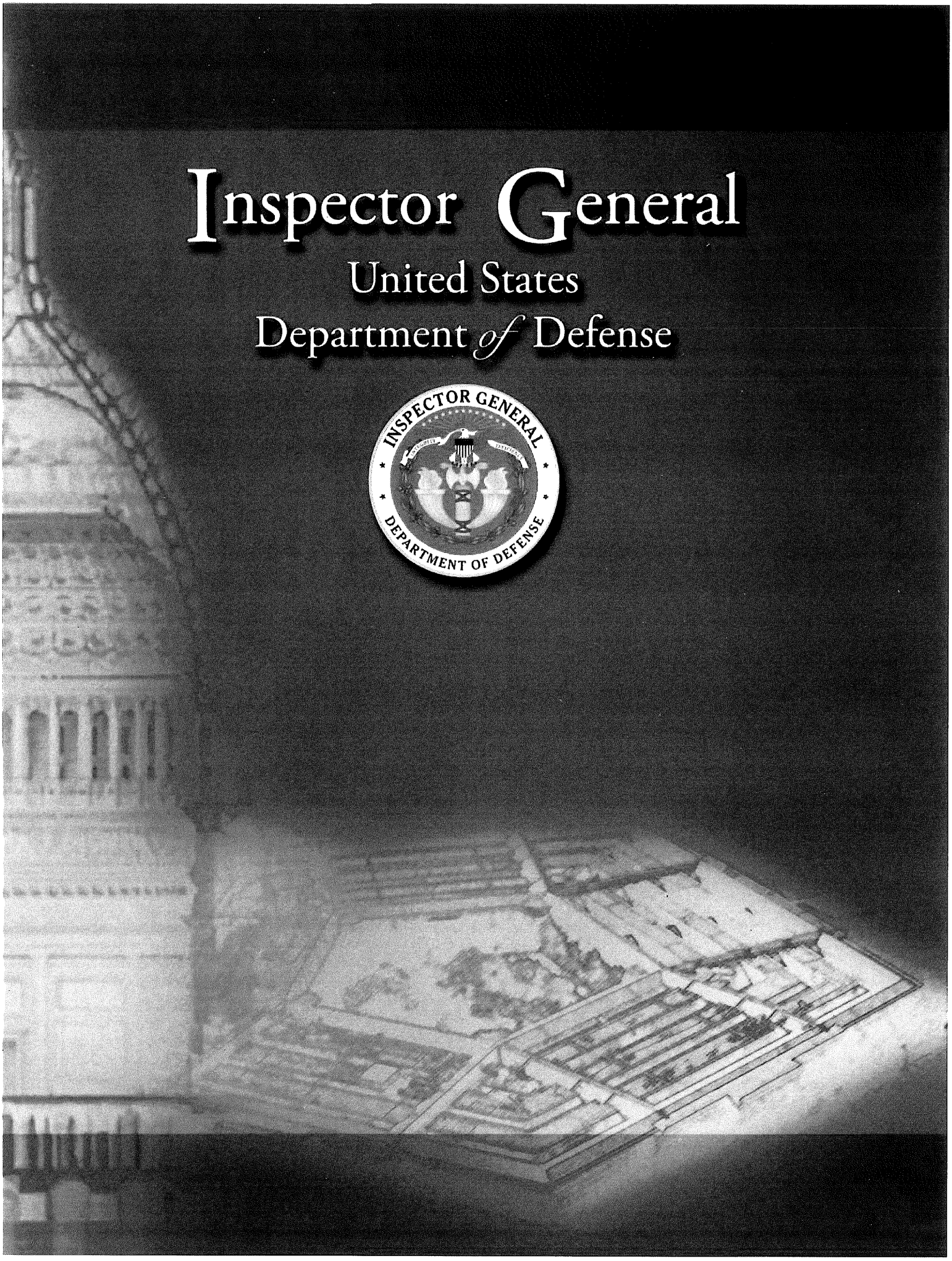
Inspector General
United States Department of Defense



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(U) To obtain addition copies of this report contact DoD OIG: (b) (6) [redacted], Deputy Assistant Inspector General for Intelligence and Special Programs Assessments at DoD OIG: (b) (6) [redacted].

(U) Suggestions for Audits

(U) To suggest ideas for or to request future reviews, contact the Office of the Deputy Inspector General for Intelligence and Special Program Assessments by phone at (703) 882-4818 (DSN 372-4818), by fax (571) 372-7451, or by mail:

ODIG-ISPA (ATTN: Audit/Evaluation Suggestions)
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(U)

Acronyms and Abbreviations

ALGS	Autonomic Logistics Global Sustainment
ALIS	Autonomic Logistics Information System
ALOU	Autonomic Logistics Operating Unit
COOP	Continuity of Operations Plan
COTS	Commercial-Off-The–Shelf
CPE	Central Point of Entry
DCAA	Defense Contract Audit Agency
DCMA	Defense Contract Management Agency
DIA	Defense Intelligence Agency
DIACAP	DOD Information Assurance Certification and Accreditation Process
EVMS	Earned Value Management System
IPT	Integrated Product Team
IV&V	Independent Verification and Validation
JCS	Joint Contract Specifications
JPO	F-35 Lightning II Joint Program Office
LM Aero	Lockheed Martin Aeronautics
LM GTL	Lockheed Martin Global Training and Logistics
LRIP	Low Rate Initial Production
ORD	Operational Requirements Document
OSI	Air Force Office of Special Investigations
SAP	Special Access Program
SDD	System Development and Demonstration
SOU	Standard Operating Unit
STAR	System Threat and Analysis Report
USD (AT&L)	Under Secretary of Defense (Acquisition, Technology and Logistics)

(U)

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

December 10, 2012

MEMORANDUM FOR DISTRIBUTION UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS
DIRECTOR, DEPARTMENT OF DEFENSE SPECIAL ACCESS PROGRAMS CENTRAL OFFICE
ADMINISTRATIVE ASSISTANT TO THE SECRETARY OF THE AIR FORCE
PROGRAM EXECUTIVE OFFICER FOR THE F-35 LIGHTNING II JOINT PROGRAM OFFICE

SUBJECT: (U) Audit of the F-35 Lightning II Autonomic Logistics Information System (Report No. DODIG-2013-031)

(U) We are providing this report for your review and comment. We considered management comments on the draft of this report when preparing the final report.

(U) DOD Directive 7650.3 requires that recommendations be resolved promptly. The Under Secretary of Defense for Acquisition, Technology, and Logistics responded on behalf of the F-35 Lightning II Joint Program Office. The Under Secretary of Defense for Acquisition, Technology, and Logistics comments were partially responsive. Therefore, we request he provide additional comments on Recommendations A., B., C.1., C.2., D.1., D.2., D.3., D.4., and D.5. by January 31, 2013.

(U) We appreciate the courtesies extended to the staff. If you have questions concerning this report, please contact DoD OIG: (b) (6) [redacted] Deputy Assistant Inspector General for Intelligence and Special Program Assessments at DoD OIG: (b) (6) [redacted]

DoD OIG: (b) (6) [redacted]

Acting Deputy Inspector General
for Intelligence and Special
Program Assessments

DoD OIG: (b) (6) [redacted]

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Report No. DODIG-2013-031 (Project No. D2010-DINT02.0146) December 10, 2012

(U) Results in Brief: Audit of the F-35 Lightning II Autonomic Logistics Information System (ALIS)

(U) What We Did

(U) The overall objective was to evaluate the management of the Autonomic Logistics Information System (ALIS). We also performed follow-up on recommendations made in DOD IG Report No. 07-INTEL-05, "Audit of Controls Over Protecting and Releasing Special Program Information to the F-35 Foreign Partners."

(U) What We Found

(U/USAF: (b) (1), 1 7(e); DoD OIG:) The ALIS Integrated Product Team does not have the authority and control needed to effectively manage the ALIS. As a result, security risks, USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted] are increased; control of cost increases and schedule delays cannot be mitigated; and additional cost and time will be expended to meet deployability requirements.

(U) We also found the F-35 Joint Program Office had implemented all but one of our recommendations which we will continue to address through the mediation process.

(U) What We Recommend

(~~U//FOUO~~) We recommend the Under Secretary of Defense for Acquisition, Technology, and Logistics designate the ALIS as a separate Major Automatic Information System under the F-35 Program Executive Officer and review the ALIS Standard Operating Unit Version 2 to determine if classification as a separate acquisition program is appropriate.

(U/~~FOUO~~) We also recommend the F-35 Joint Program Office ensure ALIS meets Service requirements and ensure protection of USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted] information through testing; the identification of current threats; and the identification of all foreign developed software used in the system.

(U) Management Comments and Our Response

(U) The Under Secretary of Defense for Acquisition, Technology, and Logistics responded on behalf of the F-35 Lightning II Joint Program Office. The Under Secretary of Defense for Acquisition, Technology, and Logistics comments were partially responsive. Therefore, we request the Under Secretary of Defense for Acquisition, Technology, and Logistics provide additional comments to the recommendations listed in the recommendations table on the back of this page by January 31, 2013.

(U) Recommendations Table

(U)

Management	Recommendations Requiring Comment	No Additional Comments Required
Under Secretary of Defense for Acquisition, Technology, and Logistics	A, C.1	
F-35 Lightning II Joint Program Office	B, C.2, D.1, D.2, D.3, D.4, D.5	

(U)

(U) Please provide comments by January 31, 2013.

(U) Table Contents

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(U) Introduction

(U) Objectives

(U) The overall objective of the audit was to evaluate the management of the Autonomic Logistics Information System (ALIS). We also performed follow-up on recommendations made in DOD IG Report No. 07-INTEL-05, "Audit of Controls Over Protecting and Releasing Special Program Information to the Joint Strike Fighter Foreign Partners," February 9, 2007. See Appendix A for the scope and methodology related to the audit objective.

(~~U//FOUO~~) During the performance of this audit, several areas of concern outside the scope of the audit were identified. The issues are discussed in Appendix B of this report.

(U) Background

(U) F-35 Lightning II. The F-35 Lightning II Program (hereafter referred to as the F-35) is a Major Defense Acquisition Category 1D program that is the largest defense acquisition program in history. The F-35 is the DOD's focal point for the next generation strike aircraft weapon systems for the Navy, Air Force, and Marines (the Services). Eight other nations are partnered with the United States in the development of the F-35: the United Kingdom, Italy, the Netherlands, Turkey, Canada, Denmark, Norway, and Australia. In addition, Israel and Japan have signed Letters of Offer and Acceptance to purchase F-35 aircraft.

(U) The F-35 air system consists of the air vehicle and the autonomic logistics system. The F-35 will address the needs of the Services by developing three variants of strike fighter aircraft. One of the primary focuses of the program is affordability; however, the F-35 experienced a critical Nunn-McCurdy breach in June 2010 because of significant increases in the program's cost. The breach resulted in the Under Secretary of Defense for Acquisition, Technology, and Logistics [USD(AT&L)] rescinding the Milestone B[1] decision that was granted in October 2001. The Acting Under Secretary of Defense for Acquisition, Technology, and Logistics reapproved the program's Milestone B in an Acquisition Decision Memorandum signed on March 28, 2012.

(U) Lockheed Martin Aeronautics (LM Aero) Company, located in Fort Worth, Texas, is the prime contractor and maintains the autonomic logistics operating unit (ALOU). Lockheed Martin Global Training and Logistics (LM GTL) in Orlando, Florida, is a partner company to LM Aero and is responsible for development of ALIS.

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[1] (U) The Milestone B decision is for a major acquisition system to enter into system development and demonstration phase.

(U) Autonomic Logistics. Autonomic Logistics is a proactive, knowledge-based, global system that identifies and communicates aircraft status, maintenance, supply, and training actions to support and enhance the F-35 mission. Autonomic Logistics encompasses three essential components:

- (U) a reliable, maintainable, and intelligent aircraft that incorporates Prognostics Health Management technology;
- (U) a technologically-enabled maintainer; and
- (U) an ALIS that incorporates advanced information system technology to provide decision support tools and an effective communication network linking the F-35 with the logistics infrastructure.

(U) Autonomic Logistics will facilitate sortie generation by providing timely, accurate, and usable information at all levels. The F-35 must have the capability of transmitting this data to ALIS from the aircraft in-flight and on the ground.

(U//~~FOUO~~) Autonomic Logistics Information System. ALIS will play a key role in logistic support, mission planning, and training, providing the near real-time information for the management of resources. Improved resource and asset management and visibility between the Services, operational units, depots and the contractors will be critical to the success of the F-35 support concept. ALIS will interface with the F-35 air vehicle and other systems, providing an integrated set of autonomic capabilities for the operations, maintenance and support. ALIS is a distributed system with components placed to support operations at the target locations, to include unclassified or classified elements as needed. ALIS will be co-located with the F-35 air vehicle. At the theater level, ALIS will assist in immediate air asset allocation. At the wing level, ALIS will assist with mission support requirements, and at the squadron level, ALIS will assist with maintenance and support resource allocations. ALIS will process Unclassified to Secret/Special Access Required information.

(~~U//FOUO~~) Autonomic Logistics Operating Unit. There will be a classified ALOU and an unclassified ALOU. The ALOU resides at the top of the ALIS infrastructure and supports communications with and between Government, Commercial and LM Aero systems. These systems include the training management system; the Central Point of Entry (CPE)[2]; the propulsion system contractors; the original equipment manufacturers; the prognostics and health management lab; the failure reporting, analysis, and corrective action system; and specific Lockheed Martin Enterprise Information Technology systems (e.g. System Applications and Products, and logistics data manager).

[2] (~~U//FOUO~~) The CPE supports information exchange requirements by being a point for aggregation of data destined for and received from country specific Government information technology systems.

(~~U//FOUO~~) The LM Aero systems that function as source data providers include the advanced technical logistics application system, global sustainment supply management, product data manager, logistics data manager, and a virtually integrated system for technical authoring. These systems are fundamental data sources that provide data such as air vehicle "as delivered" configuration; support equipment and training equipment part numbers; logistics supportability data; sustainment parts information record data; aircraft data load files; health reporting codes; standard maintenance tasks; and joint-service technical data. Additionally, the F-35 teammates and the original equipment manufacturers put their top-level part information into the product data manager, which is then transmitted to the logistics data manager. The information is then aggregated with the sub-indentured parts data, structured, configuration controlled, and formally released to ALIS. See Appendix C for a diagram of the ALIS interfaces. The systems depicted to the left of the red line are not owned or controlled by the Government.

(U) Block Development of ALIS. The "Joint Strike Fighter Operational Requirements Document" (ORD) calls for an incremental development of F-35 capabilities by software blocks during system development and demonstration (SDD). ALIS capabilities will be incorporated into three blocks.

- **(U) Block 1.** Initial training system functionality through ALIS. The autonomic logistics capability will include 24/7 customer support, an initial training system and ALIS Release 1.
- **(U) Block 2.** Will incorporate expanded ALIS capabilities.
- **(U) Block 3.** An operational requirements document compliant ALIS.

(U) Follow Up on Prior Audit

(~~U//FOUO~~) On February 9, 2007, we issued the classified Report No. 07-INTEL-05, "Audit of Controls Over Protecting and Releasing Special Program Information to the Joint Strike Fighter Program Foreign Partners." The overall audit objective was to evaluate controls over protecting and releasing special access material within the Joint Strike Fighter Program. Specifically we reviewed special access program (SAP) policies and procedures to determine whether the Joint Program Office (JPO) developed effective measures for protecting and releasing critical and highly sensitive technologies to F-35 contractors and partners. The report made 15 recommendations to the JPO.

(~~U//FOUO~~) On March 28, 2011, we met with JPO security personnel to perform follow-up work on the recommendations. We discussed the steps they had taken to implement our 15 recommendations and reviewed supporting documentation. All of the recommendations had been implemented except for one. The JPO did not concur with recommendation 2.d. "Ensure no commingling of Joint Strike Fighter SAP material with Euro Fighter information." During our meeting, JPO security personnel reasserted their position of non-concurrence. We will continue to address this recommendation through the mediation process.

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(~~U//FOUO~~) Finding A. Program Management

(~~U//FOUO~~) The ALIS Integrated Product Team (IPT) does not have the authority and control needed to effectively manage the development of the ALIS. This is evidenced by the following:

- (~~U//FOUO~~) The ALIS IPT was unaware that the Government does not own the ALOU and that no Government testing had been performed on the ALOU.
- (~~U//FOUO~~) The ALIS IPT had not developed a continuity of operation plan or backup for the ALOU functions.
- (~~U//FOUO~~) The ALIS IPT cannot identify the cost for developing the ALIS.
- (~~U//FOUO~~) The ALIS IPT cannot monitor the system development and demonstration (SDD) contract's cost and schedule performance for the ALIS development.

(~~U//FOUO~~) The ALIS IPT is not a separate program, thus, it does not have the ability to control the decisions related to ALIS. As a result, the ALIS IPT did not address the risks associated with the contractor owning a significant part of the ALIS operations. In addition, the ALIS IPT cannot monitor or control potential cost growth and schedule slippages in the development of the ALIS.

(U) ALIS Integrated Product Team

(~~U//FOUO~~) The ALIS IPT does not have the authority or control to effectively manage the development of ALIS. The F-35 JPO is large and very complex. It is staffed by Navy and Air Force personnel, partner country representatives, and contract personnel. The F-35 has 16 Director Offices, an Office of Legal Counsel, and a Chief Information Office. The Weapon Systems Program Manager oversees three of the Directorates with four IPT Leads. The Logistics and Support Products IPT Lead is responsible for three components: Support Equipment, Training Systems, and Logistics Systems. The ALIS IPT is one of four IPTs under the Logistics Systems Office. See Appendix D for a diagram of the F-35 Program organization.

(U) Autonomic Logistics Operating Unit Ownership

(~~U//FOUO~~) The ALOU is the ALIS server, which provides the information processing capabilities to support central autonomics logistics operations. The ALOU communicates with all CPE elements for each country and receives various air vehicle, maintenance, supply chain, and training information and status. The ALOU then communicates with external LM Aero enterprise systems and other contractor systems to perform the F-35 logistics and maintenance functions. See Appendix C for a diagram of the ALIS interfaces.

(~~U//FOUO~~) The ALIS Sustainment Lead, Development Lead, Contracting Officer, and Senior Associate Counsel had differing opinions on who owned the ALOU. On

February 10, 2012, after repeated inquiries into the ownership of the ALOU, the ALIS IPT acknowledged that LM Aero owned the ALOU. When supporting documentation was requested, the ALIS IPT provided briefing charts which indicated that in 2008, the F-35 JPO knew LM Aero owned the ALOU and had voiced concerns. The charts outlined the F-35 JPO and certification community concerns regarding the LM Aero extended enterprise connectivity to the F-35. These concerns related to the LM Aero use of company information technology systems to perform the autonomic logistics and performance based logistics that were not designed to support the F-35 security requirements.

(~~U//FOUO~~) In addition, the ALIS IPT did not appear to be aware that independent verification and validation (IV&V) testing was not going to be performed on the ALOU or any of the contractor systems that interfaced with the ALOU. For further details on ALOU testing, see Finding B of this report.

(U) ALOU Continuity of Operation Plan

(~~U//FOUO~~) DoD OIG: (b) (7)(E) [redacted] resides at the LM Aero Fort Worth, Texas facility. The ALOU is connected to the LM Aero back end architecture and associated systems, which are a part of the LM Aero integrated environment to perform performance based logistics. Neither LM Aero nor the ALIS IPT had developed a continuity of operation plan (COOP) to ensure the operation of ALIS and the support and maintenance of the F-35. During our June 22, 2011, meeting, LM Aero officials stated the COOP was still under development. LM Aero officials were also planning whether the 24 hour operational center in Fort Worth which supports movement of parts, flight test and training DoD OIG: (b) (7)(E) [redacted]. When asked why the COOP was not discussed in the planning stages of the program, LM Aero officials stated there was no requirement in the initial contract to have a COOP DoD OIG: (b)(7)(E) [redacted]. The requirement has been added to the contract.

(~~U//FOUO~~) JPO officials stated LM Aero had not been contracted to develop a COOP because they had not previously identified the need for a COOP. We do not understand how the JPO can develop a COOP for a contractor owned system located and operated at the contractor's facility unless they contract with LM Aero to produce one. We would have expected LM Aero to have developed a COOP for their equipment and facilities as their intentions are to be partnered with the JPO providing the performance based logistics and sustainment for the life of the F-35.

(U) ALIS Development Costs

(~~U//FOUO~~) The ALIS IPT was unable to provide the total development costs for ALIS throughout the program. ALIS development cost data is not captured separately from the SDD contract. The cost performance reports aggregate the ALIS development costs with the training and support equipment costs. When asked for the cost of ALIS, the ALIS IPT could only provide the estimated production and operation and sustainment costs

projections, which amount to $15.5 billion in CY 2011 dollars[3]. The projected production and operation and sustainment costs are based on the estimated number of aircraft each Service plans to procure and have delivered each year and the associated hardware and software required, both classified and unclassified.

(~~U//FOUO~~) The operation and sustainment costs include hardware and software technical refresh, discrete manpower per Service, and shared Manpower and Cost Assessment and Program Evaluation distribution. ALIS consists of mostly commercial-off-the–shelf (COTS) software. The licenses required for the ALIS COTS software are estimated at $1.4 million annually. The ALIS IPT did not have a software obsolescence plan for a system that mostly consists of COTS. The ALIS IPT is currently developing a plan. We question the accuracy of the estimated costs for the ALIS operation and sustainment when a software obsolesces plan was not available for consideration in the development of the costs because COTS software normally only has a lifecycle of about 5 years before it becomes obsolete.

(~~U//FOUO~~) The estimated ALIS production costs in CY 2002 dollars, for CY 2008 though CY 2062, are approximately, $1.9 billion and approximately $10.7 billion for operations and sustainment costs. According to DOD Instruction 5000.02, "Operation of the Defense Acquisition System," this amount, even without the cost of development and demonstration, is well above the criteria for designation as a Major Automated Information System. DOD Instruction 5000.02 defines the cost threshold for Major Automated Information System at $378 million in FY 2000 constant dollars for all expenditures (regardless of appropriation or fund source) directly related to system design, development, deployment, operations and maintenance; and incurred from beginning of the Material Solution Analysis Phase through sustainment for the estimated useful life.

(U) ALIS Costs and Schedule Data

(~~U//FOUO~~) Although required, the JPO was not using its earned value management system (EVMS) to manage the program. The ALIS IPT cannot monitor the contract performance for ALIS development because the cost and schedule information is not segregated from other costs. The cost performance reports aggregate the costs for the ALIS development with the costs for training and support equipment. The cost performance reports are based on information from the EVMS.

(~~U//FOUO~~) The LM Aero EVMS has been non-complaint with American National Institute and Electronic Industries Alliance Standard 748 since 2007. See Appendix B of this report for further details on the LM Aero EVMS and unrated business systems. The audit team asked how the JPO was mitigating the risks of inaccurate information from the LM Aero deficient EVMS and unrated business systems. The JPO Sustainment Earned Value Management Analyst said that the JPO only started using the EVMS last year and

[3] (~~U//FOUO~~) We did not convert to same year dollars since the only purpose was to show the amount exceeded the threshold for a Major Automated Information System.

DoD OIG: (b) (7)(E) [redacted]. They cross check documents for reasonableness and whether changes were explained. A week later, the JPO representative provided further explanation that even though there was not a written desk procedure for verifying the validity of the cost report information, there was a process that is explained to and followed by all the analysts who have contract level responsibilities. This process included comparing a set of files submitted by LM Aero to another set of files for consistency and then polling all of the analysts to determine if they noticed anything amiss in their specific areas. If there are problems, the JPO decides whether LM Aero needs to resubmit or correct the information the following month.

(~~U//FOUO~~) DoD OIG: (b) (4) [redacted]

(U) Conclusion

(~~U//FOUO~~) ALIS is a multi-billion dollar system that is crucial to the logistics support, mission planning, training as well as the ability to provide near-time information for the management of resources to the F-35. However, the oversight and management has not reflected its importance. The ALIS IPT resides six layers below the top level in the overall F-35 JPO. The ALIS IPT does not have the authority necessary to effectively manage the ALIS development. As a separate designated acquisition program under the F-35 Program Executive Officer, the ALIS and related areas such as information system interfaces, testing, requirements, and contract cost and performance would receive closer oversight and more effective management.

(U) Recommendation, Management Comments, and Our Response

(U) A. We recommend the Under Secretary of Defense for Acquisition, Technology, and Logistics designate the Autonomic Logistics Information System as a separate Major Automatic Information System program under the Program Executive Officer for the F-35.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) partially concurred with the finding, agreeing that the ALIS is a crucial subsystem of the overall F-35 Lightning II Air System. The USD (AT&L) further explained that the air system is managed as a whole and separating out a single part of the

Air System would adversely affect the integrated manner of the development and deployment. Recognizing the importance of ALIS, in April 2012, the JPO upgraded the IPT lead to a GS-15/O-6 level with direct reporting to the Weapon System Program Manager. The ALIS subsystem receives PEO-level attention on development issues and the future sustainment strategy; the PEO and the Marine Corps Deputy Commandant for Aviation receive status reports; and there are regular reviews by the Department acquisition executives and the Office of the Secretary of Defense. Additional overhead associated with managing ALIS as a separate MAIS program would not improve the performance.

(U) Our Response

(U) The ALIS plus the air vehicle equal the F-35 Lightning II Air System; therefore, the ALIS is not a subsystem, but an equally important half of the weapon system. Upgrading the ALIS IPT leader position to a GS-15/O-6 level reporting directly to the Weapon System Program Manager will not provide the dedicated oversight and authority necessary to effectively manage the cost, schedule, development, and testing of the ALIS. The JPO is a very large and complex program. See Appendix A for a diagram of the JPO structure.

(U) The fact that ALIS was behind schedule and the actual costs of ALIS development could not be determined is concerning. More disturbing is that no one in the ALIS IPT could say definitively who owned the ALOU, a significant part of the ALIS. In 2008, the JPO was aware that LM Aero owned the ALOU and had concerns regarding security, which are still valid. Since these long existing concerns have not been addressed, we conclude that the existing attention and reporting mechanisms were insufficient. The statement regarding additional overhead costs associated with managing a separate program for ALIS development was not supported by an analysis or study. Since the current arrangement does not appear to be effective, it supports the argument that the additional costs of separate program management would be beneficial. Our position remains that the ALIS warrants designation as a MAIS Program under the PEO for the F-35. We request USD (AT&L) provide comments to the final report.

(U//~~FOUO~~) Finding B. Testing of the Autonomic Logistics Information System

(U//[redacted]) There is no contractual requirement to test any of the systems that make up the ALIS. The ALOU and all of the LM Aero back end architecture, which process government data, are currently not being independently tested to ensure the technical implementation of the security design and to ascertain whether security software and hardware perform properly. In addition, the F-35 JPO does not own all of the systems that comprise the ALIS, therefore, the government has no control over the external systems or the testing. [redacted]

(U) Autonomic Logistics Global Sustainment Kit

(U//~~FOUO~~) The ALGS Kit is a group of closely related global sustainment elements, including the ALOU, which provides the information processing capabilities to support central ALGS operations. The ALOU is the focal point for supply chain, maintenance, customer support, enterprise resource management, training information and software distribution to the entire F-35 enterprise. The software distribution includes software for the air vehicle as well as the ALIS. The ALOU communicates with external Lockheed Martin enterprise systems and the U.S. Government CPE Element.

(U//~~FOUO~~) The ALOU provides ALIS information processing to support central Global Sustainment Operations. It communicates with all Services and country CPE's, collecting and passing air vehicle, maintenance, supply, training status and updates to and from the CPE. The ALOU is a combination of classified and unclassified rack server systems.

(U//~~FOUO~~) There are three integration points within the ALIS Architecture that support the receipt of data necessary to support sustainment activities. The first is the Logistics Data Manager System, which provides a centralized exchange mechanism to support delivery of configuration managed and formally released Sustainment Data Products.

(U//~~FOUO~~) The second is the Failure Reporting Analysis and Corrective Action System, which supports the exchange of data with F-35 suppliers. It is used to record all failures and problems related to a product or process, and their associated root causes, and failure analysis in order to assist in indentifying and implementing corrective actions. The Failure Reporting Analysis and Corrective Action System is one of the external enterprise systems that are connected to the ALOU.

(U//~~FOUO~~) The third is the Global Sustainment Supply Management, which provides transactional messaging to support the F-35 Supply Chain, the ALIS data domains store, manage, and dispenses this data.

(U) Contract Requirements

(U//~~FOUO~~) There is no contractual requirement to test any of the systems that make up the ALIS. The ALOU and the back end architecture which process government data are currently not being independently tested to ensure the technical implementation of the security design and to ascertain whether security software and hardware features affecting confidentiality, integrity, availability, and accountability have been implemented and whether those features perform properly.

(U//[USAF: (b) (1), 1 7(e); DoD OIG:]) ALIS requirements do not require formal verification testing from LM Aero. ALIS requirements are Tier 3 and below level requirements and are not defined in the contract. LM Aero is only contracted to develop success criteria for Tier 1 and 2 requirements. See Finding C of this report for a detailed discussion of the requirement tiers. The JPO does not have to approve the success criteria for ALIS since they are not tied to the contract. LM Aero and LM GTL perform lab verification tests on major ALIS releases. All testing on ALIS is currently being performed on standalone machines and not in a realistic, deployed setting. [USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) redacted]

(U) Ownership of the Systems that Comprise ALIS

(U//~~FOUO~~) The JPO does not own the ALOU or any of the back end architecture and associated systems, which are part of the LM Aero integrated environment, and has no control over any of the external systems or the testing. The ALIS IPT was unaware that the government did not own the ALOU until it was brought to their attention by the audit team. In June 2011, LM Aero stated that the proposal accepted by the government was for an enterprise air system under a Performance Based Logistics Contract.

(U//~~FOUO~~) LM Aero owns and maintains the ALOU. [DoD OIG: (b) (7)(E) redacted] resides in Fort Worth, Texas. According to JPO, there is no requirement for the JPO Independent Verification and Validation team to execute and/or witness the Defense Information Systems Agency Security Technical Implementation Guides compliance testing because the ALOU is a contractor system in a contractor facility.

(U) Protection of Government Data

(U//~~FOUO~~) Since only broad requirements are defined at the contractual baseline of the contract between the F-35 JPO and LM Aero, Tier 3 and 4 requirements do not require formal verification. ALIS requirements are defined at the Tier 3 and below level; therefore, formal verification is not required. The F-35 JPO does not have LM Aero on contract to perform a security accreditation of their back end equipment and associated systems that are part of the integrated environment to perform Performance Based Logistics. According to JPO officials, the accrediting community considered the risks associated with the approach and approved the decision. However, Air Force, Navy and National Security Agency officials voiced concerns during our conversations with them.

(U//~~FOUO~~) The 46th Test Squadron System Security & Assessment Flight Independent Verification and Validation testing officials (hereafter referred to as 46th Test Squadron) responsible for testing the CPE and unclassified Standard Operation Unit (SOU-U) were not properly cleared to independently perform the Independent Verification and Validation tests on the classified portions of the ALIS system until April 2012. In the past, the team has been assisted by LM Aero personnel who actually perform the tests while the 46th Test Squadron look over their shoulder and tell LM Aero personnel how to perform the testing. This process takes much longer than if the testing officials were properly cleared, actually allowed to touch the equipment, and perform the tests themselves. After the audit team voiced concerns with the JPO officials in December 2012, the 46th Test Squadron personnel received briefings and have sufficient access to perform the Independent Verification and Validation testing.

(U//~~FOUO~~) The 46th Test Squadron has performed testing on the SOU-U release 1.0.3A and the CPE release 1.0.3A. Both the CPE and SOU-U have met or sufficiently mitigated all ALIS System Security Requirements and the 46th Test Squadron recommended JSF ALIS CPE and SOU-U release 1.0.3A (Block1) be granted as Authorization to Operate with an authorization to connect.

(U//~~FOUO~~) All system compatibility configuration tests performed by LM Aero are done in a lab environment because the customer does not yet have the capability to connect to the LM Aero systems. Therefore, there are no realistic compatibility tests being performed at this time.

(U) Reliability Requirements

(U//~~FOUO~~) The F-35 SDD contract does not include reliability requirements for ALIS, support equipment or training. There are also no reliability requirements for the 24 hour operational center supporting ALIS. The only reliability requirement included in the F-35 SDD contract is for the overall air platform. The F-35 SDD contract should have included reliability requirements for all aspects of ALIS. Without those requirements, the contractor cannot be held accountable if the system is unavailable for any length of time. If ALIS is unavailable, the F-35 is unavailable.

(U) Conclusion

(U USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted] Since the F-35 JPO does not own the ALOU or any of the enterprise systems, it cannot contractually enforce testing. According to the F-35 JPO officials the accrediting community considered the risk and approved the approach. Despite the JPO comments concerning the accrediting community, our conversations with Air Force, Navy and National Security Agency officials have led us to conclude the risk is unacceptable. USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted]

(U) Management Comments to the Report

(U) Under Secretary of Defense for Acquisition, Technology and Logistics Comments

(U) The USD (AT&L) comment on "Additional Information" stated that the discussions between the F-35 Contracting Office and LM Aero on the ownership of the ALOU have clarified that the Government has unlimited data rights to non-commercial software and technical data associated with the ALOU. They are still not in agreement on the ownership of the ALOU hardware procured under the F-35 SDD contract. The Government's position is that the Government owns the hardware.

(U) Our Response

(U) Having unlimited data rights to non-commercial software and access to technical data associated with the ALOU does not give the Government the rights or access to the software source code for testing purposes. Without ownership, the Government cannot modify or change the software code as may be required for security purposes. In addition, the Government is prevented from open competition for the F-35 logistics, because they do not own the ALOU part of the system.

(U) Recommendation, Management Comments, and Our Response

(~~U//FOUO~~) B. We recommend that the Joint Program Office modify the contract to include security architecture tests for of all the systems that affect Autonomic Logistics Information System and any system that processes or maintains government data.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the Joint Program Office. The USD (AT&L) partially concurred with the finding stating that as the program matured and the security risks in information technology increased, the program proactively developed and implemented the System Security Information Assurance (SSIA) Phase I modification of the SDD contract to implement improved security controls. As the threat has evolved, the program is issuing a new SSIA Phase II modification to the SDD contract to address current and future threats in security. All systems that process classified information at any level are and will be fully tested and certified, as are the UNCLASSIFIED portions of the ALOU and System Build. Although UNCLASSIFIED contractor systems that interface with the ALOU are not covered by the SSIA contract modifications, these systems have been reviewed by a System Security Advisory Group (SSAG). The SSAG has verified that security measures in place are acceptable to protect the Performance Based Logistics information being used by those systems.

(U) Our Response

USAF: (b) (1), 1 4(c) [redacted]

[redacted] we maintain our position that the contract should be modified to ensure security architecture tests for all of the systems that affect the ALIS. Although the USD (AT&L) stated that the SSAG will review the UNCLASSIFIED contractor systems that interface with the ALOU, we do not believe reviewing the systems rather than testing them to be extensive or effective when those systems are interfacing with the rest of the system.

USAF: (b) (1), 1 4(c) [redacted]

(U) We strongly recommend cleared stakeholders and decision makers review the results of the N89 IV&V test reports in order to understand the current Information Technology security concerns. See Appendix E for details and highlights of the report

(U) Finding C. Deployability Requirements for the Autonomic Logistics Information System

(~~U//FOUO~~) The ALIS being developed and funded does not meet the Services' requirement for deployability. The ALIS specific requirements are not defined in the F-35 SDD contract. As a result, the JPO and the Services will incur additional cost and time to develop the capabilities for a deployable ALIS.

(U) ALIS Operational Requirements

(U) The "Joint Strike Fighter Operational Requirements Documents," March 13, 2000, defines the basic requirement of the Services for a next-generation strike fighter weapon system. The ORD discusses several broad requirements for ALIS.

- (~~U//FOUO~~) The ALIS must provide a seamless interface between the Services' logistics information management systems.
- (~~U//FOUO~~) ALIS shall be deployable and capable of operating with fixed-site or remote host over a variety of communication media.
- (~~U//FOUO~~) Data access through ALIS must be protected from possible compromise, sabotage, or attack.
- (~~U//FOUO~~) ALIS must have the ability to transfer classified data when necessary and interface with sources external to DOD (e.g. commercial contractor).
- (~~U//FOUO~~) ALIS must be able to receive and process data directly from the weapon system and other infrastructure sources.
- (~~U//FOUO~~) ALIS must be able to forecast, schedule and track production events, and must identify configuration status of an item, provide inventory control, and track end-items and configuration items as they move through their entire life cycle.
- (~~U//FOUO~~) ALIS should provide accurate, real-time total asset visibility, total event visibility, and total resource visibility to all users on demand.

(U) Deployability

(~~U//FOUO~~) The ALIS being developed and funded does not meet the Services' requirement for deployability. The F-35 ORD states that ALIS shall be deployable and capable of operating with fixed-sites or remote host. In addition, the F-35 SDD contract (N00019-02-C-3002, P00131) states that LM Aero shall design and develop a deployable

set of ruggedized ALIS equipment racks that will be acceptable for U.S. and partner shipboard environment. The current ALIS does not meet this requirement.

(U//~~FOUO~~) Standard Operating Unit. The ALIS SOUs are servers that provide all ALIS capabilities required to support flying, maintenance and training at squadron level. The SOU is split into classified (SOU-C) and unclassified (SOU-U) units. Each squadron will receive a classified and unclassified SOU rack server system as part of the squadron kit. These centralized servers provide access to squadron applications to operate and sustain the air vehicle and host training management and learning management systems. The current ALIS SOUs are not deployable.

(U//~~FOUO~~) Service' Requirements for Deployability. The Services believe that the current ALIS is functional; however, ALIS in its current configuration cannot deploy. The current ALIS is unsuitable to support short term detachments and sub-squadron deployments. The SOUs are extremely large and complicated to move and install. The SOU-U and SOU-C together weight over 2400 pounds and are each over 6 feet tall, making the ALIS racks extremely difficult to move to various locations. The Services explained that they need a capability that is truly deployable. Specifically, the Air Force needs a more ruggedized lightweight capability, while the Marine Corps needs a man portable capability to deploy to expeditionary sites. The Navy requirements are a subset of the Marine Corps; therefore, if the Marine Corps requirements are met then the Navy's requirements will be met. Also, a deployable ALIS would enable the Navy to detach from the ship to conduct training. The requirement for deployability is a requirement all Services need and it is not being met because ALIS specific requirements were not defined in the F-35 contract.

(U) Contract Requirements

(U//~~FOUO~~) The ALIS specific requirements are not defined as part of the F-35 contract. The F-35 Joint Contract Specifications (JCS) is a performance based logistics specification; therefore only the capabilities of a system are defined as part of the contract, not every detail.

(U) ALIS Requirements Management Structure. The F-35 requirements structure is setup and managed at three levels. Each level or tier has different requirements and approvals. Not every requirement is defined in the F-35 JCS.

- (U//~~FOUO~~) The contractual baseline (Tier 1) contains the F-35 contract specifications. The JPO manages the requirements at this level. The JPO and Chief Engineer approve the requirements at this level.

- (U//~~FOUO~~) The functional baseline (Tier 2) breaks out JCS requirements for the Air System by Air Vehicle and Autonomic Logistics. At this level, LM Aero manages the functional baseline with insight from the JPO.

- (U//~~FOUO~~) The allocated baseline (Tier 3 and below) contain the set of requirements that define the performance levels specified at the functional

baseline. ALIS specific requirements are contained at the Tier 3 level; ALIS subsystems requirements are contained at Tier 4 level. LM Aero and suppliers manage the requirements at this level with insight from the JPO.

(~~U//FOUO~~) According to the JPO, the requirements in the ORD are traced to the JCS and only high level requirements are defined in the JCS because of the performance-based structure. The ALIS requirements documented in the ORD are general requirements and only document that the ALIS shall be deployable. The ORD does not identify the capabilities that will make ALIS deployable.

(~~U//FOUO~~) The JPO stated that they were involved in defining the ALIS requirements. LM Aero stated that they defined the ALIS requirements with involvement from the JPO. However, the JCS is the sole contractual document and since ALIS requirements are not defined, it is ultimately the responsibility of LM Aero to interpret, define, and manage ALIS requirements[4]. The JPO can only hold LM Aero accountable for requirements at the contractual baseline. As a result, the ALIS does not meet the Services' requirement for deployability. Therefore, the JPO and LM Aero are developing the capabilities in the SOU Version 2 that will make ALIS truly deployable.

(U) Increased Cost for Mobility

(~~U//FOUO~~) The JPO and the Services will incur additional cost and time to develop a deployable ALIS follow-on requirement (SOU Version 2) because the current ALIS is not deployable. Due to the current F-35 contract, the Services are on contract to purchase the current ALIS capability which does not meet the requirement for deployability. The Service will also incur additional costs for the new SOU Version 2 capabilities.

(~~U//FOUO~~) The development of the SOU Version 2 capability is developed in three phases with full production anticipated by mid 2015 (during Phase III). The JPO and Services are currently in Phase II of the SOU Version 2 development. Full development cost for the SOU Version 2 capability is currently unknown because funding estimates for full production are not identified. The JPO provided cost estimates for Phase I at $1.4 million; Phase II costs are estimated at $6.4 million; and Phase III costs have not been determined. The JPO provided raw estimates for Phase III of $25 million or more. However, development costs for the SOU Version 2 could increase beyond the projected estimates during development which will result in additional cost to the Services for a requirement that should have been met during the original development. The Marine Corps has already provided $6.2 million in funding for the SOU Version 2 to ensure that the capability is met. However, there are concerns that ALIS requirements for deployability will not be met if the requirements are included in the F-35 contract.

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[4] (~~U//FOUO~~) LM Aero defined deployability as the capability to be delivered via contractor approved transportation when packed in accordance with best commercial practices. This does not meet the intent of the requirement.

(U) Conclusion

(U//~~FOUO~~) The current ALIS being developed and funded by the Services and foreign partners does not meet the requirement for deployability because ALIS specific requirements were not defined as part of the F-35 contract.

(U//~~FOUO~~) The JPO is currently deciding whether to include the SOU Version 2 requirement as part of the SDD contract or under the Production, Sustainment, and Follow on Development Memorandum of Understanding. According to the JPO, the SOU Version 2 will not be designated as a separate acquisition program. The JPO believes that no matter what direction they take, there will be a strategy to verify the requirements. However, the JPO should review the SOU Version 2 to determine whether it meets the requirements for a separate acquisition category program designation or define the SOU Version 2 requirements in a separate contract. This will ensure that requirements for the SOU Version 2 are adequately defined and tested and that costs are tracked so that the SOU Version 2 program will be less likely to experience the same problems that ALIS is experiencing.

(U) Recommendations, Management Comments, and Our Response

(U//~~FOUO~~) C.1. We recommend that the Under Secretary of Defense for Acquisition, Technology and Logistics review the Autonomic Logistics Information System Standard Operating Unit Version 2 to determine whether it should be classified as a separate Acquisition Category program.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) partially concurred with the finding, agreeing that the JPO must ensure that requirements for the ALOU SOU Version 2 are adequately defined and tested and costs are tracked. However, the SOU Version 2 should remain as part of the F-35 Air System Program and separating it out would adversely affect the integrated manner of the development and deployment.

(U) Our Response

(U) The USD (AT&L) comments are not responsive. The USD (AT&L) has not provided any analysis or supporting documentation to determine why the SOU Version 2 should not be classified as a separate program. In addition to our response to the comments in finding A., we believe that separating the SOU Version 2 from the F-35 SDD program will ensure the development does not experience the same issues currently affecting the current F-35 SDD development. We request that USD (AT&L) provide additional comments in response to the final report. The comments should identify the specific analysis performed and supporting documentation used to determine that classifying the SOU Version 2 as a separate program would adversely affect the

integration development and deployment of the system. The comments should also include the cost benefits analysis associated with managing it as part of the larger F-35 Air Vehicle.

(~~U//FOUO~~) C.2. We recommend that the Joint Program Office issue a separate contract for the Standard Operating Unit Version 2 follow-on requirements.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and partially concurred with the finding. The USD (AT&L) agrees that the JPO must ensure that requirements for the SOU Version 2 are adequately defined and tested and that costs are tracked. However, the JPO plans on awarding a contract modification for SOU Version 2, a detailed Statement of Work and associated Work Breakdown Structure, in order to ensure sound contract management is properly performed.

(U) Our Response

(U) The USD (AT&L) comments are not fully responsive to the recommendation because it does not meet the intent of the recommendation. The audit team does not agree that awarding a contract modification for SOU Version 2 work will ensure sound contract management is performed. In addition, adding work to an already complex contract which is currently well over cost and behind schedule will not benefit either development effort. This is evident with the current ALIS development which is not adequately managed. We maintain our original opinion that the JPO should issue a separate contract for the SOU Version 2 development. This will ensure that requirements for the SOU Version 2 are adequately defined, tested, and met and that costs are tracked so that the SOU Version 2 program will be less likely to experience the same problems that ALIS is experiencing.

(U//~~FOUO~~) Finding D. Security of SAP Information Processed in ALIS

(U/USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted]

- (U//~~FOUO~~) Security was not taken into consideration early in the development process.
- (U//~~FOUO~~) An ALIS specific System Threat Analysis Report (STAR) identifying possible threats to the system was not developed.
- (U//~~FOUO~~) Foreign software has been used.
- (U//~~FOUO~~) Realistic testing is not being performed.

(U/USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted]

(U) Security Oversight Responsibilities

(U//~~FOUO~~) The Air Force is responsible for the day to day SAP security management of the F-35. The Program Security Officer is the government representative and is assigned to the Air Force SAP Central Office Security Director. Region 7 of the U.S. Air Force Office of Special Investigations (OSI) provides counter-intelligence and security program management for SAPs.

(U) Special Access Required Information Processed in ALIS

(U//~~FOUO~~) According to JPO officials, the JPO has tried to keep as much of ALIS unclassified as possible. In spite of their efforts, ALIS will process and maintain SAP information. The SOU is located at LM Aero in Fort Worth, Texas. The SOU-C contains a server that processes Secret-SAP data. The Off-board Mission Support workstations will be located in the SAP facility. Information will be accessed from the Secret Internet Protocol Router Network. There is a firewall between the SOU-C and Secret Internet Protocol Router Network. The F-35 air vehicles operate as a collateral Secret asset.

(U//~~FOUO~~) LM Aero is the hub for all Performance Based Logistics information processed in ALIS. The Services, partner countries, as well as all suppliers, will connect back to the LM Aero. All Performance Based Logistics information processed in ALIS will eventually end up at the ALOU in Fort Worth.

(U) Building in Security

(~~U//FOUO~~) The JPO and LM Aero did not ensure security was taken into consideration early in the development process. A disconnect exists between the unclassified world and the classified world. Individuals working in the unclassified world do not completely understand how their decisions can affect the classified world. There was not enough interaction early on in the process to help make the transition from unclassified to classified a smooth one.

(U) For information systems, there are different requirements for different levels of security. The unclassified world follows DOD Instruction 8510.01, "DOD Information Assurance Certification and Accreditation Process (DIACAP)," November 28, 2007. The DIACAP establishes a certification and accreditation process in order to manage the implementation of information assurance capabilities and services. The DIACAP also provides visibility of accreditation decisions regarding the operations of DOD information systems.

(~~U//FOUO~~) The SAP world follows the Joint Air Force – Army – Navy JAFAN 6/3 Manual, "Protecting Special Access Program Information Within Information Systems," October 14, 2004. JAFAN 6/3 provides guidance and requirements for ensuring adequate protection of all DOD SAP information that is stored or processed on an information system. According to JPO officials, although the JAFAN was issued in 2004, it was not added to the contract until 2007.

(~~U//FOUO~~) The unclassified level does not include any level of confidentiality. The "JAFAN 6/3 Implementation Guide, Version 1," September 2006, states that only a Designated Accrediting Authority can approve the use of public domain or foreign developed software. If the JPO and LM Aero were proactive in building security into the ALIS development, the appropriate Designated Accrediting Authority and certifiers would have been included in the decisions as to how the foreign developed software could be used. Certifying officials stated the Program Security Officer needs to know the end state of the product and its use before the foreign developed software can be approved. A list of software is not sufficient.

(~~U//FOUO~~) OSI officials stated their responsibilities include conducting independent assessments of ALIS development, security documentation and making recommendations to the JPO as necessary. OSI officials explained that their office can only make recommendations; they do not have the authority to enforce corrective actions. Their assessments and recommendations are provided to the Program Security Officer who provides that information to either the JPO or LM Aero for action.

(~~U//FOUO~~) OSI officials stated the JPO and LM Aero were not meeting required information assurance controls. The JPO and LM Aero have not provided full certification and accreditation packages in order to review them for configuration management control.

The OSI officials believe the JPO and LM Aero attempt to keep them out of the loop and only involve them when necessary for certification and accreditation review or an Authority to Operate.

(~~U//FOUO~~) OSI officials stated there was a lack of configuration management and a lack of audit requirements. They were concerned that nothing has been proven except on paper. OSI officials believe that LM Aero only has traceability to the DOD Instruction 8510.01, not the JAFAN 6/3 and is only tracking back to high level ALIS requirements.

(~~U//FOUO~~) Security was not planned for early in the development process. The mapping of how the software will be used should start at the beginning. OSI officials believe that LM Aero DoD OIG: (b) (7)(E) [redacted] the process documented in the JAFAN from a national security perspective. The Designated Accrediting Authority approved software for use on the unclassified side; however, when approval for use on the classified side was needed, DoD OIG: (b) (7)(E) [redacted]

(~~U//FOUO~~) According to Air Force and Navy certifying officials, LM Aero officials DoD OIG: (b) (7)(E) [redacted]. The approval is DoD OIG: (b) (7)(E) [redacted]. OSI officials confirmed this stating LM Aero had been DoD OIG: (b) (7)(E) [redacted] Once caught, the contractor pleaded ignorance.

(U) Security Improvements

(~~U//FOUO~~) The JPO established a Chief Information Officer in April 2010. LM Aero established a counterpart in September 2010. According to JPO officials, since the inception of these positions, there has been improvement in the program, specifically with security. Security is now a part of the Integrated Master Schedule.

(U) Lack of an ALIS Specific STAR

(~~U//FOUO~~) Since the ALIS development effort was not a separate program unto itself, the JPO did not request the National Air and Space Intelligence Center develop an ALIS specific STAR.

(U) DOD Directive 5000.01, "The Defense Acquisition System," November 20, 2007, states understanding threat capabilities are integral to system development and acquisition decisions. The Directive states, "Program managers keep threat capabilities current and validated in program documents throughout the acquisition process."

(U) DOD Instruction 5000.02, "Operation of the Defense Acquisition System," December 8, 2008, requires DIA to validate STARs for Acquisition Category 1D programs.

(U//~~FOUO~~) DIA Instruction 5000.002, "Intelligence Threat Support for Major Defense Acquisition Programs," August 23, 2006, DoD OIG: (b) (7)(E) [redacted]

(U//~~FOUO~~) Although ALIS is not a separate SAP compartment, we believe it should be a separate program under the F-35 Program Executive Officer in order to effectively manage its development as discussed in Finding A. ALIS is integral to the logistics support, mission planning, training and health management of the F-35. Having DoD OIG: (b) (7)(E) [redacted] Because of its importance, every effort should be taken to ensure the security of ALIS. In order to secure ALIS, the JPO has to understand the current threats to ALIS. A current and validated STAR would describe those threats.

(U//~~FOUO~~) The STAR is intended to serve as the basic threat document supporting the acquisition decision process and the system development process. As the program matures, there should be a corresponding refinement of the threat in the STAR. The STAR shall be maintained in a current and approved/validated status throughout the acquisition process. As a result, the STAR Threat Steering Group will set the date beyond which the STAR may not be used for acquisition purposes. The STAR must address program threats from the U.S. weapon system's initial operational capability through at least initial operational capability plus 10 years.

(U) DIA Validation of the F-35 STAR

(U//~~FOUO~~) On April 21, 2009, the DIA reviewed the draft "F-35 Lightning Joint Strike Fighter System Threat Assessment Report" in accordance with the DOD and DIA instructions noted above. The DIA validated the STAR for use in the Defense Acquisition Management process of the F-35 JSF program through July 31, 2011.

(U) F-35 STAR

(~~U//FOUO~~) The F-35 STAR dated July 2009 superseded the previous STAR. According to the F-35 STAR, the DIA validated the STAR as of April 21, 2009, for use in the F-35 program. Based on the July 2009 publication date, the F-35 STAR is effective for 24 months unless earlier superseded.

(~~U//FOUO~~) The JPO did not request that the National Air and Space Intelligence Center develop an ALIS specific STAR. The F-35 STAR provided to the audit team addresses threats at the Air System level. Specifically, the F-35 STAR addresses threats only to the F-35 platform and to its internal components and subsystems while performing its assigned missions.

(~~U//FOUO~~) According to JPO officials, the threat analysis for ALIS is part of the certification and accreditation process at the SECRET level. We believe the threat analysis should be performed at the classification level of the information to be protected.

(U) Use of Foreign Software

(~~U//FOUO~~) Foreign software has been used in the ALIS development. LM Aero included COTS containing foreign developed software in ALIS for at least five years after the JPO and ALIS IPT informed them that the software could not be used.

(USAF: (b) (1), 1 4(c)) According to OSI officials, LM Aero DoD OIG: (b) (7)(E) [redacted] USAF: (b) (1), 1 4(c) [redacted] on the DoD OIG: (b) (7)(E) listing USAF: (b) (1), 1 4(c) [redacted] USAF: (b) (1), 1 4(c) LM Aero DoD OIG: (b) (7)(E) [redacted]. According to OSI officials, from an intelligence perspective, DoD OIG: (b) (7)(E) [redacted]. JPO officials stated they had worked the issue for five years and DoD OIG: (b) (7)(E) [redacted]. We contend that DoD OIG: (b) (7)(E) [redacted]. JPO security officials should not have had to work this issue for five years. The issue is DoD OIG: (b) (7)(E) [redacted]

(U) Identification of Foreign Developed Software Used in ALIS

(~~U//FOUO~~) After one year of repeated requests, LM Aero, LM GTL and JPO officials were unable to provide the list of all foreign developed software as well as all documentation of third party testing approvals. See Appendix A for further discussion concerning this request. LM Aero officials stated that DoD OIG: (b) (7)(E) [redacted]. The JPO would and could provide this information through the certifying agencies.

(U//~~FOUO~~) We met with the JPO in January 2012 to discuss the use of foreign software and data rights. JPO officials stated LM Aero provides a list of software and identifies if it is U.S. or foreign developed. Foreign developed software is provided to OSI. OSI forwards the software to the Intelligence Community where a determination of acceptance or not is made. We requested documentation describing this process. We also expressed our concern that the prime contractor DoD OIG: (b) (7)(E) [redacted] Therefore, how could LM Aero follow the process? JPO officials were surprised at the LM Aero response. DoD OIG: (b) (7)(E) [redacted] DoD OIG: (b) (5) [redacted]. We also contend it was the responsibility of the JPO to ensure LM Aero understood the security requirements.

(U) Use of Navy Checklist

(U//~~FOUO~~) In order to properly vet software developed by foreign owned companies, counterintelligence officials need 90 days. According to certifying officials, LM Aero will sometimes request a 30 day response; however, the certifiers do not adhere to the "need date." Navy certifying officials created a checklist for software approval to assist with their vetting process. The checklist includes the information needed by the certifying officials to vet the foreign owned company and software in an efficient manner by eliminating the need to request additional information from LM Aero. The JPO does not, however, mandate the use of the checklist. We recommend the JPO implement and require the use of either this checklist or a comparable version of this checklist in the future to help certifiers vet the software and their companies.

(U) Lack of Realistic Testing

(U/USAF: (b) (1), 1 7(e): DoD OIG: [redacted]) Testing performed at Patuxent River was not realistic since it was performed on standalone computers. According to Patuxent River officials, the tester retrieved the "brick" from the safe and inserted it into the stand alone computer. The data passed through the ground data security assemble receptacle for encryption. After the test, the "brick" was removed from the stand alone computer and returned to the safe. Patuxent River officials stated testing during SDD DoD OIG: (b) (7)(E) [redacted] The stand alone will not be connected to a network or tested in a realistic, deployed setting. USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted] See Finding B for additional discussion concerning testing.

(U) Conclusion

(U//FOUO) ALIS is integral to the logistics support, mission planning, training and health management of the F-35. A fully functioning and secure ALIS is necessary to protect the SAP information it processes and uses to fulfill its mission. The JPO and LM Aero must take security into consideration during all aspects of the development process. The JPO should request that the National Air and Space Intelligence Center develop an ALIS specific STAR to ensure ALIS is protected from all possible threats. Foreign developed software should be used only when approved by the Designated Accrediting Authority. The JPO should require ALIS be tested in realistic environments.

USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted]

(U) Recommendations, Management Comments, and Our Response

(U) D. We recommend the F-35 Lightning II Joint Program Office:

(~~U//FOUO~~) 1. Include the Program Security Officer, U.S. Air Force Office of Special Investigations, Air Force and Navy certifying officials in the approval process to ensure special access program requirements are taken into consideration as early as possible.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and concurred with the finding. The JPO is engaging the appropriate security and certification personnel early in the process and has performed Process Improvement reviews. As a result of the reviews, the certification personnel are included earlier in the approval process. Also, the AF OSI, Air Force, and Navy certifying officials had been included in the F-35 design and certification.

(U) Our Response

(U) The USD (AT&L) comments were not fully responsive because there were no dates or documentation associated with the activities that would allow audit follow-up to determine the effectiveness of the actions taken. If the AF OSI, Air Force, and Navy certifying officials had been included in the F-35 design and certification, we would hope that the security concerns documented in this report would have been prevented. We request the USD (AT&L) provide comments to the final report and provide the results of the process reviews and documentation of the early inclusion of certifying personnel in the approval process.

(~~U//FOUO~~) 2. Obtain a current Autonomic Logistics Information System specific System Threat Assessment Report.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and partially concurred with the finding. Subsequent to the DOD IG review, the JPO released a 2011 STAR of which Section V, Paragraph 5j addresses the threats to ALIS as it supports the F-35 Air System. In addition, the JPO will request and emphasize that this area should be expanded in future updates of the STAR for the F-35 Air System.

(U) Our Response

(U) The USD (AT&L) comments were not fully responsive because it does not meet the intent of the recommendation. The audit team was not informed of the new STAR, despite several meetings throughout the audit during which we voiced our concerns over the lack of an ALIS specific STAR. However, one paragraph in the Air Vehicle STAR addressing the threats to ALIS and the JPO intention to request and emphasize the area be expanded at an undefined future date does not meet the intent of the recommendation. Given that ALIS is DoD OIG: (b) (7)(E) [redacted], we maintain that ALIS requires a current threat assessment to ensure that the ALIS design and development provides information assurance for all classification levels. We request the USD (AT&L) provide comments to the final report.

(~~U//FOUO~~) 3. Develop and maintain a listing of all foreign developed software, as well as all documentation of third party testing approvals.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and concurred with the finding. As part of the Process Improvement of software security and foreign development reviews, the JPO has implemented the review processes recommended by the certifying agencies, which includes the items mentioned in the recommendation.

(U) Our Response

(U) The USD (AT&L) comments were not fully responsive because no dates or details were provided regarding the review process, which would allow a determination during audit follow-up of whether the actions taken were effective. To date, the JPO still has not provided the list of foreign developed software and all documentation of third party testing approvals associated with ALIS, which were originally requested in June 2011. Therefore, without evidence, we are unable to accept the review process as adequate actions. We request USD (AT&L) provide comments to the final report and dated documentation of the review process and the resulting lists of foreign developed software and third party testing approval.

(U) 4. Implement and require the use of either the Navy developed checklist or a comparable checklist for software approval.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and concurred with the finding. The JPO has adopted the AF OSI software request form, which is comparable to a checklist, for software approval as part of the security review Process Improvement and is assessing the Navy developed checklist for inclusion in the process.

(U) Our Response

(U) The USD (AT&L) comments were not fully responsive because there are not dates for completion of the assessment of the Navy Checklist and there were no details of how the AF OSI request form is comparable to the Navy Checklist in providing the same assurances. We request USD (AT&L) provide comments to the final report and documentation of the comparison of the AF OSI request form to the Navy checklist and dated completed request forms.

(U//~~FOUO~~) 5. Test the Autonomic Logistics Information System in realistic, deployable settings.

(U) Under Secretary of Defense for Acquisition, Technology, and Logistics Comments

(U) The USD (AT&L) responded on behalf of the JPO and concurred with the finding. As part of the overall program activities, DoD OIG: (b) (7)(E) [redacted]

(U) Our Response

(U USAF: (b) (1), 1 7(e); DoD OIG: (b) (7)(E) [redacted]

(U) Appendix A. Scope and Methodology

(U) We conducted this performance audit from January 2010 through April 2012 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We did not review the internal control program for ALIS because an ALIS specific program did not exist. The internal controls are for the F-35 JPO; therefore, it was out of the scope of our review.

(U) We originally announced the audit on January 2010 but due to an urgent, high priority request from the Director, DOD SAP Central Office, we suspended the audit. The audit was re-announced on December 1, 2010, and began in January 2011.

(U) We performed site visits and interviewed personnel at the following locations: F-35 JPO, Arlington, Virginia; LM Aero, Fort Worth, Texas; LM GTL, Orlando, Florida; Air Force SAP Office, Arlington, Virginia; National Security Agency, Fort Meade, Maryland; Patuxent River Naval Air Station, Patuxent River, Maryland; Eglin Air Force Base; Fort Walton Beach, Florida; and the Defense Contract Management Agency and Defense Contract Audit Agency resident offices at both the LM Aero and LM GTL sites. In addition, we interviewed representatives of the Air Force, Marine Corps, and Navy.

(U) We reviewed applicable guidance including DOD directives, instructions and the Defense Acquisition Guidebook. We also reviewed additional program documentation including: JPO organization charts; briefing charts; SDD and Low Rate Initial Production (LRIP) contracts; requirements documents; cost performance reports; Defense Contract Audit Agency (DCAA) flash reports; test reports; threat assessments; and any other major document such as system engineering or configuration management plans, etc. The documentation was dated from March 2000 through February 2012.

(U) Request for Information Concerning Use of Foreign Developed Software

(~~U//FOUO~~) We visited LM Aero in June 2011. During the ALIS Security Architecture briefing provided by LM Aero officials, we asked if all of the software being developed or used in ALIS was U.S. developed. LM Aero officials stated that ALIS was primarily COTS software and some was foreign developed. BAE Systems provided supply chain software that goes through a third party verification process. No foreign developed code was being used. LM Aero officials stated their legal department would provide a letter listing all foreign developed software as well as all documentation of third party testing approvals. The letter would also address software associated with ALIS that would have less than unlimited data rights; a list of contractors, subcontractors and cost suppliers; and

licensing, licensing transferability issues and enterprise licensing issues or results and reviews on the licensing subject. LM Aero did not provide the letter before we left Fort Worth.

(USAF: (b) (1), 1 4(c)) Upon our return from LM Aero, we met with JPO officials. When asked if foreign software was used in ALIS, the JPO official first answered no. When asked again, specifically concerning the firmware, the official said yes. DoD OIG: (b) (4) [redacted]

USAF: (b) (1), 1 4(c) [redacted]

(~~U//FOUO~~) We visited LM GTL in August 2011. During our visit to LM GTL, we asked about the status of the letter. LM GTL officials stated on numerous occasions that the letter was being prepared; the letter was under review; or the letter was in the approval and signature process. Once the letter was signed, LM GTL personnel stated the letter would have to pass from LM GTL legal to LM Aero legal and then to us. LM GTL did not provide the letter before we left Orlando.

(~~U//FOUO~~) On September 26, 2011, we asked the JPO about the status of the letter and requested documents. On November 7, 2011, LM Aero provided some of the documents but did not provide the letter listing the foreign developed software. When asked by the JPO about the status of the letter, LM Aero and LM GTL personnel denied any knowledge of the request.

(~~U//FOUO~~) As of the issuance of this report, neither the JPO nor LM Aero have provided a list of foreign developed software contained in ALIS or documentation of third part testing approval.

(U) Use of Computer-Processed Data

(U) We did not use computer-processed data to perform this audit.

(U) Prior Coverage

(U) No prior coverage has been conducted on the F-35 ALIS during the last 5 years.

(U) Appendix B. Other Matters of Interest Related to the F-35 Lightning II

(U) While conducting the audit of the ALIS, several areas of concern outside the scope of the audit were identified. The issues identified are as follows.

(U) Program Management

(~~U//FOUO~~) Common program management tools are flawed and ineffective. On March 28, 2012, the Acting USD (AT&L) reapproved the program's Milestone B. The original October 2001 Milestone B decision approval was rescinded by the USD (AT&L) as a result of the June 2010 Nunn-McCurdy breach. The LM Aero EVMS has been non-compliant since 2007. In addition, the LM Aero estimating; budget and planning; material management and accounting system; purchasing; accounting labor; and billing systems are identified by the DCAA as inadequate or unrated for Government work and direct billing authority was rescinded in July 9, 2009. The status of these issues remains unchanged.

(U) Lockheed Martin Aeronautics' Earned Value Management System.

(~~U//FOUO~~) After almost five years, LM Aero still does not have a compliant EVMS. In November 2007, the Defense Contract Management Agency (DCMA) Earned Value Center determined that LM Aero did not comply with the guidelines in the American National Institute/Electronic Industries Alliance Standard 748. DCMA withdrew their assessment of compliance for the LM Aero EVMS in October 2010. DCMA took this action based on four factors:

- (~~U//FOUO~~) the unfavorable results of the 2009 LM Aero EVMS self-assessment,
- (U) the inadequacy of the January 2010 revised corrective action plan,
- (U) the results of the Nunn-McCurdy review which included an EVMS review, and
- (~~U//FOUO~~) the overall insufficient progress in achieving closure to the original deficiencies identified in the 2007 EVMS compliance review.

(~~U//FOUO~~) On February 28, 2012, DCMA notified LM Aero that the F-35 DoD OIG: (b) (4) contract issued in September 2011 incorporated both the Contractor Business Systems and the EVMS clauses. Therefore, as long as the EVMS remains disapproved, withholds of two percent on each request for payment under the affected contract and on future contracts would be implemented. This does not apply to the DoD OIG: (b) or the DoD OIG: (b) (4) through Do (b) contracts.

(~~U//FOUO~~) On June 22, 2012, DCMA notified LM Aero that since they had failed to correct its significant EVMS deficiencies and successfully implement the accepted

June 30, 2010 Corrective Action Plan, the two percent withhold would be increased to five percent. According to DCMA officials, the increase would apply to DoD OIG: (b) (4) Withholds do not apply to the DoD OIG: (b) (4) contract, as the contract did not contain the required DFARS clauses.

(U//~~FOUO~~) DoD OIG: (b) (4) [redacted]

(U) Lockheed Martin Aeronautics' Business Systems

(U//~~FOUO~~) DCAA identified the LM Aero estimating; purchasing; billing; control environment and overall accounting; information technology; material management and accounting; and labor systems as unrated. DCAA cannot audit and opine on the adequacy of the systems until LM Aero has completed installation and implementation of their new operating system. LM Aero started implementing the Systems Applications and Products system in 2008 to replace its legacy operating systems. LM Aero is utilizing a phased approach and is implementing additional System and Applications Products capabilities primarily relating to Global Sustainment, Supply Chain Management, and Procure-to-Pay, which are not scheduled to be completed until 2013.

(U//~~FOUO~~) DCMA approved the purchasing system in February 2008, but DCAA has issued three limited scope review reports on the LM Aero purchasing system from July 2010 to May 2011. The reports identified deficiencies and inadequate controls. Because each review was of limited scope, the entire system is considered unrated until the Systems Applications and Products system is fully implemented and DCAA can audit the purchasing system and how it operates within the Systems Applications and Products system.

(U//~~FOUO~~) DCAA continues to perform limited scope audits and issue flash reports on deficiencies identified. From February 17, 2010 to June 15 2011, DCAA issued five flash reports on the LM Aero accounting systems.

(U) Contracting

(U//~~FOUO~~) The F-35 SDD contract and the LRIP contracts are being implemented concurrently. LM Aero was awarded the SDD contract in 2001. LM Aero is the prime contractor with Northrop Grumman and BAE Systems as principal partners. Presently, the JPO has awarded four LRIP contracts. LM Aero has plans for a total of 11 LRIP contracts through 2017, which will produce 879 systems including some foreign military sale systems. DODI 5000.02 states LRIP quantities should be minimized and that an LRIP quantity exceeding 10 percent of the total production quantity of a major defense acquisition program would require rationale in the program's first selected acquisition

report. According to the January 2011 Production Planning Profile, the 879 LRIP systems are 28 percent of the total 3,159 systems.

(~~U//FOUO~~) The LRIP contracts are fixed-price for the aircraft production and cost-plus for sustainment. The sustainment portions of the LRIP contracts are cost-plus because the contractor is unable to estimate costs to sustain the aircraft due to schedule slippage on aircraft delivery. Therefore, the JPO has no idea of the estimated sustainment cost each year.

(U) Requirements

(U) The F-35 SDD contract between the JPO and LM Aero was constructed in a way that F-35 requirements are developed and managed at different tiers. As a result, only broad requirements defined at the contractual baseline are tied to the contract and require formal verification. The lower tier requirements are managed by the contractor with insight from the JPO.

(U) F-35 Follow-on Development

(~~U//FOUO~~) The F-35 ORD defines the overall F-35 Air System level operational requirements and performances. During the initial development of F-35 requirements, the Services' input was evaluated and assessed to determine commonality, priority and feasibility through the Requirements Working Group. Those joint operational requirements were evaluated through the Requirements Working Group process and defined as part of the ORD. Any Service specific or unique requirements beyond the ORD would be discussed in follow-on development.

(~~U//FOUO~~) The potential cost for non-common Service unique requirements could be high. To ensure the system remains affordable to all participants, each participant will share the financial cost for common development among the participants in accordance with the proportion of their individual F-35 Air Vehicle to the total F-35 Air Vehicle of all participants in the effort. However, if a Service chooses a unique follow-on development effort not common to the other participants, that Service is also responsible for all costs incurred to satisfy the unique requirement effort. Paying to be different could significantly increase cost to the requesting Service.

(U) F-35 Sustainment Cost

(U) LM Aero will maintain a 24 hour operational center to support the ALIS. Currently, the center supports flight test, training, and movement of parts at three sites. The operational center will eventually increase to support sustainment of the F-35 program. As part of the performance based logistics contract, LM Aero will be paid on a "power by hour" basis for operational support.

(U) Training

(~~U//FOUO~~) Due to the current design structure, training on the F-35 program cannot be fully implemented until the design is complete.

(U) Tour of LM Aero Production Line

(U) The F-35 planes move along the production line, from station to station. Progress can be seen at each station. During our tour, we walked from the center of the line to the end then back. F-35 planes could be seen in various stages of production.

(~~U//FOUO~~) Although our tour time had been scheduled, as we walked the line, we saw LM Aero employees sitting with their feet propped up on their workstations; others gathered around another workstation talking; employees playing games on their computers; and employees viewing various internet web pages. There did not appear to be much work going on at the time.

(U) Lack of Hanger Space at Eglin Air Force Base

(~~U//FOUO~~) Due to the lack of hangar space at Eglin Air Force Base, the F-35 planes will be parked under sun ports. The sun ports had roofs that would cover the top of the planes but no side walls to protect the rest of the planes. We are concerned the sun ports will not provide the necessary protection for the F-35s during inclement weather which is common in Florida. Rain, hail, debris, etc, can damage the plane if the wind is blowing from any direction. Exposing the F-35 to inclement weather could have an adverse affect on its low observable, stealth capabilities.

(U) Appendix C. ALIS Interfaces

(~~U//FOUO~~)

DoD OIG: (b) (7)(E)

[redacted]

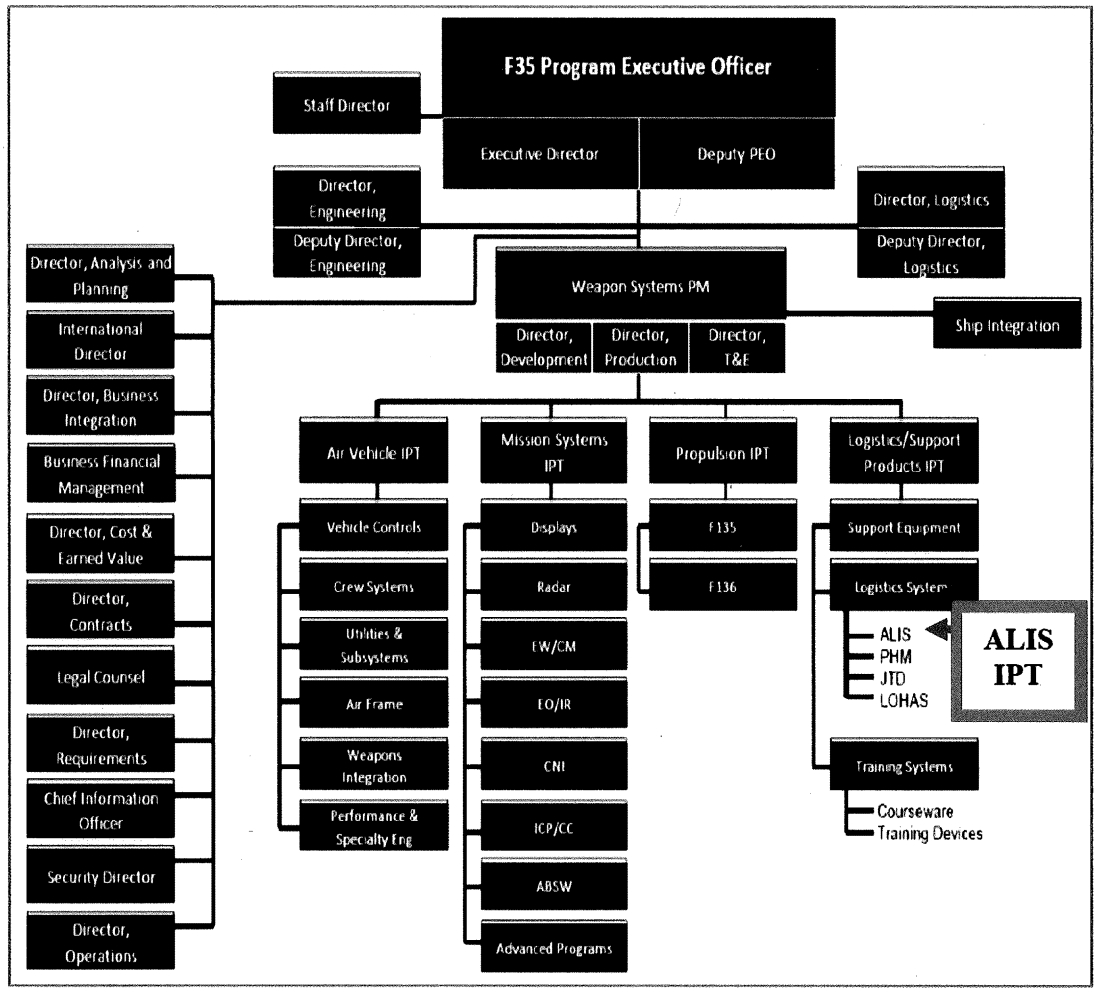
Acronyms

GDR	Ground Data Security Assembly Receptacle
GSSM	Global Sustainment Supply Management
JMPS	Joint Mission Planning System
JTD	Joint-Service Technical Data
LDM	Logistics Data Manager
LOHAS	Low Observable Health Assessment System
OMS	Off-board Mission Support
PMA	Portable Maintenance Aid
PSC	Propulsion System Contractor
SAP	Systems, Applications, and Products
SPMS	Sustainment Performance Management System
TMS	Training Management System
TSSC	Training System Support Center

(~~U//FOUO~~)

(U) Appendix D. F-35 Joint Program Office Organization

(U//~~FOUO~~)



(U//~~FOUO~~)

(U) Appendix E. Department of the Navy N89 Independent Verification and Validation Test Results

USAF: (b) (1), 1 4(c)

USAF: (b) (1), 1 4(c)

(~~U//FOUO~~) The JSF Air System design contains multiple information exchange connections that are consistent with the JAFAN 6/3 definition of a PL5. The Air Vehicle is a multi level secure operating system and the ALIS SOU includes both Classified and Unclassified systems with data being transferred between the Air Vehicle and SOU systems via the Off-Board Mission System and Ground Data Security Assembly Receptacle, and the Low Observable Health Assessment System and SOU.

(~~U//FOUO~~) The IV&V test was executed using the "National Institute of Standards and Technology (NIST) Special Publication (SP) 800-115, Technical Guide to Information Security Testing and Assessment" approach of multiple phases covering system familiarization/enumeration, vulnerability assessment, and post test or reporting. The focus of the test was to validate the effectiveness of the security controls implemented in the protection of system operation and access to sensitive or classified information for a production system.

USAF: (b) (1), 1 4(c)

(U) N89 Findings

(U) Insignificant Configuration Management

USAF: (b) (1), 1 4(c) [redacted]

USAF: (b) (1), 1 4(c)

(U) N89 IA Recommendations

(U) N89 recommended the JPO re-evaluate the Program Protection Plan, processes and procedures using a unique modified information assurance approach.

- (~~U//FOUO~~) Implement an evaluation of security controls using techniques other than traditional 8500 and JAFAN, as these processes are not responsive enough for a network centric weapons system.
- (~~U//FOUO~~) Conduct a formal Certification Test and Evaluation assessment of ALIS, (SOU-U, SOU-C, CPE, ALOU) in advance of future IV&V to reduce potential impact to program schedule from any issues identified.
- (~~U//FOUO~~) Require a full and complete IV&V assessment by Subject Matter Experts for systems under test to report back to System Project Office and SAP data owners before each build release.
- (~~U//FOUO~~) Institute a full and complete IV&V test by qualified software engineers on a recurring basis on the LM Trusted Software Development System, Air Vehicle "trusted Write Downs," and Ground Data Receptacle software.

(~~U//FOUO~~) These recommendations apply to all other systems that are interconnected but split by accreditation boundaries, as well as currently fielded systems that include Ground Data Receptacle and Portable Memory Device data transfer (e.g. System Design and Development, Flight Test, LRIP).

(U) LM Mitigations Implemented:

(~~U//FOUO~~) As of July 31, 2012, Lockheed Martin validated the following long term and short term mitigations.

- (~~U//FOUO~~) Plan of Action and Milestones were generated with 61 key items.
- (~~U//FOUO~~) Thirteen critical items were corrected immediately.
- (~~U//FOUO~~) Other findings were referred to Block 2.

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(U) Appendix F. Management Comments

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THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010

ACQUISITION, TECHNOLOGY AND LOGISTICS

OCT 0 5 2012

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR INTELLIGENCE AND SPECIAL PROGRAM ASSESSMENTS

SUBJECT: Response to DoDIG Draft Report Audit of the F-35 Lightning II Autonomic Logistics Information System (Project No. D2010-DINT02-0146.000)

As requested, attached is the response to the general content and recommendations contained in the subject report. My point of contact is DoD OIG: (b) (6) [redacted], Strategic and Tactical Systems/Air Warfare, at DoD OIG: (b) (6) [redacted]

Frank Kendall

Attachment:
As stated

(U)

(U)

Under Secretary of Defense for Acquisition, Technology, and Logistics Response to DoDIG Draft Report Audit of the F-35 Lightning II Autonomic Logistics Information System (Project No. D2010-DINT02-0146.000)

Recommendation A:
We recommend the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) designate the Autonomic Logistics Information System as a separate Major Automated Information System program under the Program Executive Officer (PEO) for the F-35.

Response:
Partially Concur. USD(AT&L) agrees with DoDIG's conclusion that the Autonomic Logistics Information System (ALIS) is a crucial subsystem of the overall F-35 Lightning II Air System, and as such it should receive oversight and management that reflects its importance. The F-35 air system is managed as a whole and separating out a single part of it will adversely affect the integrated manner in which the development and deployment is accomplished. In recognition of its importance, in April 2012, the JPO upgraded the ALIS Integrated Product Team (IPT) lead position to the GS-15/O-6 level, directly reporting to the Weapon System Program Manager. The subsystem receives PEO-level attention with regards to current developmental issues and future sustainment strategy, and the PEO and the United States Marine Corps Deputy Commandant for Aviation are provided status reports due to the imminent delivery of aircraft to their first operational base. The program is reviewed regularly by Department acquisition executives in the Services and the Office of the Secretary of Defense. The ALIS system is an item of special interest to the USD(AT&L). The additional overhead associated with managing it as a separate MAIS program would not improve performance.

Recommendation B:
We recommend that the Joint Program Office modify the contract to include security architecture tests for all of the systems that affect the Autonomic Logistics Information System and any system that processes or maintains government data.

Response:
Partially Concur. As the program matured and the security risks in information technology increased, the program proactively developed and implemented the System Security Information Assurance (SSIA) Phase I modification to the System Development and Demonstration (SDD) contract to implement improved security controls. As the threat has evolved, the program is issuing a new SSIA Phase II modification to the SDD contract to address current and future threats in security. All systems that process classified information at any level are and will be fully tested and certified, as are the UNCLASSIFIED portions of the Autonomic Logistics Operating Unit (ALOU) and System Build. Although UNCLASSIFIED contractor systems that interface with the ALOU are not covered by the SSIA contract modifications, these systems have been reviewed by a System Security Advisory Group (SSAG). The SSAG has verified that security measures in place are acceptable to protect the Performance Based Logistics information being used by those systems.

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Recommendation C1:
We recommend that the Under Secretary of Defense for Acquisition, Technology, and Logistics review the Autonomic Logistics Information System Standard Operating Unit (SOU) Version 2 to determine whether it should be classified as a separate Acquisition Category program.

Response:
Partially Concur. USD(AT&L) agrees with DoDIG's conclusion that the JPO must ensure that requirements for the ALOU SOU Version 2 are adequately defined and tested and that costs are tracked. However, the ALOU SOU Version 2 should remain as part of the larger F-35 Air System Program for the same reasons stated in the response to Recommendation A. Version 2 is a deployable configuration that supports expeditionary operations with the same basic functionality.

Recommendation C2:
We recommend that the Joint Program Office issue a separate contract for the Standard Operating Unit Version 2 follow-on requirements.

Response:
Partially Concur. USD(AT&L) agrees with DoDIG's conclusion that the JPO must ensure that requirements for the ALOU SOU Version 2 are adequately defined and tested and that costs are tracked. However, rather than a separate contract, the JPO will award a contract modification for SOU Version 2 work that encompasses a detailed Statement of Work and associated Work Breakdown Structure, in order to ensure sound contract management is properly performed.

Recommendation D1:
We recommend the Joint Program Office include the Program Security Office, U.S. Air Force Office of Special Investigations (AFOSI), AF and Navy certifying officials in the approval process to ensure special access program requirements are taken into consideration as early as possible.

Response:
Concur. The JPO is actively engaging the appropriate security and certification personnel early in the approval process. The JPO has performed Process Improvement reviews and as a result the certification personnel are included earlier in the approval process. The AFOSI, Air Force, and Navy certifying officials have been included in the F-35 design and certification as documented in the Certification and Accreditation Working Group and Certification and Accreditation Advisory Group charters.

Recommendation D2:
We recommend the Joint Program Office obtain a current Autonomic Logistics Information System specific System Threat Assessment Report (STAR).

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Attachment

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Response:
Partially Concur. Since the DoDIG reviewed the F-35 STAR dated July 2009, the updated version, dated July 2011, was released. Section V, Paragraph 5j, of the July 2011 STAR specifically addresses the threats to ALIS as it supports the F-35 Air System. The JPO will request and emphasize that this area should be expanded in future updates of the STAR for the F-35 Air System.

Recommendation D3:
We recommend the Joint Program Office develop and maintain a listing of all foreign developed software, as well as all documentation of third party testing approvals.

Response:
Concur. As part of the Process Improvement of software security and foreign development reviews, the JPO has implemented the review processes recommended by the certifying agencies, which includes the items mentioned in this recommendation.

Recommendation D4:
~~We recommend the~~ Joint Program Office implement and require the use of either the Navy developed checklist or a comparable checklist for software approval.

Response:
Concur. The JPO has adopted the AFOSI software request form, which is comparable to a checklist, for software approval as part of the security review Process Improvement and is assessing the Navy developed checklist for inclusion in the process.

Recommendation D5:
We recommend the Joint Program Office test the Autonomic Logistics Information System in a realistic, deployable setting.

Response:
Concur. As part of the overall program activities, the JPO is planning to exercise the ALIS in more robust operationally relevant environments.

Additional Information:
The DoD IG identified a difference of opinion between the U.S. Government and Lockheed Martin Aeronautics (LM Aero) regarding the ownership of the ALOU. Discussions between the F-35 Contracting office and LM Aero pursuant to this identification have provided additional clarification. The Government has unlimited rights to non-commercial software and technical data associated with the ALOU. The only item currently at issue is the ALOU hardware procured for System Development and Demonstration. It is the Government's position that the Government has title to this hardware.

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USAF: (b) (1), 1 4(c)

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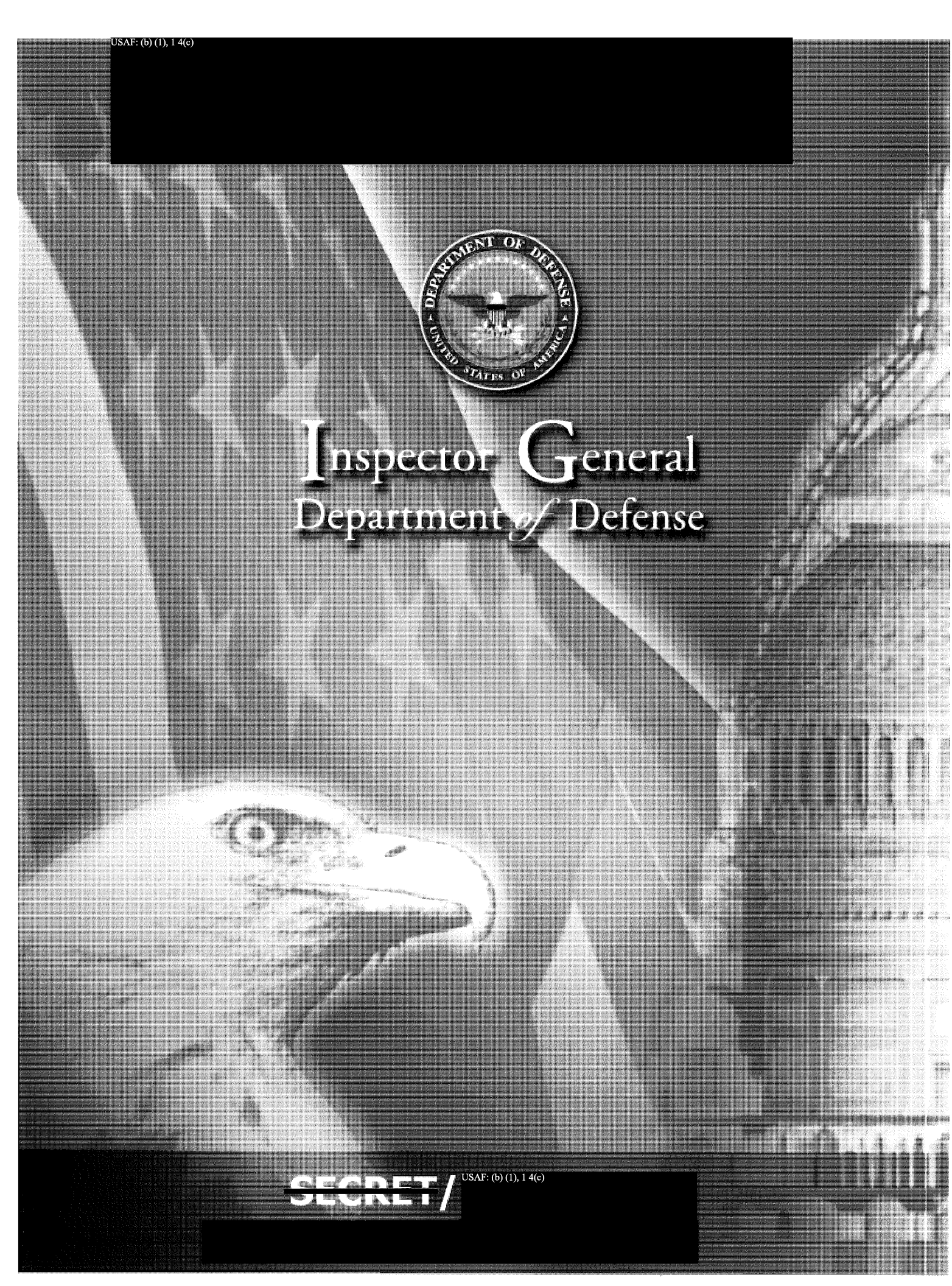

Inspector General
Department of Defense

~~SECRET~~/ USAF: (b) (1), 1 4(c)

[redacted]