall NORAD functions, not just Navy liaison and coordination. Substitution or reorganization would be required to compensate for their loss or grade adjustment.

(U) No final answer had been received by NORAD by mid-1965.

#### RCAF PUBLIC INFORMATION SPACES

(U) On 30 September 1964, NORAD informed the regions having RCAF public information spaces (25th, 26th, 29th, 30th, and NNR) that Canadian Forces Headquarters had advised that the three public relations directorates of the Canadian Armed Forces were to be integrated into a single office. This would greatly decrease public information spaces. To make this reduction, NORAD continued, the Canadian Government had decided to delete the RCAF public information spaces, officer and enlisted, at Headquarters NORAD and all region and sector headquarters except for the squadron leader spaces at NORAD Headquarters and at NNR Headquarters (one each).

(U) On 28 January 1965, NORAD advised the above regions that all RCAF public information spaces in both region and sector headquarters (with the exception of the S/L space at NNR) were deleted from the 1 January 1965 JTD effective that date. The actual deletion of these spaces, NORAD said, would be the retirement or transfer date of the incumbents. In all, there were 14 spaces, ten officers and four enlisted. Twelve, therefore, were deleted.





## CHAPTER II COMMAND AND CONTROL SYSTEMS

### SYSTEMS IN GENERAL

#### PROVISION FOR INCREASED AUTHORITY

(U) In a memorandum of 26 October 1963, the Office of the Secretary of Defense provided for ensuring that unified and specified commanders could achieve adequate influence over the development, acquisition and operation of their command and control systems. This provision for increased authority was spelled out in eight assignments. Included was authority to establish operational requirements, participate in planning and design, review system documentation prior to contract negotiation, identify those elements that should be under the commander's direct command and control, establish certain regulatory procedures, and attach the command's views to program change proposals.

(U) Preliminary instructions for carrying out the OSD memorandum were issued by the JCS on 21 December 1963. The JCS asked for a description of the command and control system and identification of those parts of the command and control system considered directly and immediately responsive to CINCNORAD's command and control. These were provided in a two-part document on 6 February 1964. Detailed guidance was to be prepared by the JCS defining the degree of influence to be exercised in the development, acquisition and operation of command and control systems. The JCS guidance paper was issued on 11 June 1965. Related guidance was issued to the military services by DOD on 8 June 1965.

(U) Because of the added responsibilities, on 21 October 1964, NORAD submitted to the JCS a





request for 24 additional manpower spaces and for the upgrading of one Air Force space from colonel to brigadier general. The latter was requested for the position of Director of Systems Development, DCS/Plans. The increased responsibilities resulting from the OSD memorandum had greatly raised the level and extent of responsibilities of this position. These requirements were also included in the Joint Manpower Program submission on 22 December 1964 (see Chapter I).

(8) The JCS asked that NORAD re-examine these requirements and on 8 June 1965, NORAD replied that with a year's experience and JCS decisions on NORAD influence over command and control systems, a re-evaluation showed that a reduction could be made. Only 15 additional spaces would be required, rather than 24. The upgrading of the System Development position was still required.

#### NORAD HARDENED COMBAT OPERATIONS CENTER

#### STATUS SUMMARY

(8) By mid-1965, the NORAD Cheyenne Mountain Complex construction program in all of the technical buildings was completed and joint occupancy was effected. The construction associated with mission equipment installation was three-fourths complete. The two Philco 212 computers that had been operating in the Group II facility were moved to the NCMC in May and June 1965 and a third computer would be transferred in January 1966 (see below). The eleven Type II consoles in Group II were moved in June. The other four (Type III) of the total of 15 consoles authorized were delivered on 17 June 1965. The large board display in Group II was to be moved in July. The NCMC closed circuit television was scheduled to be completely installed by 1 October 1965.



U  
(S) A cable connecting the NCMC with Ent AFB was completed in April. NORAD submitted a requirement to the JCS on 10 February for a microwave system to link the NCMC with the Ent complex to provide intersite television and communications to serve Intelligence, CINCNORAD, and the NORAD staff. This had been submitted by the JCS to the Secretary of Defense for approval on 25 May.

U  
(S) Implementation Progress Reports had been issued by NORAD at the end of December, March and June in accordance with a directive of the Secretary of Defense on 24 September 1964 for a quarterly report. The 30 June 1965 Report stated that "Satisfactory progress continues to be made on the overall implementation of the NCMC. While the IOC for the Space Defense Center Delta-1 (space defense) program may not be met and the ESS-1 Switchboard has slipped, it does not appear that the FOC will be delayed." Manpower, NORAD stated, continued to be the most serious problem. In its letter forwarding the 30 June report, NORAD stated that immediate action was required by DOD to approve requested manpower spaces. Further delay, NORAD continued, would affect training schedules and could affect the full operational capability of the Group III facility.

U  
(S) In regard to the Space Defense Center, NORAD said that a slip in the IOC date could occur due to a delay in the procurement of the on-line printer and associated in/out devices. This procurement delay was caused by a delay in a decision on the configuration of the automatic digital relay.

#### THIRD COMPUTER

U  
(S) NORAD wrote to the JCS in February recommending that a third Philco 212 computer be approved for the NORAD CMC. NORAD pointed out that the original configuration was for three Philco 212 computers in a triplex configuration to support a combined 425L/ space defense task. The CMC Task Force Study Report,



submitted on 18 March 1964, had recommended that space defense and 425L functions be separated and that initially only two computers be used. An OSD memorandum of 24 September 1964 directed a two-computer configuration.

↓  
(S) Experience now showed that there was a definite need for a third computer. There were two primary reasons. One was reliability. The two computers would require a total of some seven to eight hours maintenance per day (3.5 to 4 hours each) and during such periods the air or space defense functions would have to be performed outside the NCMC. The second reason was that an analysis showed that complete saturation of the equipment would be reached by about 1 September 1965.

↓  
(S) USAF advised on 24 March that the Air Staff and OSD supported the requirement for a third computer and the Philco 212 computer at the Space-track Center Alternate Facility at L. G. Hanscom Field would be moved to the NCMC. Early in April, the JCS confirmed approval of the third computer for the NCMC. A plan for the movement of the Hanscom computer was distributed in May. Movement was scheduled to begin on 3 January 1966.

#### SPACE DEFENSE CENTER

↓  
(S) Background. In February 1964, NORAD sent a description of its command and control system to the JCS in which NORAD said it planned to strengthen its operational control of SPADATS through re-organization. The following month, the NORAD Cheyenne Mountain Task Force Study Report,\* provided for carrying this out in its proposal for establishing a NORAD-manned Space Defense Center and consolidating control of space defense functions therein.

---

\* (U) Information on this report, prepared at the direction of the DOD, and the Space Defense Center, may be found in NORAD/CONAD Historical Summaries for 1964.



U  
(S) The Air Force objected to the Space Defense Center as conceived by NORAD on the basis that through it NORAD would be taking over Air Force and ADC functions and that the Air Force could not properly carry out its responsibilities associated with the Spacetrack System. USAF also feared that the "head" of the Spacetrack System would be absorbed as a NORAD function. NORAD stated, however, that facilities and computer space would be made available in the NCMC to support Spacetrack.

U  
(S) In a paper dated 24 September 1964, the Secretary of Defense approved the Space Defense Center as proposed by NORAD and said that CINCNORAD was to proceed with staffing, operating and maintaining the center. In accordance with the Secretary's guidance, NORAD/CONAD issued a regulation on 26 October 1964 establishing the functions and organization of the center. It was stated in this regulation that ADC could operate a Spacetrack center in the NCMC in support of USAF requirements. A Space Defense Center implementation plan was issued by NORAD/CONAD on 1 January 1965.

U  
(S) NORAD's manpower requirements for the Space Defense Center were submitted to the JCS in a letter on 4 December and were included in the Joint Manpower Program - FY 1966 (see Chapter I). NORAD required a total of 103 spaces to man its center, of which nine were currently available.

U  
(S) When ADC reviewed the NORAD Implementation Plan, it proposed a jointly-manned center in place of the plan for a NORAD center and a separate USAF Spacetrack center. ADC stated that the NORAD center would require 103 people and the Spacetrack center 104 people. But if they were collocated and jointly manned under the ADC plan, only about 131 people would be required altogether instead of 207. NORAD replied on 12 January 1965 that ADC's proposal was inconsistent with the concept for a self-sufficient



NORAD-manned center and that NORAD would proceed with the Implementation Plan. But this was not to be so.

(S) Change in Planning to a Single Integrated Center. In July 1964, the Deputy Secretary of Defense directed that a working group be established to review the DOD's space detection, surveillance and tracking systems to determine their adequacy, redundancy and efficiency in terms of their missions. This OSD working group, termed the DATOS (Detection and Tracking of Satellites) Group, was to recommend suitable reductions, consolidations, allocation of resources and organization of systems concerned. In the report of the Group, dated March 1965, it was stated that NORAD's manning plan for the Space Defense Center was not acceptable because there would be considerable duplication and overlap of NORAD and ADC functions. The Group recommended that the JCS tell NORAD to handle manning as an integrated, NORAD/ADC whole on the basis of current manning levels.

(S) NORAD learned informally in late February what this DATOS Group would recommend when two DDR&E representatives visited NORAD Headquarters. As a result, on 3 March, NORAD advised ADC that DOD might direct establishment of a single center to satisfy both NORAD and USAF requirements, manned with current authorizations of the SPADATS/Space-track Center. NORAD said it was planning to prepare a proposal to meet DOD objectives and asked ADC if it wished to participate.

(C) On 21 April, the JCS asked NORAD to send representatives to a meeting on the 28th to discuss implementation of a single integrated center to serve the needs of NORAD and ADC. Also, the JCS asked that NORAD withdraw its request for additional spaces to man the Space Defense Center. CONAD asked that the meeting be delayed because work was going on to establish a coordinated position with ADC.



U  
 (S) A plan was developed and an agreement reached on 5 May between the ADC commander and the NORAD deputy commander-in-chief. CINCNORAD, General Dean C. Strother, was in Australia as U.S. representative to the Coral Sea Battle Anniversary Celebration. General Strother was informed of the planning and decisions and on 8 May telephoned his concurrence.

U  
 (S) On 12 May, NORAD sent a message to the JCS withdrawing its original manpower proposal for the Space Defense Center and submitting the new manpower proposal. NORAD said that under the new plan both its and ADC's needs would be met; the Space Defense Center would be fully integrated; manning would be met with current authorizations; increased NORAD/CONAD control and participation would be achieved by putting NORAD personnel in key supervisory positions in weapons control, space surveillance and satellite classification and mission identification; and the organization would be similar to the existing structure. To implement the single integrated Space Defense Center, NORAD requested 23 spaces on its JTD (19 Air Force, three Navy and one Army). No additional spaces were required, however, for all spaces would be provided from currently authorized resources. NORAD had nine spaces authorized in the SPADATS Center which included the Navy and Army spaces listed above. The additional Air Force spaces would be gained from ADC. All Air Force spaces on the NORAD JTD would be dual hatted.

NORAD HARDENED MANUAL ALCOP

BACKGROUND

U  
 (S) In October 1960, the JCS directed all unified and specified commands to have alternate command elements in hardened, dispersed or mobile facilities. Because the NORAD alternate command post at Richards-Gebaur AFB did not meet the





standards, USAF suggested moving it to the hardened center at North Bay, Ontario. NORAD agreed and asked that the ALCOP be set up initially in a manual mode because of the need to relocate operations as soon as possible. The JCS approved the manual ALCOP at North Bay on 3 May 1963. The RCAF advised on 10 December 1963 that the cabinet had approved installation of a manual ALCOP on the understanding that it could be done within the terms of the governmental agreement for NORAD.

(S) Following development of a PSPP by ESD based on an integrated combat center and ALCOP, NORAD submitted a telecommunications requirement on 6 July 1964 to the JCS for the ALCOP. The telecommunications requirement was approved by the JCS on 21 October 1964. Canadian Forces Headquarters had stated on 11 August that the RCAF approved the design for the ALCOP as contained in the PSPP and that the RCAF was ready to negotiate implementation and cost sharing upon receipt of USAF design approval.

#### STATUS

(S) In January, the JCS asked NORAD for justification for the hardened ALCOP at North Bay and information on the advantages of that location, concept of operations, etc. NORAD furnished a detailed reply on 10 February with the recommendation that the "JCS continue to take such action as is necessary to ensure implementation of Project SNOCAP in the hardened CC/DC facility at North Bay, Ontario, Canada at the earliest possible date." On the first of March, the JCS sent a memo to the DDR&E reaffirming NORAD's requirement for the hardened facility to serve as an ALCOP to the NCMC. And on 31 March, the communications requirements were validated and forwarded to the Secretary of Defense by the JCS.

(S) On 9 June 1965, the Secretary of Defense disapproved the communications plan for the NORAD





ALCOP at North Bay and the concept of a hardened ALCOP for NORAD or any other subordinate air defense command echelon. The JCS, in preparing a reclama to support the North Bay ALCOP, asked CONAD for information and comments. CONAD responded on 18 June, stating that "NORAD strongly recommends that the decision concerning the North Bay ALCOP be reconsidered and that a favorable 'go ahead' be given this project."

#### ALASKAN REGION COMBAT CENTER

✓  
(c) The AN/FYQ-9 Data Processing and Display System for the Alaskan Region combat center had originally been scheduled for operation in early 1964. But various problems caused a number of delays. Finally, the Alaskan Air Command accepted the system officially at 0001 AST, 1 July 1965. However, because of deficiencies in the areas of supportability and maintainability, the system was placed temporarily in a limited operational status. A manual backup air defense display was being used until the deficiencies were corrected.

#### BACKUP INTERCEPT CONTROL SYSTEMS

##### BACKGROUND

✓  
(S) As an outgrowth of a June 1961 directive from the Secretary of Defense aimed at providing more system survivability, a SAGE back-up system termed BUIC (Backup Intercept Control), was approved for implementation in two phases. The first phase, or BUIC I, completed by the end of 1962, provided manual control using NCC's, NGCI's, and surveillance stations. The second phase, or BUIC II, program was to provide semi-automatic control at 34 NCC's originally, each of which was to have the AN/GSA-51 computer.

✓  
(S) To provide a more survivable system in place of the primary system, SAGE, and because BUIC II was limited, NORAD proposed a transportable



system which it termed TRACE. This got nowhere, however, and the Air Force proposed what was called Improved BUIC. The Secretary of Defense turned this down and NORAD and ADC proposed another system called PAGE (Primary Automated Ground Environment). But on 2 December 1964, the Secretary of Defense approved a BUIC III system instead.

U  
(S) As approved, there was to be an interim deployment of 14 BUIC II's in FY 1966-1967 and a phase-in of 19 BUIC III's in FY 1968-1969, replacing the BUIC II's. Twelve SAGE DC's were to be kept. The DOD guidance also provided for keeping the Reno direction center facility as a BUIC III to drive the Hamilton AFB combat center.

#### PLANNING AND STATUS

U  
(S) The above DOD paper requested the Air Force to submit a PCP for the SAGE/BUIC III program by 15 February (later changed to 15 March). USAF asked ADC for certain information for use in preparing the PCP, including a schedule for phasing from BUIC II to BUIC III, and a plan for closing the Reno facility and providing for the Hamilton AFB combat center. ADC's response, concurred in by NORAD, was dated 21 January.

U  
(S) Included in the ADC response was a proposal to install a twentieth BUIC III at Fallon AFS, Nevada (Z-156), to improve the defense posture of the Portland Sector by providing a second BUIC III in this sector.\* If a twentieth BUIC III was not approved, ADC proposed locating the computer scheduled for Waverly, Iowa (Z-81), at Fallon instead. ADC proposed

U  
\* (S) Z-156 was scheduled for a BUIC II installation when the latter program was for 34 sites. In the revised BUIC II Schedule, issued by ESD on 1 January 1965, which reduced the number to 14, Z-156 was not included.



the complete close-down of Reno as of 30 June 1966 and the installation of a GSA-51 computer at Hamilton for operation by that time. The Air Training Command was closing all of its activities at Stead AFB (Reno) and therefore continued operation of the Reno facility by ADC would involve expensive contract arrangements. The outlay would be greater than for installing the computer at Hamilton.

(S) In later exchanges of messages between USAF and ADC, a number of adjustments were made before the Air Force PCP was put in final form. On 10 March, USAF advised that the PCP listed Z-156, Fallon, as one of the 14 BUIC II centers and one of the 20 BUIC III centers. USAF said its message was authority to substitute Z-156 for Z-40 (Blaine, Washington) in the BUIC II schedule. USAF said that the proposed deployment assumed OSD approval of the computer for Hamilton, close-down of the SAGE facility at Reno by end FY 1966, and procurement of a twentieth BUIC III. If the latter was not approved, USAF said, it was assumed that Z-156 would still be kept in the BUIC III program and Z-81, Waverly, Iowa, deleted.

(S) ADC replied that the twentieth BUIC III remained a valid ADC/NORAD requirement. This twentieth unit would be installed at Waverly as the last item on the BUIC III schedule.

(S) In the meantime, the first BUIC II site was being readied for operation, set for 1 September 1965. The last site, Z-156, was to be operational on 1 April 1966. Thirteen computers were scheduled to be located at operational sites. One computer was to be installed at Z-198, Tyndall AFB, Florida, to be used for training of operational personnel and would not be operating in the NORAD system except for contingency operations. A fifteenth computer was to go to Air Training Command at Keesler AFB, Miss., for training of maintenance personnel.

~~SECRET~~



U  
(S) On 13 May 1965, DOD approved installation of the GSA-51 computer (D-825), less the consoles, at the Hamilton AFB combat center. The existing displays were to be used with modifications. From early July to the end of January 1966, it was planned that the region combat center would be undergoing reconfiguration and construction. The computer at Hamilton was scheduled to become operational on 1 July 1966 at which time the Reno FSQ-7 facility would be phased out completely.

(S) Approval had not been received at mid-year for the twentieth computer.

~~SECRET~~



## CHAPTER III COMMUNICATIONS

### AUTOMATIC VOICE NETWORK (AUTOVON)

#### BACKGROUND

<sup>U</sup>  
(S) By January 1963, NORAD and ADC had submitted requirements for some 70 automatic voice communications switching centers. Included were requirements for nine centers to serve NORAD regions, 18 centers to extend service to sectors, and some 43 centers to extend the service to the remainder of the SAGE/BUIC system. In the meantime, the Defense Communications Agency (DCA) had developed a plan for a world-wide Automatic Voice Network (AUTOVON) as part of the Defense Communications System. The latter was being set up as the single long-haul system for all elements of the DOD. In May 1963, OSD approved the combining of the four Army SCAN (Switched Circuit Automatic Network) centers with five NORAD/ADC centers to establish the first part of the CONUS AUTOVON.

<sup>U</sup>  
(S) Integration of the SCAN-NORAD/ADC centers was on a phased basis with two centers integrated first and then tested. The first integration was on 1 November 1963 and a test held in December. Combining of the SCAN-NORAD/ADC networks was completed on 20 April 1964 into the initial CONUS AUTOVON.

<sup>U</sup>  
(S) By the end of 1964, ten centers were operating (the nine SCAN-NORAD/ADC centers and one added at Faulkner, Md.). At that time the DCA program was for 66 switching centers in the CONUS, all to be operating by FY 1970. All of these centers were to ultimately use the electronic solid state switch, ESS-1, none of which was being used

[REDACTED]  
Group 1

~~SECRET~~



yet. The NORAD/ADC requirement, originally for some 70 centers, could be met within the 66-center DCA program. This was because of changes in the BUIC program and the reconfiguration of the NORAD organization.

#### STATUS

(U) NORAD and ADC had planned with DCA to integrate SAGE/BUIC into AUTOVON on a time-phased basis from 1 September 1965 to 1 January 1966. Because of difficulties in this, ADC asked AT&T to study the problem and recommend the best cutover. The latter proposed a 21-day cutover, from 10 January to 31 January 1966. This would reduce the complexity of the cutover and allow full operational capability during the cutover. DCA, NORAD and ADC agreed to the AT&T proposal.

(U) In the meantime, AT&T advised DCA that the programming of the electronic solid state switches (ESS-1), scheduled for the CONUS AUTOVON, had serious deficiencies that would delay the program and if accepted would not provide the services that NORAD and ADC required from the network. As a result, in May, DCA notified NORAD that it had decided not to accept the ESS-1 machines for AUTOVON until they could fully meet AUTOVON specifications.

<sup>U</sup>  
(S) The cutover planned for 10-31 January 1966 would involve the use of 14 interim number five cross-bar switches, which would make a total of 24 switching centers in service (the ten listed above plus these 14). The interim switches were to be replaced by the ESS-1 when the latter met the specifications. The first ESS-1 was expected to go into service on 1 September 1966 (other than at the NCMC, set for April 1966). At mid-1965, the DCA AUTOVON program was for 65 ESS's, all of which were to be in service by the 1970 time frame.

~~SECRET~~



## AUTOVON IN CANADA

(U) To work on expansion of AUTOVON to Canada for meeting NORAD air defense requirements, a joint Canadian-U.S. AUTOVON Coordinating Panel was set up at mid-1964. The members represented Canadian Defence Forces, NORAD, USAF ADC, USAF, and DCA. By early 1965, a charter for the panel had been formally approved and accepted by all agencies concerned.

(U) In February, the Canadian Telephone Industry presented a proposal to Canadian Forces Headquarters for a network of nine switching centers in Canada that would be connected to the CONUS AUTOVON switching centers. Initially, these Canadian switches would be used for air defense communications only and, as such, would be part of the dedicated NORAD/ADC portion of the CONUS AUTOVON. The proposal was forwarded to USAF ADC and forwarded by ADC to NORAD. On 5 May, ADC replied, indicating NORAD/ADC agreement with the proposal. ADC recommended that Canadian Forces Headquarters proceed with contract action for the system under the terms of the CADIN cost sharing formula for communications.

## NORAD ALERT WARNING SYSTEM (NAWS)

### BACKGROUND

(U) In 1961, NORAD asked ADC to study the feasibility of an attack warning system that could be triggered automatically by the DEW Line, BMEWS, NUDETS and other sensors to give instant warning to all NORAD combat units. ADC turned the problem over to AT&T. A plan from the latter was approved in principle by NORAD in 1962. In May 1962, NORAD submitted a telecommunications requirement for an AAWS to the JCS. The latter validated the requirement and sent it to DCA. Secretary of Defense approval of a DCA system plan was given in June 1963, but implementation approval was held up until December. AT&T was given the contract in April 1964 and the system became operational on 1 September 1964.



U  
(S) From the start, the NORAD Automatic Attack Warning System had numerous malfunctions, such as false light indications, caused by equipment failure or circuit difficulties. Finally, on 29 September, all organizations were notified that effective 1 October the system was being removed from operational use.

#### MODIFIED SYSTEM

U  
(S) In the months after September 1964, the system was re-engineered to meet the standards required by NORAD/ADC. On 12 April, NORAD advised ADC that it intended to proceed with the modified system as briefed by ADC. The requirements for system reliability, NORAD stated, were:

a. An average system reliability of 99%, meaning that 99% of the subscribers receive a positive warning each time the system is activated.

b. False alarm rate not to exceed more than one per year, meaning that no more than one system subscriber will receive a false warning within a one year period.

(U) The AT&T Company replied that it could not meet these standards but could meet reliability requirements according to the following:

If a false alert is received at NORAD, Region or Sectors, this false alert will be sent to all downstream locations homing on NORAD or that Region or Sector receiving the false alert. Therefore the number of locations receiving the false alert will depend upon where the initial false alert is generated. Based on our experience a simultaneous facility failure in a dual diverse routed section should occur less frequently than once a year. If NORAD





generates four alerts per day or 120 in a 30-day period, a total of 8,160 alerts could be received at 68 locations. With the Bell Laboratories proposed system an average of 99 per cent would be received with no more than one false alert in the system per year. It is important to note that on a single test if one location fails to receive properly with only 68 locations being exercised, the percentage will not be 99 per cent, but rather 98.53 per cent.

(U) (S) NORAD informally advised ADC on 28 May to go ahead with the NORAD Alert Warning System (NAWS) and on 8 June advised by letter that it would accept the reliability percentage proposed by the AT&T Company. In the meantime, on 16 April, NORAD had furnished ADC a list of sites to be equipped with the NAWS. In all, 65 sites were listed. Some locations were changed in June and July, but the total number remained the same.

(U) (S) NAWS was scheduled for operation on 1 February 1966.

#### SURVIVABLE LOW FREQUENCY/VERY LOW FREQUENCY COMMUNICATIONS SYSTEM

#### BACKGROUND

(U) (S) In July 1963, NORAD had submitted its requirements to the JCS for LF/VLF communications, asking for 21 transmit/receive (T/R) and 30 receive-only (R/O) stations. First, early in 1964, the JCS advised that all requirements would be consolidated and sent to DCA for preparation of a world-wide system plan. Then in August 1964, the JCS said that the Services would prepare plans for their needs and for the unified commands they supported. The JCS validated the NORAD requirements and sent them to USAF. In August also, the JCS outlined plans for the Minimum



Essential Emergency Communications Net (MEECN) which would include receive-only stations for all unified and specified commanders and component commanders.

(U) (S) After a number of downward revisions by NORAD of the requirement for the costly T/R stations, the NORAD requirement at the end of 1964 stood at six T/R stations and 36 R/O stations (which included three for the MEECN).

#### CURRENT PLANNING

(U) (S) The 487L Survivable Low Frequency Communications System (SLFCS) was currently under acquisition to meet USAF requirements. As a result of the JCS directive in August, USAF directed AFSC to prepare an augmentation to the 487L SPP. In February 1965, ESD sent a copy of a study containing a Program Change Proposal to the 487L SLFCS SPP to NORAD. NORAD reviewed the PCP and sent back certain changes resulting mainly from the programmed phase out of regions and sectors as stated in Chapter I. The end result was to delete the requirement for five R/O sites, dropping the total to 31. By mid-year, the USAF plan had been sent by the JCS to DCA for review and comment. DCA was to review all LF/VLF plans to assure compatibility with all other systems.

#### SATELLITE COMMUNICATIONS

##### BACKGROUND

(U) (S) The Secretary of Defense authorized an interim near synchronous orbit military communications satellite system for research and development and limited communications for the 1966-1967 time period. A final system was being planned, scheduled to be operational within three years. The JCS asked NORAD to provide by 1 December 1964, its requirements in the interim system, the Initial Defense Communications Satellite Program (IDCSP) and for



the Advanced Defense Communications Satellite Program (ADCSP). In the IDCSP, NORAD requested (on 1 December) channels to Projects 437 and 505 and the Diyabakir, Turkey, site. In the ADCSP, NORAD asked (on 4 December) for 110 channels which included channels to the national authorities, Canada, SPADATS sites, other unified and specified commands, ALCOP's, etc.

#### CURRENT PLANNING

<sup>U</sup>  
(S) NORAD submitted a Qualitative Requirement (NQR) for a Communications Satellite System, dated 11 January 1965, to the JCS and the Canadian Chief of Defence Staff. In the NQR, NORAD stated that an operational requirement existed for it to have access, on a high priority basis, to the DOD Communications Satellite System being established, in order to improve the survivability of communications vital to the NORAD mission. NORAD noted that the specific circuits for its immediate requirement were submitted on 1 December 1964 and those for the final system on 4 December 1964.

<sup>U</sup>  
(S) DCA advised NORAD that the first communication satellites in the IDCSP would be launched in early CY 1966. In the meantime, the JCS recommended approval to DOD of the 505 site and Diyabakir in the IDCSP, but not the 437 site. The latter was to be considered with the requirements in the ADCSP. In June, NORAD received a copy of the JCS paper to DOD on the satellite requirements for the unified and specified commands and services for the 1968-1975 time frame. The NORAD requirements were included with the exception of those circuits required between CONUS installations and the BMEWS circuits to the ALCOP's.

<sup>U</sup>  
(S) In April, ADC had recommended to NORAD that a change to the 4 December submission be made to add communication satellite requirements for the FPS-95, the AWACS, and Program 440L. Requirements for these systems were being staffed in NORAD Headquarters at the end of June.



## CHAPTER IV MANNED BOMBER DETECTION SYSTEMS

### RADAR REDUCTIONS AND PLANNING

#### PHASE OUT OF NAVY AIRCRAFT AND PICKET SHIPS ON SEAWARD AND DEW LINE EXTENSIONS

(S) Background. The Navy had radar-equipped picket ships for patrolling off both coasts of the U.S. to extend radar coverage out to sea, and air-borne early warning aircraft to extend the DEW Line seaward to Midway and to the U.K. On 1 January 1965, ten picket ship stations were manned (five off each coast). There was one other station off the East Coast, but it was vacant. Two stations were manned by Navy EC-121P aircraft on the Greenland-Iceland-United Kingdom (G-I-UK) Barrier. Four Navy EC-121C aircraft patrolled the Pacific Barrier.

(S) The high point in manning the DEW Line extensions was in mid-1959. At their peak, the Atlantic and Pacific barriers were manned by both Navy planes and ships. There were four ships and four aircraft on Atlantic barrier stations and five ships and an average of 4.5 aircraft on Pacific barrier stations. However, in April 1960, the ships on the barrier stations were withdrawn, over NORAD's objection, from early warning as a primary mission. A few ships stayed on with early warning as a secondary mission, but air rescue as their primary mission.

(S) Late in 1960, the Navy proposed to cut out the Pacific extension entirely because of a shortage of FY 1962 funds. This was not approved however. After the G-I-UK Line had replaced the former Atlantic barrier (Argentia to the Azores) in mid-1961, the AEW stations were cut from four to two.





U  
(S) In early 1964, the Navy again proposed to phase out its force in the DEW Line extensions and also in the seaward coverage. In June, CONAD told the JCS, to no avail, that studies had shown that the loss of these systems would seriously weaken its capability to defend against the manned bomber threat. In May 1964, ADC had told USAF about the same thing. ADC said that although the DEW Line extensions and seaward barriers were "badly outdated," they should be kept until an acceptable replacement system was available.

U  
(S) The Secretary of Defense approved the Navy proposal in December 1964. The Navy was directed to phase out its DEW Line extensions and the seaward barriers. Phase down was to begin in FY 1965 and be completed in FY 1966. Apparently, this decision was based to some extent on the estimate that early strategic warning would be available and the manned bomber threat was further diminishing.

U  
(S) On 28 December, CONAD protested to the JCS, repeating what effect the phase outs would have on defense against the manned bomber. CONAD asked the JCS to try to delay the phase outs until replacements, such as over-the-horizon (OTH) radar and the airborne warning and control system, were available. In January 1965, NORAD learned that all factors had been given to the Secretary of Defense before his decision and that only new and compelling information would provide a basis for reconsideration. NORAD said it had no new facts.

U  
(S) Status. The phase down began in January 1965 and followed the schedule set up by the CNO:\*

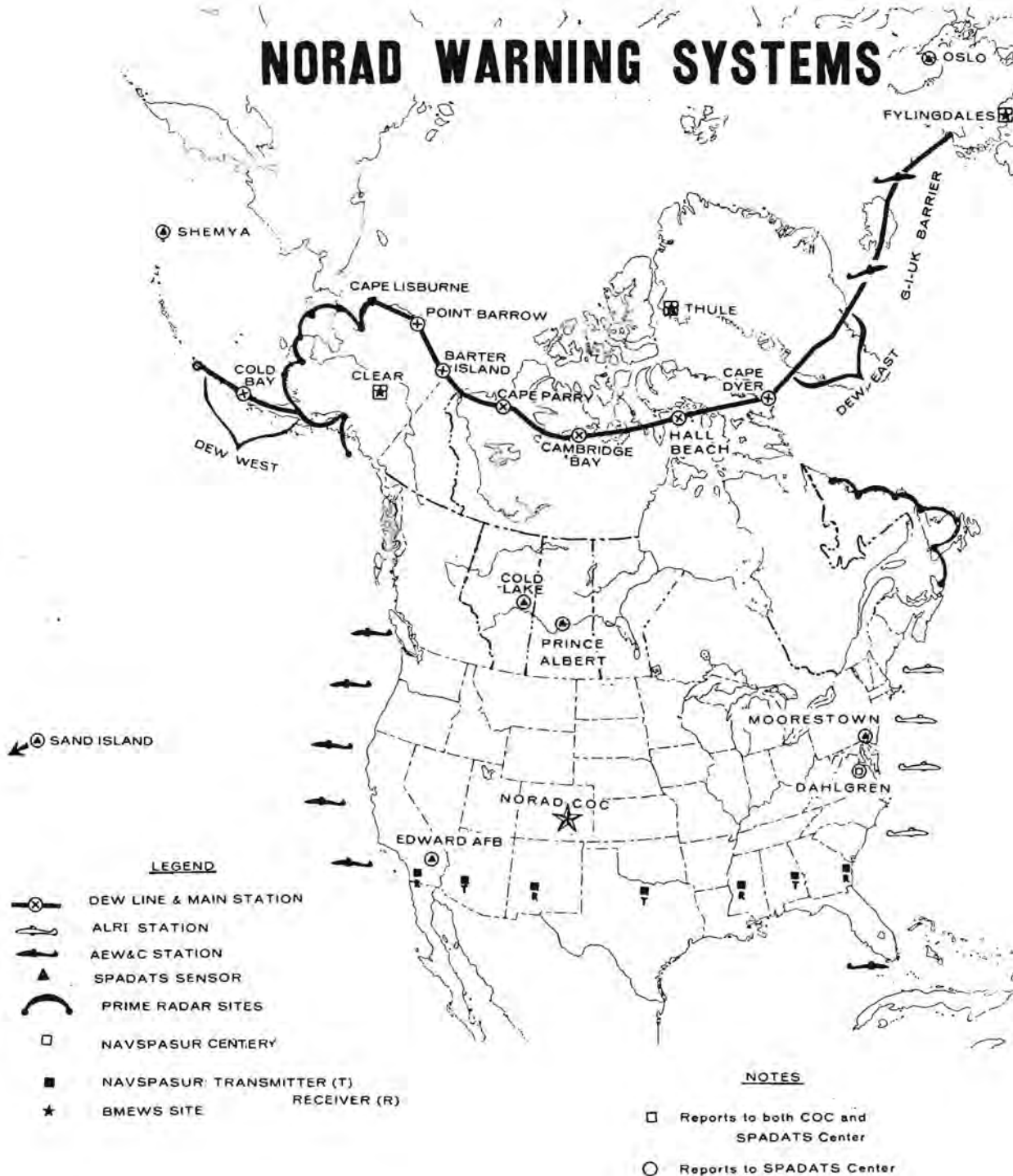
(1) Atlantic Ocean:

(a) Between 27 January and 3 February, the seaward barrier was cut to three manned picket ship

\* (U) This schedule appears in NORAD/CONAD Historical Summary, Jul-Dec 1964, p. 42.



# NORAD WARNING SYSTEMS





stations. These last three stations, which included the Southern Tip station, were vacated on 30 June 1965.

(b) On 1 July, the G-I-UK Line was cut from 1.62 coverage of its two airborne stations to 1.0. Flight operations were scheduled to stop on 1 September 1965.\*

(2) Pacific Ocean:

(a) Between 27-30 June, ships on the five stations of the seaward barrier left for their home ports.

(b) On 1 February, the DEW Line extension was cut to one aircraft on station. Flight operations ended on 1 May 1965.

(U) This phase out was to allow the Navy to inactivate 22 radar picket ships and 45 C-121 aircraft. About 9,000 men were to be reassigned. It was estimated that the phase out would save \$69 million in FY 1966.

USAF AEW&C/ALRI FORCE

(S) <sup>U</sup> West Coast Test. Soon after the impending phase down was announced, NORAD and its regions along the Coasts (25th, 26th, and 28th NR's) started to look for ways to offset these losses. On the West Coast, the 25th and 28th NORAD Regions had five seaward airborne stations manned by USAF's 552d AEW&C Wing. Also, the 552d manned the Southern Tip station off Florida. On the East Coast, the

---

\* (S) The G-I-UK Line still had two USAF land based radars at Iceland.

SECRET



26th NORAD Region had four seaward ALRI (airborne long range input) stations manned by USAF's 551st AEW&C Wing.

(S) In December 1964, NORAD asked its regions and component commands to recommend ways to minimize the loss of Navy units. In January 1965, members of the 25th and 28th Regions met to find out what effect this loss in radar coverage would have on them. They found that they would lose three hours in threat warning time and 40 minutes in early warning. To give more early warning time, it was suggested to NORAD that a new AEW&C employment concept be adopted.

(S) On 14 June 1965, after NORAD officials had studied all proposals and met with representatives of ADC and the regions concerned, NORAD directed the 25th and 28th Regions to test three AEW&C employment options. This test was named Samoset Union. Its options were:

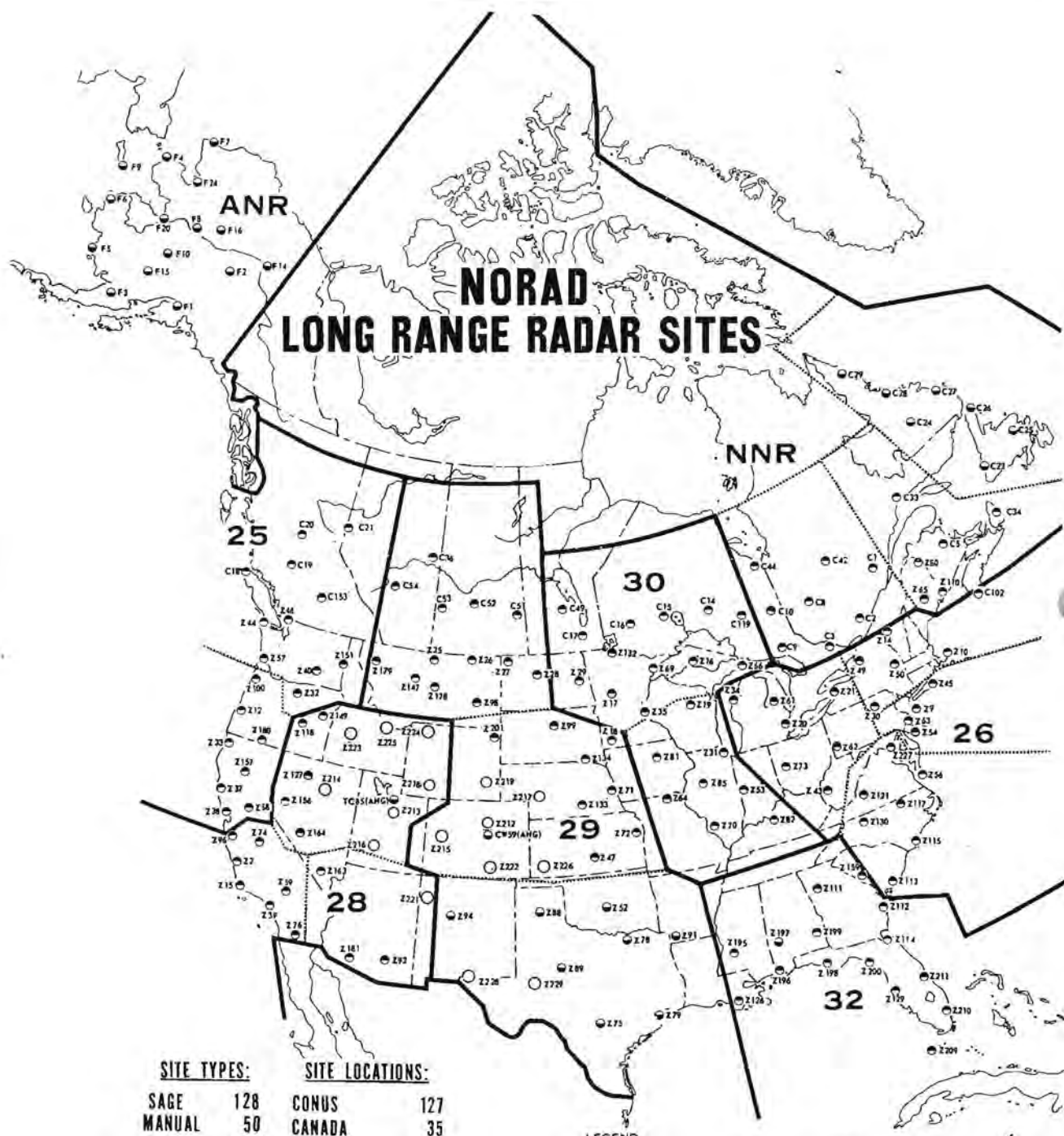
- I - the five-station plan in current use
- II - a four-station plan
- III - a three-station plan

The test objectives were to find the option giving the best defense capability, whether high-frequency single sideband was practical as primary communications, and if any extra equipment or modifications would be needed. The test report was to be sent to NORAD in August 1965.

(S) The 26th Region also was looking for ways to improve long range high altitude coverage by ALRI. However, ALRI aircraft had certain limitations in navigation/stabilization equipment and communications that would not permit revising their employment concept.

SECRET





SITE TYPES:		SITE LOCATIONS:	
SAGE	128	CONUS	127
MANUAL	50	CANADA	35
TOTAL	177	ALASKA	15
		TOTAL	177

**LEGEND**

- SAGE Site
- Manual Site
- FAA Site (Surveillance Only)





<sup>U</sup>  
(S) Alert Status Change. NORAD informed all concerned on 21 June that AEW&C ALRI alert status requirements would be re-evaluated after the results of Samoset Union were known. Until a re-evaluation was made NORAD said it was making the following changes effective 1 July 1965 under DEFCON 3 condition:

(1) Immediate preparations would be made to man all primary AEW&C/ALRI stations;

(2) CINCNORAD or his Deputy would decide if all primary stations were to be manned.

#### PHASE OUT OF 16 PRIME RADAR SITES

<sup>U</sup>  
(S) Background. In March 1964, NORAD had established a criteria for selecting land based prime radar sites needed for a high quality surveillance system. This criteria was also to be used in pinpointing those sites that were not needed. Because the criteria said that radars would be chosen from the ADC, RCAF, and FAA radar inventory, it would give a commonly understood and accepted basis for configuring the radar system.

<sup>U</sup>  
(S) USAF had asked ADC to prepare a "hard core" list of radar sites needed through 1970 to meet military requirements for survivability and ECCM, for joint-use FAA/ADC needs, and for approved and proposed programs. Also, ADC was to submit a list of sites not needed.

<sup>U</sup>  
(S) Using the NORAD criteria, ADC prepared a list of radars that could serve both FAA and ADC for possible netting into an integrated national surveillance system. On 6 March 1964, NORAD concurred with ADC's hard core list of 116 CONUS sites (changed later to 115--99 ADC/16 FAA) and 30 Canadian



radars (changed later to 29).\* Listed as excess were 16 ADC radar sites. On 9 March 1964, the USAF Air Defense Panel approved in principle both the criteria and the CONUS hard core list. However, FAA officials said they would have to determine their radar requirements before they could concur with the list.

(S) Of the 16 radar sites listed as excess, seven were identified as "conditionally required." These latter sites were to be kept to meet ARADCOM air defense requirements and/or until certain FAA radars were integrated into the air defense system. In mid-August, USAF asked for a NORAD/ADC position on proposed radar phase downs listed in a draft PCP on the ground environment system (PCP 64-107). This PCP listed 10 prime radars for deletion in FY's 1965 and 1966 and six more in FY 1967. The PCP said these latter sites, except Z-74 which was planned for transfer to FAA, would be closed if substitute FAA radars were tied into the air defense system. NORAD and ADC said they agreed with the radar closings provided the contingency requirements were met before the phase outs.

(S) In September 1964, the JCS asked for CONAD's comments on the PCP. CONAD repeated the NORAD/ADC position.

(S) The upshot was that DOD approved the deletion of the 16 prime sites and nine gap filler sites. Also, USAF was to submit by 15 March 1965 a detailed radar phase down plan, prepared in cooperation with NORAD, that satisfied NORAD plans for support of ARADCOM.

(S) On 20 November 1964, USAF directed ADC to phase out the prime sites as follows:

\* (S) NORAD wanted to determine coverage requirements for search, height, and gap filler radars before asking RCAF to concur with the Canadian sites.



FY 1965

Z-13 Brunswick AFS, Maine  
Z-24 Cutbank AFS, Montana  
Z-55 Manassas AFS, Virginia  
Z-67 Custer AFS, Michigan  
Z-150 Cottonwood AFS, Idaho  
Z-177 Dickinson AFS, North Dakota

FY 1966

Z-9 Highlands AFS, New Jersey  
Z-38 Mill Valley AFS, California  
Z-53 Rockville AFS, Indiana  
Z-57 Naselle AFS, Washington

FY 1967

Z-15 Lompoc AFS, California  
Z-43 Guthrie AFS, West Virginia  
Z-74 Madera AFS, California  
Z-98 Miles City AFS, Montana  
Z-127 Winnemucca AFS, Nevada  
Z-149 Baker AFS, Oregon

<sup>U</sup>  
(S) This phase down was estimated to save yearly about 2,140 military and 160 civilian manpower spaces and about \$13.8 million.

<sup>U</sup>  
(S) Status. The radar sites that were scheduled for phase out in FY 1965 closed on schedule. On 15 December 1964, Z-150 ended operations; the other five sites stopped operating on 1 March 1965.

<sup>U</sup>  
(S) Of the four sites that were to be phased out in FY 1966, ARADCOM asked that Z-9 and Z-38 be extended for six months (to FY 2/1967). Until then, facilities at these sites would be needed to support Nike fire control needs. On 21 January, ADC, with NORAD concurrence, asked USAF to extend operations at these sites.



U  
(S) In early February, USAF replied that in its radar phase-down plan to OSD this extension could be proposed. Also, USAF said it would probably be approved if Z-74 and G-32 (at Thule, Greenland) could be substituted for Z-9 and Z-38 and closed in FY 1966. NORAD and ADC agreed to this proposal on 19 February. However, ADC told USAF that FAA would have to take over operational control of Z-74 in FY 1966, and phase out of G-32 depended upon withdrawal of Nike units from Thule. The Nike units were withdrawn by 1 June 1965 (see Chapter Seven). At mid-1965, NORAD was waiting to hear if FAA would accept the early transfer of Z-74.

U  
(S) There was another proposal concerning Z-38. FAA told ADC that Z-58 at Mather, California, had been dropped from its list of required radars. On 20 April 1965, ADC proposed to USAF that Z-58 (a joint-use site) be phased out instead of Z-38. By mid-year, no decision had been made.

U  
(e) In FY 1967, except for Z-74, five ADC radar sites were to be phased out and replaced by FAA sites. These sites were:

<u>ADC</u>	<u>FAA</u>
Z-15	Paso Robles, California
Z-43	Lynch, Kentucky
Z-98	Lovell, Wyoming
Z-127	Battle Mountain, Nevada
Z-149	Boise, Idaho

Planning called for the FAA sites to perform air defense functions. They were to be data-tied to the air defense system before the ADC sites were closed. (See Height Finder Requirements Study, below.)

#### GAP FILLER RADARS

(U) Retied Sites. With NORAD concurrence, on 10 December 1964, ADC recommended to USAF that the gap filler radars tied to those sites slated to close in FY 1965 be retied to other prime sites. In January



1965, USAF approved this action. The sites were retied and redesignated as follows:

<u>Site</u>	<u>New Designation</u>	<u>Retied to (Date)</u>
Z-13A	Z-65B	Z-65 ( 5 Feb 1965)
Z-55B	Z-227A	Z-227 ( 2 Jun 1965)
Z-55F	Z-62G	Z-62 (12 Mar 1965)
Z-67A	Z-20G	Z-20 (13 Feb 1965)
Z-67B	Z-73J	Z-73 ( 1 Mar 1965)
Z-67C	Z-34G	Z-34 ( 4 Feb 1965)
Z-67D	Z-34H	Z-34 ( 2 Feb 1965)
Z-177B	Z-28E	Z-28 (17 Feb 1965)

When site Z-43 was phased out in FY 1967, gap fillers Z-43A and Z-43E were to be retied and redesignated Z-73I and Z-62H, respectively.

(U) Phased Out Sites. As a result of the DOD-directed phase out of nine gap filler sites, NORAD and ADC selected the sites to be closed. On 24 February 1965, ADC sent the list to USAF which approved it on 18 March. On 1 April 1965, the following sites were phased out:

Z-2A	Lockwood, California
Z-12A	Port Orford, Oregon
Z-12B	Disston, Oregon
Z-12C	Placer, Oregon
Z-14B	Blue Mountain Lake, N.Y.
Z-33A	Capetown, California
Z-40B	Wenatchee, Washington
Z-70F	Neoga, Illinois
Z-82A	Odon, Indiana

#### HEIGHT FINDER RADAR REQUIREMENTS STUDY

<sup>U</sup>  
(S) The DOD-directed 16-site reduction also required ADC to dispose of 32 Height Finder radars (two per prime site). In a message to USAF on 10 December 1964, ADC said that some equipment at the phased out prime sites would have to be retained



and/or relocated. This equipment included height finder radars. ADC said that NORAD/ADC working groups were developing firm NORAD objectives and needs to combat the manned bomber threat. Also, they were studying the equipment needed for FAA radar sites that were to be tied into the air defense system. Until these requirements were decided, ADC asked that all height finder radars be stored under its control.

(U) In January 1965, USAF said that height finders from the FY 1965 phase outs could be kept temporarily under caretaker status on the phased out sites. But USAF said it wanted the height finder study sent to it not later than 1 April 1965.

(S) On 1 April, after NORAD had concurred, ADC sent the height finder requirements study to USAF. The study recommended that USAF approve the installation of height finders at selected FAA radar sites. These sites were in the Denver/Salt Lake City area, New Mexico, Texas, Oklahoma, Arkansas, and Tennessee. Also, the study said that equipment made surplus by phasing out the 16 prime sites should be kept to meet the requirements of the study. ADC said there would be 26 FPS-6 type radars available from the phase outs (nine in FY 1965, five in FY 1966, and 12 in FY 1967), and 25 were needed.

(S) ADC said the study was based on the concept of installing these radars and necessary communications at certain FAA radar sites to give a better weapons control capability. With FAA planning to automate its new National Airspace System (NAS) centers and DOD/FAA agreements for a common surveillance system, ADC said the air defense capability could be improved at a minimum cost. ADC estimated that it would cost about \$6 million, with annual operating, maintenance, and communication costs about \$3.5 million.





✓  
~~(S)~~ USAF answered on 16 April that the study did not have enough information to justify keeping the surplus equipment. While it approved the idea of using such equipment to improve the air defense posture, USAF said

. . . the decreasing bomber threat makes it extremely difficult to obtain approval for expenditure of funds to enhance control capability, particularly in an area that had no such capability when a large bomber threat existed.

✓  
~~(S)~~ USAF said it felt air defense surveillance could be improved in the Denver/Salt Lake area after FAA had installed common digitizers (a radar video data processor) at its radar sites in that area. This was possible, USAF believed, because DOD had accepted the idea of joint military/FAA use of air traffic control and air defense facilities. But the main problem in getting a greater air defense capability in the Denver/Salt Lake area was money. USAF said that since DOD was trying to cut air defense costs all proposals for changes would be evaluated mainly on cost data.

✓  
~~(S)~~ Also, USAF asked for a more detailed height finder study. In addition, it wanted separate plans for:

(1) replacing the capability lost from those sites scheduled to phase out in FY 1967 at adjacent FAA sites; and

(2) automating the air defense capability in the Oklahoma City Sector by integrating with FAA.

✓  
~~(S)~~ On 10 May, ADC questioned the USAF decision not to keep the surplus equipment. Because this decision was based on the decreasing bomber threat,



the difficulty of getting money from DOD, and DOD efforts to cut the cost of air defense, ADC said it questioned it "particularly since the Air Force is not in agreement with the DOD projected bomber threat." ADC felt it was essential that the bomber defense system be improved. It specifically asked that the nine FPS-6 type height finders, with arctic towers, from the FY 1965 phase outs be put in storage until more detailed studies were made. Also, ADC indicated that it was preparing data for improving the air defense system in increments.

U  
(S) Again, USAF turned down ADC's request but this time the refusal was modified. On 24 May, USAF said ADC's requirement for 25 height finders could be filled from several sources, including radars made surplus in the FY 1966/1967 base closures. Thus, there was no need to keep the height finders from the FY 1965 phase outs. But the arctic towers were to be stored for future use. USAF reminded ADC to send the detailed plans it had asked for previously so they could be used in preparing a PCP to improve the bomber defense system.

U  
(S) In June 1965, a NORAD/ADC working group started preparing height finder requirements for the five FAA sites that were to be tied into the air defense system in FY 1967. It was estimated that these requirements would be completed by November 1965. Plans were also underway to improve the air defense capability in the Oklahoma City Sector and the Denver/Salt Lake area, and to data-tie selected FAA radars to air defense centers throughout the system.

#### CLOSING OF THE MID-CANADA LINE

U  
(S) Background. In September 1963, the RCAF had told NORAD that it was thinking about phasing out the Mid-Canada Line. The RCAF said this consideration was based on manpower and budget limitations and intelligence estimates. For these reasons,



the RCAF felt the MCL should phased out rather than more important air defense elements or functions. The RCAF asked for NORAD's views.

<sup>U</sup>  
(S) NORAD answered that the MCL should continue operations, at least on a reduced basis. NORAD said the MCL was the best warning capability against low-level attacks, gave DEW Line backup, confirmed DEW Line warning, gave approximate raid size and destination, and helped to make the best use of manned interceptors. NORAD recommended alternatives to shutting down the entire MCL that would leave the most important stations in operation.

(U) On 12 January 1964, five of the eight section control stations were closed.\* Still in operation were three section control stations - - Winisk, Great Whale River, and Knob Lake - - and 39 unmanned doppler detection stations running from eastern Manitoba to central Newfoundland.

<sup>U</sup>  
(S) Phase Out Completed. In early March 1965, Air Chief Marshal F. R. Miller, Chief of the Defence Staff, informed NORAD that Canada was reviewing its air defense posture. "Though our review is not yet complete," he said, "it is generally agreed here that the operational value of the remainder of the Mid-Canada Line is so marginal that its continued operation is no longer warranted." Before making any final decisions, however, he asked for NORAD's comments.

<sup>U</sup>  
(S) Air Marshal C. R. Dunlap, Deputy CINCNORAD, replied on 5 March. He repeated, without success, what had been said earlier about the value of the

---

\* <sup>U</sup>  
(S) Stations on the western end of the line were closed. Radar coverage was then provided by five new long range radars that had been built in western Canada by joint Canadian-U.S. efforts.



MCL. He told A/C/M Miller that it allowed the enemy to be engaged farther north, giving more protection to major cities and industrial areas in Canada. A/M Dunlap said that, in his view, the small amount of money spent on the MCL was a sound investment and a small premium to pay for the extra protection.

<sup>U</sup>  
(S) On 29 March, Canadian Forces Headquarters told NORAD that the MCL would close on 31 March 1965. It said the money used to run the line would give a greater return if it were spent on other defense programs. It was estimated that closing the rest of the MCL would save about \$7 million annually (the entire line had cost about \$13 million annually). Northern NORAD Region reported that the MCL ended operations on 2 April 1965.

#### CONTINGENCY MANNING OF THE DEW LINE

<sup>U</sup>  
(S) On 22 April 1965, ADC told NORAD that the U.S. and Canadian governments had agreed to USAF/RCAF exploratory talks to find a way to man essential Canadian DEW Line functions in case of labor strikes against the Federal Electric Company. The Canadian Government had not liked either the contractor's plan to replace Canadians on strike with U.S. civilians or ADC's plan (OPLAN 57-64, 1 October 1964) to send in USAF personnel. Canada agreed to the talks if they were held in the strictest confidence and no plans for manning were prepared. ADC was to represent USAF, and both sides agreed that NORAD should sponsor the talks. ADC asked NORAD to make the arrangements.

<sup>U</sup>  
(S) Representatives of NORAD, ADC, and Canadian Forces Headquarters/RCAF met on 12 May 1965. The RCAF recognized that USAF had the prime responsibility for operating the DEW Line but said it would consider taking over this responsibility during emergencies caused by labor troubles. ADC



endorsed this approach. Before this could be done, however, Canadian agencies were to consider an intergovernmental agreement on the shift of responsibility from USAF to RCAF, legal and budget considerations, and the development of RCAF plans in conjunction with USAF for manning the DEW Line. USAF was to be advised of any decision.

PASSIVE DETECTION FOR  
NON-SAGE/BUIC AREAS

BACKGROUND

U  
(S) In 1963, NORAD had considered giving its manually-operated areas (non-SAGE/BUIC) a passive detection capability. This would give the Alaskan NORAD Region, Goose NORAD Sector, and Oklahoma City Sector the ability to detect, track and control weapons against aircraft in an ECM environment. After NORAD evaluated an RCAF ADC manual PD system, it wanted to get that type of a system.\*

U  
(S) During 1964, the development of a requirement for a manual PD system was held up. It had to wait for the radar coverage criteria study and for the effect that new proposed systems would have on ground surveillance requirements. Finally, in late 1964, work started on a draft NORAD qualitative requirement (NQR).

STATUS

U  
(S) In February 1965, the draft NQR was sent for review to the component commands and ANR. Only minor changes were recommended. NORAD sent the finished NQR 3-65 (NORAD Qualitative Requirement for Passive Detection Capability in Non-Automated NORAD Ground Environmental Areas) to the JCS on

U  
\* (S) The semi-automated PD system, TCU/ASTRA, then being installed in SAGE sectors, would not work in manually operated areas.



on 30 March 1965. NORAD asked the JCS to approve it and to assign development responsibility for the system to the appropriate Service.

(S) In the NQR, NORAD said it wanted a manual PD system put in five areas by 31 December 1966. These areas were the three noted above, the eastern half of the Reno NORAD Sector (Salt Lake City Surveillance Area), and the western half of the Sioux City NORAD Sector (Denver Surveillance Area). The system was to equip long range radars with devices to find the true strobe azimuths of jamming aircraft. Strobe data would then be sent to a triangulation center where it would be used to find and track the jamming aircraft. This tracking information would then be relayed to agencies controlling weapons.

(U) On 29 May 1965, the JCS approved the NQR and gave USAF the responsibility for handling the requirement. USAF asked its Air Force Systems Command in mid-June to make a technical feasibility and cost effectiveness study on NORAD's requirement.



## CHAPTER V BALLISTIC MISSILE AND SPACE WEAPONS DETECTION SYSTEMS

### SEA LAUNCHED BALLISTIC MISSILE DETECTION

#### BACKGROUND

<sup>U</sup>  
(S) In April 1964, DOD deferred a program to modify certain SAGE FD radars that would give NORAD an off-shore missile attack warning system. DOD wanted an evaluation of other detection techniques because SAGE radar modifications would cost more than had been expected and over-the horizon (OTH) radar was expected to be available about the same time as the SAGE modification program. USAF and the Navy were to make separate studies of OTH radar for use in off-shore missile launch detection and aircraft surveillance. These studies were then to be sent to DDR&E for evaluation of OTH radar versus a line-of-sight system.

<sup>U</sup>  
(S) NORAD believed that line-of-sight radars would give only an interim capability. In 1962, and again in March 1964, NORAD had called the JCS' attention to the possibilities of OTH radar. Thus, a re-study of warning techniques was in line with NORAD's thinking. Also, in March 1964, NORAD asked for a prototype OTH radar to be installed and tested at a site in the CONUS.

<sup>U</sup>  
(S) The USAF study was finished in July 1964. It found that SAGE FD modifications were too sophisticated and expensive for the current threat. In addition, they were inadequate for both cruise missiles and the future threat. The study concluded that serious consideration should be given to getting an OTH prototype. But the current threat should





be met with an inexpensive modification of line-of-sight radars.

U  
(S) On 31 July, NORAD concurred with the main conclusions of the study. NORAD recommended to USAF that funds for an austere interim system be limited to the minimum needed to insure warning for SAC. For the longer-range threat, NORAD recommended approval of a CONUS backscatter OTH prototype with concurrent planning for a complete OTH system. NORAD explained to the JCS in August its position on getting an early SLBM detection and warning capability. NORAD said that its position on SAGE FD modification had changed, but it still wanted an interim capability, based on modifications or use of current surveillance systems. And NORAD said again that an OTH radar system should be deployed.

U  
(S) In September 1964, USAF sent its recommendations to the JCS for forwarding to DDR&E. The JCS forwarded only one of the two USAF recommendations. This was to proceed immediately with an austere line-of-sight radar program. A recommendation to begin a design phase for an OTH radar prototype was not sent because the Navy study of OTH had not yet been considered.

U  
(S) On 5 November, DDR&E approved the interim line-of-sight system concept and made \$20.2 million available for development. Also, it gave the following guidance: a maximum of four sites could be moved and consideration should be given to using seaward SAGE radars, the FPS-49 Spacetrack radar at Moorestown, N.J., and the FPS-85 phased-array radar at Eglin AFB, Fla.

U  
(S) In mid-November, system configuration was discussed by NORAD, AFSC, and the SPO. It was then recommended to AFSC that modifications to FD radars get first priority of SPO effort, and the FPS-49 and FPS-85 get second and third priority, respectively. Approval was given for a minimum system using FD radars.





## STATUS

<sup>U</sup>  
~~(S)~~ In March 1965, requests for system proposals were sent to contractors. By mid-June, with NORAD representation, the SLBM Contractor Selection Board had evaluated proposals from three contractors: Westinghouse, Sperry, and AVCO. AVCO was chosen. Both DDR&E and CINCNORAD were briefed on the results of this evaluation in July.

<sup>U</sup>  
~~(S)~~ In the meantime, on 10 May, NORAD sent to the JCS a communications requirement for the system. Although the radar sites had not been chosen yet, NORAD said it was sending the requirement to cut down processing time. The locations of the SLBM radar sites were to be sent to the JCS as soon as they were known.

<sup>U</sup>  
~~(S)~~ NORAD said it needed dual full period dedicated data circuits to send computer refined data from the sites to the COC. Voice and teletype circuits would use existing military communication systems such as AUTOVON and AUTODIN. Valid warning data would be sent from the COC to SAC, the National Military Command Center, and the Alternate NMCC over BMEWS circuits.

## DOD SPACE DETECTION, SURVEILLANCE, TRACKING, AND DATA PROCESSING STUDY

## BACKGROUND

(U) On 22 July 1964, the Deputy Secretary of Defense, Mr. Cyrus Vance, directed that an ad hoc group (known as the DATOS Study Group) be formed to study all current and programmed DOD space detection, surveillance, tracking, and data processing equipment. This group was to find the ability of these space systems to maintain space catalogs, support approved weapon systems, and maintain a technical and organizational posture to support future national operations.



(U) One main purpose of this group was to recommend ways to reduce, consolidate, and allocate resources, and organize space systems so they would operate as a coordinated program. The study was to be finished in time to influence FY 1966 apportionment decisions.

(U) Mr. Daniel J. Fink, ODDR&E, was appointed to form the study group and act as its chairman. Members were drawn from ODDR&E and OSD. Other participants represented the JCS, DCA, DIA, NSA, the Services, and NORAD.

(S) At the request of the JCS, on 17 September 1964, NORAD gave the study group a description of SPADATS equipment and operation and the latest requirements for improving SPADATS. Also, NORAD appeared before the group in October and November. To answer another study group request, NORAD updated its April 1961 requirement document for an improved SPADATS. The JCS wanted to include this new document in their report to the study group.

#### STATUS

(S) NQR 2-65 -- SPADATS Requirements. On 7 January 1965, NORAD sent its updated qualitative requirement for SPADATS (NQR 2-65) to the JCS. Included with the NQR were the requirements of all users of SPADATS data. NORAD told the JCS that most of the user needs were being met except for one major item. This major exception was the need to furnish space threat and situation warning before the first pass of a foreign spacecraft over all unified or specified command areas. NORAD said the implications of this requirement were particularly far-reaching in terms of surveillance coverage.\*

\* (U) For detailed SPADATS requirements in NQR 2-65, see NORAD/CONAD Historical Summary, Jul-Dec 1964, pp. 59-62.



<sup>U</sup>  
~~(S)~~ The JCS forwarded the NQR and user requirements to the study group on 6 February. The JCS did not comment on the NQR but said they would do so after a thorough analysis. On 1 April, with minor modifications, the JCS supported NORAD's requirements.

<sup>U</sup>  
~~(S)~~ Disapproval of NQR 2-65. However, in March 1965, the DATOS Study Group had finished its report and recommended disapproval of NQR 2-65. This was done, apparently, because of the study group's estimate of the space threat. On 5 May, OSD disapproved the NQR.

<sup>U</sup>  
~~(S)~~ The JCS responded by protesting to OSD. They said that NQR 2-65 needed revising. But they suggested that it would be wise to continue improvements in space surveillance for more knowledge of Soviet space activities and to help define the possible threat. The JCS said they would return the NQR to NORAD after specific differences over it were settled between the JCS and OSD.

(U) At mid-year, CONAD was preparing an analysis of the DATOS report to send to the JCS.

#### CANADIAN PARTICIPATION IN SPACE DETECTION AND TRACKING SYSTEMS

<sup>U</sup>  
~~(S)~~ In February 1965, Canadian Forces Headquarters told NORAD that it was making a study to find what its future role should be in space surveillance. Over the past few years, Canada had been giving data to SPADATS from two sensors: an RCAF-operated Baker-Nunn Camera at Cold Lake, Alberta, and the Defence Research Board's Prince Albert Radar Laboratory in Saskatchewan. Canadian Forces Headquarters asked for NORAD's views on the contribution these sensors made to SPADATS.

<sup>U</sup>  
~~(S)~~ Canadian Forces Headquarters asked NORAD to give specific answers to five questions for



assessing "whether there is a place for a space surveillance role in the Canadian participation in NORAD." If a firm need for Canadian participation was established, essential modifications would be made to the Baker-Nunn Camera and communications would be improved.

↓  
(8) On 12 March 1965, NORAD assured Canadian Forces Headquarters that the Canadian sensors were making valuable contributions to SPADATS. Baker-Nunn cameras were important because they gave more accurate positional data than radar observations. The Canadian Baker-Nunn was important, NORAD said, because it was one of only five such military cameras (four were owned by USAF ADC) in SPADATS. Also, its geographical location was so good that it was being used as an anchor point in a plan to relocate other cameras. The Prince Albert radar was valuable because of its location, too. NORAD said the radar gave early detection of polar, or near polar, orbits of Soviet satellites and other data on satellite surveillance. Also, it did research in areas that had a practical application to BMEWS operations.

↓  
(8) But NORAD pointed out that data from the Canadian camera was not equal to data from the other cameras. NORAD said performance could be improved by modifying the camera, adding some new equipment, giving personnel formal training, and moving the camera about 30 miles from the Primrose Missile Range to the RCAF Station at Cold Lake. Also, NORAD said the lack of secure communications at the Prince Albert radar limited its participation in many projects.

↓  
(8) Besides information on these sensors, Canadian Forces Headquarters wanted to know the importance of space surveillance in the current defense posture, particularly the value of SPADATS in countering the threat as stated in the NORAD Objectives Plan 1966-1975. NORAD answered that the threat was an anticipated one that could materialize



in 1969. The threat could be large yield nuclear warheads in orbit around the earth. Hence, to keep pace with the threat, all new space objects had to be watched to find their characteristics and mission. NORAD said SPADATS was doing this. Also, SPADATS facilities would be needed in any countersatellite system.

<sup>U</sup>  
(S) In June 1965, RCAF ADC asked Canadian Forces Headquarters to make an early decision on the program for the Baker-Nunn Camera. RCAF ADC said the USAF cameras were to be improved; if the RCAF camera were not updated, its data would be of increasingly less value. RCAF ADC added that its Baker-Nunn Camera's role in SPADATS

... is a worthwhile undertaking and is one part of the overall aerospace defense program that Canada can afford since it is the most economical space surveillance gear to operate and yet the most accurate.

BMEWS SITE III COMMUNICATIONS  
TEST VIA SATELLITE

(U) In May 1965, the Defense Communications Agency (DCA) developed a plan to test military communications over the Communications Satellite Corporation's "Early Bird" satellite.\* Test results were to be used in making future plans for leasing service over the satellite.

<sup>U</sup>  
(S) As a part of this plan, ADC asked DCA to conduct a test to find out if it was practical

---

\* (U) Early Bird was launched in early April 1965. It was an 85-pound, drum-shaped satellite designed to relay telephone calls, television images, and high-speed data between North America and Europe.



to use Early Bird for passing BMEWS Site III (Fylingdales, England) data to the NORAD COC. Both data and voice circuits were to be tested.

(U) The test was made during mid-June 1965. ADC reported to DCA that the results were very successful and proved that Early Bird could be used as a route for BMEWS communications.

(U) There was one major drawback to satellite communications, however. Normally, BMEWS data was sent from the sites to the COC over two different circuits at the same time. This method insured reliability and allowed valid comparison of the data upon receipt. A communications link by satellite could not operate simultaneously with a cable or a tropo scatter link because of an inherent time delay in relaying the messages to and from the satellite. There was a possibility that data sent by ground links could be delayed to coincide with the satellite circuit.



CHAPTER VI  
NUCLEAR DETONATION DETECTION AND  
C/B REPORTING SYSTEMS

CHEMICAL AND BIOLOGICAL  
RAPID WARNING SYSTEM

BACKGROUND

<sup>U</sup>  
(S) In 1961, NORAD's requirement for an automatic biological and chemical rapid warning system was approved by the JCS. Later, the JCS expanded it from a system for NORAD to an over-all continental system. The JCS directed the Army to set up an interim manual system until an automatic system was ready. The interim system became operational on 1 July 1964.

<sup>U</sup>  
(S) In July 1962, after DDR&E had reviewed the Army's plan for developing an automatic system, DDR&E directed the Army to make a complete study of the system to further define and clarify the project. During this study, NORAD learned that the system was being based on a requirement that was not responsive to NORAD's needs. The system under study would give tactical warning at the local level. NORAD's main requirement was for detecting and reporting CB attacks to make national strategic and tactical decisions. NORAD asked the Army in March 1964, without success, to revise the study.

<sup>U</sup>  
(S) The Army Materiel Command (AMC) evaluated the completed study. In October 1964, AMC sent its conclusions and recommendations to NORAD for comment. AMC concluded that CB sensors were not developed enough to have a system responsive to NORAD's requirements. Also, current guidance for a totally responsive system was too limited. AMC recommended suspending the program until:





(1) Suitable advances were made in sensor development.

(2) Guidance was developed which clearly established the system mission, the nature and degree of the CB threat, and the organizational and operational environment in which the system must be designed to function.

(3) A complete evaluation was made of the over-all CONUS CB warning problem.

(S) NORAD replied on 22 October that it generally concurred with the analysis and evaluation of the study. But NORAD said that it still wanted a rapid CB warning system.

#### SYSTEM REAPPRAISAL

(S) DDR&E noted in December 1964 there were technical problems that would delay system development and asked for more guidance during FY 1966. Accordingly, the JCS directed the Army in March 1965 to make an updated reappraisal, evaluating and defining the requirement for a CB system through 1975. The JCS said a re-evaluation was necessary because technical, operational, and intelligence factors had changed since the requirement was established in 1961.

(S) NORAD and DIA were to assist in this reappraisal. In June 1965, DIA sent NORAD and the Army an evaluation of the CB threat to NORAD's geographical area of responsibility. NORAD was then to send the Army, by 1 August, comments and recommendations on the threat and the system. Also, NORAD was to send an updated qualitative requirement.

(S) It was expected that the Army would give the JCS a complete reappraisal of the requirement for a NORAD CB Warning and Detection System by





mid-November 1965. The JCS were to send their recommendations to the Secretary of Defense by 1 January 1966.

## NUCLEAR DETONATION DETECTION AND REPORTING SYSTEM

### BACKGROUND

<sup>U</sup>  
(S) Phase I of the Nuclear Detonation Detection and Reporting System (NUDETS 477L) became operational on 1 July 1964. Four sites in the Washington, D.C. area were to give data for alarm, attack and damage assessment, and fallout warning on nuclear detonations. This initial phase was to satisfy the requirement of the National Military Command System.

<sup>U</sup>  
(S) Normal operation was to be interrupted by additional testing. The results of these tests were to be used by DOD to help determine requirements for Phase II. This second phase was to satisfy NORAD's requirement for a nation-wide system.

<sup>U</sup>  
(S) NORAD wanted Phase II operational by the end of FY 1969. In 1963, however, the Secretary of Defense had directed that a re-study be made of the nation-wide NUDETS requirement. MITRE was to find a way to relax height-of-burst and yield accuracies for all targets and reduce ground zero criteria on enough targets to permit use of longer range sensing techniques. The DOD position on the NUDET System was that no more funds would be authorized until data from Phase I testing was available and MITRE's study of Phase II was completed.

### CANCELLATION OF NUDET SYSTEM

<sup>U</sup>  
(S) In April 1965, NORAD learned unofficially that NUDETS Phase II had been cancelled. Technolog-



ical approaches to an automated system were not considered to be cost-effective at that time. In September 1965, NORAD learned that the Secretary of Defense had decided to end Phase I the first quarter of FY 1967.



## CHAPTER VII WEAPONS

### STATUS SUMMARY

<sup>U</sup>  
(S) The NORAD regular interceptor force decreased from 42 to 40 squadrons during the first six months of 1965. One F-102 squadron (332nd FIS, Thule Air Base) was inactivated. Another F-102 squadron (482nd FIS, Seymour-Johnson AFB), programmed for discontinuance in the second quarter of FY 1966, was released from regular alert on 1 July 1965. It was to be relieved of its Key West dispersal alert commitment on 1 August 1965 by the 326th FIS, Richards-Gebaur AFB. By 1 July 1965, the total number of aircraft had dropped from 870 to 791. The number of ANG (Category I) squadrons stayed at 21 but the number of aircraft fell from 468 to 408. The ANG continued to increase the number of aircraft on high alert. By 1 July 1965, all but one ANG squadron had three aircraft on 5/15 minute status. The 196th at Ontario, California, was relieved of its alert commitment for six months to convert from F-86L's to F-102's.

<sup>U</sup>  
(S) The number of BOMARC missiles in the eight squadrons dropped from 243 to 239 by 1 August 1965, as a result of four evaluation launches during this period. The transfer of 48 Regular Army Hercules fire units to the Army National Guard was completed with the transfer, on 14 April 1965, of two of the Cincinnati-Dayton sites. Four RA Hercules units at Thule became non-operational on 18 May 1965, leaving a total of 91 RA fire units under NORAD control on 1 July 1965. There remained eight Hawk fire units with 288 missiles and 48 launchers.





## INTERCEPTOR FORCE

### INACTIVATION OF THE 332ND FIS

(U)  
(S) The 332nd FIS was the first squadron to be inactivated under the December 1964 OSD-ordered interceptor force cuts, designed to reduce the number of regular force interceptor squadrons from 39 to 20 by FY 1970.\* The 332nd, which had seven F-102's, was relieved of alert on 1 April 1965 and its discontinuance was ordered effective 1 July 1965. The seven aircraft were dispersed throughout other regular-force F-102 squadrons in the CONUS.

### ANG ALERT SCHEDULE

(U)  
(S) In June 1964, the National Guard Bureau agreed to increase the alert status of the 21 ANG Category I augmentation squadrons to meet the requirement of NORADR/CONADR 55-3. Squadrons with nuclear capability on targeted bases were to maintain a minimum of four aircraft on 5/15 minute status. The National Guard could not assume this alert status immediately but would build up to it as resources permitted. The fourth quarter of FY 1966 was made the target date for all ANG squadrons on targeted bases to have four aircraft on 5/15 minute status. Non-targeted bases would have four aircraft on one hour status.

(U)  
(S) By 1 July 1965, all 21 squadrons had three aircraft on 5/15 minute status except the 196th at Ontario, California. It was relieved from alert in early June for six months while converting from F-86L's to F-102's. A similar six-month period of relief from alert was programmed for each of the other ANG squadrons that were to convert to F-102's during FY 1966-69.

\* (U) For a description of the Planned Force Reduction, see NORAD/CONAD Historical Summary, July-December 1964, pp. 68-71.



U  
(S) As noted above, the NORADR 55-3 alert requirement for air defense ANG squadrons was as follows:

- a. Targeted bases - 4 aircraft on 5/15 minute
- b. Non-targeted bases - 4 aircraft on 1 hour

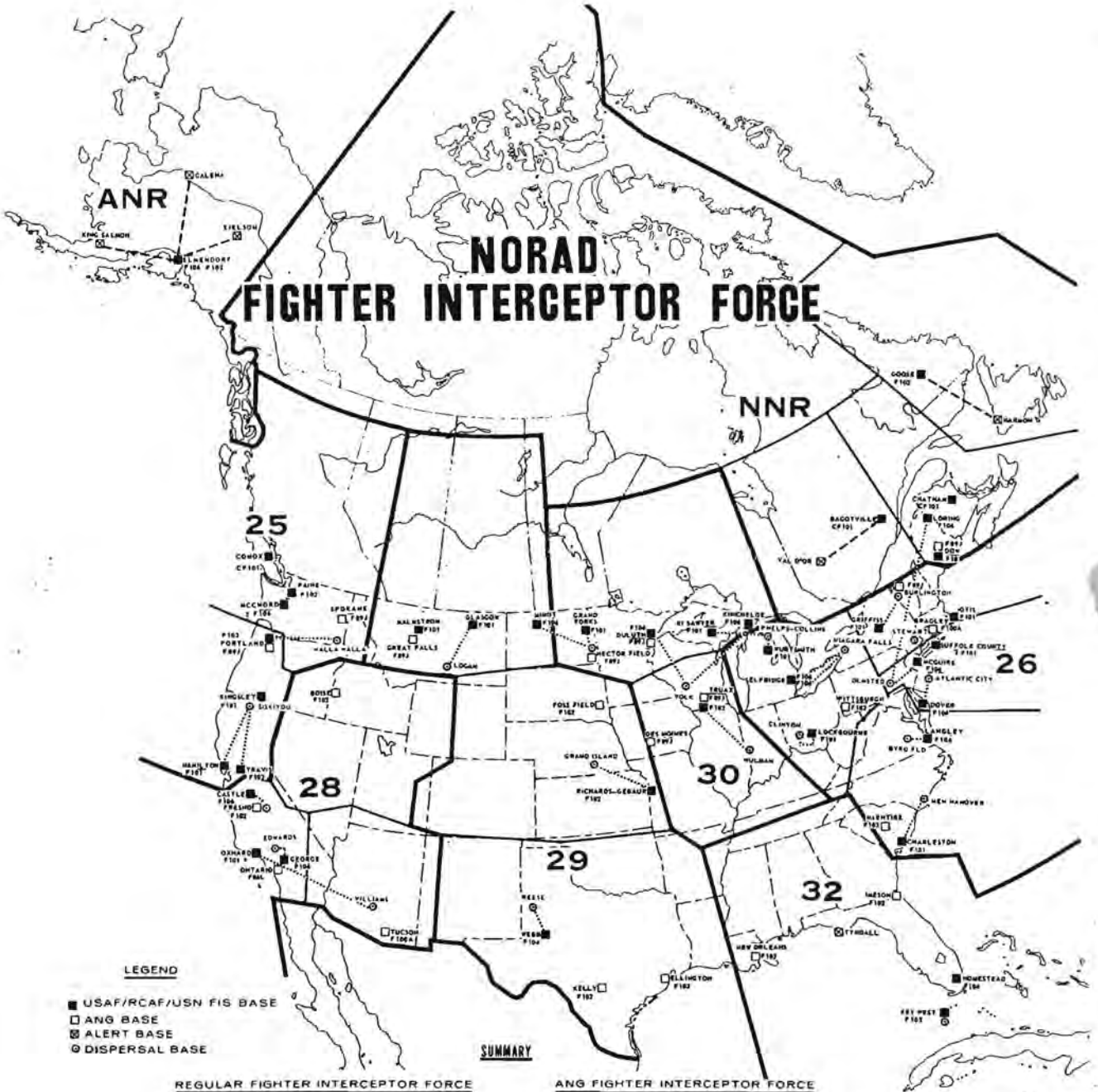
On 21 June 1965, ADC advised NORAD that the ANG air defense alert for FY 1966 was programmed for a minimum of three aircraft on 5/15 minute status on all bases. This change was justified on recognition of the region/sector commanders' prerogative under NORADR 55-3 to increase the alert under any DEFCON, as well as the possibility that as a result of a current study all 21 squadron bases could be considered targeted.

#### INTERCEPTOR DISPERSAL

#### BACKGROUND

U  
(S) The NORAD ADNAC 300N-65 stated that interceptors would be deployed to predesignated dispersal bases to enhance their survivability and/or as a tactical deployment to initiate early attacks against a hostile air-breathing threat. A dispersal base was a recovery or turnaround airfield, other than the home base, that was designated for the operation of dispersed interceptors. The operational capability of a dispersal base was defined as one of four phases, Phase I, II, III (Modified), and III. Phase I was a "turnaround only" capability progressing to Phase III that provided permanent dispersal facilities for a four-sortie nuclear capability for six aircraft on high alert.\*

\* (S) NORAD had changed the sortie requirement from eight to four in late June 1965.



**LEGEND**

- USAF/RCAF/USN FIS BASE
- ANG BASE
- ⊗ ALERT BASE
- DISPERSAL BASE

**SUMMARY**

**REGULAR FIGHTER INTERCEPTOR FORCE**

3	CF-101	SQDNS
15	F-101	SQDNS
7	F-102	SQDNS
2	F-104	SQDNS
13	F-106	SQDNS

TOTAL 40 SQDNS

**ANG FIGHTER INTERCEPTOR FORCE**

1	F-86L	SQDNS
9	F-89J	SQDNS
2	F-100A	SQDNS
9	F-102	SQDNS

TOTAL 21 SQDNS



<sup>U</sup>  
(S) ADC's dispersal plan of January 1964 (OPLAN 20-64) had listed 21 bases in the CONUS and nine in Canada as required. In July 1964, USAF advised that as a result of an OSD force guidance memo, only 17 of the 21 CONUS bases were approved for construction and development of dispersal facilities in the FY 1964 MCP. The program was to develop sixteen bases to a Phase III capability and one (Stewart) to a Phase II capability.

<sup>U</sup>  
(S) In the meantime, during the latter part of 1964, the dispersal requirement was further appraised by USAF and ADC. In December, when the Secretary of Defense announced the planned interceptor force reduction, ADC sent USAF a proposed dispersal alignment for FY 1966 through 1969. ADC said that under its future 20-squadron force, a minimum of 18 CONUS and two Canadian dispersal bases were required for "one squadron/one Dispersed Operating Base (DOB)," dispersal. On 7 January 1965, USAF approved 17 CONUS bases plus three Canadian bases for future negotiation with Canada. NORAD was satisfied except it felt that two more Canadian bases should be negotiated for in eastern Canada in place of two of the CONUS bases approved that NORAD felt were in probable target areas. NORAD asked the JCS on 20 January 1965 to help reopen Canadian dispersal base negotiations at the earliest practical time.

#### STATUS

<sup>U</sup>  
(S) NORAD wanted five Canadian DOB's instead of three. Stewart AFB and Niagara Falls were considered prime targets and NORAD wished to replace them with two Canadian bases, Val D'Or and another base in southeastern Canada. ADC agreed and advised USAF of this position on 25 February 1965. NORAD also stated its views to USAF on 1 March 1965. USAF replied on 8 March 1965 that the requirement for five DOB's in Canada could not be met, but that four



might get approval if ADC and NORAD agreed to join USAF in this position. USAF explained that adoption of a fifth Canadian base depended on vacating Niagara Falls. But too much money (approximately \$500,000) had already been committed to contracts for dispersal facilities at Niagara. Agreement on this position, USAF hoped, would permit negotiations for the four bases to be started without delay. NORAD and ADC reluctantly agreed, and ADC so advised USAF on 25 March 1965. ADC asked that negotiations be started at once to use Namao, Cold Lake, Portage La Prairie, and Val D'Or as DOB's. NORAD advised USAF of its concurrence on the same date.

(S) On 21 April 1965, USAF told ADC and NORAD that authority for site surveys of the four proposed bases had been received from the Canadian Joint Staff in Washington. ADC made the surveys and the results were given to USAF on 6 May 1965. On 8 July 1965, ADC questioned USAF on the status of the program. The latter replied that the program was being coordinated through the Air Staff before presentation to the Secretary of the Air Force.

(S) Meanwhile, development of the 16 permanent Phase III CONUS DOB's was progressing. It was expected that all 16 bases would be completed by 1 January 1966 except one that was to be finished in February 1966. As noted above, 17 bases had been approved, but one was to have a Phase II capability only. This capability had been achieved at this base, Stewart, by late 1964. As of 1 July 1965, there was one Phase I, 17 Phase II and four Phase III(M) DOB's. One base had no phase designation as yet. Six of these bases were temporary and would be dropped when the squadrons using them were deactivated under the Planned Force Reduction.





TRANSPORTATION FOR DISPERSAL

<sup>U</sup>  
(S) NORAD had been concerned about the adequacy of the airlift support for the interceptor dispersal program. ADC had only nine C-54's and 27 C-123's assigned. The major airlift support was to be provided by 154 C-119's from four TAC Reserve Wings. NORAD and ADC agreed that the Reserve Wings were not responsive enough to the requirement because mobilization was involved. In July 1965, NORAD asked the JCS to consider substituting MATS or other regular Air Force airlift units stationed on or near ADC bases for the reserve units for dispersal airlift. The JCS replied on 7 October 1964, asking NORAD to submit a detailed plan that took into account the phasing of airlift requirements under various DEFCON's, the need to cut requirements to a minimum, the prepositioning of equipment at DOB's, and alternate means of transportation.

<sup>U</sup>  
(S) The permanent Phase III DOB's were to be adequately stocked by late CY 1965. This fact along with greater consideration being given to surface transportation indicated that NORAD needs for dispersal airlift would be substantially cut. A NORAD study completed in December 1964 confirmed this by concluding:

1. Sufficient personnel, assets, and armament would be available at DOB's to support initial operational commitments for dispersed interceptors without serious degradation.
2. Only six DOB's were in excess of 10 hours movement time by surface transportation from associated interceptor bases.



3. ADC organic airlift could support the dispersal of the six interceptor units located in excess of 10 hours movement time from their DOB.

4. Augmentation airlift was not required.

On 9 February 1965, NORAD sent the study to ADC and asked that a comprehensive investigation of using surface and organic air transport for the dispersal mission be held. Meanwhile, in January 1965, NORAD had advised the JCS that it was studying the airlift problem with ADC and the findings would provide a basis for the plan that the JCS had asked for in October 1964.

U  
(S) On 18 May 1965, ADC sent NORAD its views on the December 1964 NORAD study. ADC said that the requirement for augmentation of ADC organic airlift with TAC Reserve C-119 aircraft could be greatly reduced but not eliminated. Both NORAD and ADC continued to study the problem. A decision to cut the requirement from eight to four sorties per aircraft at Phase III DOB's further lessened the airlift requirement. NORAD and ADC agreed that the number of TAC Reserve C-119 sorties needed could be reduced from about 150 to 76.

U  
(S) NORAD still wanted regular force airlift instead of reserve and prepared a draft annex to the ADNAC 300N-65 outlining a plan for MATS and ADC organic airlift instead of the TAC Reserve Units. On 14 July 1965, NORAD sent the draft to ADC and on 11 August 1965 ADC concurred except for a few minor recommended changes. In late August 1965, NORAD was preparing a plan in the form of a draft annex to NORAD ADNAC 300N-65 that was to be sent to the JCS for approval.



MISSILE FORCE

BOMARC, CIM-10B

(S) The NORAD BOMARC inventory was cut by three missiles during the last half of FY 1965, and by one more in July, as a result of the Combat Evaluation Launch (CEL) Program.\* The four missiles were launched at Eglin AFB by the following units:

- 447th SAMS, La Macaza - 2 March 1965
- 37th ADMS, Kincheloe - 13 April 1965
- 26th ADMS, Otis - 19 June 1965
- 46th ADMS, McGuire - 27 July 1965

One of the missiles came from the 446th SAMS, North Bay, and three were from the 35th ADMS, Niagara AFMS.

(S) In March 1965, two BOMARC missiles that had been at Ogden Air Materiel Area were transferred to the 35th at Niagara. They were not operational on arrival because of a shortage or lack of spare parts and components. One missile became operational by 1 July 1965 and the other by 1 August 1965. On 31 July 1965, two missiles were withdrawn from Niagara and sent to Eglin to support of the CEL Program. By 1 August 1965, NORAD had seven squadrons with 28 missiles each, and an eighth, the 35th at Niagara, with 43 missiles.

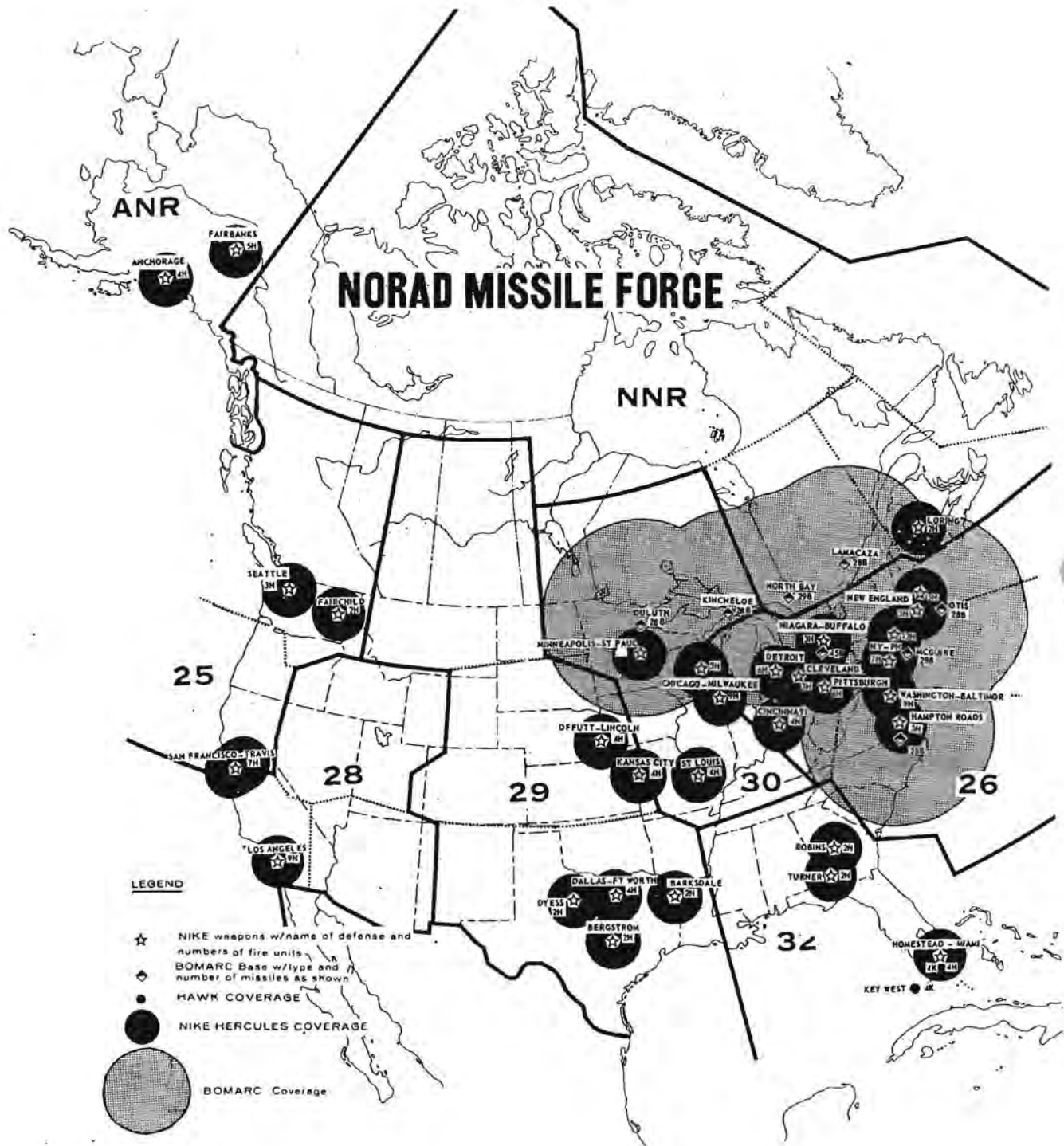
NIKE HERCULES REDEPLOYMENT

(S) Since 1962, NORAD had recommended the redeployment of 18 Hercules units from nine soft SAC bases and four units from Thule AFB.\*\* NORAD felt that the combination of warning, SAC aircraft alert,

\* (U) For a description of the CEL Program see NORAD/CONAD Historical Summary, July-December 1964, pp. 77-80.

\*\* (U) For a detailed background, see NORAD/CONAD Historical Summary, Jan-Jun 1964, pp. 67-71.







and area defense was adequate protection for the SAC bases against manned bomber attack and it was more probable that these bases would be hit by missiles. Thule AFB was particularly vulnerable to missile attack being within Soviet IRBM range. NORAD's recommendation was to deploy the 22 units to unprotected urban/industrial areas.

<sup>U</sup>  
(S) In December 1964, the JCS asked CONAD for a further detailed study of the redeployment question. The study, which was submitted on 24 March 1965, recommended the redeployment of the 22 Hercules units to the following urban/industrial centers:

<u>Time Period</u>	<u>Area</u>	<u>Number of Fire Units</u>
FY 66	Houston	4
	San Diego	3
	Portland	4
FY 67	New Orleans	3
	Denver	4
	S.E. U.S.(Charleston)	4
	Total	22

<sup>U</sup>  
(S) The Secretary of Defense in a memorandum to the JCS, 26 April 1965, ordered the withdrawal of the four Hercules units from Thule in the first quarter of FY 1966. By 1 June 1965, they had been withdrawn from NORAD operational forces with their future disposition not decided.

<sup>U</sup>  
(S) The JCS advised CINCONAD on 1 May 1965 that an Army proposal to delete the 22 Hercules units from the Five Year Force Structure and Financial Plan during FY 1966 was being studied by the Joint Staff. The JCS, referring to CINCONAD's study of 24 March

~~SECRET~~



1965, requested any additional rationale or comment. CINCONAD replied on 6 May 1965, reiterating the position that the 22 Hercules units be kept and redeployed as indicated above.

U  
(S) On 27 May 1965, the JCS recommended to the Secretary of Defense that eight of the units be used for USARSTRIKE and Guam requirements and the remaining 14 units be deactivated in FY 1966. Adoption of this course of action would remove all 22 units from the NORAD terminal defense force.

~~SECRET~~



## CHAPTER VIII TRAINING AND PROCEDURES

### ECCM TRAINING PROGRAM

#### ECCM TRAINING PROGRAM

<sup>U</sup>  
(S) ADC had been advised by USAF that a contract had been awarded to Hughes Aircraft Company on 23 July 1964 for ECM jamming pods. ADC was told to expect the first of 155 pods in August 1965. But in March 1965, ADC discovered that there had been a two-month slip in the delivery date to October 1965, because, the contractor said, the Aeronautical Systems Division of Air Force Systems Command had not provided complete drawings. Then in August 1965, ADC told NORAD there would be a further four-months delay in delivery for the same reason and the first pods would not be delivered until February 1966.

<sup>U</sup>  
(S) During CY 1964, ADC had also been trying to improve the effectiveness and UE of its three B-57 Defense System Evaluation Squadrons (DSES). As of 1 January 1965, the three DSES's were at Biggs AFB, Texas, Stewart AFB, New York, and Hill AFB, Utah, and had a total of 55 aircraft. The squadron at Biggs with 14 aircraft was entirely committed to the tracking and ECM requirements of the U.S. Army Air Defense Center at Fort Bliss.

<sup>U</sup>  
(S) By July 1965, several ECM modifications to the B-57's had been completed. Forty-five ECM-configured aircraft had been provided with an increased electrical power capability (Mod 645 Program) and fitted with the ALT-13 air-to-ground jammer (Mod 1309 Program). Eleven aircraft at Biggs had had the QRC-187 installed. This was a jammer designed for use against the Nike Hercules target tracking radar. Another program was begun in August in which nine



additional aircraft were to be modified for a high altitude capability and equipped with the AN/ALQ-41 air-to-air jammer. ADC had asked USAF to have the remaining aircraft fitted with the AN/ALQ-41, but no decision had been made by the end of August 1965.

(S) In 1964, USAF had told ADC they could expect 24 more B-57's, eleven from the TAC ANG in late 1965 and 13 more from PACAF in mid 1966. But in July 1965, USAF said that other operational commitments prevented the transfer of the 24 aircraft to ADC.

#### ECM SIMULATOR/EVALUATOR SYSTEM

(S) NORAD was concerned about the facilities for ECCM training and evaluation of its forces. The SAC EB-47 ECM force that had been providing most of NORAD's ECCM training in exercises had been phased out during the last half of FY 1965. The only equipment NORAD had was the Active Countermeasures Trainer (ACTER) that was originally designed for the manual radar system and was not suited for the automated (SAGE/BUIC) radar environment.

(S) In 1963, ADC had submitted a Qualitative Operational Requirement for an ECM simulator which USAF rejected because of its high cost. ARADCOM had also been working on a simulator system for some time and had submitted a Qualitative Military Requirement (QMR) to the Department of the Army in 1964. The QMR was returned in November 1964 for additional justification and re-costing. NORAD felt that any system sought by USAF should be compatible with the ARADCOM effort. So in January 1965, NORAD met with ARADCOM and ADC to agree on a position on the simulator system. From this meeting, NORAD prepared a NORAD Qualitative Requirement (NQR) for an ECM Simulator/Evaluator System. On 12 May 1965, NORAD sent the NQR to the JCS, stating that it had been concurred in by each of the component commands and presented a combined service approach to joint training, evaluation, and weapon system integration through simulation methods.





U  
(S) On 23 June 1965, the JCS sent NORAD its report on the NQR. The JCS had concluded that there was a need to develop additional or alternative means for the training and evaluation of NORAD's combat units. The NQR should be examined jointly by the Army and Air Force to see if a single simulator/evaluator could be developed that would substantially meet the NORAD specifications. The JCS therefore, on 1 July 1965, asked the Army and Air Force to try to develop jointly a single system or alternatives that would satisfy the specifications in the NQR. The JCS asked for the response, including cost estimated, by 31 August 1965. USAF asked NORAD to host a conference with ADC and ARADCOM to study the requirement documents in order to submit a joint requirement to the JCS. On 22 July 1965, NORAD advised USAF and USA that a conference would be convened on 5-6 August 1965.

IDENTIFICATION, FRIEND OR FOE (IFF) - MARK XII PROGRA

U  
(S) Background. For electronic identification, NORAD used certain operational procedures in conjunction with the Mark X IFF/SIF equipment. However, this system had proven to be inadequate in full-scale exercises. Security of the identification codes could not be maintained and in any air battle there was a risk of destroying friendly aircraft. A more secure system was needed to increase NORAD's ability to provide safe passage to the SAC Emergency War Order aircraft and to identify other essential traffic during hostilities.

U  
(S) NORAD had asked the JCS for implementation of a new crypto-secure system, the Mark XII IFF. In April 1963, the JCS said they approved the requirement and had given the Secretary of Defense their views. Late in 1963, the JCS advised NORAD that acquisition of Mark XII was to be put in the AIMS PSPP and asked that NORAD submit its requirements in



this program.\* NORAD complied with an initial outline of its requirements. Meanwhile, the JCS had named USAF as executive agent for the AIMS program. However, the Secretary of Defense deferred Mark XII procurement funds until 1966.

U  
(S) Early in October 1964, CINCNORAD and CINCSAC again asserted to JCS the pressing need for the Mark XII IFF. The JCS urged the Secretary of Defense to authorize implementation of the Mark XII Program in FY 1966. The Secretary agreed and said that austere funding could be expected in FY 1966. Revised PCP's, outlining the program through 1970, were asked for by 1 November 1964. By 4 November 1964, USAF had submitted PCP 64-157 for ATCRBS and PCP 64-158 for Mark XII. FY 1966 funding was approved by DOD on 9 December 1964.

U  
(S) Current Developments. ADC advised NORAD on 20 January 1965 that coordination of the AIMS PSPP by participating services and commands was to be completed by 15 February 1965. ADC also asked to meet with NORAD to develop joint comments on the draft PSPP. The meeting (on 12 February 1965) resulted in ADC preparing a combined NORAD/ADC submission to USAF. A NORAD/ADC AIMS Working Group had been formed for the February meeting and this group met again on 12 April 1965. An Operations Concept was prepared and priorities were set up for the ground station implementation of the Mark XII system. Also, plans on computer programming, and procedures and methods of use were made. On 22 April 1965, NORAD sent the working group's recommendation for ground station implementation to ADC which sent it to USAF and the AIMS System Program Office on 3 May 1965. The main consideration, NORAD said, was

U  
(e) \* AIMS stood for A - ATCRBS (Air Traffic Control Radar Beacon System), I - IFF/SIF Mark X, M - Mark XII IFF, S- System.



safe passage for SAC bombers and returning tankers during battle, so installation priority for ground equipment must be oriented around the most heavily traveled SAC routes. In general terms, this meant first priority to Northeast U.S. and adjacent Canada, followed by the Southeast, West Coast, North Central and South Central U.S. ADC also sent the Concept of Operations, Mark XII IFF, to the AIMS System Program Office on 22 April 1965.

<sup>U</sup>  
(S) On 21 May 1965, ADC asked NORAD for coordination on an advance copy of the DOD AIMS System Package Program (SPP) for Mark XII IFF. NORAD found it satisfactory and told ADC on 4 June 1965 that it had no comments.

<sup>U</sup>  
(S) Meanwhile, on 6 May 1965, NORAD sent the plans for the Mark XII IFF in the U.S. to the Canadian Chief of Defence Staff (CDS). Because perimeter radar sites in Canada were in key positions to identify aircraft approaching North America, NORAD said it would be most desirable to have these sites equipped with Mark XII IFF. NORAD asked what Canadian intentions were on support of Mark XII IFF in Canada. The Canadian CDS replied, on 31 May 1965, that future plans included possible re-equipping of Canadian radar sites with the Mark XII and that funds had been included in the Integrated Defense Program.

SECRET

SECRET

SECRET

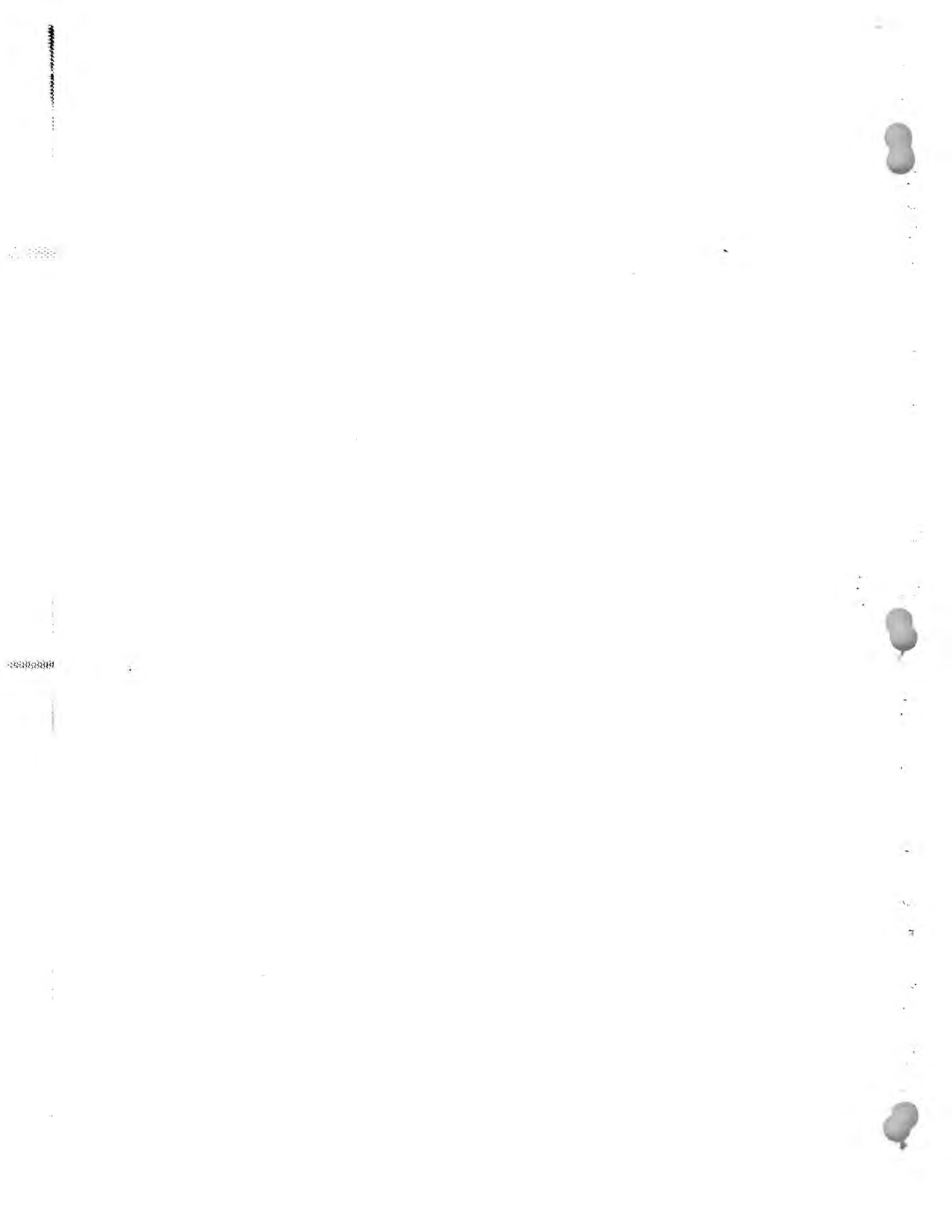
SECRET

SECRET





GLOSSARY





## GLOSSARY OF ABBREVIATIONS

AAWS	Automatic Attack Warning System
A/C	Air Commodore
A/C/M	Air Chief Marshal
ACTER	Active Countermeasures Trainer
ADC	Air Defense Command
ADCSP	Advanced Defense Communications Satellite Program
ADMS	Air Defense Missile Squadron
ADNAC	Air Defense North American Continent
AEW&C	Airborne Early Warning and Control
AFSC	Air Force Systems Command
ALCOP	Alternate Command Post
ALRI	Airborne Long Range Input
AMC	Army Materiel Command
ANG	Air National Guard
ANR	Alaskan NORAD Region
ARADCOM	Army Air Defense Command
ASW	Anti-submarine Warfare
ATCRBS	Air Traffic Control Radar Beacon System
AT&T	American Telephone & Telegraph (Company)
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
AWACS	Airborne Warning and Control System
BIRDIE	Battery Integration and Radar Display Equipment
BMEWS	Ballistic Missile Early Warning System
BUIC	Backup Intercept Control
CADIN	Continental Air Defense Integration North
CANFORCHED	Canadian Forces Headquarters
CB	Chemical-Biological
CC	Combat Center; Control Center
CDS	Chief of Defence Staff (Canada)
CEL	Combat Evaluation Launch
CINCNORAD	Commander-in-Chief North American Air Defense Command



CMC	See NCMC
CNO	Chief of Naval Operations
COC	Combat Operations Center
CONAD	Continental Air Defense Command
CONUS	Continental United States
DA	Department of the Army
DATOS	Direction and Tracking of Satellites
DC	Direction Center
DCA	Defense Communications Agency
DCS/...	Deputy Chief of Staff/...
DDR&E	Director Defense Research and Engineering
DEFCON	Defense Readiness Condition
DEW	Distant Early Warning
DIA	Defense Intelligence Agency
DOB	Dispersed Operating Base
DOD	Department of Defense
DSES	Defense Systems Evaluation Squadron
ECCM	Electronic Counter Counter Measures
ECM	Electronic Counter Measures
ESD	Electronic Systems Division
ESS	Electronic Solid State Switch
FAA	Federal Aviation Agency
FD	Frequency Diversity
FIS	Fighter Interceptor Squadron
FOC	Full Operational Capability
FY	Fiscal Year
G-I-UK	Greenland-Iceland-United Kingdom
IDCSP	Interim Defense Communications Satellite Program
IFF	Identification Friend or Foe
IOC	Initial Operational Capability
JMP	Joint Manpower Program
JTD	Joint Table of Distribution
LF/VLF	Low Frequency/Very Low Frequency





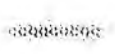
MCL	Mid-Canada Line
MCP	Military Construction Program
MEECN	Minimum Essential Emergency Communications Net
MITRE	Massachusetts Institute of Technology, Research and Engineering (Corporation)
NAS	National Airspace System
NAVFORCONAD	Naval Forces Continental Air Defense Command
NAWS	NORAD Alert Warning System
NCC	NORAD Control Center
NCMC	NORAD Cheyenne Mountain Complex
NGCI	NORAD Ground Control Intercept (Station)
NMCC	National Military Command Center
NNR	Northern NORAD Region
NQR	NORAD Qualitative Requirement
NUDETS	Nuclear Detonation Detection and Reporting System
ODDR&E	Office of the Director Defense Research and Engineering
OPLAN	Operation Plan
OSD	Office of the Secretary of Defense
OTH	Over the Horizon
PAGE	Primary Automated Ground Environment
PCP	Program Change Proposal
PD	Passive Detection
PSPP	Proposed System Package Program
RA	Regular Army
RCAF	Royal Canadian Air Force
R/O	Receive Only
SAC	Strategic Air Command
SAGE	Semi-automatic Ground Environment
SAM	Surface-to-air Missile
SCAN	Switched Circuit Automatic Network
SDC	Space Defense Center
SIF	Selective Identification Feature
S/L	Squadron Leader



SLBM	Sea Launched Ballistic Missile
SLFCS	Survivable Low Frequency Communications System
SNOCAP	Survivable NORAD Capability
SPADATS	Space Detection and Tracking System
SPASUR	Space Surveillance (System)
SPO	System Program Office
SPP	System Package Program
TAC	Tactical Air Command
TCU/ASTRA	Threshold Control Unit/Azimuth Strobe Tracking
T/R	Transmit/Receive
TRACE	Transportable Automated Control Environment



INDEX





INDEX

- (U) AEW&C/ALRI Force: alert status change for, 41; employment test of, 38
- (U) Alaskan NORAD Region: data processing and display system for, 23
- <sup>U</sup>  
~~(S)~~ ALCOP: background of, 21-22; communications for, 22-23; DOD disapproval of hardened site for, 22-23
- (U) ANG: alert status of, 66-67
- (U) ARADCOM: reorganization plans for, 10, 13
- <sup>U</sup>  
~~(S)~~ AUTOVON: background of, 27-28; Canadian participation in, 29; equipment problems in, 28
- (U) Baker-Nunn Camera: Canadian participation in SPADATS with, 57-59
- (U) BMEWS: satellite communications test for, 59-60
- (U) BOMARC: evaluation launch of, 73; status of, 65, 73
- (U) BUIC: AUTOVON Communications for, 27-28; background of, 23-24; BUIC II, 24, 25; BUIC III, 24-26
- (U) Chemical/Biological Rapid Warning System: Army recommendations on, 61-62; background of, 61-62; reappraisal of, 62-63
- <sup>U</sup>  
~~(S)~~ Communications: ALCOP requirements for, 22; AUTOVON, 27-29; BMEWS satellite communications test, 59-60; DOD disapproval of ALCOP requirements for, 22; NORAD Alert Warning System, 29-31; satellite communications, 32-33; Survivable LF/VLF System, 31-32



- (U) Contiguous Barriers: background of, 34-35; phase out of, 35, 37
- (U) DATOS Study Group: purposes of, 20, 55-56; Space Defense Center manning recommendation by, 20; SPADATS NQR acted on by, 57
- (U) Defense Communications Agency: AUTOVON planning by, 27; satellite communications test plan by, 59-60
- (U) Department of the Army: ARADCOM reorganization plan acted on by, 13
- (U) DEW Line: contingency manning of, 50-51
- (U) DEW Line Extensions: background of, 34-35; phase out of Naval forces in, 35, 37
- (S) DOD/OSD: ALCOP communications disapproved by, 22; DATOS study directed by, 20, 55-56; hardened
- ALCOP concept disapproved by; 22-23; Mark XII funds approved by, 86; Nike withdrawal from Thule ordered by, 75; NQR for SPADATS disapproved by, 57; NUDETS cancelled by, 63-64; PCP for SAGE/BUIC III requested by, 24; phase out of radar sites approved by, 42; SLBM detection concept approved by, 54
- (U) ECM/ECCM: improved training equipment for, 77-79; training program for, 77
- (U) FAA: National Air-space System, 46; radar sites, 44, 46, 47
- (U) G-I-UK Line: see DEW Line Extensions
- (e) Interceptors: ANG alert status of, 66-67; dispersal of, 67, 69-70; inactivation of sqdn of, 66; status of, 65; transportation for dispersal of, 71-72



- <sup>U</sup>  
(S) JCS: additional computer for NCMC confirmed by, 18; ALCOP communications approved by, 22; guidance on increased authority for CINCNORAD issued by, 15; manpower re-examination requested by, 16; manpower request approved by, 2; Mark XII implementation asked by, 80; NAVFORCONAD dis-establishment approved by, 5; Nike redeployment recommendations by, 76; Nike redeployment study requested by, 75; NQR for Communications Satellite System sent to, 33; NQR for ECM simulator/evaluator acted on by, 79; NQR for passive detection system approved by, 52; NQR for SPADATS sent to, 56-67; reappraisal of C/B Rapid Warning System directed by, 62-63; SLBM communications requirement sent to, 55
- (U) Manpower: Navy spaces at regions and sectors, 13-14; rank up-graded for Director/Deputy Director of COC, 3-4; RCAF public information spaces, 14; request for, 1-3
- (U) Mark XII IFF: background of, 79-80; status of, 80-81
- (U) Mid-Canada Line: phase out of, 48-50
- (U) NAVFORCONAD: dis-establishment of, 5
- (U) Nike Hercules: redeployment of, 73, 75-76
- <sup>U</sup>  
(e) NORAD Alert Warning System: background of, 29-30; malfunctions in, 30; modified system, 30-31
- <sup>U</sup>  
(e) NORAD Cheyenne Mountain Complex: additional computer for, 17-18; construction status of, 16; equipment in, 16-17; Space Defense Center in, 17



- (U) NORAD/SAC Liaison Teams: deletion of, 4
- (U) NUDETS (477L): background of, 63; cancellation of, 63-64
- (U) PARL Site: SPADATS participation by, 57-59
- (U) Picket Ships: see Contiguous Barriers
- (U) Program 440L: satellite communications for, 29-31
- (U) Radar: contingency manning of DEW Line, 50-51; Height Finder Study, 45-48; Mark XII system for Canadian sites, 81; PARL Site, 57-59; passive detection, 51-52; phase out of Contiguous Barrier, 35, 37; phase out of gap filler sites, 45; phase out of Naval force in DEW Line extensions, 35, 37; phase out of 16 prime sites, 41-44; redesignated and retied gap filler sites, 44-45; SLBM detection, 53-55
- (U) Reorganization: ADC plans for, 6, 9; ARADCOM plans for, 10, 13; background of, 5-6; NORAD plans for, 9
- (U) SAGE: AUTOVON communications for, 27-28; back-up system for, 23-26
- (U) Samoset Union: 38
- (U) Satellite Communications: background of, 32-33; NQR for, 33
- (U) SLBM Detection: background of, 53; communications requirements for, 55; contractor for system for, 55
- (U) Space Defense Center: background of, 18-20; DATOS Study recommendation on, 20; IOC of, 17; manpower request for, 1-2, 19, 21; NORAD/ADC integration of, 1-2, 20-21
- (U) SPADATS: Canadian participation in, 57-59; NQR for improvements to, 56-57





(U) Strother, General  
Dean C.: assumption  
of command by, 4

(U) Survivable Low  
Frequency/Very  
Low Frequency  
Communications  
System: background  
of, 31-32; status  
of, 32





UNCLASSIFIED

UNCLASSIFIED





UNCLASSIFIED

UNCLASSIFIED

