



**INSPECTOR GENERAL**  
**DEPARTMENT OF DEFENSE**  
4800 MARK CENTER DRIVE  
ALEXANDRIA, VIRGINIA 22350-1500

March 5, 2018  
Ref: FOIA-2016-00800

**SENT VIA EMAIL TO: john@greenewald.com**

Mr. John Greenewald  
The Black Vault



Dear Mr. Greenewald:

This is in response to your September 28, 2016, Freedom of Information Act (FOIA) request for a copy of report DODIG-2016-133, Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars. We received your request on the same day and assigned it case number FOIA-2016-00800.

The Office of the Deputy Inspector General for Intelligence and Special Program Assessments conducted a search and found the enclosed document responsive to your request. I determined that certain redacted portions are exempt from release pursuant to the following FOIA exemptions:

- 5 U.S.C. § 552 (b)(1), which pertains to information that is currently and properly classified pursuant to Executive Order (EO) 13526, section 1.4(a), which pertains to military plans, weapons systems, or operations, and section 1.4(g), which pertains to vulnerabilities or capabilities of systems, installations, infrastructures, projects, plans, or protection services relating to the national security;
- 5 U.S.C. § 552(b)(6), which pertains to information, the release of which would constitute a clearly unwarranted invasion of personal privacy and;
- 5 U.S.C. § 552 (b)(7)(E), which pertains to records or information compiled for law enforcement purposes, the release of which would disclose techniques and procedures for law enforcement investigations or prosecutions.

Additionally, in coordination with the United States Air Force Space Command, the National Security Council, and the United States Strategic Command, other redacted portions are exempt from release pursuant to the following exemptions:

- Air Force Space Command: 5 U.S.C. § 552 (b)(1), EO 13526, section 1.4(g);
- National Security Council: 5 U.S.C. § 552 (b)(1), EO 13526, section 1.4(a);
- United States Strategic Command: 5 U.S.C. § 552 (b)(1), EO 13526, section 1.4(g) and; 5 U.S.C. § 552 (b)(7)(E).

March 5, 2018  
Ref: FOIA-2016-00800

If you consider this an adverse determination, you may appeal. You may submit an appeal to the Department of Defense, Office of Inspector General, ATTN: FOIA Appellate Authority, Suite 10B24, 4800 Mark Center Drive, Alexandria, VA 22350-1500. Your appeal, if any, must be postmarked within 90 days of the date of this letter and reference the file number above. I recommend that your appeal and its envelope both bear the notation "Freedom of Information Act Appeal."

You may seek dispute resolution services and assistance with your request from the DoD OIG FOIA Public Liaison Officer at 703-604-9785, or the Office of Government Information Services (OGIS) at 877-684-6448, [ogis@nara.gov](mailto:ogis@nara.gov), or <https://ogis.archives.gov/>. Please note that OGIS mediates disputes between FOIA requesters and Federal agencies as a non-exclusive alternative to litigation. However, OGIS does not have the authority to mediate requests made under the Privacy Act of 1974 (request to access one's own records).

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Sincerely,



Mark Dorgan  
Division Chief  
FOIA, Privacy and Civil Liberties Office

Enclosure(s):  
As stated

This document is made available through the declassification efforts  
and research of John Greenewald, Jr., creator of:

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# INSPECTOR GENERAL

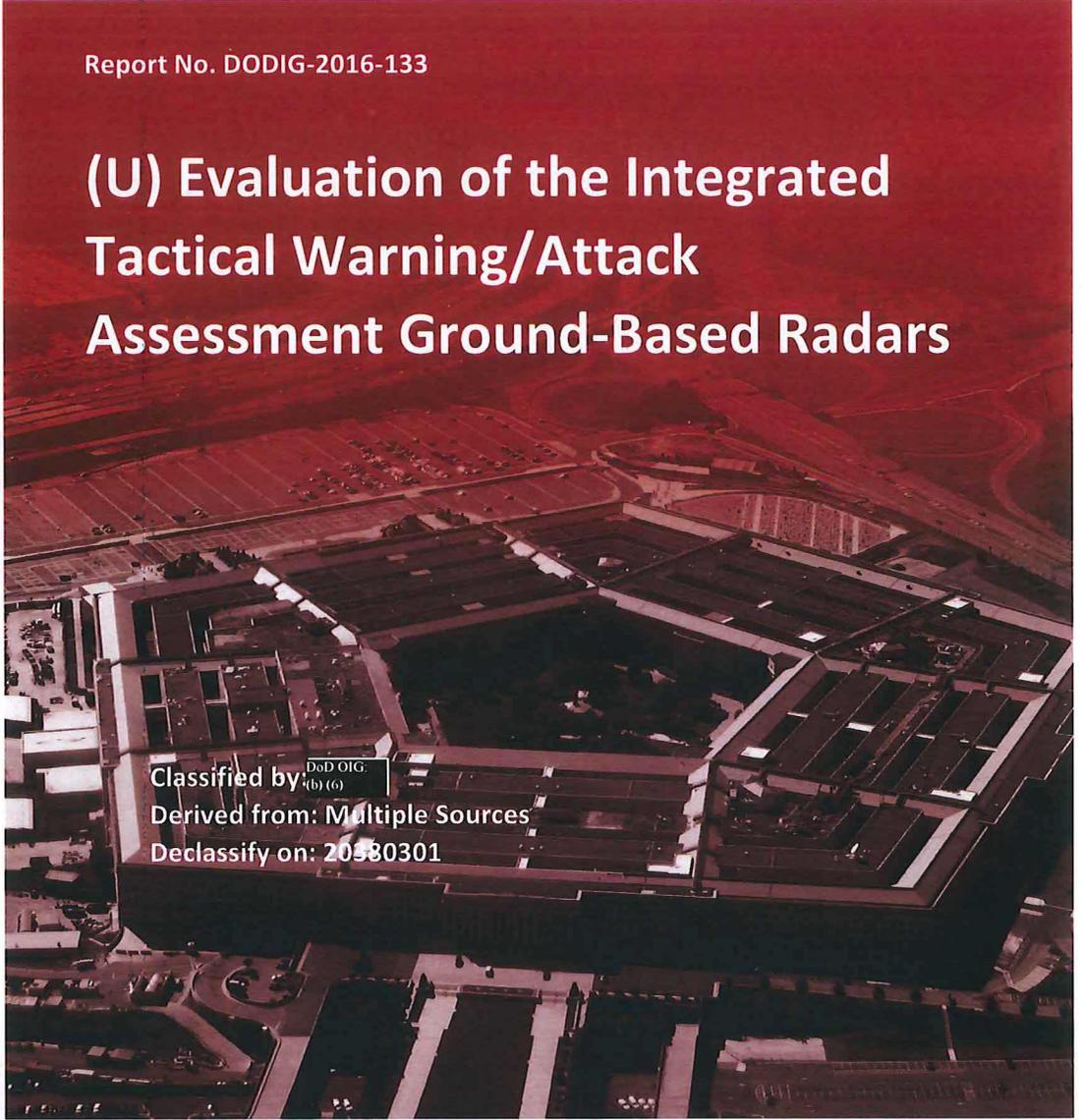
*Department of Defense*

September 8, 2016

Report No. DODIG-2016-133

## (U) Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars

Classified by: <sup>DOD OIG</sup>  
(b) (6)  
Derived from: Multiple Sources  
Declassify on: 20380301



INTEGRITY ★ EFFICIENCY ★ ACCOUNTABILITY ★ EXCELLENCE

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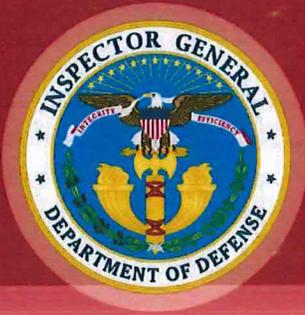
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# Results in Brief

## Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars

(U) September 8, 2016

### (U) Objective

(U) We determined whether the material condition of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars (ITW/AA GBR) is adequate to perform and sustain required capabilities. Specifically, we examined the infrastructure, maintenance, planned or required upgrades, funding, and management of the radar sites.

### (U) Findings

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [redacted] as required by Presidential Policy Directive-35, DoD Directive S-5210.81, and Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6811.01C. Specifically, we found that:

- (S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [redacted]
- (S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [redacted]

### (U) Findings Cont'd

- (U) Not all ITW/AA GBR spare parts meet system specifications or are catalogued for Air Force use. This occurs because of insufficient management of supply and suitable substitute processes. Because of this, Air Force personnel chose to repair or alter consumable and depot-level repairable parts to keep radars operational to the maximum extent possible. As a result of these repairs, the Air Force is not creating accurate demand forecasts for spare parts, which prevents corrective action for parts transactions.

### (U) Recommendations

(U) Chief of Staff, U.S. Air Force:

- Develop an ITW/AA GBR mission essential facility and equipment list that includes all necessary supporting infrastructure.
- Define the ITW/AA GBR weapon system to include all items on an essential facility and equipment list.

(S) The Commander, Air Force Space Command:

- STRATCOM (b) (1), EO13526, sec. 1.4(g) [redacted]
- STRATCOM (b) (1), EO13526, sec. 1.4(g) [redacted]

(U) The Commander, Air Force Lifecycle Management Center System Program Office:

- Ensure the Air Force is identified as a user for all ITW/AA GBR spare parts.
- Review and correct quality assurance processes for ITW/AA GBR suitable substitute selection.



## Results in Brief

### *Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars*

#### **(U) Management Comments and Our Response**

(U) The Military Deputy Under Secretary of the Air Force (Space), responding for the Chief of Staff of the U.S. Air Force, addressed all specifics of Recommendations A.1a and A.1b. However, as a result of other management comments, we revised Recommendation A.1a, and we request the Chief of Staff of the U.S. Air Force to provide comments by October 7, 2016. No further comments are required on Recommendation A.1b.

(U) The Director of Integrated Air, Space, Cyberspace, and ISR Operations, responding for the Commander, Air Force Space Command, addressed all specifics of Recommendation A.2 and B.1. Also, the Director provided

STRATCOM (b) (7)(E)

and we revised the report accordingly. However, as a result of other management comments, we revised Recommendations C.1 and C.2, which now include Air Force Space Command as an office of collateral responsibility. Accordingly, we request the Commander, Air Force Space Command

#### *(U) Management Comments Cont'd*

(U) provide comments on these recommendations by October 7, 2016.

(U) Comments from the Senior Material Leader, Chief, Strategic Warning and Surveillance Systems, responding for the Commander, Air Force Lifecycle Management Center, addressed all specifics of Recommendations C.1 and C.2. Therefore, no further comments are required.

(U) As a result of management comments, we revised Recommendations C.1 and C.2, which now include the Defense Logistics Agency as an office of collateral responsibility. Accordingly, we request the Director, Defense Logistics Agency, provide comments on these recommendations by October 7, 2016.

(U) As a result of management comments, we revised Recommendations C.1 and C.2, which now include the Air Force Sustainment Center as an office of collateral responsibility. Accordingly, we request the Commander, Air Force Sustainment Center, provide comments on these recommendations by October 7, 2016.

**(U) Recommendations Table**

Management	Recommendations Requiring Comment	No Additional Comments Required
Chief of Staff, U.S. Air Force	A.1.a	A.1.b
Commander, Air Force Space Command	C.1, C.2	A.2, B.1
Director, Defense Logistics Agency	C.1, C.2	
Commander, Air Force Sustainment Center	C.1, C.2	
Commander, Air Force Life Cycle Management Center		C.1, C.2

(U) Please provide Management Comments by October 7, 2016.

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September 8, 2016

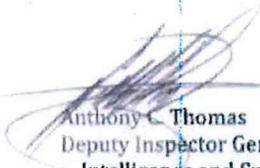
MEMORANDUM FOR DISTRIBUTION

SUBJECT: (U) Evaluation of the Integrated Tactical Warning/Attack Assessment  
Ground-Based Radars (Project No. D2015-DISPA1-0132.000)

(U) We are providing this final report for review and comment. As a result of management comments, we revised Recommendation A.1a, and we request the Chief of Staff of the U.S. Air Force provide comments by October 7, 2016. As a result of other management comments, we revised Recommendations C.1 and C.2, which now include the Commander, Air Force Space Command; Director, Defense Logistics Agency; and the Commander, Air Force Sustainment Center as offices of collateral responsibility. Accordingly, we request these agencies provide comments on these recommendations by October 7, 2016.

(U) DoD Instruction 7650.03 requires that all recommendations be resolved promptly. We conducted this evaluation in accordance with the Council of the Inspectors General on Integrity and Efficiency Quality Standards for Inspection and Evaluation.

(U) We appreciate the courtesies extended to the staff. Please direct questions to me at 703-699-7430 or DoD OIG (b) (6)

  
Anthony C. Thomas  
Deputy Inspector General for  
Intelligence and Special  
Program Assessments

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DoDIG-2016-133 | 6

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***Distribution:***

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COMMANDER, AIR FORCE SUSTAINMENT CENTER

COMMANDER, AIR FORCE LIFE CYCLE MANAGEMENT CENTER

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## (U) Introduction

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### (U) Objective

(U) Our objective was to determine whether the materiel condition of the ground-based radar sites is adequate to perform and sustain their required capabilities. Specifically, we examined the infrastructure, current maintenance, planned or required upgrades, funding, and management of the radar sites.

### (U) Background

(S) The ITW/AA GBR system is part of a greater missile warning architecture, detailed in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6210.02C. Per the CJCSI, this architecture is designed to provide the President and senior decision makers with an accurate and timely analysis of possible inbound ballistic missiles. The ground-based radars independently confirm whether a launch signature detected by satellite sensors is an inbound threat. STRATCOM (b) (1), EO13526, sec. 1.4(g)

██████████ The launch data are then transmitted to DoD correlation centers for further analysis, and subsequently forwarded to the key components of the national command network that support the decisions of the President, Secretary of Defense, Joint Chiefs of Staff, and designated Combatant Commanders.

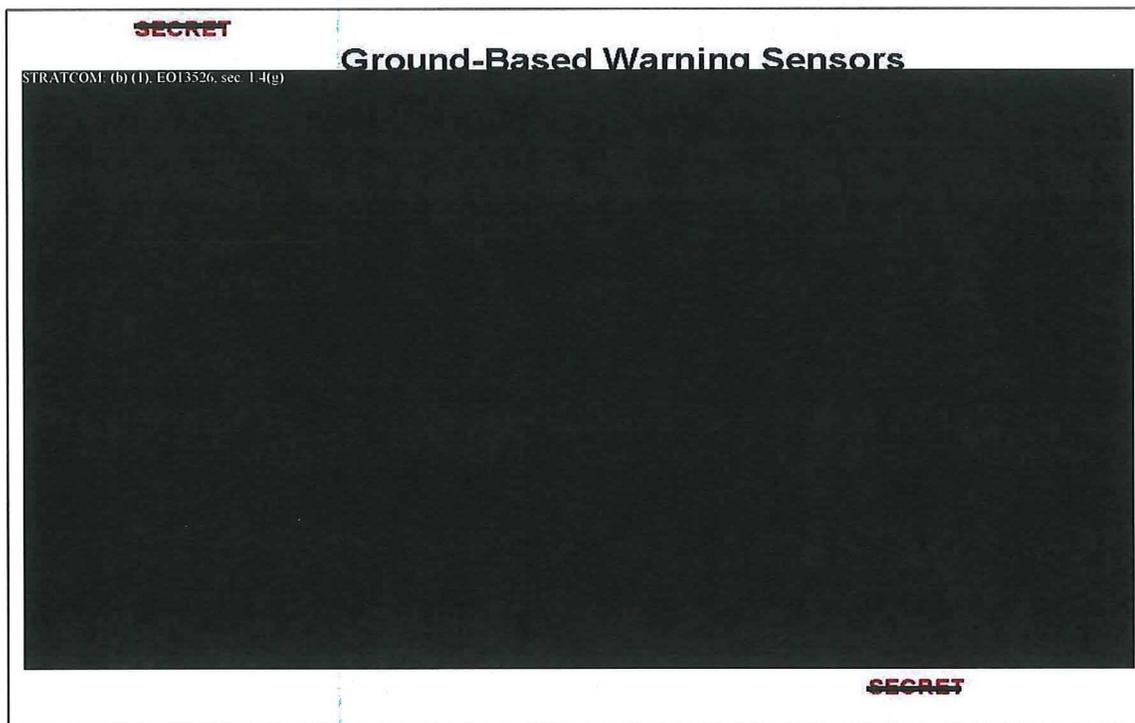
(U) Each radar continuously monitors its sector for incoming threats. Figure 1 shows the coverage for all six ITW/AA GBR sites:

- Beale Air Force Base, California
- Cape Cod Air Force Station, Massachusetts
- Cavalier Air Force Station, North Dakota
- Clear Air Force Station, Alaska
- Thule Air Base, Greenland
- Royal Air Force Station Fylingdales, United Kingdom

(U) We visited five of the six radar sites. We examined supporting infrastructure and interviewed site personnel. We also interviewed management personnel at Headquarters, United States Air Force; U.S. Strategic Command; and Air Force Space Command.

(U) Some of these sites have been operating since the 1960s. The type of radar system varies based on its original construction date. Three radar system technologies are currently in use: Upgraded Early Warning Radar [formerly Ballistic Missile Early Warning System (BMEWS)], PAVE Phased Array Warning System (PAVE PAWS)<sup>1</sup>, and the Perimeter Acquisition Radar Attack Characterization System (PARCS).

*(U) Figure 1. Ground-Based Warning Sensors*



(U) Source: U.S. Strategic Command

<sup>1</sup> PAVE is an Electronic Systems Center overarching program name and is not an acronym.

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]  
[Redacted]  
[Redacted]  
[Redacted]  
[Redacted]  
[Redacted]

## (U) Finding A

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]

(S) NSC (b) (1), EO13526, sec. 1.4(a), STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g)

[Redacted]

(U) Table 1. Operational Availability of each ITW/AA radar

<del>SECRET</del>	Feb 2014	Mar 2014	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015
Ground-Based Radar	STRATCOM (b) (1), EO13526, sec. 1.4(g)												
Beale	[Redacted]												
Cape Cod	[Redacted]												
Cavalier	[Redacted]												
Clear	[Redacted]												
Thule	[Redacted]												
Fylingdales	[Redacted]												
													<del>SECRET</del>

(U) Source: 21st Operations Support Squadron

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g)

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

(U) Table 2. Mean-Time-Between-Failure Rates of each ITW/AA radar<sup>2</sup>

<del>SECRET</del>	MEAN TIME BETWEEN FAILURES <sup>2</sup>					
Radar	Beale	Cape Cod	Cavalier	Clear	Thule	Fylingdales
STRATCOM (b) (1), EO13526, sec. 1.4(g)						
						<del>SECRET</del>

(U) Source: 21st Operations Support Squadron

<sup>2</sup> (S) The data in Table 2 STRATCOM (b) (1), EO13526, sec. 1.4(g); AFSPC (b) (1), EO13526, sec. 1.4(g)

## **(U) Management by Multiple Organizations Can Confuse Funding Responsibility**

(U) Based on our interviews and analysis of all available data, we determined that the ITW/AA GBR and the supporting infrastructure are not an integrated program of record. No single Air Force person or organization is responsible for ensuring ITW/AA GBR sites are resourced, modernized, and sustained. Radar equipment, to include emitters, computers, software, and radar screens, is operated by Air Force Space Command Space Warning Squadrons. ITW/AA GBR equipment is funded by the Air Force Space Command System Program Office, but the funding responsibility is expected to be transferred to Air Force Material Command sometime during the next two fiscal years. Acquisition and sustainment of the ITW/AA GBRs are performed by the Air Force Nuclear Weapons Center, Kirtland Air Force Base (AFB), New Mexico; Air Force Lifecycle Management Center, Wright-Patterson AFB, Ohio; and the Air Force Sustainment Center, Tinker AFB, Oklahoma. During our five site visits, we discussed the funding responsibility and determined that the system program office funded only what was considered to be part of the weapon system. ITW/AA GBR site personnel stated that the weapon system was only the radar transmitter, the radar receiver, and the computer/communications gear used to process and transmit received data externally for evaluation by strategic defense organizations. Alternatively, site personnel stated that supporting infrastructure such as buildings, structures, utilities, and some support equipment was not considered part of the weapon system.

(U) Our analysis of historical Air Force documents shows that some site funding responsibilities are divided because of geographic location. ITW/AA GBR sites were selected based on geographic requirements for global coverage, as is depicted in Figure 1. Therefore, some radars were not built on Air Force Space Command bases. For example, Air Combat Command is the host command for Beale AFB; the Massachusetts Air National Guard hosts Cape Cod Air Force Station; and Cavalier Air Force Station receives its support from Air Mobility Command through Grand Forks AFB. Operationally, the missile warning mission is also shared by U.S. Northern Command, the North American Aerospace Defense Command, and U.S. Strategic Command.

(U) Our interviews with radar site and Air Force Space Command Headquarters personnel revealed that operational units, installation support units, and host commands have difficulty identifying whether some facilities and equipment should be funded by the System Program Office or through installation operations and maintenance funds. This is primarily because of the lack of agreement about which facilities and equipment on the GBR sites are part of the weapon system and which are not. For example, we asked GBR personnel at each site we visited what was considered the weapon system. Answers varied from site to site, but most agree that a single side of the radar building that houses the transmitter and receivers was the weapon system, but the rest of the same building was not. Air Force headquarters staff acknowledged this problem during our site visits. The identity of the responsible organization was uncertain, requiring headquarters staff to negotiate funding responsibility on a case by case basis. This situation continues to occur because there is no definitive list of systems and subsystems that are part of the weapon system. Air Force Space Command Headquarters and the System Program Office staff acknowledged there was not a specific list of equipment that made up the weapon system. Staff from both offices and site personnel explained that some components of the radars are in a program of record; some components are real property; and the remaining facilities and equipment must be sustained with installation operations and maintenance funding. Because multiple agencies are involved in the day-to-day funding and management of various portions of the ITW/AA GBR, we conclude it is difficult for Headquarters Air Force to hold any one organization responsible for ITW/AA GBR issues when they arise.

(U) Air Force Instruction 32-1061, "Providing Utilities to U.S. Air Force Installations," February 21, 2011, directs the installation commander to provide utilities, including electricity, heat, and water for cooling systems for tenant organizations such as ITW/AA GBR. The electrical generating units, water towers, and other mission essential facilities and equipment are classified as real property.<sup>3</sup> The host base is responsible for maintaining real property and prioritizing repairs and upgrades. Therefore, repairing a mission essential electrical generator at an ITW/AA GBR site may have to

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<sup>3</sup> (U) Air Force Instruction 32-9005, "Real Property Accountability and Reporting," August 14, 2008, defines Real Property as "Land and improvements to land (i.e., facilities). It includes equipment affixed and built into the facility as an integral part of the facility (such as heating systems), but not moveable equipment (e.g., plant equipment, industrial equipment, buoys)." Real Property Installed Equipment is government-owned or leased accessory equipment, apparatus and fixtures that are essential to the function of the real property and are permanently attached to, integrated into, or on government-owned or leased property.

(U) compete with dozens of other base-wide projects resulting in possible maintenance delay, deferral, or cancelation. For example, <sup>STRATCOM (b) (7)(E)</sup> [REDACTED] the second phase of the project has not received funding by the host base.

### **(U) Funding for the Integrated Tactical Warning/Attack Assessment Infrastructure Is Insufficient to Address Deficiencies**

(U) Through interviews and an analysis of programmatic documents, we determined that the source for funding dollars for infrastructure and real property is not the same as for weapon system parts. Weapon system items are funded by the System Program Office, but the rest of the assets needed to ensure that the weapon system keeps transmitting compete with other base support infrastructure. While touring the radar sites, maintenance personnel pointed out equipment that should receive preventative maintenance, but they believed that the maintenance is delayed because a time-to-failure was not easily predicted. <sup>STRATCOM (b) (7)(E)</sup> [REDACTED]

[REDACTED]

<sup>(S)</sup> <sup>STRATCOM (b) (1), EO13526, sec. 1.4(g)</sup> [REDACTED]

<sup>(S)</sup> **Mission Critical Sustainment Shortfalls.** <sup>STRATCOM (b) (1), EO13526, sec. 1.4(g); AFSPC (b) (1), EO13526, sec. 1.4(g)</sup> [REDACTED]

(U) STRATCOM (b) (7)(E) [Redacted]  
[Redacted]  
[Redacted]  
[Redacted]  
[Redacted]  
[Redacted]

(S) STRATCOM (b) (1), EOI3526, sec. 1.4(g); AFSPC (b) (1), EOI3526, sec. 1.4(g) [Redacted]  
[Redacted]

(S) STRATCOM (b) (1), EOI3526, sec. 1.4(g); AFSPC (b) (1), EOI3526, sec. 1.4(g) [Redacted]  
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**(U) Personnel Safety Shortfalls.** During our site visits, site personnel pointed out safety concerns they are trying to resolve. At Cavalier Air Force Station, we saw nonfunctional fire doors in a stairwell at the radar facility, which was listed as an unfunded FY 2015 repair. New doors are the process of being installed. We were also shown boiler rooms for gas fired boiler systems and gas fired water heaters that lack carbon monoxide detectors.

(U) A furnace duct recently installed at the fire station's mezzanine level of the facility presents another safety concern. The placement of the duct prevents access to heating and air conditioning equipment, so the equipment cannot be serviced. A construction project is being pursued to make duct access easier for maintenance personnel. Site personnel at Cavalier Air Force Station also showed us sprinkler system leaks throughout the radar facility and a need to replace failing lighting within four of the five Power Plant Generator Modules.

(U) While touring the radar facility at Clear Air Force Station, we observed that the fire doors to the room maintaining the uninterruptable power supply batteries for mission critical equipment <sup>DoD OIG (b) (7)(E)</sup> [REDACTED]

[REDACTED]

(U) <sup>STRATCOM (b) (7)(E)</sup> [REDACTED]

**(U) Security Funding Shortfalls.** Although not nearly as prevalent, we did encounter examples of unfunded requirements that impact physical security at the sites. For example, <sup>STRATCOM (b) (7)(E)</sup> [REDACTED]

[REDACTED]

(U) At Cavalier Air Force Station, repairs are needed on the base <sup>DoD OIG (b) (7)(E)</sup> [REDACTED]

[REDACTED]

### **(U) Maintenance Prioritization Is Hindered Because Mission Essential Equipment Is Not Identified**

(S) <sup>DoD OIG (b) (1), EO13526, secs. 1-4(a), 1-4(g)</sup> [REDACTED]

(U) The mission essential equipment list would ensure the military services place the highest support priority on CJCS critical equipment and facilities. CJCSI 6810.01B requires that Priority 1, the highest support priority, be assigned to equipment and systems aboard platforms assigned to carry the President. Priority 1 support must also

(U) be assigned to Nuclear Command, Control, and Communications survivable equipment and systems which includes the ITW/AA GBR. The lack of a mission essential equipment list to prioritize maintenance obscures the importance of sustainment and repair issues, which results in delayed maintenance. For example, we observed <sup>STRATCOM (b) (7)(E)</sup> [REDACTED]

[REDACTED]

(U) As a result of our analysis of maintenance records, installation and Program Office documentation, and our interviews, we determined there is no documentation that defines what systems and subsystems constitute the weapon system and what constitutes support equipment.

### **(U) Recent Plans to Define Nuclear Command, Control, and Communications Still Exclude Mission Essential Equipment and Critical Infrastructure**

(U) As a result of the February 2015 Nuclear Oversight Board, the Air Force Secretary and Chief of Staff designated Air Force Global Strike Command (AFGSC) as the lead command for the Nuclear Command, Control, and Communications (NC3) mission area. When reviewing meeting minutes provided to us by the Air Staff, we noted that the Air Force Chief of Staff directed the Commander, AFGSC, to establish a National Leadership Command Capability/NC3 task force to identify and define the elements of NC3; associated interdependencies; and resource requirements.

(U) On June 1, 2015, the Secretary of the Air Force and Chief of Staff of the Air Force agreed with the task force's recommendation to designate the NC3 system as a weapon system in Air Force Policy Directive 10-9, "Lead Command Designation and Responsibilities for Weapon Systems." When this occurs, the designation will establish advocacy for the Nuclear Command, Control, and Communications system during its lifecycle and will clarify responsibilities for all using and supporting organizations. However, neither the task force's recommendations nor the Air Force Policy Directive include mission essential equipment or critical infrastructure in the weapon system definition. The absence of this specific guidance will hinder support prioritization required by CJCSI 6810.01B.

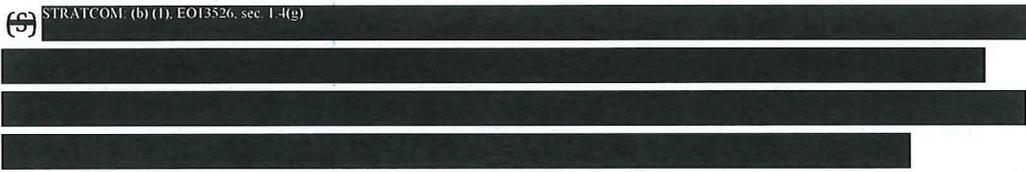
## (U) Previous DoD OIG Reporting on Systemic Logistics Weaknesses

(U) Four of ten nuclear enterprise reports that we issued from September 30, 2010, to June 18, 2015, identified various logistical issues or problems with parts availability similar to what we found in this evaluation.<sup>4</sup> One report, DODIG-2015-051, "Air Force Leadership Action is Required to Sustain the Minuteman III Intercontinental Ballistic Missile Through 2030," highlights how Air Force Global Strike Command and Air Force Material Command addressed similar issues experienced with the Minuteman III Intercontinental Ballistic Missile. In the case of the Minuteman III, key facilities and equipment were not managed as part of the Minuteman III weapon system which resulted in deferred maintenance and aging, unsupportable equipment; similar to the issues we identified in this evaluation.

(U) Air Force Global Strike Command is overcoming these challenges for the Minuteman III through a new product support strategy. According to Air Force Global Strike Command, the new product support strategy, when fully implemented, will include funding for all weapon system critical infrastructure--including real property and real property installed equipment. Air Force Global Strike Command also established programmed depot maintenance for the real property and real property installed equipment associated with the Minuteman III to ensure proper maintenance cycles are established and funded. Our 2015 evaluation of the Minuteman III and our analysis of the ITW/AA GBR in this evaluation shows that, in many cases, that Air Force Global Strike Command's strategies to support Minuteman III operations are easily transferable and could be applied to the ITW/AA GBRs.

## (U) Conclusion

(S) STRATCOM. (b) (1). EO13526, sec. 1.4(g)



<sup>4</sup> Report No. 10-INTEL-13, "Sustaining the Weapons Storage and Security System (WS3)," September 30, 2010; DODIG-2015-051 "Air Force Leadership Action is Required to Sustain the Minuteman III Intercontinental Ballistic Missile Through 2030," December 17, 2014; DODIG-2014-083 "Insufficient Infrastructure Support to the Fixed Submarine Broadcast System," June 23, 2014; and DODIG-2015-133 "Evaluation of the Integrated Tactical Warning and Attack Assessment's Mobile Ground System," June 18, 2015.

(S) STRATCOM: (b) (1), EO13526, sec. 1.4(g)

## (U) Management Comments on the Finding and Our Response

### *(U) Commander, Air Force Space Command*

(U) The Director of Integrated Air, Space, Cyberspace, and ISR Operations, responding for the Commander, Air Force Space Command, concurred with the finding and provided additional information on repairs that were underway at Cavalier Air Force Station subsequent to our field visits. The Commander stated that the installation of new hardware to correct the fire doors is programmed, and the estimated completion date is September 2016. The Commander also stated that the power plant lighting is funded, and the estimated completion date is December 2016. However, the Commander disagreed that carbon monoxide detectors are a requirement for boiler rooms with gas fired boiler systems and gas fired water heaters. The Commander also disagreed that the fire station furnace duct is not accessible by personnel.

### *(U) Our Response*

(U) We agree with that there is no regulatory requirement for carbon monoxide detectors for boiler rooms with gas fired boiler systems and gas fired water heaters. We also agree with the Base Civil Engineer that gas fired boiler systems and gas fired water heaters could produce carbon monoxide gas should a malfunction or failure mode develop. Carbon monoxide gas buildup could endanger both building occupants and maintenance personnel. Even though there is no requirement, we and the Base Civil Engineer consider this a safety enhancement and engineering best practice. Accordingly, we ask the Commander to reconsider his position. Air Force Space Command's assessment of the fire station furnace duct conflicts with our observations and those of site personnel. The 10th Space Warning Squadron Commander believes the risk of injury to technicians is high and developed a project plan to fabricate components necessary to allow the base heating, ventilation, and air conditioning technician to correct equipment access difficulties. The project remains unfunded.

## **(U) Recommendations, Management Comments, and Our Response**

### **(U) Revised Recommendation**

(U) As a result of Air Force Space Command Management Comments, noted below, we revised draft Recommendation A.1 to clarify the development of the Integrated Tactical Warning/Attack Assessment mission essential facility and equipment list to include testing.

### **(U) Recommendation A.1**

**(U) We recommend that the Chief of Staff, U.S. Air Force:**

**(U) a. Develop an ITW/AA GBR mission essential facility and equipment list that includes all necessary supporting infrastructure to ensure maintenance, testing, and funding responsibilities are clearly defined.**

**(U) b. Define the ITW/AA GBR weapon system to include all items on the essential facility and equipment list to ensure critical Nuclear Command, Control, and Communications maintenance issues are prioritized.**

### ***(U) Director of Integrated Air, Space, Cyberspace, and ISR Operations, Air Force Space Command, Comments***

(U) Although not required to comment on Recommendation A.1, the Director of Integrated Air, Space, Cyberspace, and ISR Operations, Air Force Space Command, requests that we include testing as a responsibility to be defined for the essential facility and equipment list in Recommendation A.1.a.

### ***(U) Our Response***

(U) We agree with the Director of Integrated Air, Space, Cyberspace, and ISR Operations, Air Force Space Command, and we revised Recommendation A.1a to include testing.

### ***(U) Chief of Staff, U.S. Air Force Comments***

(U) The Military Deputy Under Secretary of the Air Force (Space), responding for the Chief of Staff of the U.S. Air Force, agreed with Recommendations A.1a and A.1b in the draft report.

*(U) Our Response*

(U) We request the Chief of Staff comment on revised Recommendation A.1a, because the addition of the requirement to test may involve personnel and resources from other Air Force and non-Air Force organizations. We also request the Chief of Staff to specify a plan of action and milestones to complete actions identified in Recommendations A.1.a and A.1.b.

**(U) Recommendation A.2**

**(U) We recommend that the Commander, Air Force Space Command, determine**

STRATCOM: (b) (7)(E)

**Once identified, coordinate corrections to address the concerns.**

*(U) Commander, Air Force Space Command Comments*

(U) The Director of Integrated Air, Space, Cyberspace, and ISR Operations, responding for the Commander, Air Force Space Command, concurs with Finding A.2, and will task the 21st Space Wing, which has oversight of all radar sites, to identify and prioritize all unfunded requirements supporting mission critical assets. Once these requirements are identified, Air Force Space Command will validate these requirements and advocate for sufficient funding to implement corrective actions.

*(U) Our Response*

(U) Comments from the Air Force Space Command addressed all specifics of the recommendation, and no further comments are required.

**(U) Finding B**

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g) [Redacted]  
[Redacted]  
[Redacted]  
[Redacted]  
[Redacted]

(U) STRATCOM (b) (7)(E) [Redacted]

(U) According to the Deputy Assistant Secretary of Defense for Nuclear Matters, HEMP is a physical phenomenon that poses risks to military and civilian infrastructure. HEMP is caused by a nuclear explosion above the altitude of 40 kilometers, resulting in electromagnetic radiation from a strong electronic pulse. This pulse produces current and voltage surges, in addition to radio, gamma, and X-rays that can damage or destroy the power grid, which is critical to the military infrastructure. HEMP provides a means for use of a nuclear weapon without nuclear radiation, blast, shock, and thermal effects on humans and ground infrastructure.

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g), AFSPC (b) (1), EO13526, sec. 1.4(g) [Redacted]  
[Redacted]  
[Redacted]  
[Redacted]

(U) Per the April 2010 Nuclear Posture Review, "The threat of global nuclear war has become remote, but the risk of nuclear attack has increased," highlighting the increased probability of a nation's use of a HEMP during conflict. Similarly, the Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack states that "EMP is one of a small number of threats that may hold at risk the continued existence of US civil society."

(U) An EMP event can also be caused by natural phenomena such as a geomagnetic storm. Geomagnetic storms cause changes in the magnetic field that induce currents that can damage or destroy the power grid, which is critical to the military infrastructure. Government Accountability Office Report No. GAO-12-170-C, "Electromagnetic Pulse and Cyber Threats," May 2012, concludes that a severe geomagnetic storm has the potential to cause power grid and equipment failure, and some of the larger transformers may take up to 18 months to replace.

(U) The GAO stated that the most recent geomagnetic storm severe enough to disrupt the commercial grid was in 1989, when approximately six million homes in Quebec, Canada, lost power for nine hours. According to the Office of Science and Technology Policy, the likelihood of a severe geomagnetic storm 10 times worse than the 1989 event is estimated at one percent a year. The GAO report highlighted that commercial power is more vulnerable to longer outages because the electric grid has become increasingly fragile. These conditions make the survivability and endurance of the ITW/AA GBR during commercial outages even more critical.

(U) STRATCOM (b) (7)(E)  
[Redacted]

(S) STRATCOM (b) (1), EO13526, sec. 1.4(g)  
[Redacted]

*(U) Table 3. Electromagnetic Pulse Hardening Status*

<del>SECRET</del>	
<small>STRATCOM (b) (1), EO13526, sec. 1.4(g)</small> [Redacted]	
	<del>SECRET</del>

Sources: 21<sup>st</sup> Space Wing and Headquarters Air Force Space Command A2/3/6

~~(S)~~ Beale Air Force Base, California. STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

[REDACTED]

~~(S)~~ Cape Cod Air Force Station, Massachusetts. STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

[REDACTED]

~~(S)~~ Cavalier Air Force Station, North Dakota. STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

[REDACTED]

~~(S)~~ STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

[REDACTED]

~~(S)~~ Clear Air Force Station, Alaska. STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

[REDACTED]

(S) STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)  
[Redacted]

(S) **Thule Air Base, Greenland.** STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)  
[Redacted]

(S) STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)  
[Redacted]

(U) *Figure 1:* DoD OIG: (b) (7)(E) [Redacted]

DoD OIG: (b) (7)(E)  
[Redacted]

(U) Source: DoD OIG

**(U) Royal Air Force Station Fylingdales, United Kingdom.**

DOD OIG: (b)(7)(E)

[REDACTED], Air Force Space Command informed us that new emergency exit doors will be installed sometime in the spring of 2016. DOD OIG: (b)(7)(E)

**(U) Maintaining EMP Capability Once Established.** The 2017 Resource Management Decision (RMD), signed February 10, 2016, by the Deputy Secretary of Defense, inserted language into the President's budget to request funding for quarterly Hardness Maintenance/Hardness Surveillance activities. This is intended to protect the investments being made at the sites, ensuring that the sites stay certified.

**(U) Conclusion**

(S) STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

**(U) Management Comments on the Finding and Our Response**

*(U) Commander, Air Force Space Command Comments*

(S) The Director of Integrated Air, Space, Cyberspace, and ISR Operations, responding for the Commander, Air Force Space Command provided updates

STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

*(U) Our Response*

(U) We appreciate the comments from Air Force Space Command. We modified the report to reflect the updated information.

*(U) Chief of Staff, U.S. Air Force Comments*

(S) The Military Deputy Under Secretary of the Air Force (Space), responding for the Chief of Staff of the U.S. Air Force, disagreed with our finding and stated that the Air Force

STRATCOM: (b) (1), EO13526, sec. 1.4(g); AFSPC: (b) (1), EO13526, sec. 1.4(g)

*(U) Our Response*

(S) STRATCOM: (b) (1), EO13526, sec. 1.4(g). AFSPC: (b) (1), EO13526, sec. 1.4(g)  
[Redacted text block]

**(U) Recommendations, Management Comments, and Our Response**

**(U) Recommendation B.1**

**(U) We recommend that the Commander, Air Force Space Command:**

(S) a. STRATCOM: (b) (1), EO13526, sec. 1.4(g). AFSPC: (b) (1), EO13526, sec. 1.4(g)  
[Redacted text block]

**(U) b. Ensure all scheduled Integrated Threat Warning/Attack Assessment EMP projects, to include final verification testing, are completed.**

*(U) Commander, Air Force Space Command Comments*

(U) The Director of Integrated Air, Space, Cyberspace, and ISR Operations, responding for the Commander, Air Force Space Command, concurs with Finding B.1, and will, as power protection studies are completed, work with the 21st Space Wing to develop a prioritized EMP protection plan and oversee its completion.

*(U) Our Response*

(U) Comments from Air Force Space Command addressed all specifics of the recommendation, and no further comment is required.

## (U) Finding C

(U)

STRATCOM (b) (7)(E)

(U) Not all ITW/AA GBR spare parts meet the original manufacturer's specifications or are catalogued for Air Force use. This occurred because there was insufficient management of supply and suitable substitute processes. Because of this, Air Force personnel repair or alter consumable parts and depot-level repairable items to keep the radars operational to the maximum extent possible. As a result of these field-level repairs, the Air Force is not creating accurate demand forecasts, which prevents corrective action for future parts transactions.

### (U) Not All ITW/AA GBR Spare Parts Meet the Original Manufacturer's Specifications or Are Catalogued for Air Force Use

(U) The Air Force transferred procurement responsibility for depot-level repairable items to the Defense Logistics Agency (DLA) as a result of the 2005 Base Realignment and Closure Act. Additionally, the 2005 Base Realignment and Closure Act was the impetus for the Air Force's transfer of management of all consumables to DLA.<sup>5</sup> As a result, ground-based radar technicians must use both Air Force and DLA supply processes to sustain the ITW/AA GBRs. After interviewing personnel at five of the six GBR sites, and examining the supply process for the radar sites, we concluded that two specific areas require attention: (a) suitable substitutes that meet ITW/AA GBR specifications and (b) parts not catalogued for Air Force use. Both of these problems prevent spare parts from arriving on time, which degrades GBR operations and impacts the mission.

(U) **Suitable Substitutes.** The DLA and the Air Force have an established process to find suitable substitute parts when a specific part is not in stock. However, we found examples where radar site logistics personnel received suitable substitutes from DLA, but the parts did not meet ITW/AA GBR specifications. For example, a suitable

<sup>5</sup> 2005 Base Realignment and Base Closure Report, September 8, 2005, page 274.

(U) substitute for a radio frequency amplifier circuit card assembly does not have capacitors positioned correctly. This radio frequency card assembly has experienced numerous problems. The card is part of the solid state module, which is used to amplify the radar signals critical to missile warning operations. DLA made a large purchase of these card assemblies at the initial installation of the ITW/AA ground-based radars, and provided them for all the sites. These card assemblies are low demand items, and over time the original vendor ceased production of the cards. With no vendor, substantial expenditures were required to re-tool new production runs. Additionally, the circuit card assemblies for the new radio frequency amplifier did not arrive for more than a year. Once the sites received the assemblies, technicians discovered that the capacitors were incorrectly placed in the circuit cards and needed to be repositioned.

(S) STRATCOM. (b) (1), EO13526, sec. 1.4(g) [Redacted]

(U) **Parts not catalogued for Air Force Use.** Not all ITW/AA ground-based radar parts are catalogued for Air Force use. We found seven ITW/AA ground-based radar parts that are catalogued "Not For Air Force Use." For example, the Federal Aviation Administration manages the network time sensor, which handles the ITW/AA GBR's frequency shifts. Because the network time sensor is not catalogued for Air Force use, ITW/AA ground-based radar sites cannot order replacements without time consuming work-arounds.

(U) In addition to the network time sensor, we were provided six more examples of parts that are catalogued as "Not For Air Force Use," including a power supply, disk drive unit, and a centrifugal fan. Coding of assets is key for stocking and re-ordering.

## **(U) Circumventing the Supply System Fails to Properly Signal Demand**

(U) Maintenance personnel at several sites provided examples of instances where they repaired radar parts rather than wait for replacement parts specified in the technical orders. Parts were repaired because of the requirement to keep the radar operational to the maximum extent possible. However, conducting repairs rather than ordering the appropriate replacement parts circumvents the supply system that tracks parts usage and forecasts future demand. As a result, no parts are ordered and no demand data is generated regarding the part repaired on site. Future demand cannot be accurately estimated if these practices continue.

(U) The previously cited radio frequency amplifier circuit card with misaligned capacitors also adversely affected supply system demand. The 21st Space Wing, which commands the geographically dispersed ITW/AA radar sites, stated that they authorized ITW/AA maintenance contractors to realign the capacitors on the circuit card assemblies to reduce system down time. 21st Space Wing personnel and Cape Cod Air Force Station maintenance personnel stated that realigning the capacitors on site causes multiple hours of rework for each circuit card, but this allowed the ITW/AA radar sites to remain operational.

(U) During our review we also noted that radar technicians modified power supply fans received from DLA. The fans did not work properly and were experiencing a higher failure rate than fans ordered in prior maintenance cycles. One site reported to us that it completed 160 fan alterations to achieve minimal functionality.

(U) At Cavalier Air Force Station, site personnel acknowledged that they repaired leaks in cooling coils because replacement parts were not available through supply channels. However, each time a leak was sealed, more fins would have to be removed to access the area needing sealed, thus reducing the efficiency of the cooling coil.

*(U) Figure 2: Cooling Coil With Transfer Fins Removed to Allow Access to Seal Leak - Cavalier*



(U) Source: DoD OIG

(U) Although modifying parts received in the wrong configuration or repairing parts that break on site keep the radar operational, the practice fails to signal deficiencies or demand in the supply system. Without proper indications of deficiencies or demand, the supply system cannot respond with the correct part rapidly enough to meet the technician's needs. Technicians expect parts to arrive in a serviceable condition described in their written procedures, ready for installation, rather than requiring additional servicing by maintenance personnel.

### **(U) Conclusion**

(U) Current demand patterns do not ensure the availability of critical spare parts and equipment required to support the ITW/AA GBR sites. Because of the requirement to meet Mean-Time-Between-Failure rates, as required by the Chairman of the Joint Chiefs of Staff, technicians conduct repairs on the radar rather than waiting for parts specified in the technical orders. These practices increase the operational availability of the radars, but fail to signal deficiencies in the supply system, thereby, preventing possible actions to ensure parts orders are correct.

## **(U) Recommendations, Management Comments, and Our Response**

### **(U) Revised and Redirected Recommendations**

(U) As a result of Air Force Life Cycle Management Center Management Comments, we revised draft Recommendations C.1 and C.2 to include the collateral responsibility of the Defense Logistics Agency, Air Force Space Command, and the Air Force Sustainment Center.

### **(U) Recommendation C.1**

**(U) We recommend that the Commander, Air Force Lifecycle Management Center, in conjunction with the Defense Logistics Agency, Air Force Space Command, and the Air Force Sustainment Center, ensure the Air Force is identified as a user for all Integrated Tactical Warning/Attack Assessment ground-based radar spare parts.**

### *(U) Commander, Air Force Lifecycle Management Center Comments*

(U) The Senior Material Leader, Chief, Strategic Warning and Surveillance Systems, responding for the Commander, Air Force Lifecycle Management Center agreed and stated that corrective actions will be completed by the Strategic Warning and Surveillance Systems Division by August 4, 2017.

### *(U) Our Response*

(U) Comments from the Commander Air Force Life Cycle Management Center addressed all specifics of the recommendations, and no further comments are required.

### *(U) Director Defense Logistics Agency*

(U) We request that the Director Defense Logistics agency respond to Recommendation C.1, to ensure that the Air Force is identified as a user for all Integrated Tactical Warning/Attack Assessment ground-based radar spare parts.

### *(U) Commander, Air Force Sustainment Center*

(U) We request that the Commander, Air Force Sustainment Center respond to Recommendation C.1, to ensure that the Air Force is identified as a user for all Integrated Tactical Warning/Attack Assessment ground-based radar spare parts.

***(U) Recommendation C.2***

**(U) We recommend that the Commander, Air Force Lifecycle Management Center, as the service engineering authority in conjunction with the Defense Logistics Agency, Air Force Space Command, and the Air Force Sustainment Center, review and correct quality assurance processes for Integrated Tactical Warning/Attack Assessment ground-based radar suitable substitute selection.**

***(U) Commander, Air Force Lifecycle Management Center Comments***

(U) The Senior Material Leader, Chief, Strategic Warning and Surveillance Systems, responding for the Commander, Air Force Lifecycle Management Center, agreed and stated that corrective actions will be completed by the Strategic Warning and Surveillance Systems Division by August 4, 2017.

***(U) Our Response***

(U) Comments from the Commander Air Force Life Cycle Management Center addressed all of the recommendations, and no further comments are required.

***(U) Director Defense Logistics Agency***

(U) We request that the Director Defense Logistics agency respond to Recommendation C.2, to review and correct quality assurance processes for the Integrated Tactical Warning/Attack Assessment ground-based radar suitable substitute selection.

***(U) Commander, Air Force Sustainment Center***

(U) We request that the Commander, Air Force Sustainment Center respond to Recommendation C.2, to review and correct quality assurance processes for the Integrated Tactical Warning/Attack Assessment ground-based radar suitable substitute selection.

## (U) Management Comments

### (U) Chief of Staff, U.S. Air Force



DEPARTMENT OF THE AIR FORCE  
WASHINGTON DC

OFFICE OF THE UNDER SECRETARY

13 July 2016

MEMORANDUM FOR SAF/FMF

FROM: SAF/SPV

SUBJECT: DoD Inspector General (IG) Draft Report: Evaluation of the ITW/AA Ground Based Radars (GBR), TMT HAFS1618915398

Pursuant to TMT HAFS 1618915398, SAF/SPV has completed a review of the DoD IG Draft Report and evaluated the recommendations.

a. SAF/SPV supports recommendations A.1.a and A.1.b as written in the report. We agree with the end goal of defining and prioritizing Integrated Tactical Warning and Attack Assessment (ITW/AA) GBR mission essential facility and equipment lists to ensure support to the critical NC3 mission.

b. Recommend revising the introductory portion of Recommendation B.1 (Page 13) to reflect the wording on the recommendation in the body of the report (Page 18). Revision would acknowledge up front that the Air Force does have a viable plan and funding in place.

My POC for this effort is [REDACTED]

DoD OIG (b) (6)

[REDACTED]  
Military Deputy Under Secretary of the Air Force (Space)

**(U) Headquarters Air Force, A10**



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON DC

CLASSIFICATION: UNCLASSIFIED

JUL 22 2016

MEMORANDUM FOR DoD Inspector General

FROM: AF/A10N  
1307 Brookley Ave, Suite 201  
Joint Base Anacostia-Bolling, DC 20032

SUBJECT: DoDIG Draft Report Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars

We have thoroughly reviewed the draft Integrated Tactical Warning/Attack Assessment Ground-Based Radars (ITW/AA GBR) report and agree with the recommendations. The recommended changes will ensure a capable and integrated ITW/AA system well into the future. AF/A10 has no actions associated with the proposed recommendations.

My POC is [REDACTED]

DoD OIG (b) (6)

USAF

Chief NC3 Division

CLASSIFICATION: UNCLASSIFIED

**(U) Headquarters Air Force, A3**



**DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS UNITED STATES AIR FORCE  
WASHINGTON, DC**

28 Jul 16

MEMORANDUM FOR DoD Inspector General

FROM: AF/A3  
1480 Air Force Pentagon  
Washington D.C. 20330-1480

SUBJECT: DoD IG Report of Evaluation of the Integrated Tactical Warning/Attack Assessment  
Ground-Base Radars (ITW/AA GBR)

After reviewing your draft report on the ITW/AA GBR, I concur with comments that we believe will further facilitate the accuracy of your report. These changes are provided in a separate comment resolution matrix.

My POC is [REDACTED]

Handwritten signature of Scott A. Vander Hamm in black ink.

SCOTT A. VANDER HAMM, Maj Gen, USAF  
Assistant DCS, Operations

Attach  
Project No. D2015-DISPAA1-0132.00 - A3 CRM.doc

(U) Headquarters Air Force, A3 (cont'd)

DoD Draft Report of Evaluation of the ITW/AA GBR

CLASSIFICATION: ~~SECRET~~

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ITEM	#	SOURCE	TYPE	PAGE	PARA	LINE	COMMENT	RATIONALE	DECISION (A/R/M)
		[REDACTED]	S	3	Find ing A	4	[REDACTED]		
		[REDACTED]	S	3	Find ing A	12			
		[REDACTED]	S	12	Con clusi on	1			
		[REDACTED]	S	14		17			

STRATCON: (b) (U), EO 13526, sec. 1.4(e)

**(U) Headquarters Air Force Space Command**



CLASSIFICATION: ~~SECRET~~  
**DEPARTMENT OF THE AIR FORCE**  
**HEADQUARTERS AIR FORCE SPACE COMMAND**

(U) MEMORANDUM FOR DOD IG

28 Jul 16

(U) FROM: HQ AFSPC/A2/3/6  
150 Vandenberg Street, Suite 1105  
Peterson AFB, CO 80914-4170

SUBJECT: (U) AFSPC Response to DoD IG Draft Report Evaluation of the Integrated Tactical Warning/Attack Assessment Ground-Based Radars, Project No. D2015-DISPA1-0132.000

1. (U) Our team reviewed the subject draft report and we concur with the findings with substantive comments at Attachment 1.

2. (U) Our response to recommendations A.2 and B.1 are as follows:

a. (U) Recommendation A.2 (page 12) - HO AFSPC will task 21 SW to identify and prioritize all  
STRATCOM (b) (7)(E)

My staff will validate these requirements and advocate with the 21  
SW and AFIMSC/Det 1 for funding to implement corrective actions.  
STRATCOM (b) (1), EO13526, sec. 1.4(g)

STRATCOM (b) (1), EO13526, sec. 1.4(g)

3. (U) My point of contact for this report is [REDACTED]

STEPHEN N. WHITING  
Brigadier General, USAF  
Director of Integrated Air, Space,  
Cyberspace and ISR Operations

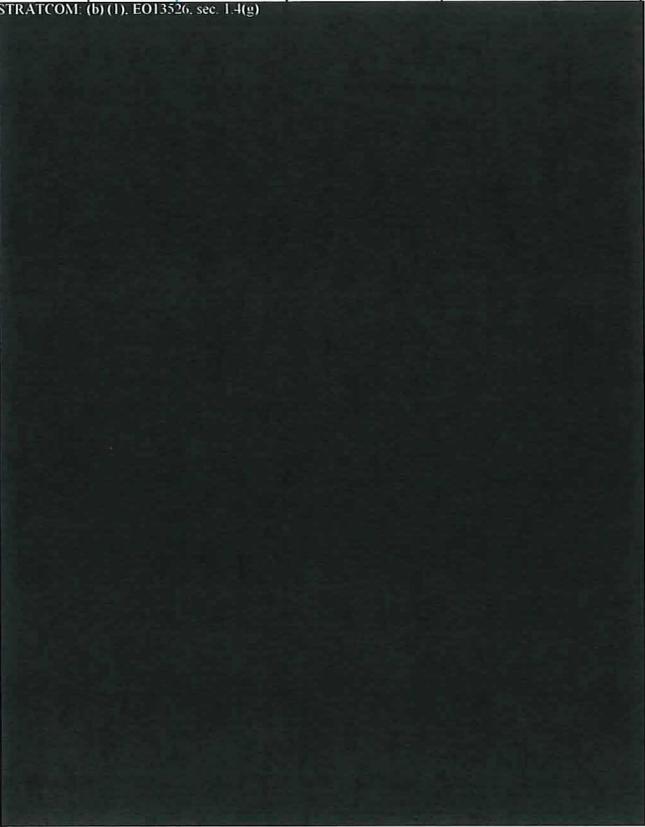
Attachment:  
(U) CRM

CLASSIFICATION: ~~SECRET~~  
GUARDIANS OF THE HIGH FRONTIER

(U) Headquarters Air Force Space Command (cont'd)

CRM/DOD IG Report: Evaluation of ITWAA GBRs, dated 20 Jan 2016

CLASSIFICATION: ~~SECRET//REL-GBR~~

ITEM #	SOURCE	TYPE	PAGE	PARA	LINE	COMMENT	RATIONALE	DECISION (A/R/M)
1.	21 OG	S	8	4	1-4			
2.	21 OG	S	8	4	4-5			
3.	21 OG	S	8	5	1-3			
4.	21 OG	S	8	5	4-5			

STRATCOM: (b) (1), EO13526, sec. 1.4(g)

**(U) Headquarters Air Force Space Command (cont'd)**

CRM DoDIG Report, Evaluation of ITWVAA GBRs, dated 20 Jun 2016

CLASSIFICATION: ~~SECRET//NOFORN~~

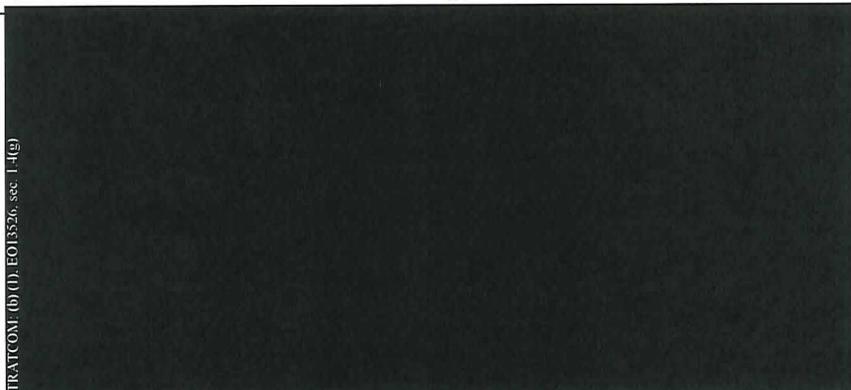
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5.	21 OG	S	9	1		Delete entire paragraph		

STRATCOM: (b) (1), EO13526, sec. 1-4(g)

(U) Headquarters Air Force Space Command (cont'd)

CLASSIFICATION: ~~SECRET//REL ODR~~

CRM DoD IG Report, Evaluation of ITWAA GBRs, dated 20 Jun 2016

ITEM #	SOURCE	TYPE	PAGE	PARA	LINE	COMMENT	RATIONALE	DECISION (A/R/M)
6.	14 AF/A3/4/6 	S	PDF 9	Figur e 1		 <small>STRATCOM (b)(1), EO 13526, sec. 1.4(g)</small>		
7.	14 AF/A3/4/6 	A	all	all	all	(U) Throughout document, standardize use of <u>ground-based radar</u> with hyphen. Not all entries have a hyphen.	Grammar.	A Done
8.		A	8	3	4	Redundancy is not only to provide service to the mission when one pathway fails, but also to provide a means of taking elements down for maintenance, repair, and testing to ensure continued operation.  Using redundancy for maintenance and testing is rarely done, but essential to avoid unscheduled outages.	Redundancy is more than direct mission support. It is also for maintenance, repair, and testing.	R As 2 <sup>nd</sup> sentence describes, redundancy for maintenance and testing is rarely done.

(U) Headquarters Air Force Space Command (cont'd)

CLASSIFICATION: ~~SECRET//REL GDR~~

CRM DoD IG Report, Evaluation of ITWAA GBRs, dated 20 Jun 2016

ITEM #	SOURCE	TYPE	PAGE	PARA	LINE	COMMENT	RATIONALE	DECISION (A/R/M)
9.	[REDACTED]	A	12	6	3	<p>Add <i>testing</i>. "...all necessary supporting infrastructure to ensure maintenance [<i>testing</i>] and funding responsibilities are clearly defined.</p> <p>For example: actual power outages should be conducted twice per year. These outages should be modeled as a power grid outage to ensure mission operation during an actual power outage. This should apply to all utilities.</p> <p>Corollary to this is the mission to document survival times for each utility. This will ensure properly designed infrastructure.</p>	<p>Testing is an integral part of ensuring mission availability. Proper testing exposes issues before the unscheduled power outage occurs.</p>	<p>A</p> <p>Recommendation A.1.a has been revised, with an explanatory paragraph and Revised Recommendations table</p>

## (U) Commander, Air Force Life Cycle Management Center



CLASSIFICATION: ~~UNCLASSIFIED//FOUO~~  
DEPARTMENT OF THE AIR FORCE  
AIR FORCE LIFE CYCLE MANAGEMENT CENTER (AFLCMC)  
PETERSON AIR FORCE BASE COLORADO

9 August 2016

MEMORANDUM FOR HQ AFLCMC/FZOF AUDIT FOCAL POINT  
BLDG 14 ROOM 240  
1865 4<sup>TH</sup> ST  
WRIGHT-PATTERSON AFB OH 45433-7114

HQ AFLCMC/CC  
BLDG 14 ROOM 201  
1865 4<sup>TH</sup> ST  
WRIGHT-PATTERSON AFB OH 45433-7114

HQ AF/FMP/AQ/AG  
PENTAGON  
WASHINGTON DC 20330-1130

IN TURN

FROM: AFLCMC/HBQ  
Bldg 2025  
1050 East Stewart Ave  
Peterson AFB CO 80914-2900

SUBJECT: Management Comments, DoD-IG Draft Report Of Audit (ROA), *Evaluation of Infrastructure Support to the Integrated Tactical Warning and Attack Assessment (ITWAA) - Ground Based Radars*, Project D2015-DISPA1-0132.000

1. Subject audit reviewed Air Force Space Command (AFSPC) and Air Force Life Cycle Management Center (AFLCMC) programs related to ITWAA Ground Based Radars (GBRs). We concur with the *results and findings* stipulated in subject ROA which are applicable to AFLCMC and more specifically, the Strategic Warning and Surveillance Systems Division (AFLCMC/HBQ). HBQ management comments addressing AFLCMC-related *recommendations* and appropriate *corrective actions* are attached.
2. Report clarification: the recommendation section of the draft ROA directs the HQ AFLCMC Commander to implement corrective actions. It is important to note that with the approval of the AFLCMC Commander, all corrective actions for recommendations C.1 and C.2 will be implemented by the HBQ Division in cooperation with AFSPC.
3. I recommend SAF/AQ appoint AFSPC as the Office of Collateral Responsibility (OCR) for implementation of all recommendations in the ROA and for subsequent follow-up (status) reports to SAF and DoD-IG.
4. Please direct questions regarding this project to [REDACTED]

DoD OIG (b) (6)

Senior Materiel Leader  
Chief, Strategic Warning & Surveillance Systems

Attachment:  
AFLCMC/HBQ Management Comments (1 page)

CLASSIFICATION: ~~UNCLASSIFIED//FOUO~~

## (U) Commander, Air Force Life Cycle Management Center (cont'd)

CLASSIFICATION: UNCLASSIFIED//~~FOUO~~

DoD-IG

Report Of Audit (ROA)

Strategic Warning & Surveillance Systems Division (AFLCMC/HBQ)

*Evaluation of Infrastructure Support to the Integrated Tactical Warning and Attack Assessment (ITWAA)*

*Ground Based Radars, Project D2015-DISPA1-0132.000*

### MANAGEMENT COMMENTS

Per DoD-IG draft ROA, recommendations C.1 and C.2 apply to AFLCMC.

The Commander, Air Force Life Cycle Management Center (AFLCMC), Wright-Patterson AFB, OH, [specifically, the HBQ Division Chief at Peterson AFB CO] will...

#### 1. Recommendation C.1:

Ensure the Air Force is identified as a user for all ITW/AA Ground Based Radar (GBR) spare parts.

a. Concur with recommendation C.1.

b. OPEN.

c. HBQ will coordinate with Air Force Space Command (AFSPC), Air Force Sustainment Center (AFSC) and Defense Logistics Agency (DLA) to ensure GBR parts are AF coded. All stock and non-stock listed parts will be reviewed to ensure proper coding. This involves thousands of stock and non-stock listed parts across 6 different GBRs.

d. Estimated Completion Date (ECD): 4 Aug 2017

#### 2. Recommendation C.2:

Identify stakeholders to review and correct quality assurance processes for ITW/AA GBR suitable substitute selection.

a. Concur with recommendation C.2.

b. OPEN.

c. HBQ will coordinate with AFSPC, AFSC and DLA to optimize suitable substitute quality assurance processes for GBR parts. This corrective action will be conducted in parallel with recommendation C.1.

d. Estimated Completion Date (ECD): 4 Aug 2017

CLASSIFICATION: UNCLASSIFIED//~~FOUO~~

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## (U) Appendix

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### (U) Scope and Methodology

(U) We conducted this evaluation from March 2015 through June 2016 in accordance with the Council of the Inspectors General on Integrity and Efficiency Quality Standards for Inspection and Evaluation. Those standards require that we plan and perform the evaluation to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our evaluation objective.

(U) We interviewed senior leaders from Office of the Secretary of Defense; U.S. Strategic Command; U.S. Northern Command; U.S. Missile Defense Command; Headquarters, U.S. Air Force; Air Force Space Command; and Air Force Materiel Command.

(U) We conducted site visits at five of the six radar sites used to provide data to the Integrated Tactical Warning/Attack Assessment system:

- Beale Air Force Base, California
- Cape Cod Air Force Station, Massachusetts
- Cavalier Air Force Station, North Dakota
- Clear Air Force Station, Alaska
- Thule Air Force Station, Greenland

(U) We also examined the facilities at those radar sites necessary to conduct the ITW/AA mission, including power generation and distribution, cooling, and other infrastructure assets.

(U) We reviewed Presidential directives, DoD directives, Joint Staff, and Air Force Instructions, to identify authorities and responsibilities for the Integrated Tactical Warning/Attack Assessment ground-based radar system.

### **(U) Use of Computer Processed Data**

(U) We did not use computer-processed data for this evaluation.

### **(U) Use of Technical Assistance**

(U) We did not use technical assistance in performing this evaluation.

### **(U) Prior Coverage**

(U) The DoD OIG has not conducted any prior evaluations on the Integrated Tactical Warning/Attack Assessment ground-based radars.

## (U) Acronyms and Abbreviations

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<b>AFB</b>	Air Force Base
<b>AFGSC</b>	Air Force Global Strike Command
<b>CJCSI</b>	Chairman of the Joint Chiefs of Staff Instruction
<b>DLA</b>	Defense Logistics Agency
<b>EMP</b>	Electromagnetic Pulse
<b>GBR</b>	Ground-Based Radar
<b>HEMP</b>	High Altitude Electromagnetic Pulse
<b>ITW/AA</b>	Integrated Tactical Warning / Attack Assessment
<b>ITW/AA GBR</b>	Integrated Tactical Warning / Attack Assessment Ground-Based Radar
<b>MTBF</b>	Mean-Time-Between-Failure
<b>NC2</b>	Nuclear Command and Control
<b>NC3</b>	Nuclear Command, Control, and Communications
<b>PPD</b>	Presidential Policy Directive

~~SECRET~~

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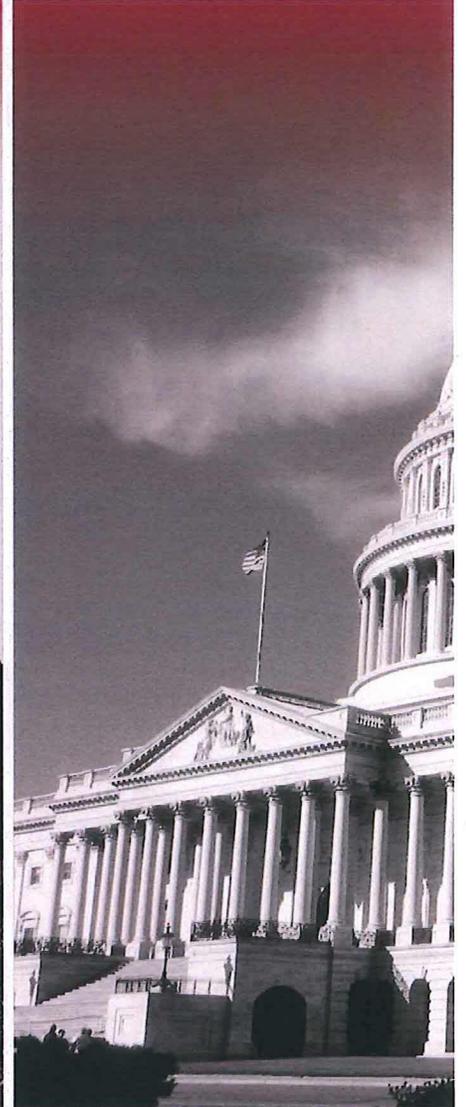
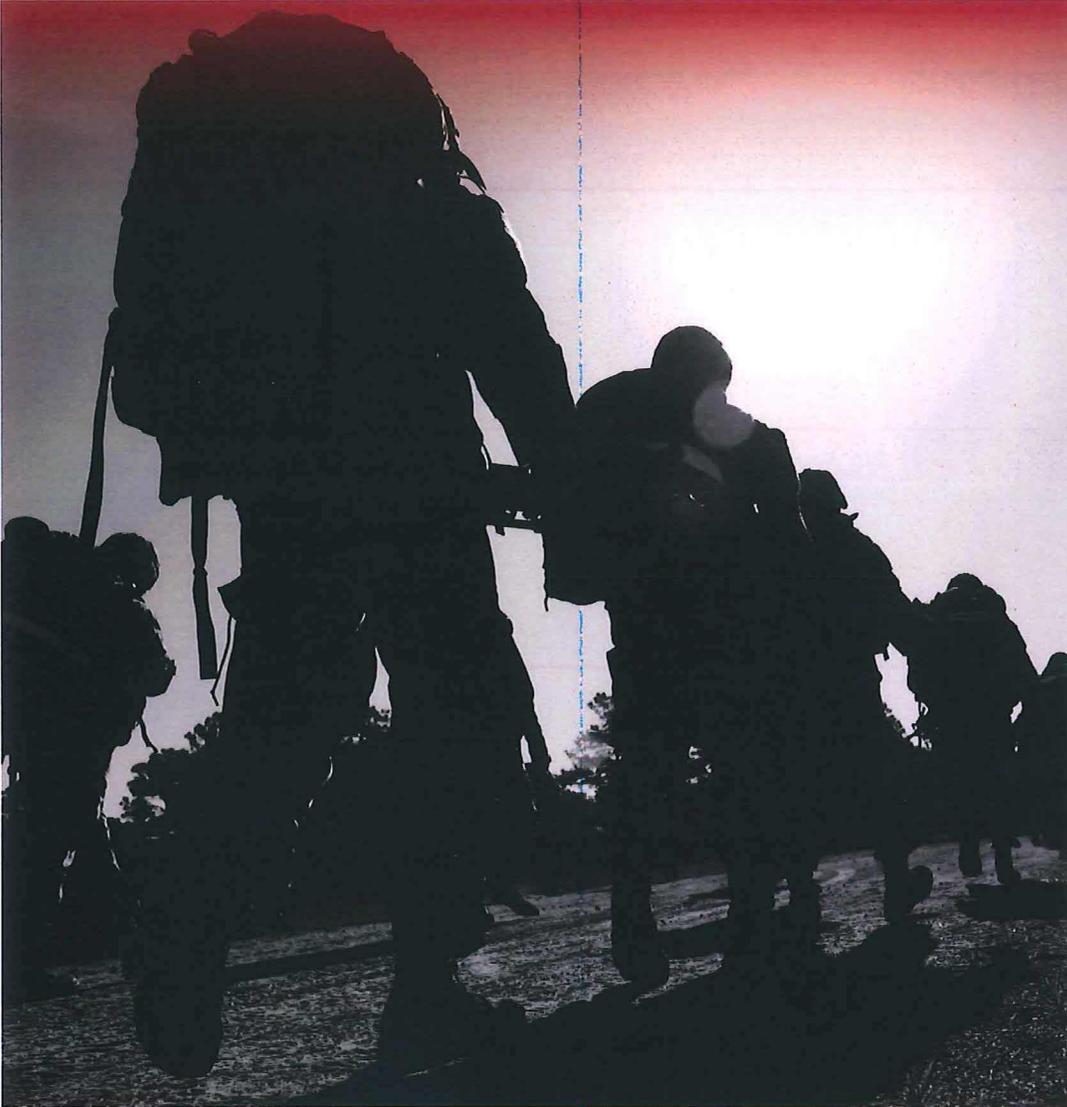
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