[redacted]

[redacted]

UNCLASSIFIED

NORAD/CONAD

HISTORICAL SUMMARY

(Unclassified)

JULY – DECEMBER 1963

UNCLASSIFIED

[redacted]

DEC 14 2006

MEMORANDUM FOR HQ NORAD/USNORTHCOM/HO

FROM: HQ NORAD/J3

SUBJECT: Declassification Review of Histories

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NORTH AMERICAN AEROSPACE DEFENSE COMMAND

CONFIDENTIAL

RELEASABLE TO CANADA

16 June 2000

MEMORANDUM FOR NORAD/NJ3E

FROM: NORAD/HO

SUBJECT: Declassification Review of NORAD/CONAD Jul-Dec 63 Historical Summary

1. Executive Order 12958 requires a review of classified documentation more than 25 years old. The NORAD History office (HO) maintains NORAD and Continental Air Defense Command (CONAD) histories, studies, and other documentation that falls into this category. In order to comply with the Executive Order, HO will forwarded these documents on a systematic basis to functional experts within the NORAD staff to complete this review.

2. Request the NJ3 staff review the NORAD/CONAD Jul-Dec 63 Historical Summary per Executive Order 12958 and forward a response to NORAD/HO by 14 Jul 00. If additional time is required, please contact this office.

3. During the review process, if any of the material within the documentation still requires protection, please mark those portions (e.g. words, phrases, sentences, paragraphs, pages) with red brackets ([ ]). Along with this, please provide the justification for retaining the security classification for these portions.

4. Once the declassification review is completed, please prepare a memorandum for the director's/vice director's signature which states:

   a. The NORAD/CONAD Historical Summary for the period Jul-Dec 63 has been reviewed and is now declassified.

   or

   b. The NORAD/CONAD Historical Summary for the period Jul-Dec 63 has been reviewed is now declassified except for the following sections: [list as appropriate]. The justification for retaining the classification is: [list as appropriate].

V/R

JEROME E. SCHROEDER
Assistant Historian

1 Atch
NORAD/CONAD Jul-Dec 63 Historical Summary

THIS MEMORANDUM IS UNCLASSIFIED WHEN ATCH #1 IS WITHDRAWN

CONFIDENTIAL

RELEASABLE TO CANADA

[redacted]

NORTH AMERICAN AIR DEFENSE COMMAND
AND CONTINENTAL AIR DEFENSE COMMAND

HISTORICAL SUMMARY

JULY – DECEMBER 1963

1 MAY 1964

DIRECTORATE OF COMMAND HISTORY

OFFICE OF INFORMATION

HEADQUARTERS NORAD/CONAD

[redacted]

(This page is Unclassified)

SECURITY NOTICE

1. This document is classified SECRET in accordance with paragraph 10, 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.

CONTENTS

MAPS AND CHARTS

SUMMARY OF THE FORCES
(AS OF 1 JANUARY 1964)

(S) MISSILE FORCE

Regular

2 BOMARC A Squadrons
5 BOMARC B Squadrons
3 BOMARC A & B Squadrons
Missiles Assigned - 206A, 248 B

123 Hercules Fire Units

8 Hawk Fire Units

Army National Guard

20 Hercules Fire Units

19 Ajax Fire Units

(S) INTERCEPTOR FORCE

Regular

45 Fighter Interceptor Squadrons -
900 assigned aircraft

Squadrons:	16	9	2	13	5
	F-101	F-102	F-104	F-106	CF-101

Augmentation

NORAD Category I Augmentation Force -

25 squadrons from ADC/ANG -
530 assigned aircraft

[redacted]

NORAD Category II Augmentation Force
(Regular)

USN/USMC - F-4B, F-3B, F-8A, F-8D, F-6A, F-11A, and F-9J aircraft as available
TAC - 40 aircraft as available, D-Day through D+30
TAC - 126 aircraft as available, D-Day through D+5
USAF ADC - 70 aircraft
RCAF ADC - CF-100 and CF-101 aircraft as available

(U)
(S) SURVEILLANCE AND CONTROL

Surveillance

188 Prime Radar Sites
97 Gap Filler Radars (12 Standby)
Distant Early Warning Line:
Land Based Segment - 6 main, 23 auxiliary stations
Aleutian Segment - 1 main, 5 auxiliary stations
Greenland Segment - 4 auxiliary stations
Mid-Canada Line: 8 Section Control and 90 Doppler Detection Stations
Picket Ships - 11 stations authorized, 10 manned
ALRI Stations - 4 off the East Coast
AEW&C Stations - 5 off the West Coast on 30% random rotating basis; 1 off the East Coast at Key West on full time basis
Pacific Barrier (under operational control of CINCPAC) - 5 aircraft stations
G-I-UK Barrier (under operational control of CINCLANT) - 2 aircraft stations and 2 Iceland-based radars

[redacted]

[redacted]

3 Ballistic Missile Early Warning Stations
1 Space Detection and Tracking System
1 Bomb Alarm System

Control

1 Combat Operations Center
1 Primary and 1 Secondary ALCOP
7 NORAD Region Combat Centers - 4 SAGE, 2 Remoted from Sector DC, and 1 Manual
1 NORAD Region without Combat Center (32d NORAD Region)
18 Sector Direction Centers (16 SAGE and 2 Manual)
1 NORAD Sector without direction center (Hudson Bay)
30 NORAD Control Centers
2 CONAD Control Centers

(U)
(S) MANPOWER

Authorized

NORAD and Components	- 174,300
National Guard and Reserve	- 40,240
TOTAL	- 214,540
NORAD Headquarters	750

[redacted]

[redacted]

CHAPTER ONE
ORGANIZATION

COMMAND REORGANIZATION

416L PHASE-DOWN

(U) (S) In late 1962, the DOD directed the Air Force to reduce the air defense ground environment system by six SAGE direction centers and 17 prime radars by the end of FY 1964. To carry this out, 16 radars were cut between January and May 1963 and one other was to be cut in June 1964, and between 15 May and 1 October 1963, six direction centers were shut down. These deletions caused much reorganization and realignment of forces including sector discontinuance, expansion of the remaining sector boundaries, changes in region boundaries, and changes in assignment and control.

(U) (S) Region/Sector Changes. By 1 June 1963, the San Francisco, Minot, and Spokane NORAD/CONAD Sectors had been discontinued. Adjoining sectors were expanded to take over the vacated areas and the 25th and 28th Region boundaries changed. On 4 September, the Syracuse and Grand Forks NORAD/CONAD Sectors were discontinued. This brought a number of changes. The headquarters location of the Boston Sector was moved at the same time from Stewart AFB to Hancock Field (Syracuse).* The Syracuse Sector area was taken over by the Boston,

(U)
* (S) The 26th Region combat center at Syracuse was to move to Stewart AFB in 1964. For a detailed discussion of the 416L changes and the reasons therefor, see NORAD/CONAD Historical Summary, Jan-Jun 1963, pp. 1-9.

[redacted]

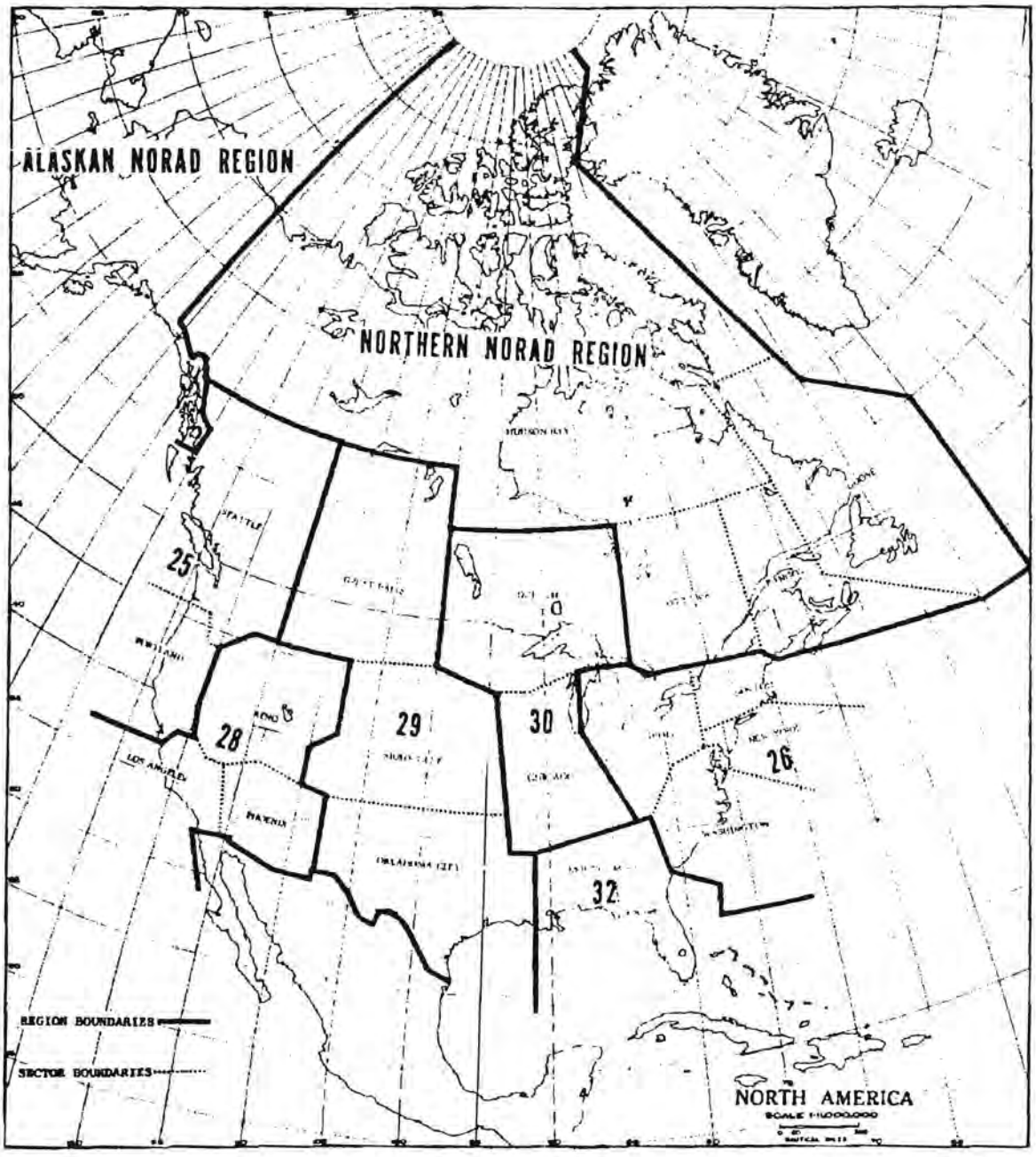
[redacted]

Detroit, and New York Sectors. The areas of responsibility of these sectors were changed accordingly and the Detroit Sector assignment changed from the 30th to the 26th Region. This changed the boundaries of these two regions. The Grand Forks Sector area was taken over by the Duluth and Sioux City Sectors. The Great Falls Sector was expanded to cover the area of the old Minot Sector with the exception of a small southern portion which was assigned to the Sioux City Sector. The final sector deletion was made on 1 October when the Sault Ste Marie NORAD/CONAD Sector was discontinued. Responsibility for its area was assumed by the Duluth, Detroit and Chicago Sectors, which brought further shuffles in boundaries.

(U)
(S) Not yet mentioned was the move of the 32d NORAD/CONAD Region and the many changes resulting. As part of the DOD-directed cuts, ADC deactivated its 32d Air Division in September 1963. NORAD wanted to keep its 32d Region, however, because of the importance of the southeastern defenses (facing Cuba) and the great size of the area that the 26th Region would inherit if the 32d were abolished (see map). The upshot was that NORAD kept the region, but on 1 July 1963, moved the headquarters from Oklahoma City to Gunter AFB, Alabama, reduced the region's size to that of the Montgomery Sector, and discontinued the sector (which had been at Gunter). ADC's Montgomery Air Defense Sector remained in existence and was reassigned to the ADC 26th Air Division. The area vacated by the 32d Region/Division was placed under the Oklahoma City NORAD/CONAD Sector and the Oklahoma City ADS. The sectors were assigned to the 29th Region/Division.

(U) The 32d Region was commanded by an Air Force brigadier general with the additional duty of commander of the Montgomery Air Defense Sector (ADC). Integration of sector and region functions and manpower resources was carried out to the maximum possible. The Commanding General of the 53d Artillery Brigade (AD) became deputy commander of

[redacted]



NORAD OPERATIONAL BOUNDARIES
1 November 1963

NORAD COMMANDERS

1 JANUARY 1964

NORAD
Gen J. K. Gerhart USAF
A/M C. R. Slemon RCAF

25th NORAD Region
McChord AFB, Wash.
M/G Henry B. Spicer USAF
A/C George H. Elms RCAF

- Portland NORAD Sector
  Adair AFS, Ore.
  B/G Correll W. McColpin USAF
  Col Leon G. Lewis USAF
- Seattle NORAD Sector
  McChord AFB, Wash
  B/G Grover C. Brown USAF
  G/C Robert S. Turnbull RCAF

26th NORAD Region
Hancock Field, N.Y.
M/G Arthur C. Agan USAF
M/G John T. Sndgrass USA

- Boston NORAD Sector
  Hancock Field, N.Y.
  B/G Thomas B. Whitehouse USAF
  G/C Robert T. P. Davidson RCAF
- Detroit NORAD Sector
  Custer AFS, Mich.
  Col Glendon P. Overing USAF
  Col William J. Chaniski USAF
- New York NORAD Sector
  McGuire AFB, N.J.
  B/G Theron Coulter USAF
  Col Mark H. Vinzani, Jr. USAF
- Washington NORAD Sector
  Fort Lee, Va.
  B/G Orie B. Johnson USAF
  Col James M. Vendehey USAF

28th NORAD Region
Hamilton AFB, Calif.
M/G Mervin M. Magee USA
M/G Conrad F. Necrason USAF

- Los Angeles NORAD Sector
  Norton AFB, Calif.
  Col Joseph Myers USAF
  Col Frederick J. Melander USAF
- Phoenix NORAD Sector
  Luke AFB, Ariz.
  Col William R. Nevitt USAF
  Col Edward F. Roddy USAF
- Reno NORAD Sector
  Stead AFB, Nev.
  Col Hubert Zemke USAF
  Col Philip C. Loofbourrow USAF

29th NORAD Region
Richards-Gebaur AFB, Mo.
M/G Dolf E. Muehleisen USAF
A/C N. W. Timmerman RCAF

- Great Falls NORAD Sector
  Malmstrom AFB, Mont.
  Col Jean H. Dougherty USAF
  G/C Samuel M. Stringe RCAF
- Oklahoma City NORAD Sector
  Oklahoma City AFS, Oklahoma
  Col Glen G. Atkinson USAF
  Col Raymond M. Gabrig USAF
- Sioux City NORAD Sector
  Sioux City Muni Apt, Iowa
  Col Archie M. Burke USAF
  Col George L. Wells USAF

30th NORAD Region
Truax Field, Wisc.
M/G Frederick R. Terrell USAF
A/C William Welser RCAF

- Chicago NORAD Sector
  Truax Field, Wisc.
  B/G William D. Greenfield, USAF
  Col Ira F. Wintermute USAF
- Duluth NORAD Sector
  Duluth Muni Apt, Minn.
  B/G Joseph L. Dickmon USAF
  Col Harry L. Downing USAF

32nd NORAD Region
Gunter AFB, Ala.
B/G Hubert S. Judy USAF
Col Charles D. Sonnkalb USAF

- Montgomery NORAD Sector
  Gunter AFB, Ala
  B/G Hubert S. Judy USAF
  Col Charles D. Sonnkalb USAF

Alaskan NORAD Region
Elmendorf AFB, Alaska
L/G Raymond J. Reeves USAF
M/G James C. Jensen USAF

Northern NORAD Region
RCAF Station North Bay, Ont.
A/V/M J. B. Harvey RCAF
B/G Harrison B. Thyng USAF

- Bangor NORAD Sector
  Topsham AFS, Me.
  A/C F. R. Sharp RCAF
  Col Edward A. Harbes USAF
- Goose NORAD Sector
  Goose AB, Lbdr.
  Col Thomas H. Beeson USAF
  Col Edward R. Haydon USAF
- Ottawa NORAD Sector
  RCAF Station North Bay, Ont.
  A/C M. E. Pollard RCAF
  Col Samuel C. Grashio USAF
- Hudson Bay NORAD Sector
  (No Sector Organization)

The first named individual in each block is the Commander.
The other individual is Second-in-Command.

[redacted]

the region when the brigade was activated on 1 October 1963 at Montgomery, Alabama.

(U) In the meantime, NORAD decided to re-establish the Montgomery Sector. On 1 October, the NORAD/CONAD Montgomery Sector was re-established and assigned the same area of responsibility as the 32d Region. The 32d Region Commander assumed the additional duty of command of the NORAD sector.

(U) Following all the above changes, NORAD made some further minor shifts in Canadian-U.S. border area region and sector boundaries as of 1 November 1963. The NORAD boundaries as of this date are shown on the map on page three.

(4)
(U) Surplus NORAD U.S. Spaces. As a result of the sector deletions, 29 U.S. spaces became surplus. NORAD wanted to use these spaces in other places, but on 6 August, the JCS advised that the NORAD manpower ceiling of U.S. spaces as of September was 1,112, which was a cut of 29 spaces. NORAD asked to keep the 29 spaces until the time of its annual JTD submission on 1 October and return any surplus at that time. NORAD explained that it had allocated some of the 29 spaces and others were being held for known requirements.

(4)
(U) The JCS refused, however, replying on 23 August that the ceiling would remain at 1,112 and that any manpower requirements resulting from assignment of new responsibilities should be submitted separately.

ARADCOM REGION CHANGES

(U) Because of the changes in the NORAD/CONAD structure, as shown above, ARADCOM realigned its organizational structure. ARADCOM's 4th Region, which had its headquarters at Richards-Gebaur AFB, was discontinued on 1 November 1963. The 2d Region

(This page is CONFIDENTIAL.)

[redacted]

[redacted]

Headquarters was moved at the same time from Oklahoma City to Richards-Gebaur. Responsibility for the area vacated by the 4th Region was assumed by the 2d Region. About half of the latter's former area was taken over by the 1st Region, however, which put the 2d Region in control of an area in the center of the U.S. from border to border. The 1st Region controlled the entire East Coast and much of the Gulf area. The ARADCOM structure as of 1 November is shown on the map following.

REORGANIZATION STUDIES

(U) (S) ADC's Plan R. As a result of an OSD-directed project,* ADC prepared a plan in 1962 that proposed reduction of the ADC organization from six SAGE divisions to three air forces and of the NORAD/CONAD organization in the continental U.S. from six regions to three. A NORAD report to the Secretary of Defense in September 1962 proposed reducing regions and sectors along with implementation of TRACE (see Chapter Two). And NADOP 65-74, June 1963, proposed reduction of three regions in FY 1966 with the planned reduction from 16 to 12 sectors.

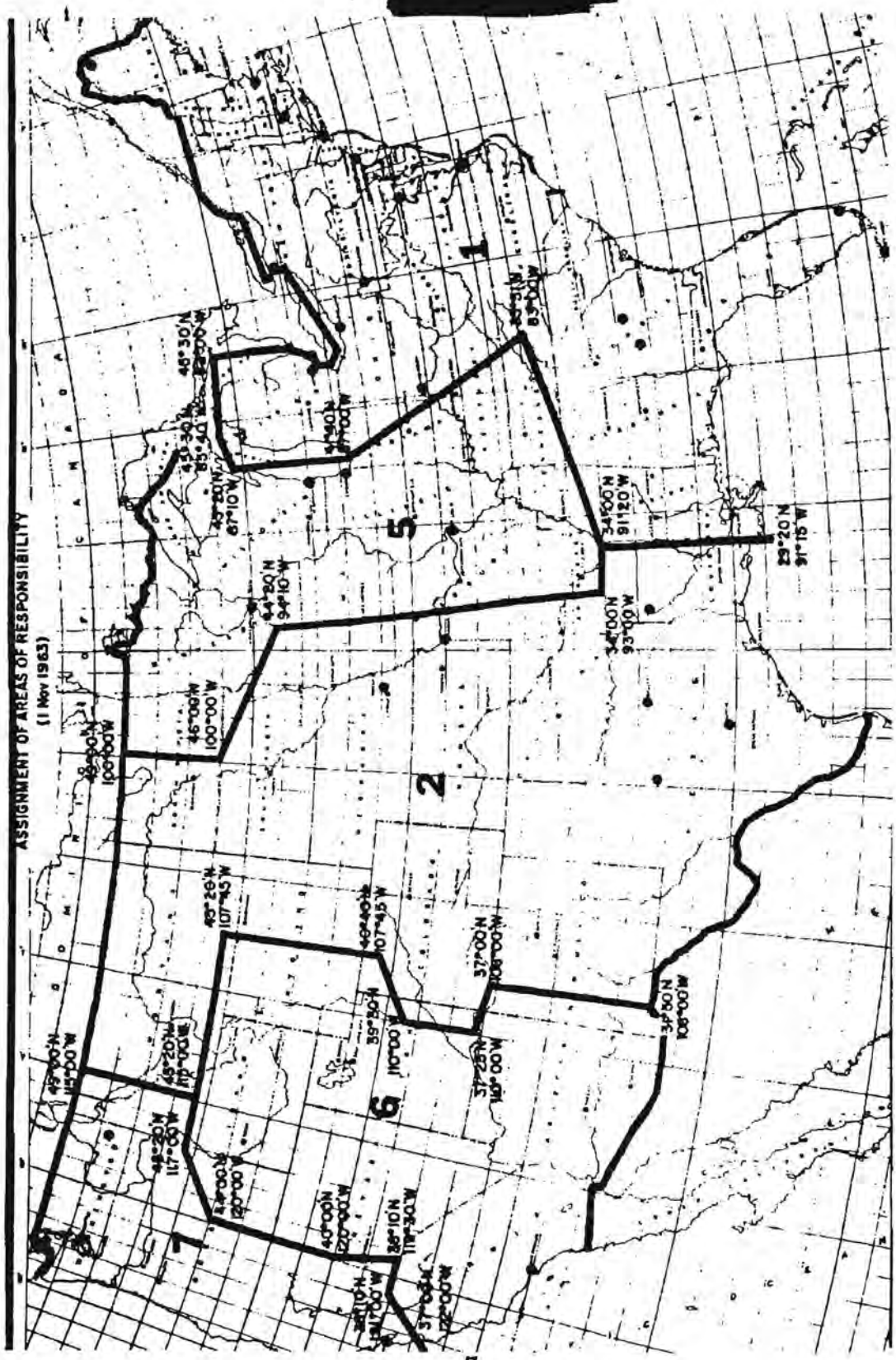
(U) (S) In March 1963, ADC said that the OSD-directed 416L phase-down would permit reconfiguration in the CONUS to three regions when programming and communications were available for the expanded regions. NORAD replied, however, that it did not want any further deletions in its command and control facilities until FY 1966.

(U) (S) Following this, in June 1963, NORAD replied to an ADC letter on the latter's Plan "R"

(U) * (S) Project 39 - aimed at reduction of headquarters staffs and number of headquarters organizations to lower expenditures and accelerate the decision-making process.

[redacted]

[redacted]



(This page is UNCLASSIFIED.)

[redacted]

for ADC reconfiguration. This would reduce ADC's organization to three air forces by FY 1965. NORAD answered that it did not object to ADC making the proposal to USAF but wanted inserted in any proposals the statement that NORAD agreed, in principle, to a future consolidation to three regions, but this was tied to increased combat capability and improved BUIC which could not be expected before FY 1966.

(4)

(S) It was decided shortly thereafter, however, by ADC that its Plan R would be re-examined in view of possible changes in weapons and ground environment. This was underway in August. Later, NORAD asked ADC to hold Plan R in abeyance until a NORAD study was finished on future organizational structure.

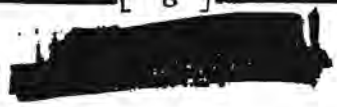
(U) NORAD Organization Study. NORAD's Commander-in-Chief, General John K. Gerhart, asked that a study be made to develop an optimum NORAD organization. Earlier proposals for NORAD reorganization were, more or less, by-products of service and component plans and actions. This study would consider "what is best for NORAD." The lack of a master plan for the command and control environment in the past had required NORAD to react to problems, rather than to be able to carry out long term objectives.

(4)

(S) NORAD components were invited to participate. The general objectives for the study were:

> (1) To define a NORAD organization for 1974 which would provide the optimum level of control of all systems.
>
> (2) To develop a phasing plan which would maintain maximum continuing operational capability while phasing from the present organization to the 1974 objective organization.

(U) The study was still in progress at the end of 1963.



[redacted]

CANADIAN ORGANIZATION AND MANNING CHANGES

DELEGATION OF RESPONSIBILITIES

(U) (S) Early in 1963, the AOC, RCAF ADC, asked NORAD for concurrence to delegate certain component command responsibilities to the senior RCAF officer in the co-manned sector headquarters and to the commanders of the Ottawa and Bangor Sectors. The object was to insure that RCAF tactical units were properly monitored and to provide a direct channel of communications to RCAF ADC so that any problems could be handled as quickly as possible. The aim was to assure a high standard of RCAF component support. Included were these responsibilities: to assess and report on RCAF radar squadron deficiencies and to recommend correction; to authorize temporary duty for RCAF personnel to attend NORAD-sponsored conferences; to represent RCAF ADC at sector conferences; to report on incompatibilities between RCAF and USAF operating procedures, etc.

(U) (S) NORAD concurred in a letter to the RCAF Chief of the Air Staff on 29 August. However, NORAD asked for an increase of four RCAF Flight Lieutenant Telecommunications Officers (one each for Bangor, Duluth, Great Falls, and Seattle Sectors) because of the increase in workload that would result and also because of the increased workload caused by the sector reconfiguration. The RCAF turned down an increase in spaces, however, and stated that the proposed commitment could be accepted only if compensating deletions were made from other NORAD co-manned positions.

(U) NORAD went ahead with the delegation of responsibilities anyway. This was done by requiring the senior RCAF officer, together with the currently established RCAF C&E squadron leader, to perform these component responsibilities. NORAD told the regions concerned that it did not feel that these duties would be onerous or detract substantially from the individuals' ability to perform

[redacted]

their primary functions. NORAD stated though that if an RCAF Flight Lieutenant space could be made available from within the region's resources, it would be converted to C&E.

(U)

(U) In the meantime, RCAF ADC asked that excess C&E officer spaces from discontinued sectors be transferred to the remaining sectors. NORAD replied that it had already recommended to RCAF that 35 of the 121 RCAF spaces released from the discontinued sectors be used to augment Great Falls, Detroit, Duluth, and Boston Sectors, and that the 86 remaining spaces had been returned to the RCAF on 23 April. Later, RCAF advised that the Minister of National Defence had approved the return of these 86 spaces. But financial considerations now made it mandatory that further RCAF personnel savings be made and the RCAF had been directed to cut nine more spaces. These nine additional spaces were returned to the RCAF on 7 November 1963.

ESTABLISHMENT OF A NUCLEAR DEFENSE STAFF

(U) On 14 August, the Ottawa NORAD Sector requested an increase in the JTD for a nuclear defense officer and an NCO assistant. NNR strongly supported the request and NORAD approved it. NORAD then asked RCAF to provide the spaces and on 9 October, RCAF replied that they would be added as requested.

(U) Later, NNR recommended to NORAD that a nuclear defense officer and an NCO assistant be established also at Bangor and Goose Sectors. At the end of the year, this was being studied at NORAD Headquarters.

CHAPTER TWO

COMMAND AND CONTROL SYSTEMS

PROVISION FOR INCREASED AUTHORITY OVER COMMAND AND CONTROL SYSTEMS

(U) A memorandum from the Office of the Secretary of Defense on 26 October 1963 made, what one NORAD staff section called, "a revolutionary change in NORAD's over-all responsibility in the depth and operation of its command and control system." What this memo did was to ensure that unified and specified commanders could achieve adequate influence over the development, acquisition and operation of the command and control systems. This memorandum followed an earlier one in 1962 that established a concept for operation of the world-wide military command and control system. It had stated that the sub-systems of the unified and specified commands would be internally configured and operated in accordance with the prerogatives and policies of the commanders and headquarters they served. The new memorandum was in implementation of the latter.

(U) The provision for increased authority of unified and specified commanders over their command and control systems was spelled out in eight assignments to these commanders. Included was authority to (1) establish operational requirements, (2) participate in planning and design, (3) review system documentation prior to contract negotiation, (4) identify those elements that should be under the commander's direct command and control, (5) establish certain regulatory procedures, and (6) attach the command's views to program change proposals.

(U) The secretaries of the military departments were to notify all appropriate agencies of these assignments and make any modifications in

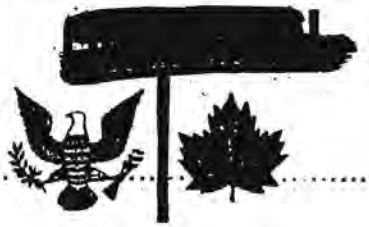
management relationships necessary. The latter was to include provision for direct communication between the unified and specified commanders and the military departments directly supporting them on the development and acquisition of their command and control systems. The secretaries were also to provide for getting the views of the commanders on all plans, designs, specifications, and other documentation affecting the command and control systems. Any statements the commanders wanted to make on plans and PCP's were to be attached to these documents if forwarded to the Secretary of Defense.

(U) The JCS forwarded this memorandum early in November for study. They were to follow up later with implementing instructions. Prior to this, representatives of the JCS, military departments, and the DCA were to visit each commander to get his views.

(U) In the meantime, NORAD's J-5 section, DCS/Plans, identified the staff actions required of NORAD by the memo and designated the Directorate of Manpower and Organization as the project office. The latter was to designate the Offices of Primary Interest and organize working groups for definitive study of the tasks and development of the NORAD position, courses of action, and other matters required to implement the memo.

(U) Another consideration was in making a change to the document, Unified Action Armed Forces (UNAAF), November 1959, that provided guidance for the exercise of command by unified and specified commands and others. The Secretary of Defense memo asked for changes to reflect its provisions. NORAD submitted proposals to the JCS in December.

(U) The JCS implementing instructions for the command and control memorandum were issued on 21 December. Guidance for carrying out each of the eight assignments was provided.



NORAD HEADQUARTERS COC

CHEYENNE MOUNTAIN COMPLEX STUDY

(U) Related to these provisions for change in command and control authority, but separately directed, was a study begun shortly after the start of 1964 of the Cheyenne Mountain Complex (NORAD underground COC). Here is the immediate background.

(U)
(S) In late October, the Deputy Director of Defense Research and Engineering, Eugene G. Fubini, sent a paper on the NORAD combat operations center to General Gerhart. The DDR&E staff had just reviewed a USAF PCP on 425L that proposed a triplex computer configuration (see COC status section below). The DDR&E staff said that from their review it had become obvious that a better understanding was needed of CINCNORAD's requirements and plans. There were a great number of separate sub-systems or facilities and numerous computers planned. But the approach was uncoordinated, fragmented. There was no integrated plan for all the COC equipment and sub-systems to meet the many requirements. A thoroughgoing study was recommended of all systems, requirements, functions, etc. Two lists of questions were provided to assist in attacking the technical and management problems involved.*

(U)
* (S) NORAD officers were well aware of the shortcomings. One officer described the problem this way: "...one of the primary difficulties has been the development by agencies other than NORAD of uncoordinated detailed procedures to be employed by the NORAD staff in the operation of the hardened COC. These details have not been subject to correction or modification in most instances by CINCNORAD or his staff. The picture has further been complicated by requirements stated by agencies other than NORAD, whose elements are planned for occupancy within the COC. Further, there has been no central coordinating

(Continued on following page)

(4)

(S) In a Decision/Guidance paper on the above-mentioned 425L PCP, the Secretary of Defense directed the Air Force to submit a new technical development plan. Among the things on which this plan was to be based was a review of the concept of centralized post-attack control of continental air defense and the feasibility of implementing such a policy with the programmed facility at Cheyenne Mountain. This was to include examination of all the functions programmed to be performed within the COC. Also this plan was to consider an evolutionary approach to the multiple computer configuration for 425L and 496L functions to find out if the facility could meet stated objectives.

(4)

(C) The upshot was the issuance on 10 December of a memorandum by the Secretary of Defense asking CINCNORAD to make a study directed to questions in the DDR&E paper and the Decision/Guidance paper mentioned above. The Secretary of Defense stated that the 26 October memorandum established a general concept for command and control systems and JCS implementing instructions were under development. But there were several immediate problems of such importance that an over-all review of the entire NORAD/CONAD command and control system had to be started before the JCS instructions were issued. These problems included the phasing and funding of Air Force programs, budget considerations, interim improvements at Ent AFB, and establishment of guidance for installation and integration of facilities at the CMC facility.

(4)

(C) The CMC study was to be completed within 90 days and an over-all report submitted within two weeks thereafter. To make the study, CINCNORAD

---

authority empowered to arbitrate or make decisions in cases of apparent conflict." Another headquarters staff officer summed it up when he said "there are just too many people and agencies in the chain who can disagree...."

was to set up a task force and designate its chairman. The task force was to be composed of members from NORAD/CONAD and other appropriate agencies.

(U) NORAD began organizing the study right away. Additional space of around 14,000 square feet was needed, so ADC, at NORAD's request, got authority to rent an unoccupied building north of Colorado Springs. Next, NORAD requested representatives from the appropriate agencies (which included DOD, JCS, DCA, DIA, ADC, AFSC, ESD, MITRE, SDC, RAND, AFLC, ATC, Air Weather Service, Air Force Communications Service, and Air Force Regional Civil Engineer). Major General Dolf E. Muehleisen, commander of the 29th NORAD Region, was named chairman of the task force. On 6 January, the personnel signed in at the task force headquarters and work began the next day.

HARDENED COC DEVELOPMENT

(U)

(S) Early in October, it was decided at a conference at the Omaha office of the Air Force Regional Civil Engineer to delay the beneficial occupancy date of the 425L facility by $6\frac{1}{2}$ months -- from 1 August 1964 to 15 February 1965. The reason for this delay was that repairs to the command post (B-2) intersection, resulting from a geological fault, required additional time. Until this was completed, the central building, where most of the technical equipment was to be installed, could not be finished.

(U)

(S) The IOC and FOC dates in effect prior to this BOD delay (October 1965 and August 1966) had not been changed as a result, or at least a change had not been determined. But changes were in the offing.

(U)

(S) USAF messages on 31 October advised of the OSD decisions and guidance on the 425L PCP and stopped action on COC internal communications. The Office of the Secretary of Defense had disapproved

a proposed triplex computer and additional displays and consoles, and had approved the increase in R&D funding requested for FY 1964 (4.8 million) and part of the increase requested for FY 1965 (3.6 million approved versus 8.1 million requested). USAF said that in view of the OSD action and the BOD slippage, further actions were to be withheld on internal communications contracting until the 425L system had been re-defined. Finally, USAF said that competitive proposals would be solicited as a basis for a decision on government versus commercial communications. ADC and NORAD were on record in favor of commercial leased systems. In 1961, ADC advised USAF and the 425L Project Office that, along with NORAD, it did not believe a government-owned system for 425L would satisfy the operational requirements. Just prior to the USAF action, NORAD had urged, through the JCS, approval of its requirement for internal communications. The JCS replied on 5 June that OSD had approved it and authorized USAF to implement.

(U)

(S) The USAF action now of holding up on communications would, in the opinion of the Electronic Systems Division (ESD), delay availability of internal communications until the period February 1966 through June 1966. The net effect, ESD said, would be to delay IOC of 425L to September 1966 at the earliest, and possibly to January 1967. Also, this delay could cost as much as ten million.

(U)

(S) At any rate, as stated above, a complete review of the Cheyenne Mountain COC facility was directed by the Secretary of Defense. The results would decide the future course of development of the COC, presumably. In the meantime, a plan for interim development had to be made. ESD prepared such and presented it to a NORAD/ADC group on 6 December. This plan, as directed by DOD, had to be based on a duplex computer configuration. Both NORAD and ADC concurred as an interim "way to go" until the over-all DOD-directed study was made and action taken on its recommendations. Both commands cautioned against anticipating results of this study, however. And both urged awarding of the

internal communications contract by 1 February 1964.

NORAD ALTERNATE COMMAND POST

USE OF NORTH BAY FOR THE NORAD ALCOP

(U)
(S) Background. The JCS directed, in October 1960, all unified and specified commands to have alternate command elements in hardened, dispersed, or mobile facilities. Because the NORAD and CONAD alternate command posts at the 29th Region Headquarters, Richards-Gebaur AFB, did not meet the JCS requirements, USAF suggested use of the hardened center at North Bay, Ontario, for the NORAD ALCOP.* Both NORAD and ADC agreed.

(U)
(S) USAF proposed the move to RCAF Headquarters and the latter approved in principle on 23 October 1962. Because of the immediate need to relocate, NORAD asked that the facility be set up initially in a manual mode and later made automatic. The JCS approved the relocation on 3 May 1963.

(U)
(S) In the meantime, the survivability and future use of North Bay was being examined. For one thing, Canadian authorities pointed out that space was extremely limited for extra functions. Secondly, the RCAF said that possibly the combat center's computer (FSQ-7) should be replaced by a more survivable one, such as that for BUIC. The RCAF felt that a computer change and consolidation of functions might ease the space problem.

(U)
(S) New Study of the Manual ALCOP Design. USAF had allocated $870,000 to the Air Force Systems Command for implementation of the manual ALCOP at North Bay. Release of funds by AFSC

(U)
* (S) CINCONAD stated in 1962 that the CONAD ALCOP would remain at Richards-Gebaur AFB.

would be made upon completion and approval of all the documentation. ESD was preparing the Proposed Systems Package Program, MITRE/ESD were working on the design, and USAF ADC was preparing the formal requirement.

(U) (S) However, NORAD had to halt these actions so that the ALCOP design could be re-studied to find a way to lower the space requirements. As it was, the design would require more space than could be made available. For one thing, the MITRE/ESD design made the ALCOP separate from the NNR combat center. Space limitations dictated a merging of functions, if at all possible. On 7 August, NORAD asked ADC to arrange for a study to compare the current ALCOP with the proposed manual ALCOP that would develop firm conclusions on the feasibility of merging the ALCOP and CC functions using NNR personnel. NORAD explained that the requirements for space had first been estimated at 1,500 square feet and the personnel needed at 60. These requirements had grown to 3,900 square feet and 112 people. Manpower was already 64 percent higher than authorized for the current ALCOP.

(U) (S) On 30 September, USAF authorized AFSC to go ahead with the comparison study. It would be made with AFSC resources and no more funds would be needed. The money already provided for the ALCOP was not to be used for the study, but to implement its results.

(U) (S) NORAD, ADC, RCAF, MITRE and other agency representatives met on 9 October to establish the requirements for the study. A written memorandum of understanding was completed on 10 October. ESD was to make the study and then brief CINCNORAD who would then determine the action to be taken and seek RCAF and USAF concurrence.

(U) (S) NORAD had submitted the telecommunications requirements for the manual phase of the ALCOP to the JCS on 15 May 1963. These requirements were based on a separate ALCOP and combat center so NORAD now told the JCS that there would probably

be some changes. On 8 October the JCS cancelled the requirement document.

(U)
(S) As noted earlier, the RCAF approved in principle the location of the ALCOP at North Bay. On 10 December 1963, RCAF Headquarters advised that installation of a manual ALCOP had been approved by the cabinet on the understanding the program could be accomplished within the terms of the existing Canada-U.S. NORAD agreement and subject to satisfactory discussion on implementation and cost sharing procedures. The RCAF said that it expected negotiations with USAF to begin when the ALCOP design and costs were ready.

(U)
(S) On 12 December, ESD/MITRE representatives briefed NORAD on the ALCOP study. Another briefing was scheduled for January to present the completed proposal for the ALCOP. It was hoped that approval for implementation could be gained by February and interim operation of the ALCOP by around mid-year.

(U)
(S) Automated ALCOP. RCAF headquarters stated on 7 June 1963 that there was not space enough for an automated ALCOP without major changes in the CC/DC or new excavation. The RCAF asked NORAD to establish an order of priority for functions that might be located at North Bay. The RCAF also said it was studying survivability and use of the facility and early results indicated that further hardening of the installed system was needed and that the FSQ-7 computer might well be replaced with the BUIC computer. The FSQ-7 was a tube-type computer. The BUIC computer was a more survivable, transistor type.

(U)
(S) In July, USAF agreed in principle with the RCAF proposal to replace the FSQ-7 with a solid state computer or combination of computers in lieu of implementation of BUIC II in the Ottawa Sector. However, USAF asked that replacement be held in abeyance until hardening studies were completed and the BUIC question settled.

(U)
(S) But the RCAF changed its view. At a meeting in Ottawa in mid-December, NORAD learned that the RCAF had reversed its position and now supported installation of the two BUIC II facilities in the Ottawa Sector. The new RCAF position was sent in a message on 10 January 1964. A joint USAF/RCAF study of North Bay survivability, which had been started at mid-year, indicated that the greatest vulnerability was to electromagnetic pulse (EMP). RCAF said it had concluded the following. The North Bay facility would not survive the nuclear threat postulated in CANUS 63. EMP shielding was an immediate requirement. An automated backup for the Ottawa Sector was required because of the probability, until EMP protection was provided, of the backup becoming the prime system after an initial ICBM strike.

(U)
(S) In the meantime, on 30 September 1963, NORAD had answered the RCAF request for an order of priority for North Bay functions. NORAD's list was as follows:

(1)	Present through 1966	
	Priority One	CC/DC Function (FSQ-7)
	Priority Two	ALCOP Function
(2)	1967 through 1970	
	Priority One	Replace FSQ-7 with a solid state computer or computers to perform the ALCOP, CC, and DC functions.
(3)	Post 1970	
	Priority One	ACC /Solid State Computer(s)/

AIRBORNE COMMAND POST

(U) (S) NORAD staff agencies were studying the need for an airborne command post and developing the concepts for employment. This resulted from questions being raised in OSD about the reliance NORAD was placing in the hardened COC and the interest of CINCNORAD in expanding the command and control structure through use of an airborne command post.

(U) On 29 November 1963, NORAD asked JCS for approval to use the C-118 assigned CINCNORAD as an interim airborne command post when he was aboard. The JCS wanted more information on the plane's communications and capability. NORAD replied that, with the C-118's equipment, CINCNORAD could communicate with his COC, the entire NORAD system, and elements of the NMCC. But the aircraft could not process and display information.

ALASKAN REGION COMBAT OPERATIONS CENTER

(U) (S) A new system, called the Alaskan Air Command Data Processing and Display System, AN/FYQ-9, was being installed in the Alaskan area to automate the data processing and display. The radar reporting sites would be provided with semiautomatic track data inserters teletype equipment to assist in entering track and status data into the system. Each of the four NORAD control centers would be provided with a teletype, a computer, a display and a read-out console.

(U) (Ø) The entire system was scheduled at first to be operational early in 1964. But this date had slipped to July 1964.

NNR AND OTTAWA NORAD SECTOR SAGE

(U) (S) Northern NORAD Region (NNR) Headquarters was initially at RCAF Station St. Hubert, Quebec. An underground facility was built at RCAF Station

North Bay, Ontario, to house both the region combat center and the Ottawa NORAD Sector direction center and was equipped with a modified FSQ-7 SAGE computer. NNR Headquarters was moved to North Bay on 13 May 1963 and the Ottawa NORAD Sector Headquarters (which did not exist previously) was established on the same date at North Bay.

(U)

(S) A detachment of NNR Headquarters was established at St. Hubert to operate the manual combat center there until an interim manual combat center at North Bay became operational on 18 June. The St. Hubert detachment then operated as a backup until 1 July when it ceased operations. An Ottawa Sector detachment was also established at Edgar, Ontario, to operate the manual direction center there until the direction center at North Bay took control.

(U)

(S) SAGE testing and training of personnel was completed in September. On 1 October 1963, both NNR and Ottawa Sector became operational with SAGE at North Bay. The Ottawa Sector detachment at Edgar was retained for thirty days as a backup.

NCC AND ARMY CONTROL SYSTEMS

BACKUP INTERCEPTOR CONTROL (BUIC) PROGRAM

(U)

(S) Background. As an outgrowth of a directive by the Secretary of Defense in June 1961, a SAGE backup system was established for implementation in two phases. The first phase, in effect in the CONUS by the end of CY 1962, provided manual control using NCC's, NGCI's, and surveillance stations. The RCAF approved Phase I for all sectors affecting Canada in February 1963. Phase II was to provide semi-automatic control at 34 NCC's in a switched communications environment. Each NCC was to have the AN/GSA-51 computer. Initially, thirty of the BUIC II NCC's were to be in the U.S., four in Canada. But because of boundary changes caused by radar and direction center deletions, this was altered in April 1963 to 31 NCC's in the U.S.,

three in Canada. RCAF had not approved BUIC II by mid-1963.

(U)

(S) In the meantime, the report of a Secretary of Defense-directed Air Force study, Continental Air Defense Study, dated 10 May 1963, recommended an Improved BUIC/AWAC (airborne warning and control) System to replace SAGE. Forty-six Improved BUIC centers were recommended, four as CC's and three in each of 14 sectors.

(U)

(S) BUIC II Priorities. On 17 June, NORAD received RCAF policy decisions on BUIC II. Canada's position was that BUIC II should be installed in the Bangor Sector, but not in the Ottawa Sector. RCAF did not think at this time that the Ottawa BUIC II was necessary because of having the hardened North Bay facility and wanted to replace the North Bay FSQ-7 with the Ottawa BUIC computers.

(U)

(S) Because of the RCAF's views, it was decided at a meeting between RCAF and USAF on 9 July to move the Ottawa BUIC NCC's, C-1 and C-8, to the bottom of the priority list pending a decision on replacement of the North Bay FSQ-7. On 19 July, USAF sent NORAD an operational priority list which included the above shift. NORAD asked for one modification, to which USAF agreed, and on 9 August, USAF approved operational priorities for all BUIC sites. Operational dates at this time were 15 January 1965 for the first site, 22 October 1966 for the complete system.

(U)

(S) As stated in the section on ALCOP, at the end of the year, the RCAF changed its position on BUIC II in the Ottawa Sector. At a meeting in December, NORAD learned that the RCAF now favored installation. The changed position was formally stated in a message on 10 January 1964.

(U)

(S) Interim Point-to-Point Communications. A switched communications system was planned for BUIC Phase II. However, because it turned out that BUIC II computers would be available ahead of automatic switching equipment, interim point-to-point data

circuits had to be put in to meet operational schedules. It was found that switched communications would not be available until 1967.

(U)

(S) USAF ADC had realized early that switched communications would not be available for at least the first part of the program and ordered point-to-point circuits for the first eight sites on the operational priority list. This involved Canada, which needed a statement of NORAD's requirements before it could act to provide point-to-point circuits. NORAD provided the requirements statement in a message on 29 November 1963. This was followed by a meeting in Ottawa in December. It was at this meeting that NORAD learned that the RCAF supported BUIC II for Ottawa. The money, $2.48 million, had been made available to provide point-to-point communications. The RCAF would order the circuits as soon as possible. NORAD furnished RCAF a detailed listing of CADIN requirements following the meeting.

(U)

(S) Improved BUIC. As a replacement for SAGE, NORAD had recommended a transportable system called TRACE. This was essentially the BUIC II system, expanded in capacity and given transportability. But TRACE did not get very far. The Air Force's Continental Air Defense Study Report, 10 May 1963, recommended a fixed Improved BUIC system rather than a transportable system. Improved BUIC was recommended to replace SAGE and become the primary system (after which, obviously, it would have to be called something else than BUIC). A system of 46 centers was recommended. After review by the Air Staff, the CAD Study was forwarded by the Air Force to the Secretary of Defense.

(U)

(S) NORAD told the JCS in August that it supported the CADS recommendations with two modifications. First, NORAD wanted the BUIC equipment packaged in modules to facilitate van installation at a later date should transportability be necessary. Secondly, NORAD recommended flexibility in the number of consoles to permit tailoring of control capability to the expected threat.

(U)

($) The Air Force submitted a PCP to the Secretary of Defense on 21 October 1963 for Improved BUIC. The OSD sent the PCP to the JCS which, after coordination with NORAD, approved it and returned it to the OSD. The Secretary of Defense did not approve the PCP, however. In a Decision/Guidance memorandum, dated 27 November 1963, he stated that the Improved BUIC program was deferred without prejudice pending resolution of the DOD/FAA radar environment and the air defense weapons posture. The Air Force was to continue the system definition program to provide information on site characteristics, configuration of sites and sectors in the transition period from SAGE to BUIC II to Improved BUIC, a plan and schedules for providing switchable digital data communications, and alternative methods of control.

(U)

($) An Air Force proposed reclama was presented at NORAD Headquarters on 9 December. Following this, ADC was requested by USAF to make a critical analysis of a course of action designed to modernize the air defense system and reply by 1 February. ADC asked the Systems Command for help.

ARMY WEAPONS CONTROL EQUIPMENT

(U)

($) Phase Out of Two Missile Masters. In June, ARADCOM asked for NORAD's concurrence on replacing two Missile Masters (AN/FSG-1) with BIRDIE equipment (AN/GSG-5). ARADCOM wanted to replace the Missile Master at Lockport, New York (Z-21), Niagara-Buffalo defense, with the BIRDIE from Loring AFB, Maine; and the MM at Fort Lawton, Washington (Z-1), Seattle defense, with the BIRDIE from Fairchild AFB. DA had directed all Army commands to submit a list of units or activities that could be cut in FY 1964 to get spaces for high priority functions. From ARADCOM's proposals, DA had chosen these facilities. NORAD concurred on 18 June, for the phase-out accorded with long-range plans.

(U)

($) The Missile Masters were phased out on 26 September 1963. This left eight Missile Masters

in the ARADCOM system. The Fairchild and Loring defenses were operated in a manual mode on removal of the BIRDIE systems.

(U)

(S) Improved Fire Coordination System. The Missile Master removal above fitted into plans for replacing all Missile Masters and for resiting the Hercules batteries around SAC bases. NORAD's Objectives Plan 1965-1974, June 1963, proposed replacing the existing eight MM's and 18 BIRDIE installations with about 26 Improved Fire Coordination Systems (AN/TSQ-51) by FY 1968. This was the number thought necessary, but the exact figure required engineering analysis to determine. The AN/TSQ-51 or IFCS was a greater capacity system that could be operated for less cost and deployed in more survivable locations than Missile Master or BIRDIE.

(U)

(S) On 5 November 1963, the Department of the Army submitted a PCP to the Secretary of Defense for the delivery of ten of these systems by FY 1966. At year's end, DA was staffing final technical specifications in anticipation of requesting contractor proposals in January.

COMMUNICATIONS

NORAD COMMUNICATIONS SURVIVABILITY PHILOSOPHY

(U)

(S) A long standing objective of NORAD was communications survivability. Beginning with its Objectives Plan of 1960 (NADOP 62-66, 31 March 1960), NORAD listed communications survivability as an objective. In the 1960 plan, NORAD said: "The essential characteristics of NORAD communications in this time period must be speed, accuracy, reliability and survivability." Something similar to this was stated in each succeeding plan. In NADOP 65-74, June 1963, NORAD said that its communications must "be made more secure, reliable, and survivable...."

[redacted]

(U)

(S) In November 1962, NORAD sent to the JCS a considerably-detailed statement of objectives for survivable communications. NORAD considered this an interim statement because it planned to issue a more complete statement later. The reason for preparing and submitting this letter was that NORAD communications officers felt there was a long-standing need for such and they wanted to get NORAD's concepts to the JCS and to the Defense Communications Agency which was preparing plans for survivable communications world-wide. Among the points made in this letter was that current and future system effectiveness depended upon communications of adequate quality with a probability of survival equal to that of the installations served.

(U) A more detailed statement of NORAD communications philosophy was contained in the NORAD Communications Planning Guide, July 1963, which also related NORAD philosophy to Defense Communications Agency objectives and programs. As explained in this document, the DCA was developing the Defense Communications System which was to be a world-wide complex of government-owned and leased communications facilities organized into a single compatible communications system to meet all long-haul, point-to-point requirements of the Defense Department. The DCA concept was that each military department would provide, man, and operate portions of the DCS to satisfy requirements of the DOD regardless of the department or unified command originating the requirement. Thus, most major NORAD communications networks were to be an integral part of the DCS, and facilities might be furnished by any Service. NORAD was still responsible for planning and submitting requirements to the JCS and for operational control of its allocated circuits.

(U)

(S) NORAD listed the required major characteristics of aerospace defense communications as adequacy, speed, reliability, flexibility, security, and survivability. NORAD said it also wanted systems that were compatible with the commands and weapons they served and with interfacing systems, adequate backup systems, and maximum automatic

[redacted]

switching. As for survivable communications, NORAD described the required characteristics as follows: a minimum of relay points, low probability of destruction from nuclear detonation, a variety of communications following dispersed routes, automatic dial switching, and entrance communications for hardened centers as survivable as the centers served. As methods of providing survivable communications, NORAD included geographically-separated routes and a variety of communications, a commercial gridded network with automatic restoration of facilities, tropospheric scatter systems, microwave systems, deep strata communications, automatic switching, mobile communications, very low frequency network, satellite relays, and others.

SWITCHED COMMUNICATIONS

(U)

(S) Background. In 1960, NORAD, ADC and commercial communications companies developed a concept for an automatic switching network. The first phase, nine switching centers, serving NORAD regions, was approved in July 1961. Requirements for a second phase, to expand and extend the service with approximately 18 more centers, were submitted by NORAD on 24 January 1963. Another part of the switching requirement was to provide communications for the BUIC II system.* USAF ADC submitted requirements in September 1962 for some 70 centers. The total required included the nine phase one, and 18 phase two, centers.

(U)

(S) On 4 May 1963, the Deputy Secretary of Defense approved the combining of the four Army SCAN (Switched Circuit Automatic Network) centers with four of the NORAD Phase I centers to make the initial part of the CONUS AUTOVON (automatic voice network) system being developed by the Defense Communications Agency. Integration into AUTOVON was

---

* (U) See also page 23.

to be on a phased basis with two centers integrated first and then tested.

(U) (S) On 8 May 1963, the Office of the Assistant Secretary of Defense (Installations and Logistics) approved the BUIC II communications requirements for implementation as an Air Force operated element of the DCS. Implementation was to be accomplished by expanding AUTOVON on a priority basis.

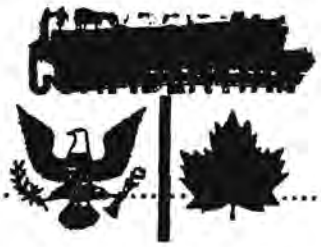
(U) AUTOVON Integration Test. The NORAD/ADC Phase I switching network became operational on 1 November 1963, as scheduled. A test to determine the feasibility of integrating the NORAD/ADC centers and Army SCAN centers and adequacy of the combined system to respond to user needs was held from 2 through 12 December. The Hillsboro, Missouri, and Monrovia, Maryland, switches and associated trunks of the SCAN and NORAD/ADC networks were used for the test.

(U) The test data were to be provided by the telephone company in January 1964. If the results showed that integration was satisfactory, the entire NORAD/ADC-SCAN networks would be integrated in February, creating the CONUS AUTOVON. The preliminary results were favorable.

(U) (C) NORAD/ADC Phase II Switching Network. The JCS advised the DCA on 6 August 1963 that they had reviewed and validated the NORAD/ADC automatic voice switching requirements. The JCS recommended that these requirements be incorporated into the CONUS AUTOVON. DCA was also advised that implementation of these requirements had to be coincident with that of the BUIC II switching system of which they were an integral part. NORAD had not been advised of the status of Phase II by year's end, however.

SURVIVABLE LOW FREQUENCY COMMUNICATIONS SYSTEM

(U) (S) Early in 1963, USAF directed a revision of its SOR 193, Survivable Low Frequency Communications System, in accordance with a plan for



reaching initial operating capability and final operating capability. IOC, to be reached by December 1965, included two transmit/receive installations at Omaha, Nebraska (SAC), one at March AFB, California (SAC alternate), and one at Washington, D.C. (JCS). AFSC was to investigate the possibility of refurbishing the Thule-to-Ent low frequency equipment to provide a capability to transmit to NORAD. FOC was to include three transmit/receive capabilities for the NORAD COC.

(U)

(S) NORAD asked for one of the transmit/receive facilities planned for the IOC, to be installed at the NORAD COC by December 1965 because of the refurbishing of the Thule transmitter. This would enable NORAD to pass warning information from Thule to the JCS and SAC. Other T/R capability would not be available until 1967. But a proposed revision of the USAF SOR did not provide for NORAD's request and did provide for a VLF transmitter at Thule. NORAD appealed to the JCS which replied in June that a request would have to be submitted in accordance with DOD Directive 4630.1 because the over-all SLFCS program had not been approved.

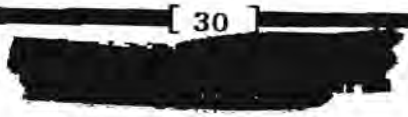
(U)

(S) On 9 July, NORAD submitted its requirement to include all of its low frequency communications requirements. For providing last-ditch survivable communications for NORAD command, control and alerting purposes, NORAD requested a total of 21 transmit/receive stations (two in FY 1966, 19 in FY 1967) and 30 receive-only stations (22 in FY 1966, eight in FY 1967).

(U) The draft of the revised USAF SOR 193 was sent to ADC in August. It still did not have NORAD's requirements. ADC included them in its reply to USAF, however.

(U)

(S) NORAD learned early in 1964 from the JCS that when all the LF/VLF requirements were received from all services and unified commands, the entire package, including NORAD's requirements, would be sent to the DCA for development of a world-wide plan.



AIR FORCE RESERVE RECOVERY TROPO SYSTEM

(U)

(S) In November 1962, NORAD submitted its general requirements to the JCS in the proposed USAF reserve recovery tropo system. The purpose of this system was to provide mobile voice tropospheric scatter stations (12 channel initially) in non-target areas, 30 to 40 miles from each location served. It would be primarily a post-attack communications restoral system to be operated by Air Force Reserve and National Guard personnel. Over 700 stations were planned.

(U)

(S) The JCS validated the NORAD requirements and instructed USAF to include them in the over-all plans. They also asked USAF to give NORAD the information necessary to prepare a requirement in accordance with DOD Directive 4630.1, if NORAD requirements exceeded the USAF system. In response to a request from the Air Force Communications Service, NORAD provided its tentative requirements in June 1963. In its letter to AFCS, NORAD asked for the technical data needed to submit the 4630.1 paper to the JCS. NORAD requirements included stations for the COC, COSC and Alternate, NORAD ALCOP's, Regions, Sectors, BUIC sites, ARADCOM command posts, BOMARC sites, and ADC active and recovery bases.

(U)

(S) On 27 September 1963, AFCS advised that the data NORAD needed would be determined after 1 November when a revision to the Air Force communications recovery system would be completed. AFCS also said that DOD had approved spending $8.9 million for a prototype segment of the Air Force system to be installed and tested in 1965. Results of the tests would determine whether the over-all system would be approved.

VOICE SECURITY

(U)

(S) NORAD submitted to the JCS, in March 1963, a five-year plan for voice security communications. NORAD proposed to replace the system in use, KY-9,

which it considered unsatisfactory, with the HY-2/KG-13 long-distance secure voice equipment and the KY-3 shorthaul equipment. NORAD stated in this plan that it wanted 40 KY-3 sets and 42 HY-2/KG-13 equipment. The component commands were to program HY-2/KG-13 equipment for their commands.

(U)

(S) NORAD learned from the JCS and DCA in June that a world-wide automatic secure voice network was being developed by the DCA to serve all subscribers. In reply to a NORAD query, the JCS said in July that the DCA had incorporated NORAD's requirements into the DCA plan.

(U)

(S) Early in October, NORAD learned from a briefing on the DCA plan that it needed to ask for more equipment. In the DCA plan, switching would be accomplished from Cheyenne Mountain for ADC and ARADCOM, whereas in the original NORAD plan, the components were to switch at their own headquarters. NORAD, therefore, asked the JCS for additional equipment. In all, NORAD increased the requirement by three HY-2/KG-13 sets and 37 KY-3 sets. The new totals were 45 HY-2/KG-13 equipment and 77 KY-3 equipment. The JCS approved the new requirements in February 1964.

AUTOMATIC ATTACK WARNING SYSTEM

(U)

(S) Background. In 1961, NORAD had asked ADC for a study on the feasibility of an automatic attack warning system (AAWS), one that could be triggered automatically by the DEW Line, BMEWS, NUDETS, and other sensors into giving instant warning to all NORAD combat units. ADC turned the problem over to AT&T. A plan from the latter was approved by NORAD in principle in 1962. In the meantime, NORAD set up an interim manual system using the existing Readiness and Warning Network.

(U)

(S) On 22 May 1962, NORAD submitted a telecommunications requirement for an AAWS to the JCS. The latter validated the requirement and forwarded it to the DCA in July 1962, requesting a systems

plan be prepared. The DCA sent a plan to DOD early in 1963. The proposed system would provide an interim capability using existing point-to-point circuits. When integration of the latter into the AUTOVON automatic switch network was accomplished, the system was to be incorporated into the AUTOVON switching system, if such was feasible.

(U) (S) Status. The JCS recommended approval, on 7 June 1963, of the proposed DCA system to the Secretary of Defense. OSD approved the system on 20 June, but imposed two restrictions:

(1) There would be no increase in existing circuitry.

(2) The system would be compatible with the AUTOVON switching system.

(U) (S) Both ADC and NORAD objected to these restrictions because they would prevent implementation of the interim system. ADC told USAF in a message on 25 July that the system planned would use channels derived from other than Air Force circuits. Secondly, the approved system was not compatible with the initial AUTOVON for it was not designed for a switched environment. Seizure equipment would have to be designed and procured for each NORAD/ADC switching center and additional access lines provided, for the initial system did not extend below sector level.

(U) (S) NORAD told the JCS on 27 August that the restrictions would prevent implementation in the time desired and in a manner that was technically compatible with existing or planned communication facilities. NORAD asked that the restrictions be taken off because of the urgency of the requirement.

(U) (S) The JCS backed NORAD in a memorandum to the Secretary of Defense in November, asking that the restrictions be removed and the original systems plan be implemented as an interim means of meeting the requirement. The JCS pointed out that

the interim system would be phased out when the requirement could be met by either AUTOVON or AUTODIN. NORAD learned in late November that OSD had approved the JCS recommendations and advised USAF. It was expected that the latter would go ahead with implementation.

NORAD/SHAPE EARLY WARNING VOICE CIRCUIT

(U)

(S) In 1962, NORAD, SHAPE and the JCS agreed to the requirement and means for a direct point-to-point voice circuit between the command posts of NORAD and SACEUR. The JCS advised in April 1963 that NORAD could report evaluated BMEWS and Bomb Alarm System data to SHAPE. The circuit could be included in the NORAD air defense alert reporting system, provided there was no degradation of the system.

(U)

(S) Originally, the circuit was to be in operation by 1 March, but after it was established, numerous troubles cropped up and it could not be operated successfully. Among the problems were difficulties with a microwave link and with signalling equipment at the terminals. The circuit finally became fully operational and acceptable on 3 October 1963.

CHAPTER THREE
MANNED BOMBER DETECTION SYSTEMS

REAPPRAISALS AND REDUCTIONS

STUDIES OF 416L CONFIGURATION

(U) (S) Continental Air Defense Study (CADS).* Back in June 1962, the Secretary of Defense had directed the Air Force to make a study of continental air defense in the 1966-1975 period to provide a basis for decisions on air defense weapons, control, and surveillance systems. A report on the findings of the study was issued on 10 May 1963. In July, the CADS Report was sent to the Secretary of Defense.

(U) (S) The CADS Report proposed a Canadian-U.S. surveillance system of 134 LRR's and associated gap fillers and height finders. The system envisaged called for the deletion of a number of prime, gap filler, and height finding radars. NORAD did not agree with all the deletions. In a letter to the JCS on 23 August, NORAD provided its position on the CADS Report. NORAD advised that it felt that, in some cases, the conclusions in the report on numbers of radars considered necessary were based on concepts of operation that were incompatible with NORAD requirements. NORAD said it was making a study of over-all radar operations "which we consider a vital prelude to any further numerical adjustment."

(U) (S) Meanwhile, USAF submitted a Program Change Proposal to DOD on one of the CADS recommendations -- Improved BUIC. DOD sent the Air Force PCP to the JCS, who, after coordinating with NORAD, approved and returned it.

---

* (U) See also Chapter Two, Improved BUIC.

(U)

(S) The Secretary of Defense did not approve the PCP, however (see Chapter Two). In a Decision/ Guidance memo dated 27 November, he deferred the Improved BUIC program without prejudice. Also, he approved a new radar program that coincided with a previously approved program. It called for 172 search radars during FY 1964-1969; 306 height finder radars in FY 1964, decreased to 298 during FY 1965-1969, 100 gap filler radars in FY 1964, increased to 163 during FY 1965-1969; and 39 DEW Line radars during FY 1964-1969.

(U)

(S) NORAD Study. NORAD anticipated reductions in the 416L System during FY 1965 based on the CAD Study because of informal information coming from the DOD. NORAD established an Environment Working Group in late October whose purpose was to develop a logical and properly time-phased plan to prevent reductions out of line with NORAD's objectives.

(U)

(S) Composed of representatives of NORAD, USAF ADC, and RCAF ADC, the Working Group had, by early 1964, formulated criteria for selecting radar sites to be kept in the system. NORAD sent the criteria to USAF ADC, RCAF ADC, and ARADCOM for review and comment.

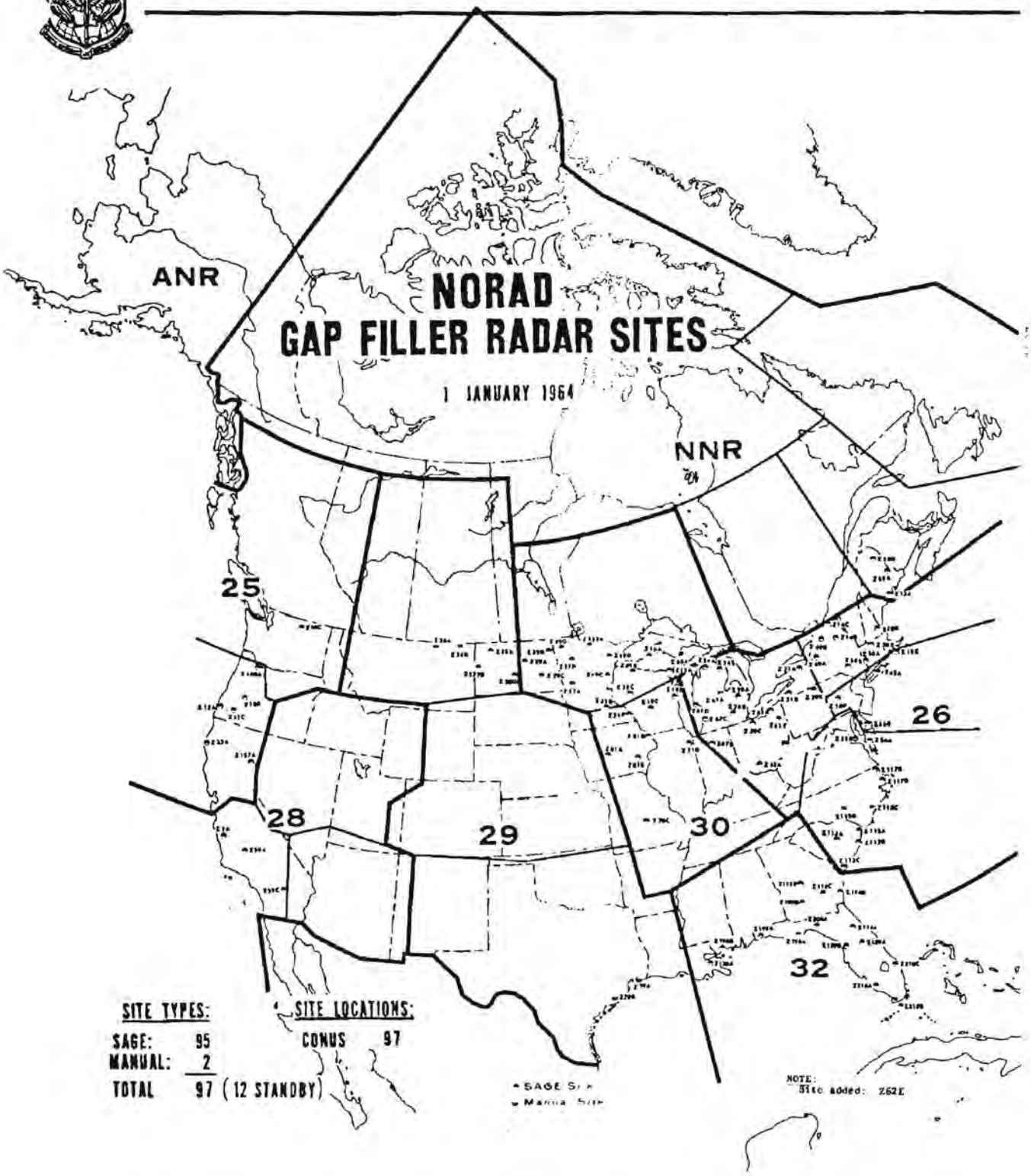
(U)

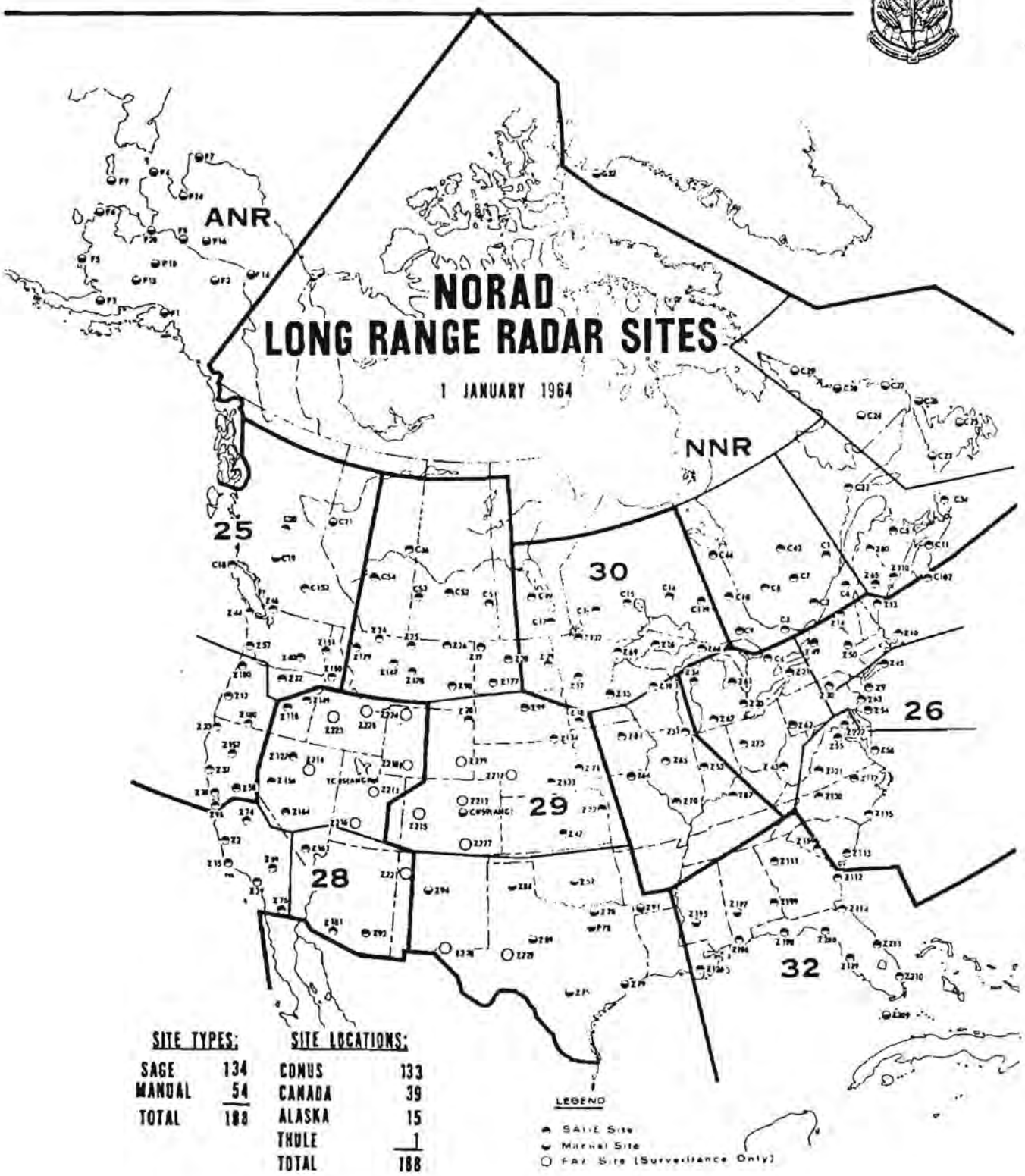
(S) USAF ADC Study. Coincident with this NORAD study, USAF requested ADC to prepare a "hard core" listing of radar sites needed to meet military requirements for survivability and ECCM, for joint use FAA/ADC needs, and for approved and proposed programs. USAF also asked for a list of sites not chosen for retention to aid in any future phase-down planning. ADC expected to send this study to USAF in March 1964.

CANCELLATION OF AN/FPS-74 GAP FILLER PROGRAM

(U)

(S) Background. In October 1960, USAF established a program to modernize all existing SAGE gap filler sites and to equip all programmed SAGE gap filler sites with the AN/FPS-74. The program called for a total of 182 FPS-74's -- 137 in the


NORAD
GAP FILLER RADAR SITES
1 JANUARY 1964
ANR
NNR
25
26
28
29
30
32
SITE TYPES:
SAGE: 95
MANUAL: 2
TOTAL 97 (12 STANDBY)
SITE LOCATIONS:
CONUS 97
NOTE:
Site added: Z62E


NORAD
LONG RANGE RADAR SITES
1 JANUARY 1964
ANR
NNR
25
30
26
29
28
32
SITE TYPES:
SAGE 134
MANUAL 54
TOTAL 188
SITE LOCATIONS:
CONUS 133
CANADA 39
ALASKA 15
THULE 1
TOTAL 188
LEGEND
SAGE Site
Manual Site
FAI Site (Surveillance Only)

U.S. and 45 in Canada. Originally, Budd Electronics, the contractor, was to install the first set by 1 October 1962 and it was to be operational by 1 January 1963.

(U) (S) However, the program fell far behind because Budd failed to produce satisfactory equipment. The program was nearly a year behind schedule by December 1962 and in danger of cancellation. During the early months of 1963, USAF closely monitored the program. In accordance with USAF stipulation, Budd changed its technical management and hired new engineers to correct flaws in the equipment.

(U) (S) Much thought was being given, in the meantime, to the need for continuing the program. In mid-1962, RCAF had deferred its part of the program for a year and in February 1963, questioned the merit of continuing its part of the program at all. USAF asked that a decision be held up until later in 1963. Then in May, USAF said that it was considering cancelling the FPS-74 contract and asked for ADC and NORAD views on replacing the FPS-74 program with additional maintenance on their existing FPS-14 and FPS-18 gap fillers. ADC replied that this would satisfy the requirement for better equipment and asked that a decision be withheld until the CADS Report recommendations were considered.

(U) (S) Status. A new delivery schedule was established in July 1963. The first FPS-74 was to be installed at a site by April 1964 and the last one by February 1965. The total gap filler program then called for 124 FPS-74's and 39 FPS-18's. There were to be 162 operational sites -- 118 in the U.S. and 44 in Canada.

(U) (S) First article testing of the FPS-74 began on 31 July and was to end by 15 October. ESD said that although testing was proceeding satisfactorily, it was moving slowly. ESD estimated that testing would continue until February 1964. While this would delay production deliveries until May, ESD

indicated that the reliability of the FPS-74 would be observed and corrections made at the contractor's expense.

(U)

(S) However, USAF advised on 20 January 1964 that the FPS-74 program would be cancelled. RCAF had concurred in this on 9 January. On 24 January, USAF notified all concerned that the improved gap filler program was cancelled and all contracts and efforts on production and installation of the FPS-74 would be terminated. The FPS-14/18 radars were to be inventoried with a view toward reconfiguration of the gap filler program according to the CADS recommendations and NORAD criteria under development.

CANADIAN STUDIES AND REDUCTIONS

(U)

(S) Because of manpower and budget ceilings along with increasing requirements, the RCAF found that it had to reduce the extent of its operations. Seven prime radars were proposed to be cut on the basis of ground environment studies. Later, RCAF proposed reducing hours of operating remaining radars in a "checkerboard" plan. RCAF also shut down part of the Mid-Canada Line and disbanded its Ground Observer Corps.

(U)

(S) Proposed Deletion of Prime Radars. On 18 July 1963, RCAF informed NORAD that it was considering deleting seven long-range, RCAF-operated, radars to save money and reduce tasks. NORAD replied that after considering the impact, from a military standpoint, it could not concur until qualitative improvements to the NORAD air defense system were in place and operational. However, NORAD said that if national considerations beyond the control of military authorities necessitated radar cuts, it recommended that no more than five be removed, which it listed. RCAF answered, however, that seven had to be cut and asked NORAD to select two more. The seven finally selected by RCAF and NORAD, that would least degrade the system, were: C-4 Edgar, C-6 St. Sylvestre, C-7 Parent,

C-10 Ramore, C-11 Beaverbank, C-17 Beausejour, and C-19 Puntzi Mountain. RCAF plans called for closing all sites by 31 March 1964.

(U) (S) Meanwhile, the Secretary of Defense wrote to the Canadian Minister of Defense on 29 November, expressing the U.S. view that, based on the advice of the JCS, it would be premature to close down the seven radars. However, the Secretary of Defense proposed a technical level discussion and, as a result, a preliminary meeting between USAF and RCAF representatives was held on 23 December. USAF could not concur with the cuts, but it was decided that an RCAF/USAF working group would convene on 6 January. USAF was then to re-evaluate the Canadian proposal within the total context of North American air defense and submit a recommended U.S. position to the Secretary of Defense. NORAD and ADC were asked to make a technical analysis of the deletions and to participate in the review in January.

(U) (S) Phase-Out of Part of the Mid-Canada Line. On 30 September 1963, the RCAF informed NORAD that it was considering the phase-out of the Mid-Canada Line (MCL). The RCAF Chief of the Air Staff said that this consideration was based on manpower and budget limitations and intelligence estimates. One of the chief purposes of the MCL, he said, was to provide warning of approaches at low level. The latest Canada-U.S. Intelligence Estimate suggested, he pointed out, that any manned bomber attack would follow an initial ICBM attack and would be unlikely to rely on low-level tactics. Therefore, for this reason and because he had found no solution to the manpower and budget limitations except to cut tasks, he felt the MCL should be phased out in the next few months rather than more important air defense elements or functions. He asked for NORAD's views.

(U) (S) NORAD urged the RCAF to continue MCL operations, at least on a reduced basis. In its reply on 1 November, NORAD explained that in addition to being the best warning capability against still-possible low-level attacks, the MCL provided DEW Line backup, confirmed DEW Line warning, gave

approximate raid size and destination, and helped to make the most effective use of manned interceptors. NORAD also explained that closing 28 intermediate DEW Line sites in July 1963 had cut low level coverage and that this coverage would be reduced further by deleting seven prime radar sites in Canada (see above). However, because NORAD realized the overriding importance of Canadian national considerations, it recommended alternatives that would leave the most important stations in operation.

(U) On 30 December, the Canadian Minister of Defense announced that parts of the MCL would be closed in early 1964. He said that this would be made possible by the operation of several new long-range radars in early 1964, which had been installed in the western Canadian prairies by joint Canadian-U.S. efforts.

(U)

(S) On 12 January 1964, five of the eight MCL section control stations were closed. The operational portion of the MCL then consisted of three section control stations (Winisk, Great Whale River, and Knob Lake) and 39 doppler detection stations running from eastern Manitoba to central Newfoundland.

(U) As a result, the MCL could not provide NORAD sectors with air traffic indentification. NORAD assigned this responsibility to the Duluth Sector in the Winisk area, to the Ottawa Sector in the Great Whale River area, and to the Bangor Sector in the Knob Lake area. Another change was to be the rerouting of communications circuits formerly relayed by the closed stations.

(U)

(S) Checkerboard Plan for Radar Operation. In October 1963, NORAD received from RCAF ADC a document entitled, "A Study of Canadian Air Defense Requirements 1963-1968." The purpose of this study was to develop ways by which RCAF ADC could handle its tasks with limited manpower at a reasonable cost. One conclusion was that because of the changing threat, from the bombers to ICBM's, it

was unnecessary during peacetime to keep all air defense facilities on a 24-hour schedule. ADC recommended that, except for four coastal radar sites (C-18 Holberg, C-25 Gander, C-34 Sydney, and C-102 Barrington) to be left on around-the-clock operations, all other sites would be run on an eight-hour staggered-shift schedule (hence, the term "checkerboard"). The latter sites would keep an ability to return to fulltime activity within 90 minutes. Also, RCAF ADC recommended closing only three prime radar sites instead of seven as proposed by the RCAF.

(U)

(S) NORAD replied on 1 November that a thorough analysis of the study would be made before NORAD commented on the proposal.

(U)

(S) NORAD had asked in late October for USAF ADC's comments regarding the Canadian study. ADC answered that, under the circumstances, it agreed with the study's conclusion that air defense requirements should be re-evaluated.

DEACTIVATION OF THE CANADIAN GROUND OBSERVER CORPS

(U)

(S) As noted previously, Canadian studies were being made to find ways to save manpower and money. These studies also brought Canada's Ground Observer Corps, which had 20 RCAF personnel and approximately 1200 civilian volunteers, under close scrutiny.

(U)

(S) In August, RCAF ADC asked NORAD for comments on whether to keep the GObC. RCAF ADC said it was no longer needed as shown by the small number of aircraft sightings reported. The number of sightings would continue to fall, RCAF ADC said, as more aircraft operated at higher altitudes.

(U)

(S) NORAD concurred with RCAF ADC's findings and said that it supported either reduction or disbandment of the GObC. On 31 January 1964, it was disbanded.

ANG TAKE-OVER OF RADARS

(U)

(S) Background. In March 1963, USAF agreed to USAF ADC's proposal that the Air National Guard take over manning and operation of certain radars in the Oklahoma City Sector. This would off-set, to some extent, the loss of radars under the OSD-directed 416L phase-down (see Chapter One). ADC submitted a list of seven radars and ANG said that it could take over four sites in FY 1965 if funds were available. These were:

Z-186 - Pyote AFS, Texas
Z-191 - Rockport AFS, Texas
Z- 90 - Walker AFB, New Mexico
Z-125 - England AFB, Louisiana

(U)

(S) Status. In July, ANG told USAF that if FY 1964 funds were available, it could begin operations in the same year. USAF indicated that funds were not available and told ADC to place the sites under caretaker status. USAF also authorized ADC to assist ANG in preparing a PCP for taking the sites over in FY 1965.

(U)

(S) In November, NORAD learned that OSD had disapproved the PCP. However, it authorized USAF to reactivate any of the sites as long as the approved number of sites and costs were not exceeded. USAF asked ADC to consult with NORAD to determine the need for the four sites. NORAD and ADC, at year's end, were considering this requirement along with their studies on 416L configuration.

AIRBORNE LONG RANGE INPUTS (ALRI)

BACKGROUND

(U)

(S) Initially, the ALRI program had called for five stations on both coasts. The first stations were scheduled for operation in mid-1961. In early 1960, however, USAF had cut the program to one wing (35 aircraft) and reduced the number of ground stations to four. NORAD then chose to install ALRI on the East Coast.

(U)

(S) In addition to being reduced, the program fell behind schedule. By the end of 1962, testing had not been completed. NORAD was asking USAF for seven additional stations, but USAF planned to withhold expansion until the East Coast system was evaluated.

STATUS

(U)

(S) The first ALRI station (4) became operational in March 1963. Station 8, the last of the four ALRI stations, became operational on 28 August 1963.

(U)

(S) Also, shortly thereafter, a long-standing problem over flight clearance on one station was ironed out. ALRI Station 6 was located in the Virginia Capes -- a Navy controlled area subject to limited flight clearance. In September 1963, USAF ADC asked NORAD to help resolve the problem of getting ALRI aircraft cleared. NORAD arranged an agreement with the Navy after testing indicated that Station 6 was in the best location. In December, CINCNORAD and CINCLANT signed a formal agreement on the operation of Station 6. It provided:

(1) Clearance for 24-hour station manning during states of DEFCON 2 or higher;

(2) Clearance for manning during nights, weekends, and periods of light activity on a "no conflict" basis during DEFCON 5 through 3;

(3) Clearance for exercises, operational inspections, and evaluations on a "no conflict" basis when the target force had been cleared.

[redacted]

PASSIVE DETECTION AND TRACKING SYSTEM

PASSIVE DETECTION FOR SAGE/BUIC AREAS

(U) (S) NORAD stated a requirement in its NADOP 1965-1974, June 1963, for a passive detection and tracking system (PD) that would quickly and accurately locate aircraft emitting ECM. This system would supplement active ECCM coverage for controlling weapons during periods of heavy ECM activity. USAF approved a program in August 1961 to give SAGE a passive defense system. This program was reoriented by December 1961, because of changes made in 416L to provide a SAGE backup, to provide a passive defense system for the 34 BUIC sites. In addition, it was believed that the system could also provide a capability for SAGE because of the logic in SAGE Model 9.1 computers.* The implementation of the program was divided into two phases.

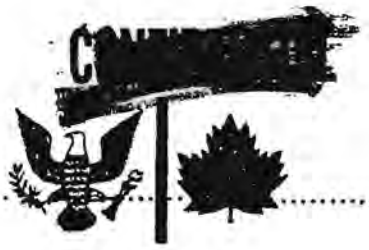
(U) (S) Passive Detection Phase I. This initial phase was to provide a semiautomated system (TCU/ASTRA).** It called for installing threshold control units (direction reporting devices) at 138 long range radars to generate jamming strobe lines, modifications to AN/FST-2's for reporting these strobe lines to direction centers (DC's), and a program for SAGE and BUIC computers for displaying strobe lines at DC's. Operators at radar sites would select azimuth strobes. At DC's, operators would analyze these strobes, locate the targets, and then put the target locations into computers for presentation on situation displays.

(U) (S) A contract for modifying FST-2's was awarded in September 1962, and in January 1963, a contract was let to begin installing threshold

(U)
* (S) Tests later revealed that revised programs were necessary for Model 9.1 computers.

** (U) Threshold Control Unit/Azimuth Strobe Tracking

[redacted]



control units at the 138 radar sites. System testing was to start in the Phoenix Sector on 20 January 1964. All 16 SAGE Sectors were to have installation and testing completed by mid-October 1963.

(U) (S) NORAD learned, in the meantime, that the system did not fully meet the requirements. ESD proposed modifications for threshold control units and height finder radars to give increased capability.

(U) (S) Passive Detection Phase II. This phase was to provide BUIC II with 34 fully automated passive radar systems (AN/TLQ-8's). However, USAF cancelled PD Phase II on 31 July. USAF made this decision, it said, because it could not buy the system in FY 1964. If funds from FY 1965 were used, USAF continued, the late operational date of the system would make it out of step with the concepts in the CAD study.

(U) (S) NORAD and ADC told USAF in early August that they would not agree with the cancellation and reaffirmed the need for PD Phase II. NORAD said, however, that if improvements to PD Phase I provided adequate capability, then it would reconsider its position.

(U) (S) No answer had been received from USAF by early 1964.

PASSIVE DETECTION FOR MANUAL AREAS

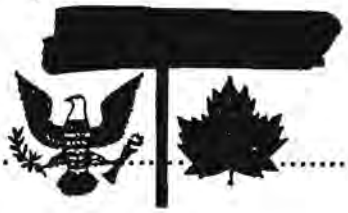
(U) (S) NORAD was giving consideration to providing its manual areas (non-SAGE/BUIC) with a passive detection system. These areas, Alaskan NORAD Region, Goose Sector, and Oklahoma City Sector, were particularly vulnerable to ECM because they lacked FD (Frequency Diversity) radars.

(U) (S) In September 1963, NORAD evaluated an RCAF ADC manual passive detection system (Azimuth Time Recorder) during an ECM exercise. In use in the Ottawa and Bangor sectors, RCAF was considering

deleting the ATR on 1 October. NORAD was impressed with the ATR's capability and recommended its retention at least until Phase II BUIC became operational. NORAD saw the need for such a system and began to develop an operational requirement for passive detection in manual areas.

(4)

(S) NORAD discovered, however, that its requirement was in conflict with USAF's Specific Operational Requirement 79 which listed a passive detection requirement for SAGE and BUIC, but not for manual areas. In January 1964, NORAD asked USAF, USAF ADC, RCAF ADC, and its regions for comments and recommendations on three systems that could satisfy NORAD's requirement. NORAD expected to establish a qualitative requirement after evaluating these comments.



CHAPTER FOUR

BALLISTIC MISSILE AND SPACE WEAPONS DETECTION SYSTEMS

BALLISTIC MISSILE EARLY WARNING SYSTEM

SITE III

(U)

(S) The third site in the three-site BMEWS reached its operational date on 15 September 1963 and its sustained operational date on 15 January 1964. This was Site III at Fylingdales Moor, England. The other two sites had reached fully automatic operation in 1961 -- Site I, Thule, Greenland, on 31 January 1961, and Site II, Clear, Alaska, on 30 September 1961. The system now consisted of:

Site I - 4 detection radars
1 tracking radar

Site II - 3 detection radars

Site III - 3 tracking radars

(U)

(S) From 15 September to 15 January, the Air Force Systems Command tested Site III to correct malfunctions in equipment and to train operating personnel. NORAD told the COSC, JCS, SAC and others that it planned to treat any threat build-up or alarm from Site III with caution during this testing period because of false impact and launch incidents during previous Site III tests. Any alarms or threat build-ups would be checked for validity in the same manner as prescribed for Sites I and II. In no case, would an alarm from Site III, by itself, be treated as a missile warning for the North American Continent.

(U)

(S) On 15 January 1964, ADC assumed its assigned responsibility for Site III from AFSC. And

NORAD, in a message to all concerned, stated that effective that date "... alarms and threat warning information emanating from Site III will be treated as credible data," thus ending the limitations imposed during the testing period. Operational control of Site III was a joint responsibility of CINCNORAD and the AOC-in-Chief, RAF Fighter Command. NORAD was planning to replace its verbal agreement for joint operational control with a formal document.

SYSTEM IMPROVEMENT REQUIREMENTS

(U)

(S) BMEWS did not meet NORAD's requirement for a high-credence, high-confidence system because of the expanding ICBM threat. NORAD wanted technical improvements and equipment added to the BMEWS configuration to provide an ECCM capability, to fill low-angle gaps, and to improve detection capability.

(U)

(S) ECCM Capability. Equipment had been installed at Sites I and II in 1962 to give these sites a limited ability to recognize when they were being jammed. However, BMEWS still lacked the ability to operate in an ECM environment.

(U)

(S) USAF had submitted a $43 million program to DOD in March 1962 for improved ECM recognition and analysis fixes as well as active ECCM fixes. A rise in estimated costs to $52 million resulted in delay and cuts in the program. USAF imposed a budget ceiling of $12.9 million for the BMEWS ECCM program for FY 1963 and asked for NORAD and ADC advice on which ECCM feature to place the funds. NORAD and ADC recommended the ECM recognition and analysis fixes. But even with these, BMEWS would still lack an ECCM capability.

(U)

(S) NORAD told the JCS in January 1963 that it considered the recognition and analysis fixes as an increment of the program and reaffirmed the need for the complete ECCM program.

[redacted]

(U)

(S) In May 1963, USAF submitted a PCP to the DOD which included ECCM improvements. In September, the Secretary of Defense approved the ECCM program. NORAD learned that $43.3 million was to provide ECM recognition and analysis fixes and ECCM action fixes against continuous wave and sweep jamming. These features were expected to be operational by 30 June 1966, but NORAD learned in January 1964 that part of the program had slipped 90 days because of an effort to cut costs. Also, DOD approved procurement of the side lobe cancellor (SLC). The SLC was to be opened to competitive bidding with procurement to start after satisfactory testing. It was estimated that SLC's would be operational by 30 December 1966 at Sites I and II.

(U)

(S) Work on the ECCM program started almost immediately. On 25 September 1963, RCA was awarded a contract for a recognition and analysis item.

(U)

(S) Low-angle Gap Fillers. BMEWS was designed and deployed to detect missiles with re-entry angles of between 15 to 65 degrees. NORAD stated a requirement to fill the low-angle gaps in BMEWS that would detect missiles with re-entry angles of less than 15 degrees. To fill the gap between Sites I (Thule) and II (Clear), NORAD wanted a tracking radar at Site II. For the gap between Sites I and III (Fylingdales), NORAD asked for radar either on the north coast of Iceland or the east coast of Greenland. The gap between Sites I and III, NORAD felt, was the most important.

(U)

(S) OSD approved a tracker at Site II and proposed $10 million for the project. OSD also concurred in the gap filler between Sites I and III as a budget item requirement. The Secretary of Defense approved reallocation of $25 million of FY 1964 funds to initiate programs to fill the low-angle gaps and to provide an early SLBM detection and warning capability (see SLBM below). However, USAF suggested that the whole requirement be restudied before installation of the tracker at Site II began.

(U)

(S) The reviewing agency (DDR&E) recommended the tracker for Site II, but did not recommend the gap filler between Sites I and III. The Secretary of Defense approved these recommendations on 11 September 1963. Several factors played a part in the cancellation of the gap filler: negligible threat evaluation, budget limitations, political difficulties over site location, and development of other systems capable of closing the gap.

(U)

(S) NORAD did not take any reclama action on the gap filler. There were indications that the whole PCP on BMEWS improvements might be jeopardized if a reclama were sent in view of the economy measures underway within the DOD.

(U)

(S) Extension of Detection Range. NORAD continued to state a requirement for extended range to cover launches from Southern Russia and possible high re-entry angle ICBM's. Because of detection deficiencies, NORAD believed that Extended Range Ballistic Missiles (ERBM's) could be launched from the Soviet Union over the Antarctic and impact in North America without being detected before impact.

(U)

(S) To correct these deficiencies, in January 1964, NORAD stated a qualitative requirement (NQR 1-64) for a Launch Detection System that would:

> detect, identify and provide the earliest possible information concerning the launch from the Sino-Soviet area of ballistic missiles (ERBM's, ICBM's, satellite and space launches) directed against the North American Continent, and to provide the earliest satellite and space launch information obtainable.

NORAD wanted this system initially operational by CY 1965 and fully operational by 1967.

SEA LAUNCHED BALLISTIC MISSILE DETECTION

BACKGROUND

(U)

(S) In early 1962, NORAD stated a requirement for a warning system to detect sea-launched ballistic missiles (SLBM's). To satisfy the requirement, NORAD and USAF ADC examined several systems proposed by ESD.

(U)

(S) In March 1963, NORAD recommended either the FPS-24/26 radar system or the FPS-35 with the back-to-back 60-foot tracker system. Modifications would be made to selected SAGE radars -- either the FPS-24/26's or the FPS-35's, but NORAD considered these modifications an interim capability.

STATUS

(U)

(S) The Secretary of Defense, in April 1963, approved the reallocation of $25 million of FY 1964 funds, a part of which was for a program to provide an early SLBM detection and warning capability. The DDR&E prepared a PCP that included an item for a warning capability against SLBM's and the Secretary of Defense approved it on 11 September.

(U)

(S) The approved program called for modifications to SAGE radars. It was estimated that USAF would release the requirements to industry for competitive bidding in April 1964 and a contract would be awarded in August. The SAGE radar modifications were to be operational by mid-1966.

SPACE DETECTION AND TRACKING SYSTEM

SPACETRACK SYSTEM

(U)

(S) In January 1963, USAF set forth the responsibilities of the Department of the Air Force for space detection and tracking. Based on an ADC-prepared concept, USAF defined the USAF Spacetrack System, assigned it to ADC, and restated its mission. USAF distinguished Spacetrack from the

operational system, SPADATS (Space Detection and Tracking System), which had been assigned to NORAD's operational control and was comprised of both the Spacetrack System and the U.S. Navy SPASUR (Space Surveillance) System.

(U)

(S) NORAD was not satisfied with USAF's concept of operation for Spacetrack. NORAD wanted all elements of SPADATS integrated into the NORAD Combat Operations Center.

(U)

(S) The USAF position, as stated in October by the USAF Vice Chief of Staff, was that the total Spacetrack System was to be manned and operated as a departmental responsibility, but that it would remain responsive to the SPADATS mission. The Spacetrack System, USAF felt, was also essential to the Air Force space mission in the support of research, development, test, and engineering of new DOD space programs and for projects for which the Air Force would be responsible.

(U)

(S) CINCNORAD answered on 1 November that a memorandum from the DOD on command and control systems would have an impact on the subject. Explained CINCNORAD, when this was received, "The question of the SPADATS composition, design and operation must be re-examined in the light of present and future needs."*

BAKER-NUNN CAMERAS

(U)

(S) Background. NORAD also wanted to improve SPADATS through the use of Baker-Nunn cameras. Of the 17 cameras in existence, USAF had four, Canada had one (obtained from USAF in mid-1962), and 12 were operated by the Smithsonian Astrophysical Observatory (SAO) in support of NASA.

---

* (U) See Chapter Two

(4)

(S) In September 1962, USAF ADC submitted a plan, with NORAD's concurrence, for the integration of Baker-Nunn cameras into SPADATS. The plan called for a basic seven-camera network, in addition to the RCAF-operated camera at Cold Lake, Alberta. The plan also called for taking over three SAO-operated cameras and for getting additional cameras, if needed, as SAO phased them out. NORAD added a request for two cameras to calibrate the Navy's SPASUR fence.

(4)

(S) The Secretary of the Air Force and the JCS concurred in ADC's plan and it was sent to the Secretary of Defense in November 1962. In January 1963, the latter said that an analysis of the capability and accuracy required by SPADATS and offered by the camera had been left out. An analysis, he said, would be a prerequisite to approval. Also, he indicated that NASA would not be phasing out its SAO-operated cameras as planned.

(4)

(S) NORAD then reaffirmed its need for the accuracy of the camera, again supported the ADC plan, and submitted an analysis of the capability and accuracy of the Baker-Nunn. NORAD said it wanted a basic military network of cameras under its operational control rather than having to rely on data supplied from sensors operated by scientific agencies.

(U) In the meantime, at the end of 1962, RCAF ADC put the camera at Cold Lake under the operational control of CINCNORAD.

(4)

(S) Status. The JCS replied to CINCNORAD on 17 July that the three SAO-operated cameras would not be available as proposed in ADC's plan. The JCS asked for a revised four-camera network plan that would include only those cameras currently owned by USAF. The camera at Cold Lake was to be included in the plan (for a total of five cameras) and every effort made to get NASA to provide Baker-Nunn data to SPADATS. The JCS endorsed NORAD's request for a Baker-Nunn camera network to the Secretary of Defense to include only the cameras currently assigned to USAF.

[redacted]

(U)

(S) NORAD told the JCS in September that it was completely revising its plans for the operation of the Baker-Nunn camera network. The revised plan, NORAD said, would provide for the integration of the RCAF camera and the USAF cameras into a mutually supporting sub-system of SPADATS. However, the contribution that SAO-operated cameras could make had to be determined before recommendations could be made for locating the USAF-owned cameras. The plan was to be submitted before mid-1964. NORAD also asked the JCS to recover the camera on loan to Chile.

(U)

(S) Because the U.S. Navy developed other methods for calibrating SPASUR, Baker-Nunn cameras were no longer needed for that purpose. NORAD learned in October that the Navy had asked the JCS to take no further action to provide cameras for SPASUR for that purpose, a request which the JCS approved.

(U)

(S) Cold Lake. As noted previously, the Canadian Baker-Nunn camera at Cold Lake had been placed under NORAD's operational control at the end of 1962. RCAF ADC, which operated the camera, hoped to improve Cold Lake's contribution to SPADATS. Computer facilities that were expected to reduce the SPADATS Center's processing load at the NORAD COC were being checked out in December. RCAF ADC also asked NORAD for help in determining future manning and capability requirements for the satellite tracking unit. NORAD answered that Cold Lake's workload could be expected to go up but was subject to unknown variables, such as the level of foreign space activity, angles of launch inclination, and altitudes. NORAD expected, however, that Cold Lake would have the capacity to operate during viewable periods of darkness and to track all satellites within view.

(U)

(S) Two problems, however, clouded Cold Lake's future status. Secure communications circuits, that were to have been available on 15 November, had not been installed by year's end because of funding difficulties. Also, consideration was being given to moving the Baker-Nunn camera.

[redacted]

PARL SITE

(U)

(S) Background. NORAD had tried to change the arrangements whereby Canada's Prince Albert Radar Laboratory (PARL) supplied information to SPADATS on a part-time basis. NORAD wanted PARL to be fully responsive to SPADATS; however, the Defence Research Board (DRB), which controlled the site, was reluctant to set up a capability for handling classified data.

(U)

(S) Consequently, NORAD wanted executive control of PARL transferred from the DRB to the RCAF. To do this, NORAD suggested to USAF in December 1962 that U.S. equipment at PARL be transferred to the RCAF when the loan of equipment was renegotiated. NORAD further recommended to USAF in May 1963 that if the loan had to be renewed with DRB, then it should provide for 24-hour availability of the radar for space observations. NORAD also asked that an RCAF unit be set up at PARL for SPADATS operations.

(U)

(S) In June 1963, NORAD told the JCS that it wanted PARL as a full-time SPADATS sensor and asked for JCS approval in principle.

(U)

(S) Status. The JCS replied in August, stating that they had learned during negotiations with the DRB that USAF's investment in equipment had been greatly reduced by a fire at the site. What USAF had left, the JCS continued, would not permit it to seek a change in PARL's executive control because of political factors. NORAD also learned later that USAF was going to find out if its interests in PARL could be ended and the whole facility turned over to Canada.

(U)

(S) By letter in September, NORAD tried to learn from the Chief of the Air Staff, RCAF, which Canadian agency (DRB or RCAF) would make arrangements for the continued use of PARL in SPADATS. No reply had been received by January 1964; however, PARL was still providing information to SPADATS.

TURKEY SITE

(U) (S) As had been planned in 1962, NORAD assumed operational control of the radar site at Dyarbakir, Turkey, on 1 August 1963. USAF ADC had taken over manning and operation of the site on 1 July when it became a part of the Spacetrack System to gather both SPADATS and intelligence data.

(U) (S) Communication difficulties were met, however, when the site became operational. An investigation showed that the Adana-Dyarbakir tropo-link caused excessive distortion which prevented the use of all circuits. An interim routing system was set up that provided secure teletype and an unclassified voice circuit from Ent AFB to Dyarbakir. The final routing for improved communications was to be completed in February 1964 for secure teletype and March 1964 for a voice circuit.

TRINIDAD SITE

(U) (S) The Trinidad FPS-44 tracking radar supplied information to SPADATS on a part-time basis, but in December 1962 NORAD asked the JCS for full-time operational control of the facility because its near-equatorial location enabled it to observe all earth satellites. In February 1963, the JCS told NORAD that it would have operational control when the facility was transferred from AFSC's Air Force Missile Test Center to USAF ADC. In March, USAF authorized ADC to prepare a transfer agreement with AFSC.

(U) (S) Transfer was held up, however, when OSD became concerned over ADC's capability to meet the requirements of other users of the Trinidad facility. No action had been taken by January 1964. NORAD learned later that USAF had asked ADC to provide justification for getting the site. ADC gave its justification and expected action by 1 May 1964.

DEEP SPACE SURVEILLANCE

(U)

(S) In July 1963, NORAD was surprised to learn from the JCS that it did not have either the requirement or the responsibility for obtaining data on deep space probes and deep space vehicles. Then, in October 1963, NORAD learned through a staff visit to the Pentagon that a 20,000-mile "ceiling" had been set as NORAD's limit. This "ceiling" resulted from a requirements letter of April 1961 to the JCS on the basic SPADATS sensor coverage, but the letter was not intended to indicate the limit of NORAD's interest. However, NORAD did not send a reclama. It was felt that such action might cause more positive restraints and also adversely affect other pending JCS actions that were then favorable to NORAD.

(U)

(S) NORAD also learned that the JCS did not intend to limit NORAD's activities in deep space. They did intend, however, to prevent requests for procurement or funding of a system of deep space sensors. Thus, the main constraint on NORAD was financial. NORAD's intention was not to ask for a special sensor network, but to get data from agencies with deep space surveillance facilities and to modify some large radar-tracking antennas. The staff visit showed that such modifications might be accomplished by projects not requiring JCS funding approval.

Defined for NSA for Declass

PROPOSED CHANGE IN TERMS OF REFERENCE

(U) (S) In July 1963, NORAD asked the JCS and COSC to amend the NORAD Terms of Reference to add in specific terms the responsibility for space defense.* NORAD believed that this change was necessary to insure development of appropriate plans for aerospace defense of the North American continent.

(U) (S) Canada's Air Chief Marshal told the Chairman, JCS, that the COSC agreed that NORAD's request was appropriate from their point of view, but felt that such an amendment might exceed the scope of the NORAD agreement. To amend the Terms of Reference, the COSC believed that the subject would have to enter diplomatic channels.

(U) (S) The JCS replied to the COSC in December that the basic NORAD agreement might need amending to change the Terms. The JCS felt, however, that it would be premature for either government to introduce the matter into diplomatic channels.

(U)
* (S) NORAD had once before, in May 1961, asked for a change in its Terms of Reference. At that time, the JCS had replied that they believed the existing Terms were broad enough.

CHAPTER FIVE

NUCLEAR DETONATION AND BW/CW REPORTING SYSTEMS

NUCLEAR DETONATION DETECTION AND REPORTING SYSTEM (NUDETS 477L)

BACKGROUND

UNCLAS

(S) In September 1959, the JCS transferred responsibility from CONAD to NORAD for establishment of a nuclear detonation and radioactive fallout warning and reporting system.* In response, on 29 October 1959, NORAD submitted criteria for an automatic NUDET reporting system to the JCS. The following year, DOD directed USAF to fund and develop a NUDET system. This system, as specified later in USAF SOR 189, 22 August 1961, was to provide information on nuclear detonations in the U.S. and southern Canada. Its function was to furnish data for alarm, attack assessment, damage assessment, and fallout warning. The NUDETS (477L) Program evolved into a Phase I system, which was primarily designed to satisfy requirements for the National Military Command System in the Washington, D.C., area; and into a Phase II, nation-wide, system. The General Electric Company was awarded a $6.5 million contract to complete the Phase I system and to study the requirements for Phase II.

UNCLASS

(S) After development and deployment of the Phase I system began, a number of problems appeared, among them blanking of seismic sensors by radio frequency interference, triggering of electromagnetic sensors by radio interference and radar, and triggering of optical sensors by radars and the sun.

UNCLAS

* (S) CONAD had been assigned the responsibility in December 1956.

As a consequence, the initial operational capability date for the prototype system kept being deferred, slipping from 1 April 1963 to 30 June 1964. And there was no assurance this date could be met.

STATUS

UNCLAS

(S) At the end of 1963, solutions to the interference problems were being actively pursued by the 477L System Project Office (SPO), the MITRE Corporation, and the General Electric Company. The 477L SPO advised that considerable progress had been made and it was hopeful that efforts to solve the problems would be successful. However, the solutions were considered to be major R&D problems and the 477L SPO noted that, as current problems were solved and as redesigned equipments were installed, new problems were expected to crop up.

UNCLAS

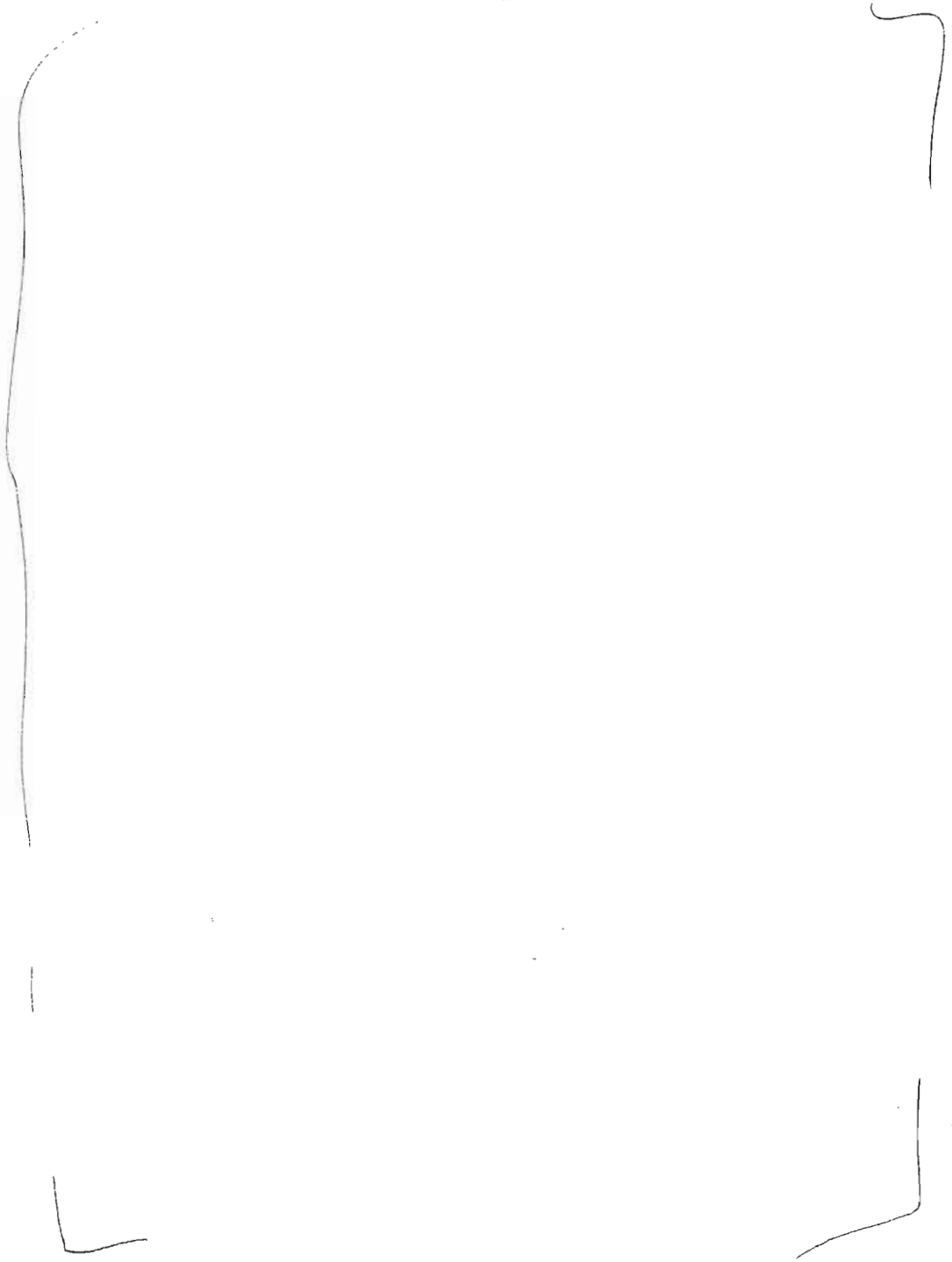
(S) In the meantime, the Secretary of Defense had ordered a study of the over-all NUDETS requirement aimed toward relaxing height-of-burst and yield accuracies for all targets and reducing ground zero criteria on enough targets to permit use of longer range sensing techniques. The study was still in progress at the end of 1963.

BOMB ALARM SYSTEM

UNCLAS

(S) A bomb alarm system of sensors at 97 areas in the CONUS and one each at Thule and Clear became operational on 1 September 1962. SAC advised in September 1963 that the Bomb Alarm at its Laughlin AFB in Texas was no longer needed. ADC asked NORAD if this set should be moved or turned back to the contractor. NORAD replied in November that it had studied all the possible areas and had settled on Elmendorf AFB and Eielson AFB in Alaska. But before finally choosing, NORAD asked that ADC provide cost estimates for these two bases.

[redacted]



(U) The Army Materiel Command Technical Committee approved the title for the project as "Chemical and Biological Rapid Warning System, Short Title NBC." Programming documentation and all references to this project had been or were to be changed accordingly.

CHAPTER SIX
WEAPONS

STATUS OF FORCES

INTERCEPTORS

(U)

(S) During the last half of the year, the NORAD regular interceptor force remained constant at 45 squadrons. Assigned aircraft were down to 900 as compared to the mid-year figure of 929.

BOMARC

(U)

(S) The BOMARC force remained at ten squadrons during the period. A significant change in the force capability occurred when, following the signing of the Canada/U.S. nuclear agreement, the two Canadian BOMARC squadrons acquired nuclear warheads. Both squadrons, 446 SAM Squadron at North Bay and 447 Squadron at LaMacaza, were declared operational on 16 January 1964.

HAWK

(U)

(S) The number of Hawk fire units assigned to NORAD's missile force remained at eight. The acquisition of the Hawk units had come about as a result of the Cuban Crisis of October 1962.

NIKE HERCULES/AJAX

(U)

(S) The phase-out of the Army National Guard's Nike Ajax missile force, and transfer of 48 of the Regular Army's Hercules sites to the ARNG, continued in the last half of 1963. By the end of December, the Ajax sites were reduced to 19 from a mid-year total of 34. Thus, during CY 1963, 29 Ajax

sites had been deleted. Four more RA Hercules sites were transferred to the ARNG during the last six months of 1963, bringing the current total to 20. The transfer of these four Hercules units reduced the Regular Army force to 123 fire units from the 1 July figure of 127.

CANADIAN WEAPON FORCE

CANADA/U.S. NUCLEAR AGREEMENT

(U)

(S) The Governments of the United States and Canada reached agreement on 16 August 1963 for provision of nuclear warheads to Canadian forces. The agreement was general in nature and called for detailed procedures to be worked out between the military agencies of both countries. Joint Supplementary Arrangements for the CIM-10B (BOMARC) and the CF-101/AIR-2A were completed on 18 October. Their purpose was to establish and describe the procedures governing the provision of nuclear warheads.

(U)

(S) The Supplementary Arrangement for the CIM-10B stated that USAF would provide:

(1) Nuclear warheads for the CIM-10B missiles in Canada.

(2) Custodial detachments (three officers and 23 airmen at each site) as required to insure conformance with U.S. law.

(3) Communications equipment required for U.S. purposes exclusively.

The RCAF was to provide:

(1) Suitable and secure maintenance and storage facilities.

(2) Support for U.S. personnel and their dependents comparable to that established for their own personnel.

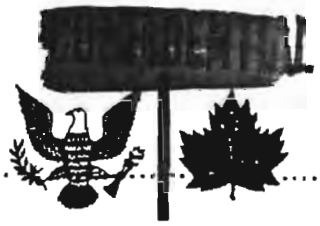
(3) Security measures adequate to cope with sabotage, hostile attack, espionage, and subversion.

(4) A reliable system of signal communications as required to fulfill agreements between the two governments.

(U) (S) Operational use of the weapon system was subject to authorization by both governments and in accordance with procedures established by CINCNORAD and approved by Canadian and United States authorities. Actual operating procedures had yet to be determined and, in the interim, authority for the use of the weapon system would be provided through existing governmental channels and NORAD.

(U) (S) Movement of the nuclear warheads from the U.S. to Canadian BOMARC sites was to be accomplished by USAF airlift and in accordance with approved procedures and laws of both countries. Storage and loading functions would be performed by joint USAF/RCAF armament teams, but under control and direction of USAF personnel. All maintenance on warheads would be done solely by USAF personnel in USAF Maintenance and Storage facilities. Loading of warheads was to be done by a four-man crew: one USAF supervisor, one USAF loading crew member, and two qualified RCAF armament specialists. A human reliability program, for evaluating personnel who would have access to nuclear weapons or controls, was to be established. Measures would be taken to eliminate persons not compatible with assignment to these sensitive areas.

(U) (S) As a follow-on to the supplementary arrangement, NORAD, on 28 November, sent a message to the RCAF detailing its proposed interim operating procedures for the Canadian BOMARC squadrons. These provided that custody of the warheads would remain with the U.S. until released by proper U.S. authority. Also, CINCNORAD would, time permitting, consult with the JCS and COSC prior to employing these nuclear weapons. Release from U.S. custody would be by CINCONAD only and would be communicated from



CONAD to the U.S. Warhead Release Officer on duty at the Ottawa Sector who would have exclusive access to the single U.S. BOMARC Interlock Key. The Interlock Switch would not be activated until release authorization had been received from CINCONAD and authenticated.

(U) (S) Canadian release authorization would be by CINCNORAD only. This would be communicated from NORAD to NNR and then passed to the Canadian Release Officer on duty at the Ottawa Sector who would have access to the single Canadian BOMARC Interlock Key. The Canadian BOMARC Interlock Switch would not be activated until CINCNORAD's authorization had been received and authenticated.

(U) (S) After the U.S. and Canadian releases had been received, RCAF CIM-10B's could then be employed in support of the NORAD mission in accordance with the approved rules of interception and engagement outlined in NORAD Regulation 55-6. Authentication procedures would be used at each level to confirm orders associated with the employment of nuclear weapons.

(U) (S) The first shipment of nuclear warheads for the Canadian BOMARC's arrived at North Bay on 31 December 1963. However, as the RCAF had not yet approved the interim operating procedures, NORAD said that the warheads would have to be stored under the custody and control of the U.S. Custodian at each site (North Bay, Ontario, and LaMacaza, Quebec). RCAF concurrence in the interim procedures was received by NORAD on 13 January 1964 and by 16 January, both 446 SAM Squadron at North Bay and 447 SAM Squadron at LaMacaza were declared operational.

(U) (S) As noted above, a Supplementary Arrangement for the CF-101/AIR-2A was also completed on 18 October 1963. The provisions outlined were much the same as for BOMARC nuclear weapons. USAF would provide the nuclear warheads and custodial detachments (six officers and 34 airmen at each CF-101 base with AIR-2A/W-25 weapons) to insure

[redacted]

compliance with U.S. laws. The RCAF was responsible for providing: secure and suitable storage facilities, support for U.S. personnel involved, base security, and a reliable signal communication system. Procedures for the release of warheads from United States custody were to be established by CINCNORAD in accordance with directions from higher authority. The U.S. custodial detachments would provide an Alert Duty Officer at all times. Following declaration of an Air Defense Emergency by CINCNORAD, the Alert Duty Officer would release weapons from U.S. custody only when authenticated release orders had been received through the U.S. chain of command.

(U) (S) Prior to the use of CF-101 nuclear weapons, authorization was required from both the United States and Canadian governments. And then only in accordance with procedures established by CINCNORAD and approved by U.S. and Canadian authorities. These procedures had yet to be established and, in the interim, authority for nuclear weapons use was to be provided through existing governmental channels and NORAD.

(U) (S) USAF would control distribution of the warheads and components to Air Force units supporting RCAF CF-101 forces. The weapons would be transported by USAF airlift to the U.S. custodial detachments. USAF personnel would control all movements of weapons within Canada. Loading and unloading of the interceptors was to be done by the RCAF under direct USAF custodial control. A Human Reliability Program was to be established in the same manner as in the BOMARC arrangement.

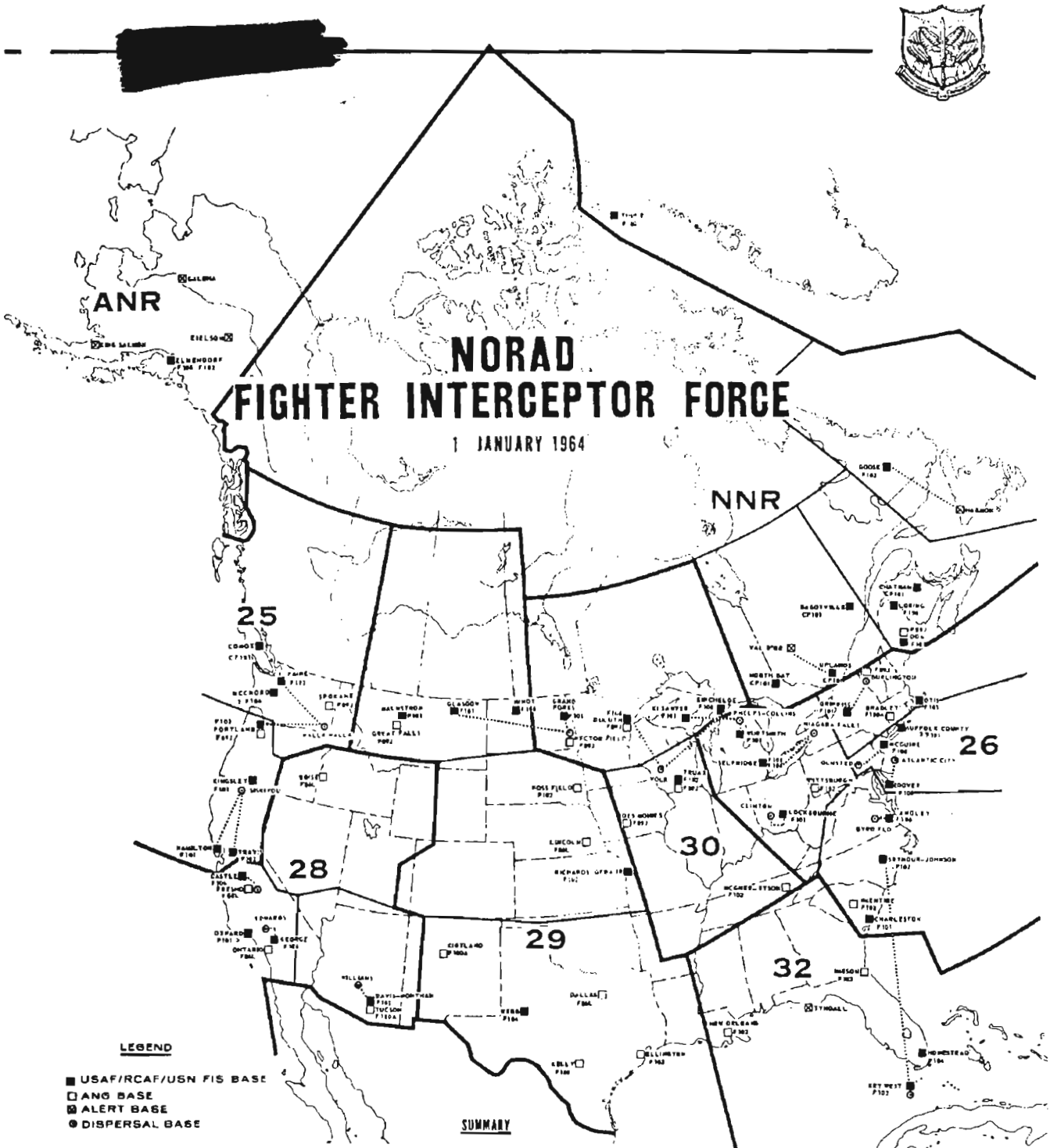
(U) (S) Unlike the BOMARC sites, the CF-101 bases had no nuclear storage and maintenance facilities. It was estimated that construction would not be completed until October 1964.

CONSOLIDATION OF CANADIAN INTERCEPTOR FORCE

(U) On 10 January 1964, the Canadian Government announced that consolidation of the five

[redacted]

[redacted]



NORAD
FIGHTER INTERCEPTOR FORCE

1 JANUARY 1964

LEGEND

- ■ USAF/RCAF/USN FIS BASE
- □ ANG BASE
- ⊠ ALERT BASE
- ◉ DISPERSAL BASE

SUMMARY

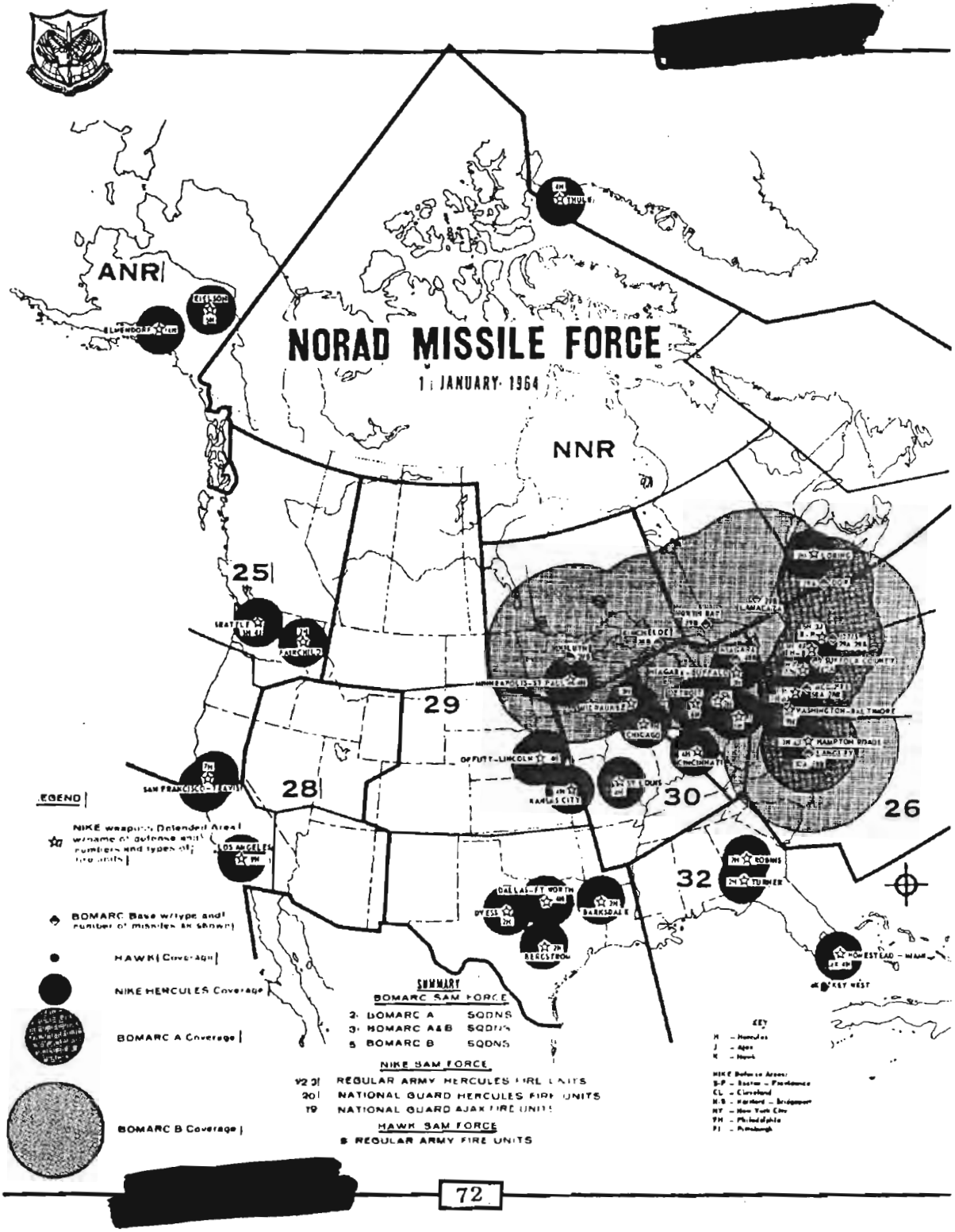
REGULAR FIGHTER INTERCEPTOR FORCE

6	CF-101	SQDNS
16	F-101	SQDNS
9	F-102	SQDNS
2	F-104	SQDNS
13	F-106	SQDNS
TOTAL 46		SQDNS

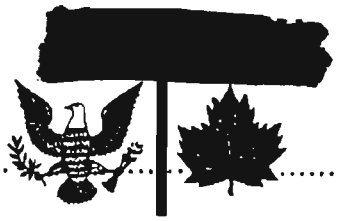
ANG FIGHTER INTERCEPTOR FORCE

5	F-86L	SQDNS
9	F-89J	SQDNS
3	F-100A	SQDNS
8	F-102	SQDNS
TOTAL 25		SQDNS

[redacted]


NORAD MISSILE FORCE
1 JANUARY 1964
ANR
NNR
25
29
28
30
26
32
LEGEND
NIKE weapon Defended Area (w/name of defense and numbers and types of fire units)
BOMARC Base w/type and number of missiles (if shown)
HAWK Coverage
NIKE HERCULES Coverage
BOMARC A Coverage
BOMARC B Coverage
SUMMARY
BOMARC SAM FORCE
2 BOMARC A SQDNS
3 BOMARC A&B SQDNS
5 BOMARC B SQDNS
NIKE SAM FORCE
REGULAR ARMY HERCULES FIRE UNITS
NATIONAL GUARD HERCULES FIRE UNITS
NATIONAL GUARD AJAX FIRE UNITS
HAWK SAM FORCE
8 REGULAR ARMY FIRE UNITS
KEY

[redacted]



Canadian F-101B Voodoo squadrons into three squadrons was to be effected as an operational efficiency and economy measure.

(U)(S) The plan required the disbandment of 410 AW Squadron, Uplands (Ottawa), Ontario, on 31 March and 414 AW Squadron at North Bay, Ontario, on 30 June 1964. The unit establishments of 425 Squadron, Bagotville, Quebec, and 416 Squadron, Chatham, New Brunswick, would be increased thereby from 12 to 18 aircraft on 31 March 1964. 409 AW Squadron at Comox, British Columbia, would retain its current status of 12 aircraft. Nuclear storage facilities were to be provided for F-101B warheads at Chatham, Bagotville, and Val d'Or (a dispersal base), by 31 October 1964. Although no specific date was given, Comox was also to get nuclear storage facilities.

NORAD MISSILE FORCE

BOMARC A PHASE-OUT

(U)(S) At the end of August 1963, USAF advised ADC that it had decided to delete all BOMARC A missiles during FY 1965. This would affect five of the eight U.S. BOMARC squadrons. Two of these, which had A missiles only, the 6th ADMS at Suffolk County AFB and the 30th ADMS at Dow AFB, would be disbanded entirely. The other three affected squadrons, at Langley AFB, McGuire AFB, and Otis AFB, equipped with a mixture of A and B weapons, would continue operations with their B missiles only. It would not affect the remaining three squadrons, at Duluth, Kincheloe, and Niagara, armed entirely with B missiles. Thus, following the BOMARC A deletion, NORAD would have six U.S. squadrons of BOMARC B's, five equipped with 28 launchers, and one (the 35th ADMS at Niagara) with 48 launchers. USAF had asked ADC to submit a plan for coordinating the phase-out and, in turn, ADC requested NORAD's views.

(4) (S) NORAD learned that the FY 1965 BOMARC A operating funds were cut from $8.3 million to $3.5 million, which would allow for approximately six months operations. Therefore, on this basis, NORAD proposed that the BOMARC A's be phased out at Langley AFB, McGuire AFB and Otis AFB, during the first quarter of FY 1965, and those at Dow AFB and Suffolk County AFB to follow in the second quarter. ADC's plan, nicknamed Rack Up, followed NORAD's recommendations closely but scheduled a gradual phase-out rather than an abrupt shut down on a given date. It planned the phase-out of the A missiles as they came due for inspection, which was at the rate of about 10 per month. ADC felt that this schedule would keep a measure of operational capability over a longer period of time, prevent the generation of an excessive maintenance and supply manhour backlog, and still make the phase-out within the required time period.

NORAD REQUIREMENT TO RESITE NIKE HERCULES UNITS

(5) (S) NORAD wanted to resite a portion of its Nike Hercules force to insure a more effective and survivable defense. The need was stated to the JCS in JSOP-68 on 14 January 1963, in a follow-up letter of 22 February, and in NADOP 1965-74 in June.*

(6) (S) Again on 19 July, in a letter to JCS, NORAD restated its position and recommended that the Hercules resiting plan, as outlined in NADOP 1965-74, be approved for early implementation. The plan called for the resiting of some 52 Hercules fire units. Because the Hercules had a greater range than the Ajax, their location in Ajax sites did not take advantage of this capability. Also, the resiting would have the additional

---

* (S) For details on NORAD's Hercules resiting plan, see NORAD/CONAD Historical Summary, Jan-Jun 1963, pp. 65-66.

[redacted]

advantage of increasing survivability since units would be located farther from the target areas they were defending. NORAD also felt that the increasing Soviet submarine-launched cruise missile capability, plus the bomber threat from Cuba, warranted deploying eight more Hercules units to the southeastern area. Four of the eight units were to come from the Thule area which NORAD no longer regarded as a likely bomber target as it was within Soviet IRBM range. SAC did not object to their removal. It was advocating improvements to the existing warning systems. SAC said that the key to accomplishment of its mission was the receipt of credible and reliable warning, rather than defense of its bases. The other four fire units would be made excess by the over-all resiting and deletion plan. Plans called for their siting along a line from Charleston to Jacksonville. This would provide a perimeter defense along the most likely approach routes to industrial areas of the interior.

(U) (S) The JCS replied on 7 August that a decision on NORAD's proposals was being deferred until the Army had completed its CONUS air defense studies. The reason was that the Army study included the question of Nike Hercules redeployment. NORAD got copies of the Army studies on 29 January 1964, but the JCS had not made any decision.

INTERCEPTOR SURVIVABILITY

CHECK OF INTERCEPTOR STATUS

(U) (S) It was estimated that the BMEWS warning time would be 15 minutes in the event of a surprise ICBM attack. To provide for the survival of enough of its regular interceptors to meet any follow-on manned bomber attack, NORAD required certain alert minimums. The Alfa, or normal, alert status was as follows:

(1) At bases where, in an emergency, flushing fighters to dispersal points was

[redacted]

required: one-third of the aircraft was to maintain an alert posture of not more than 15 minutes.

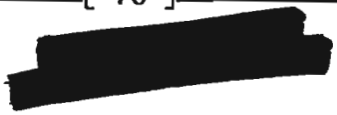
(2) At bases where flushing was not required: one-third of the interceptors was to maintain an alert status of not more than one hour.

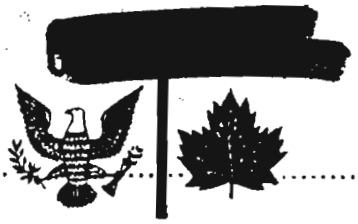
(4) (S) NORAD ran a spot check of the regular interceptor force at 0001Z 28 August 1963. Results showed that only 21.5 percent of the force were on a survivable status as opposed to the one-third minimum specified in NORAD Regulation 55-3. Included in the reasons given by the regions for the shortcoming were: interceptor improvement programs, insufficient aircrew authorization, and aircrew training requirements. Because of the USAF ADC ratio of 1.2 crews per aircraft, aircrews were sometimes working the 75 hours maximum in a week and their squadrons had to be granted an alert waiver. As a remedy for this part of the over-all problem, ADC asked USAF to approve establishment of a 1.5 aircrew-to-aircraft ratio.

(4) (S) On the basis of unofficial approval, ADC planned to go ahead with the program at once. ADC estimated that it could man 24 squadrons to the desired 1.5 aircrew figure by July 1964. Priority was to be given to units at McChord AFB and Seymour-Johnson AFB because of commitments in Alaska and at Key West. NORAD did not plan any other changes at this time for it believed that its objectives for interceptor survival could be met within the framework of its current directives.

INTERCEPTOR DISPERSAL

(4) (S) ADC Dispersal Plan. In June 1961, the JCS directed NORAD to develop plans for increasing the survivability of the air defense system against a ballistic missile and follow-on bomber attack. The plans were to include provision for interceptor dispersal. In line with NORAD's requirements, ADC





drew up a permanent dispersal plan that was approved by DOD in late 1962.

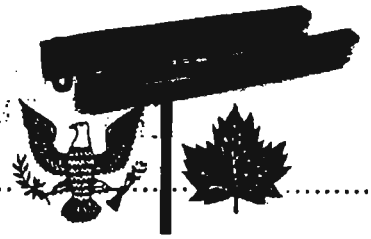
(U) (S) In November 1963, Congress authorized $45 million for the FY 1964 implementation of ADC's permanent interceptor dispersal plan. However, this was $6 million less than required by ADC's plan. And while Congress had authorized $45 million, only $39 million was appropriated. USAF indicated that possibly an additional $6 million could be appropriated for FY 1965, but even so, a plan was needed for the saving of some $5 million.

(U) (S) ADC told USAF on 19 December, that the cutback left them with two alternatives: either a cut in the scope of construction at all dispersal bases or the total deletion of the Phase III* construction at some of the low priority bases. But, it added, the present construction program was already on an austerity basis and further cuts would jeopardize operations. Therefore, ADC said that deletion of low priority bases was the course it intended to take.

(U) (S) Still to be considered was the use of Canadian bases. Their strategic location and relatively low development cost made them highly desirable for consideration in the over-all dispersal plan. Unfortunately, arrangements with Canada for their use had not been completed. ADC, therefore, told USAF that commitment of the limited funds for interceptor dispersal would not be made until the question of the Canadian bases had been settled.

(U) (S) Dispersal Support. Coupled with interceptor dispersal was the problem of airlift support.

(U) * (S) Phase III was the designation for bases which would have the best dispersal facilities. These bases would be able to accommodate four or six fighters on permanent dispersal (depending on whether squadrons were unit equipped with 18 or 24 aircraft), and would have nuclear storage facilities for eight sorties per aircraft.



The ADC War Plan Basic outlined the aircraft force that would be assigned for support of interceptor dispersal. This would consist of support aircraft assigned to ADC divisions, the 4650th Combat Support Squadron (9 C-54's and 27 C-123's), and four CONAC Reserve Wings (151 C-119's) made available to ADC by TAC under existing USAF War Plans. By law, the use of reserve forces depended on mobilization following the declaration of a national emergency by either Congress or the President, or by declaration of war by the Congress. Since either was unlikely to happen before DEFCON 1, NORAD doubted that reserve forces would be available in time to support dispersal requirements. Even assuming that the reserve aircraft were available, ADC had estimated that only 25 percent could react in the first two hours following mobilization. These, and other, problems caused concern for the effectiveness of interceptor dispersal in the event of an emergency.

(U) (S) In a letter to ADC on 14 October 1963, NORAD recommended measures for increasing the airlift support capability. One way, NORAD said, would be to give C-130 aircraft to the 4650th Combat Support Squadron. Another would be to make better use of regular airlift forces.* NORAD also felt that if reserve forces had to be used, consideration should be given to the distance between reserve airlift units and the fighter bases for which they were responsible. NORAD wanted a set-up whereby an airlift support unit would be located within one hour's flying time of its assigned interceptor unit.

---

* (U) (S) Only 12 of the 4650th's 36 aircraft were programmed for this purpose. Also, several MATS and TAC units when on dispersal, were close enough to interceptor dispersal bases to be used for airlift support. Some of these units had no assigned tasks for 72 hours after an initial nuclear attack.

(U) (S) Since airlift support for the interceptor dispersal plan was essential, NORAD asked for ADC's cooperation in rectifying the present deficiencies. ADC was to study the matter and reply by year's end.

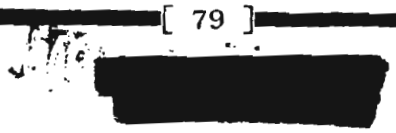
NORAD WEAPON REQUIREMENTS

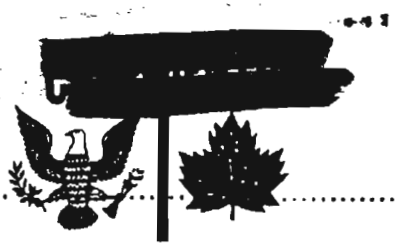
IMPROVED MANNED INTERCEPTOR

(U) (S) Throughout 1963, NORAD continued to seek a long-standing requirement -- the Improved Manned Interceptor (IMI). NORAD wanted a supersonic, long-range manned interceptor that could operate efficiently at both high and low altitudes. The air-to-surface missile capability attributed to Soviet bombers made a long-range capability essential. Current NORAD interceptors did not have the necessary range. Also, the proposed fire control system for the IMI, the ASG-18, would provide improved capabilities over systems presently in use. These improvements included: extended radar pick-up range, internally computed navigation and attack information, and automatic missile firing. Thus, the IMI would be able to attack enemy forces farther from target areas, reduce reaction time, and operate effectively beyond contiguous radar coverage or in a degraded ground control environment.

(U) (S) NORAD's Objectives Plan, NADOP 65-74, June 1963, called for a gradual replacement of the current interceptor force over the next ten years with a smaller but more survivable and effective IMI force. NORAD wanted 15 IMI squadrons (12 U.S. and three Canadian) of 18 aircraft each. NORAD hoped for introduction of the IMI with one squadron in 1968 and build up to 15 by 1970.

(U) (S) The Air Force's Continental Air Defense Study (CADS), 10 May 1963, recommended 12 IMI squadrons (216 aircraft). The CADS report said that in its wargames, "The IMI destroyed bombers farther from CONUS and population centers in Canada than any other weapon system studied. It was the only weapon which was able to destroy supersonic





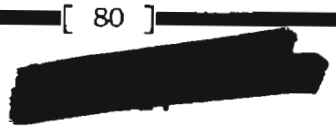
bombers with acceptable success." NORAD told the JCS in August that it supported the CADS recommendation and, in addition, recommended that the RCAF buy three squadrons (54 aircraft) during the same time period. "The IMI should be afforded first priority in the expenditure of air defense funds allocated to meet the manned bomber threat," NORAD declared.

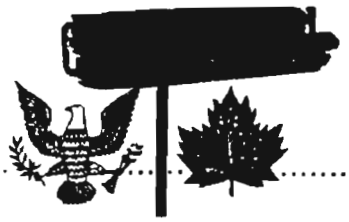
(U) (S) General Curtis LeMay, the Air Force Chief of Staff, had also supported the CADS recommendations for the IMI to the Secretary of the Air Force. But he said that the 12 IMI squadron force was a minimum requirement. Any cuts in the current interceptor force were acceptable only after the IMI had been acquired and proven reliable.

(U) (S) At the end of the year, the JCS and NORAD were both awaiting action by the Secretary of Defense on a JCS proposal submitted on 6 November. It recommended the acquisition of 162 IMI's during the period FY 1965 to FY 1969.

IMPROVED INTERCEPTOR FOR ALASKA

(U) (S) Overflights of the Alaskan NORAD Region by Soviet aircraft in March 1963 clearly showed the inadequacy of the F-102. Since an Improved Manned Interceptor was not available, CINCAL sought the F-4C (Air Force version of the high-performance Phantom currently employed by the Navy). However, this aircraft would not be available in time to solve the immediate problem. So a plan for temporary assistance was developed, calling for deployment of eight (later, ten) F-106's to Elmendorf AFB. Two conventionally-armed F-106's were to be on five-minute alert at both Galena and King Salmon. The operation, given the nickname White Shoes, went into effect on 17 July 1963. While White Shoes partially took care of the Alaskan problem for the moment, what was needed was a solution for the period until NORAD got the IMI.





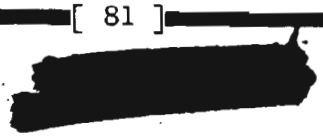
(S) At any rate, study of the situation by NORAD, ADC, and ALCOM continued. On 19 July, NORAD proposed to ADC that one F-106 squadron of 18 aircraft be transferred from Selfridge AFB to Elmendorf AFB as soon as possible. NORAD also recommended that provision be made for an MB-1 nuclear capability for the F-106's. NORAD suggested cutting the Alaskan F-102 squadron from 40 to 18 aircraft.

(S) By mid-September, no solution had been reached, so NORAD asked ADC and ANR to continue with the White Shoes program indefinitely. NORAD added that due to cold weather operating difficulties, ANR could cut the number of F-106's on 5-minute alert from four to two, plus two aircraft on 15 minutes. Deployment of the alert aircraft was to be at the discretion of the Commander ANR.

(S) Then on 20 September, ADC advised USAF and NORAD that because of the lack of adequate facilities and other considerations, Alaskan Air Command (AAC) could not accept the permanent assignment of any available improved interceptor. AAC had suggested continuing White Shoes, but cutting it from ten to eight F-106 aircraft. AAC estimated that F-106 rotation would be required for at least two more years.

(S) Matters were further complicated when, on 26 September, USAF told NORAD that from a cost effectiveness standpoint, the permanent TDY deployment of the F-106's to Alaska could not be supported. USAF recommended a modified White Shoes operation (based on peak Soviet air activity periods) and improvements to existing facilities which would give optimum use of Alaska's F-102's. Comments on these proposals were invited.

(S) CINCAL, in his reply, told USAF that his headquarters could not determine an operational concept for an interceptor force based on a peak activity period. Therefore, he recommended continuing the current F-106 deployment. As for the work required on airfield improvements for better



F-102 use, only three airfields fully met the requirements: Nome, as the primary alert base, and either Umiat or Point Barrow, as a limited turnaround base. Nome would cost $30 million, Point Barrow $14.5 million, and Umiat $31 million. Thus, the estimated airfield improvement costs would run from a low of $44.5 million to a high of $61 million.

(3)

(S) NORAD, in its reply to USAF in October, outlined the following points in advocating continuance of the current White Shoes and allocation of F-4C's when available:

> (1) The requirement for an improved air defense capability in Alaska had not diminished.
>
> (2) In lieu of the availability of the IMI and F-4C, the F-106 was a suitable interim solution.
>
> (3) Intrusion of the Alaskan airspace by Soviet aircraft was unpredictable and unrelated to any Soviet peak activity periods. Therefore, the modified White Shoes proposal on a part-time or random basis was not considered feasible.
>
> (4) Improvement of existing facilities was not practical from a cost effectiveness or time standpoint.
>
> (5) Existing facilities in Alaska were adequate for F-106 operations and for the F-4C when it became available.

(4)

(S) By mid-December, USAF decided to continue rotating the F-106's to Alaska to meet the immediate need. However, USAF advised that other alternatives would be studied.

[redacted]

CHAPTER SEVEN

EXERCISES, TRAINING AND PROCEDURES

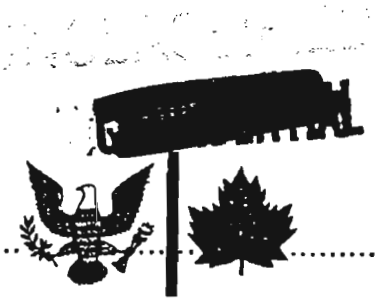
EXERCISES

TOP RUNG

(U) (S) In 1960, 1961, and 1962, a large-scale, NORAD-wide, exercise called Sky Shield, had been held. And, continuing with this program, NORAD planned to run Sky Shield IV in August or September 1963. But SAC objected. SAC felt that the training derived for its crews was considerably less than that received on normal training missions and that the expense and effort were not warranted. SAC favored the SAC/NORAD program for region exercises. CINCNORAD, on the other hand, felt that semi large-scale exercises were no substitute for Sky Shield. But the JCS supported SAC and Sky Shield IV for 1963 was cancelled. However, the JCS provided that a SAC/NORAD report was to be submitted by 1 January 1964 which would include recommendations for a possible resumption of the Sky Shield-type of exercise for FY 1965.

(U) (S) With Sky Shield for 1963 cancelled, the JCS directed SAC and NORAD to hold four quarterly air defense exercises designed on a mutually satisfactory basis. The original plan had been to have one, command-wide, large-scale exercise (Sky Shield), and three smaller exercises, called Top Rung, one to be run in each of the three NORAD training areas, Eastern, Central, and Western (which included Alaska). The revised plan provided for four Top Rung exercises during FY 1964. Their purpose was to evaluate concepts of strategic and defensive air operations and provide maximum training for selected areas of the NORAD system. They were also to provide SAC with the opportunity to evaluate penetration tactics with a given defense environment.

[redacted]



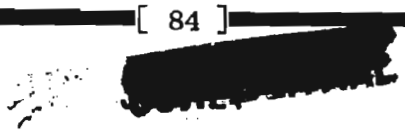
(U)
(S) The first such exercise, Top Rung I, was held on 10-11 October in the Eastern area; Top Rung II was held on 6 December in the Central training area. Two exercises were planned for the Western and Eastern areas in March and June of 1964.

SWIFT KICK

(U)
(S) In August 1963, NORAD ran another of its "no-notice" operational effectiveness checks. Swift Kick 2 was implemented at 1800Z on 29 August, via the Voice Alerting Network. Assembly of region and sector battle staffs was to be as fast as possible. Units were to attain Delta status as quickly as possible and to load and man all weapons.

(U)
(S) An analysis of the test showed that the regions averaged one minute to acknowledge implementation, which was one minute less than the previous Swift Kick on 7 May 1963. Region battle staffs averaged nine minutes to assemble, which was six minutes better than the 7 May check. It took an average of two hours and 21 minutes for the regions to attain Delta status, which compared favorably with the two hours and 24 minutes required during the last weapon loading conducted in October 1962. However, two regions had not reported Delta status prior to fadeout at 2100Z, and were computed as reaching Delta in three hours (the duration of the exercise).

(U)
(S) It took two hours for 76 percent of the combat-ready interceptors to reach Delta, 48 percent having made it during the first hour. During the weapons-loading check of 2 October 1962, 73 percent of the combat-ready aircraft had attained Delta status within one hour. Of the Nike fire units involved, 81 percent had reached Delta within one hour. There were 318 BOMARC missiles on two-minute status at 1800Z, and by 1815Z, 319 were reported on Delta. This figure stayed constant for the remainder of the check.



(U)

(S) Over-all, the check had shown a marked improvement over the previous test of 7 May. But NORAD felt that the results of Swift Kick 2 emphasized the urgent need for an Automatic Attack Warning System and improvements to the present system.

DESK TOP VI

(U) (S) To maintain an integrated and effective force, NORAD had a continuing requirement for exercising the entire command and control, warning and communication system. The command post exercise, Desk Top VI, was designed to meet this need for FY 1964. Desk Top VI was currently being run in three parts -- the first having been held on 10 December 1963.

(U) (S) Part I consisted of three phases. The first, or pre-battle phase, was a simulated intelligence buildup with corresponding increased states of readiness throughout NORAD during a several day period prior to 10 December. Phase two, the air battle portion, was based on estimates of Soviet Bloc tactics, materiel and capabilities. This included the use of ICBM, SLBM, and bomber forces. The third, or post-battle, phase involved all NORAD elements. Battle damage was assessed, force deployment reviewed, and necessary actions taken to prepare for future operations.

(U) (S) Part II, scheduled for 10 March 1964, was planned to take up where Part I left off and would be run with the forces computed as having survived the air battle phase of Part I.

(U) (S) Part III would be a rerun of Part I but run as a "no-notice" alert. The purpose was to test the operational readiness and responsiveness of the NORAD command and control system to a surprise attack.

STRICOM/NORAD EXERCISES

(U) (S) The United States Strike Command (STRICOM), with headquarters at MacDill AFB, Tampa, Florida, had come into being on 18 October 1961. In February 1963, CINCNORAD had been approached by General Paul D. Adams, CINCSTRIKE, on the question of NORAD forces taking part in STRICOM's large air/ground exercises. STRICOM had two exercises scheduled for the year, Coulee Crest in May in the Yakima, Washington, area, and Swift Strike III in August in North and South Carolina. CINCNORAD agreed and ADC units participated in both exercises.

(U) (S) The extent of NORAD's future participation was to be decided after evaluation of Swift Strike III. Evaluation indicated that there was a definite ADC role in this type of joint operation, but there were still several problems to be resolved between STRICOM and NORAD. By the end of the year no firm agreements had been reached and ADC participation in STRICOM's "Desert Strike," scheduled for May 1964, was indefinite.

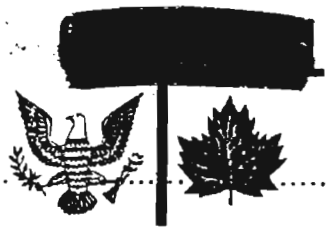
KEY CHAIN

(U) (S) Key Chain was a JCS-sponsored, world-wide, Command Post exercise held 7-11 October 1963. It was designed to exercise limited war contingency plans and procedures with emphasis on the JCS Emergency Action Procedures. CONAD participation was confined to that of the Battle Staff, COC and the Battle Staff Support Center. Because the exercise did not escalate into a general war situation, CONAD participation was limited to preparation for an air attack which did not occur.

IDENTIFICATION AND AIR TRAFFIC CONTROL

IFF MARK XII

(U) (S) Electronic identification of friend from foe (IFF) was a vital factor in air defense operations. NORAD's present equipment for accomplishing



this was the IFF Mark X SIF system. 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 the risk of destroying a large number of friendly aircraft. What was needed, therefore, was a system to increase NORAD's capability to provide safe passage to the SAC Emergency War Order aircraft and to identify other essential traffic during hostilities.

(U) (S) Back in December 1960, NORAD had asked the JCS for limited implementation of a new crypto-secure system, the Mark XII IFF. Later testing proved it to be highly reliable and, on 19 April 1963, the JCS approved implementation on a priority basis. The required funds were to be included in the Five-Year Force Structure and Finance Program beginning in FY 1964.

(U) (S) Under the JCS priority schedule, all units in North America were to be equipped during the 1965-1968 period. First priority would be given to the NORAD ground environment and the SAC Emergency War Order force.

STANDARDIZATION OF POP-UP CRITERIA FOR ADA DEFENSE UNITS

(U) (S) NORAD had prescribed special rules for Air Defense Artillery (ADA) units to enable them to act quickly against low-flying enemy aircraft or missiles that had escaped manned interceptor or BOMARC defense. Where timely identification or tactical direction was not possible, ADA defense commanders were authorized to act autonomously and engage and destroy "Pop-Up" targets. This procedure would follow the declaration of Air Defense Emergency and implementation of SCATER/ESCAT by which the majority of non-essential air traffic would be grounded. However, instructions in NORADM 55-5, 15 July 1963, permitted each NORAD region to determine its own pop-up criteria which resulted in wide variations between regions. Because this created a potential danger to

friendly aircraft traveling from one region to another, each with its own criteria, standardization was considered essential.

(U) (S) NORAD, on 4 October 1963, sent a letter to all regions proposing the following standardization of Pop-Up criteria:

(1) A ground speed of 300 knots or more.

(2) An altitude of 15,000 feet or less (mean sea level).

(3) Any altitude when the ground speed exceeded 1100 knots.

(U) (S) The regions generally accepted the NORAD proposal. However, the 28th and 29th Regions expressed the view that reduction of the 1100-knot speed factor would be required to allow for enemy air-to-surface and submarine-launched cruise missiles, which had an estimated speed range as low as 700 to 800 knots. NORAD concurred and settled on a figure of 800 knots as suitable. An amendment to NORADM 55-5, incorporating the standardization of pop-up criteria, was drawn up and subsequently approved early in February 1964.

SCATER

(U) (S) Background. NORAD had been trying for some time to publish a new directive on SCATER (Security Control of Air Traffic and Electromagnetic Radiations). Publication was held up because the CONELRAD (Control of Electronic Radiation) plan, which directly affected SCATER, was being revised by DOD and FCC. Finally, on 12 January 1963, the JCS directed NORAD to revise its SCATER planning in collaboration with FAA, and to assume that CONELRAD would be changed to control only accurate navigation aids. Thus, NORAD's requirements in the proposed SCATER plan called for control of accurate navigation aids only (i.e., VOR, VORTAC, TACAN,

[redacted]

LORAN, and SHORAN). In line with this, NORAD proposed to change the title from SCATER to SCATANA (Security Control of Air Traffic and Air Navigation Aids).

(U) Status. By October 1963, the revised SCATER plan had been developed by NORAD and FAA to a point where outside coordination with other agencies was appropriate. Also in October, NORAD sent its proposed SCATER requirements to the JCS and COSC for their approval. The JCS replied on 19 November that the proposed NORAD requirements document was approved in principle as a guide for further development of the SCATER plan. Following this, a meeting was held in Washington to acquaint the FCC (Federal Communications Commission) with the status of the SCATER revision program and to discuss the draft plan as it pertained to FCC rules and regulations. The FCC representative asked for copies of the draft for later study and that the FCC be represented in all future meetings. NORAD sent the requested documents on 23 December along with formal assurance of FCC participation.

(U) It was expected that Canadian review of the NORAD requirements would be completed prior to a meeting to be held later in Canada. Representatives from NORAD, FAA, RCAF and the Canadian DOT would try to make the U.S. and Canadian SCATER plans as compatible as possible.

TRAINING

AIRBORNE JAMMING SYSTEM

(U) (S) Background. NORAD's efforts to get an airborne electronic jamming system to give adequate electronic warfare training to its forces dated back to a NORAD Qualitative Requirement (NQR) of 1 June 1961. This had been sent to ADC for submission to USAF. The NQR called for the development of ECM pods with interchangeable jammers to cover all ten frequency bands used by NORAD forces. They were to be self-contained, detachable pods that could be

[redacted]

carried by any faker target aircraft, including UE interceptors. NORAD learned that USAF had released funds in March 1963 to buy 155 QRC-160 ECM pods. But comparison of the QRC-160 pods with NORAD's requirement revealed three major deficiencies:

(1) Lack of frequency coverage and power output.

(2) Lack of ECM deception techniques.

(3) Lack of growth potential.

(U) (S) Therefore, on 15 May 1963, NORAD told ADC that the QRC-160 pod was not acceptable and asked it to take action with USAF to insure procurement of a pod system that would meet the NORAD requirement. Also, on the following day, NORAD asked the JCS to levy a requirement on the services to equip the component and augmentation forces with an ECM pod system as specified in the NQR of 1961.

(U) (S) Status. On 5 September 1963, NORAD sent representatives to the JCS to discuss the ECM pod requirements outlined in NORAD's letter of 16 May. USAF was still proposing procurement of the QRC-160 pod and NORAD could not agree that it was acceptable. Testing of this system had been underway at Eglin AFB since February 1963. Results had not established whether the QRC-160 would measure up to NORAD's requirements.

(U) (S) The JCS advised on 19 November that the Air Force Systems Command had evaluated the NQR and found it to be technically feasible, but that it would cost about $101 million. Monetary considerations had to be taken into account, the JCS said, so NORAD should restate its NQR in priorities by frequency. Another request was that NORAD monitor the development and testing of the Navy AN/ALQ-31B and the Air Force AN/ALQ-71V, both of which appeared to partially satisfy NORAD's requirement. Because of the above, the JCS said it was inadvisable to put a levy on the services for NORAD's requirement.

[redacted]

Meanwhile, USAF was looking into the suitability of the Navy ALQ-31B pod.

SAC/NORAD INTERCEPT TRAINING

(U) The question of safe procedures for SAC/NORAD joint intercept training continued to be of concern during 1963. The testing and evaluation of new positive target control systems was underway, but interim measures were urgently required to increase training. The NORAD Western Training Area had adopted satisfactory criteria for target separation that had been used with target aircraft provided by the 801st Air Division. Based on these criteria, NORAD proposed to SAC on 14 October 1963 the revision of paragraph 4h to SAC/NORAD Regulation 51-6. The proposal provided that exercises or training missions with multiple aircraft strikes that had been cleared for intercept activity would be planned so as to provide a minimum of fifteen nautical miles between aircraft in an ECM environment and five nautical miles in a clean environment. The present minimums were five and three miles, respectively. As each aircraft in a formation had to be identified as a separate target, NORAD felt that the increased spacing would reduce the number of intercepts lost due to lack of positive target identification.

(U) At a meeting on 9-10 December, SAC concurred in the revision as proposed.

(U) (S) Another long-time concern of NORAD's was the restriction of the use of armed interceptors for SAC/NORAD training. The use of armed interceptors had been suspended in April 1961 following the accidental shooting down of a B-52 by an ANG F-100.*

---

* (U) See NORAD/CONAD Historical Summary, Jul-Dec 1961, pp. 54-55.

[redacted]

(U)

(S) In January 1962, ADC had stated that the continuous loading and unloading of interceptors put an untenable workload on the command. It was ADC's opinion that armed intercepts should be resumed by all interceptors, except the F-101 (due to an inadvertant firing of a missile), based on a certification by technical agencies of the Air Force Systems Command (AFSC) that armed intercepts could be made with safety. The F-101 was also to be included after a Technical Order compliance completed on 15 January 1962. However, in June of that year, a review of the modifications to the interceptor force fire control systems showed that further investigation was required to ensure maximum safety. AFSC was asked to make a feasibility study in August 1962 to see whether it was possible to provide a fail-safe device that would give the safety required. The matter continued to receive further study and investigation throughout 1963 but no final solution had been achieved.

(U) (S) In a letter of 7 January 1964, NORAD asked ADC to find out the number of day-to-day intercept sorties lost due to lack of time for down-loading. NORAD wanted to determine the validity of reopening discussions with SAC on the subject.

GLOSSARY

GLOSSARY OF ABBREVIATIONS

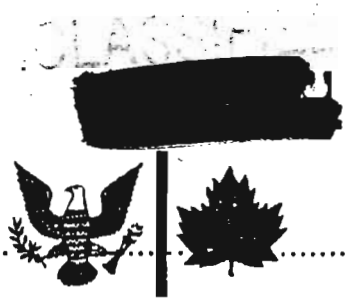
AAC	Alaskan Air Command
AAWS	Automatic Attack Warning System
ADA	Air Defense Artillery
AFSC	Air Force Systems Command
ALCOP	Alternate Command Post
ALRI	Airborne Long Range Input
ARADCOM	Army Air Defense Command
ATR	Azimuth Time Recorder
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
AWAC	Airborne Warning and Control
BIRDIE	Battery Integration and Radar Display Equipment
BMEWS	Ballistic Missile Early Warning System
BOD	Beneficial Occupancy Date
BUIC	Back-Up Interceptor Control
CADIN	Continental Air Defense Integration North
CADS	Continental Air Defense Study
CC	Control Center
CMC	Cheyenne Mountain Complex
CONAD	Continental Air Defense Command
CONELRAD	Control of Electromagnetic Radiations
CONUS	Continental United States
COSC	Chiefs of Staff Committee (Canada)
DA	Department of the Army
DC	Direction Center
DCA	Defense Communications Agency
DCS	Defense Communications System
DDR&E	Director Defense Research and Engineering
DEW	Distant Early Warning Line
DIA	Defense Intelligence Agency

DOD	Department of Defense
DOT	Department of Transport (Canada)
DRB	Defence Research Board (Canada)
ECCM	Electronic Counter Counter Measures
ECM	Electronic Counter Measures
EMP	Electro-Magnetic Pulse
ERBM	Extended Range Ballistic Missile
ESCAT	Emergency Security Control of Air Traffic
ESD	Electronic Systems Division
FAA	Federal Aviation Agency
FD	Frequency Diversity
FOC	Final Occupancy Capability
GObC	Ground Observer Corps
ICBM	Inter-Continental Ballistic Missile
IMI	Improved Manned Interceptor
IOC	Interim Occupancy Capability
JTD	Joint Table of Distribution
MCL	Mid-Canada Line
MITRE	Massachusetts Institute of Technology Research and Engineering (Corporation)
NASA	National Aeronautics and Space Administration
NBC	Short title for: Chemical and Biological Rapid Warning System
NCC	NORAD Control Center
NGCI	NORAD Ground Control Intercept Station
NMCS	National Military Command System
NNR	Northern NORAD Region
NQR	NORAD Qualitative Requirement
NRL	Naval Research Laboratory
NSA	National Security Agency
NUDETS	Nuclear Detonation Detection and Reporting System (477L)
OSD	Office of the Secretary of Defense

PARL	Prince Albert Radar Laboratory (Canada)
PCP	Program Change Proposal
PD	Passive Detection
RAND	Research and Development Corporation
RCA	Radio Corporation of America
R&D	Research and Development
SACEUR	Supreme Allied Commander Europe
SAGE	Semi-Automatic Ground Environment
SAO	Smithsonian Astrophysical Observatory
SCAN	Switched Circuit Automatic Network (Army)
SCATANA	Security Control of Air Traffic and Air Navigation Aids
SCATER	Security Control of Air Traffic and Electromagnetic Radiations
SDC	Systems Development Corporation
SIS	Satellite Interceptor System
SLBM	Sea-Launched Ballistic Missile
SLC	Side Lobe Cancellor
SLFCS	Survivable Low Frequency Communications System
SPADATS	Space Detection and Tracking System
SPASUR	Space Surveillance System (Navy)
SPO	System Project Office
STRICOM	United States Strike Command
TRACE	Transportable Automated Control Environment
TCU/ASTRA	Threshold Control Unit/Azimuth Strobe Tracking
UNAAF	Unified Action Armed Forces
VLF	Very Low Frequency

(Reverse side blank)

INDEX



INDEX