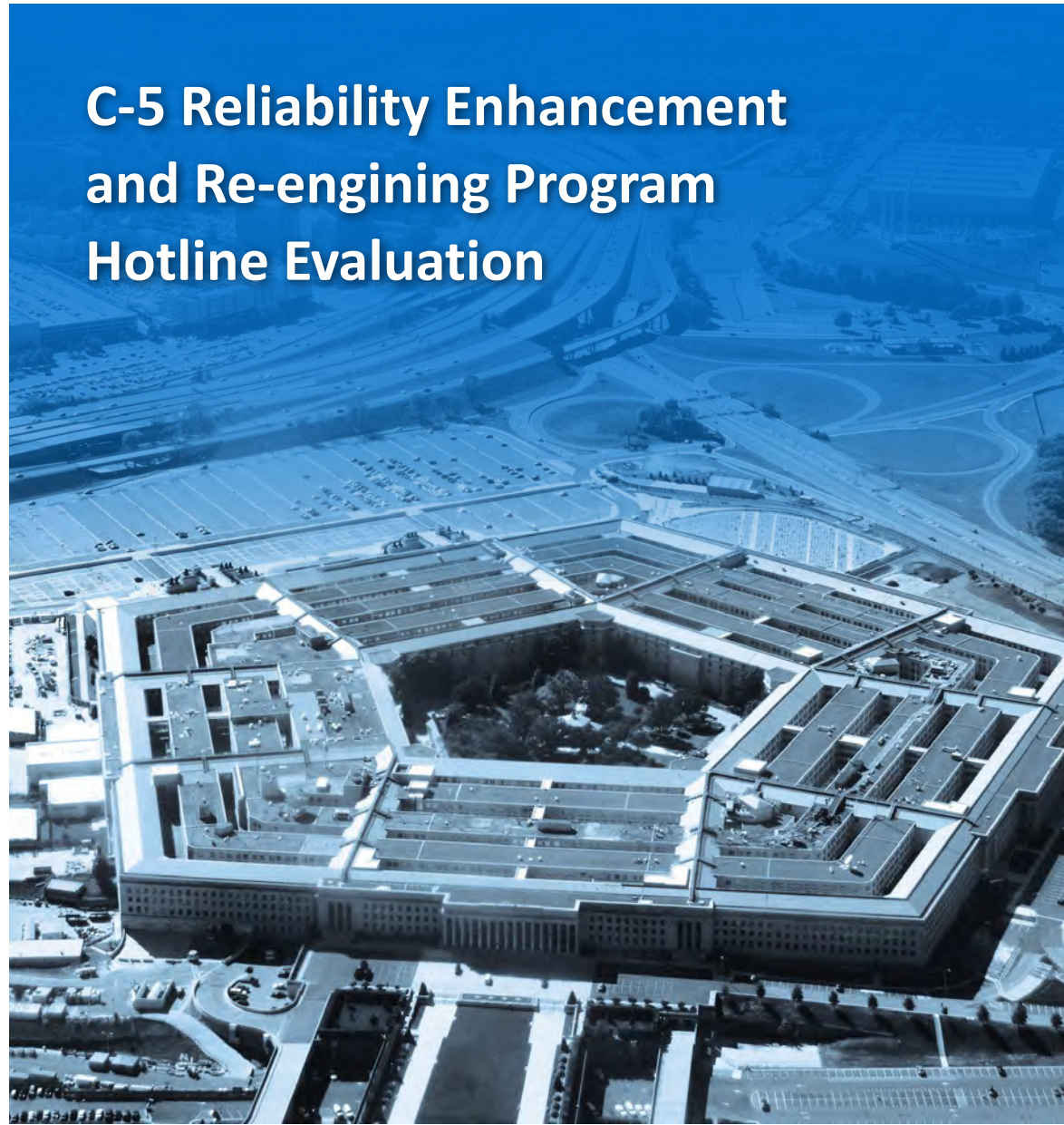




INSPECTOR GENERAL

U.S. Department of Defense

NOVEMBER 18, 2014



C-5 Reliability Enhancement and Re-engining Program Hotline Evaluation

INTEGRITY ★ EFFICIENCY ★ ACCOUNTABILITY ★ EXCELLENCE

INTEGRITY ★ EFFICIENCY ★ ACCOUNTABILITY ★ EXCELLENCE

Mission

Our mission is to provide independent, relevant, and timely oversight of the Department of Defense that supports the warfighter; promotes accountability, integrity, and efficiency; advises the Secretary of Defense and Congress; and informs the public.

Vision

Our vision is to be a model oversight organization in the Federal Government by leading change, speaking truth, and promoting excellence—a diverse organization, working together as one professional team, recognized as leaders in our field.



For more information about whistleblower protection, please see the inside back cover.



Results in Brief

C-5 Reliability Enhancement and Re-engining Program Hotline Evaluation

November 18, 2014

Objective

We evaluated the C-5 Reliability Enhancement and Re-engining Program to determine the legitimacy of the allegations made in the Department of Defense Office of the Inspector General Hotline complaint.

Findings

We substantiated four of the six allegations, as noted below:

- A. The Government failed to discourage repeated tender of nonconforming components. – SUBSTANTIATED
- B. The Government delegated inherently Government functions to Lockheed Martin. – SUBSTANTIATED
- C. The Government failed to approve and document Lockheed Martin flights. – UNDETERMINED
- D. The Government accepted nonconformances that were corrected at an additional cost to the Government. – SUBSTANTIATED
- E. Defense Contract Management Agency (DCMA) failed to comply with DCMA Instruction for the corrective action process. – SUBSTANTIATED
- F. The Government failed to ensure that Lockheed Martin used U.S. Air Force service guidance. – NOT SUBSTANTIATED

Recommendations

We recommend that the System Program Office ensure that the Government disposition process, practice, and contract documentation is in compliance with the Federal Acquisition Regulation and Defense Federal Acquisition Regulation Supplement. The System Program Office should establish a process for, and actively participate in, the review and disposition determination of all critical and major product nonconformances. In addition, the System Program Office should update its airworthiness certification process to ensure that identified risks have been resolved or accepted by the appropriate authority before issuing Military Certificates of Airworthiness.

Furthermore, we recommend that the Defense Contract Management Agency ensure that it reviews all nonconforming material dispositions and approves all minor nonconforming material dispositions before Lockheed Martin takes disposition action by actively participating in a joint Government-Contractor Material Review Board. Also, the Defense Contract Management Agency should review all open Corrective Action Requests and raise the level of any that meet the elevation criteria of Defense Contract Management Agency Instruction 1201.

Management Comments

On October 23, 2014, the Program Executive Officer for Mobility and Defense Contract Management Agency responded to our recommendations. Collectively, they concurred with 14 recommendations, partially concurred with 1 recommendation, and did not concur with 3 recommendations. We determined that four of their comments did not meet the intent of our recommendations. We request that the Program Executive Officer, Mobility, and Defense Contract Management Agency provide additional comments in response to this report by December 19, 2014. The following table identifies recommendations requiring additional comments. Please see the Findings section in the report for detail.

Recommendations Table

Management	Recommendations Requiring Comment	No Additional Comments Required
C-5 Reliability Enhancement and Re-engining Program System Program Office	A.1.b	A.1.a, A.1.c, A.1.d, B.1.a, B.1.b, C, D.1, D.2, E.1
Defense Contract Management Agency	A.2.a, A.2.b, E.2.a	B.2.a, B.2.b, E.2.b, E.2.c, E.2.d

Please provide comments by December 19, 2014.



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

November 18, 2014

**MEMORANDUM FOR U.S. AIR FORCE PROGRAM EXECUTIVE OFFICER FOR MOBILITY
DIRECTOR, DEFENSE CONTRACT MANAGEMENT AGENCY**

**SUBJECT: C-5 Reliability Enhancement and Re-engining Program Hotline Evaluation
(DODIG-2015-039)**

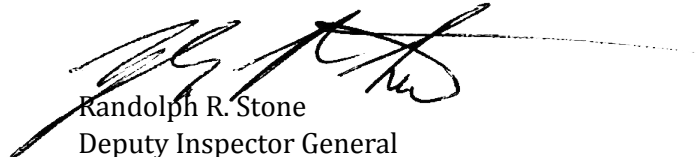
The DoD Office of the Inspector General (DoD OIG) conducted the subject evaluation of the allegations made in the DoD OIG Hotline complaint received on May 29, 2013, against the C-5 Reliability Enhancement and Re-engining Program (RERP). We conducted the onsite evaluation at Lockheed Martin in Marietta, Georgia and at both System Program Office (SPO) locations, at Robins Air Force Base (AFB) and Wright-Patterson AFB. Our objective was to evaluate the legitimacy of allegations made in the DoD OIG Hotline complaint received on May 29, 2013 and to determine if they posed any risk to the program.

Our evaluation determined that four of the six allegations were substantiated. The Government failed to discourage repeated tender of nonconforming components, delegated inherently Government functions to Lockheed Martin, accepted nonconformances that were corrected at an additional cost to the Government, and failed to comply with DCMA Instruction for the corrective action process. We provided our findings in a draft of this report to the Program Executive Officer for Mobility and the Director of the Defense Contract Management Agency.

We considered management comments on the draft from the Program Executive Officer for Mobility and the Director of the Defense Contract Management Agency when preparing the final report. We request further comments on Recommendations A.1.b, A.2.a, A.2.b, and E.2.a. Further comments should be received by December 19, 2014.

DoD Directive 7650.3 requires that recommendations be resolved promptly. If possible, send a .pdf file containing your comments to the contact below. Copies of your comments must have the actual signature of the authorizing official for your organization. We are unable to accept the /Signed/ symbol in place of the actual signature. If you arrange to send classified comments electronically, you must send them over the SECRET Internet Protocol Router Network (SIPRNET).

We appreciate the courtesies extended to our staff. Please direct questions to CAPT Christopher Failla at (703) 604-8915 or christopher.failla@dodig.mil.



Randolph R. Stone
Deputy Inspector General
Policy and Oversight

cc:

Under Secretary of Defense (Acquisition, Technology and Logistics)

Assistant Secretary of Defense (Acquisition)

Secretary of the Air Force Inspector General

Assistant Secretary of the Air Force (Acquisition)

Assistant Secretary of the Air Force (Financial Management and Comptroller)

Director SAF/FMPA

Contents

Introduction

Objective	1
Background	1
C-5 RERP	2
Hotline Complaint	3

Finding A. Failure to Discourage Repeated Tender of Nonconforming Components

Allegation	4
Our Evaluation	5
Allegation Timeframe	5
Current Condition and Deficiencies	7
Management Comments on Finding A and Our Response	9
Recommendations – Management Comments and Our Response	9
Recommendation A.1	9
Recommendation A.2	12

Finding B. Delegation of Inherently Governmental Functions to Lockheed Martin by SPO and DCMA

Allegation	14
Our Evaluation	14
Allegation Timeframe	14
Current Condition and Deficiencies	16
Management Comments on Finding B and Our Response	16
Recommendations – Management Comments and Our Response	17
Recommendation B.1	17
Recommendation B.2	18

Contents (cont'd)

Finding C. Alleged Failure to Approve and Document Contractor Flights	19
Allegation	19
Our Evaluation	19
Allegation Timeframe	19
Current Condition and Observations	21
Recommendation – Management Comments and Our Response	21
Recommendation C	21
 Finding D. Alleged Acceptance of Nonconformances that were Corrected at an Additional Cost to the Government	 22
Allegation	22
Our Evaluation	22
Allegation Timeframe	22
Current Condition and Deficiencies	25
Management Comments on Finding D and Our Response	26
Recommendations – Management Comments and Our Response	27
Recommendation D	27
 Finding E. Alleged Failure to Comply with DCMA Instruction for Corrective Action Process	 29
Allegation	29
Our Evaluation	29
Allegation Timeframe	29
Current Condition and Deficiencies	34
Management Comments on Finding E and Our Response	35
Recommendations – Management Comments and Our Response	35
Recommendation E.1	35
Recommendation E.2	36

Contents (cont'd)

Finding F. Alleged Failure to Use U.S. Air Force Service Guidance	39
Allegation	39
Our Evaluation	39
Allegation Timeframe	39
Current Condition	41
Appendixes	
Appendix A. Scope and Methodology	42
Appendix B. Notice of Concern and Response	43
Appendix C. Management Comments on the Findings and Our Response	47
Management Comments	54
Acronyms and Abbreviations	67



Introduction

Objective

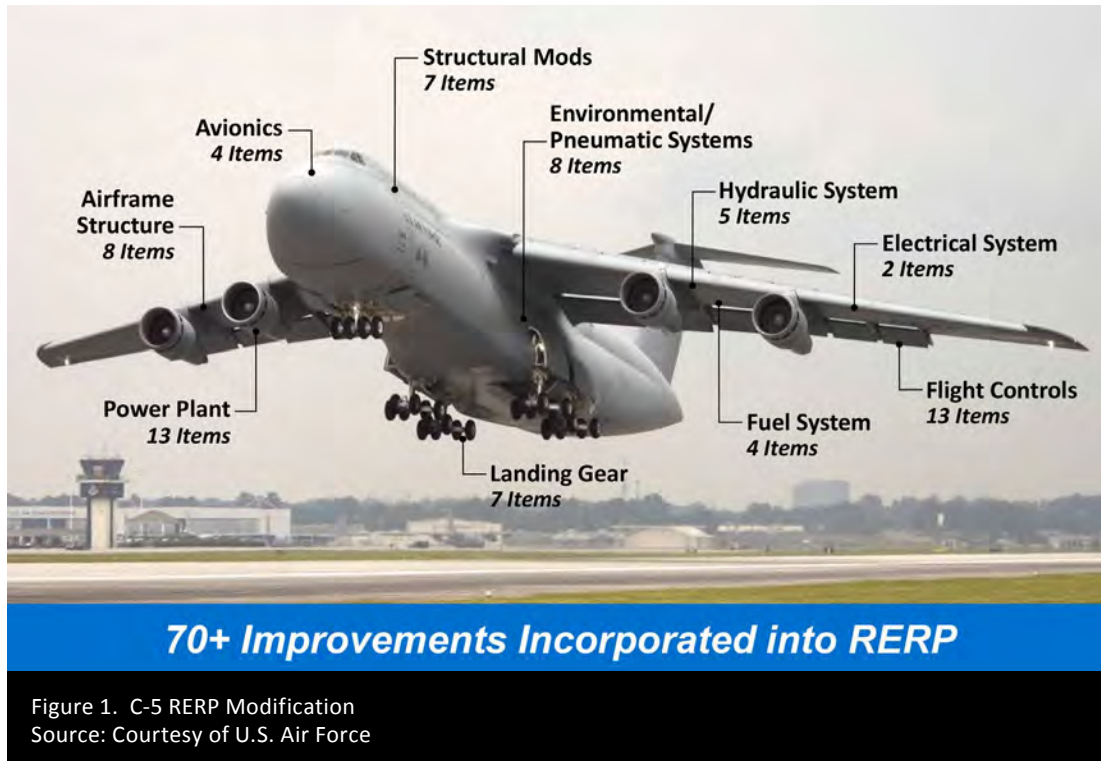
The objective of this evaluation was to determine the legitimacy of the allegations made in the Department of Defense Office of the Inspector General (DoD OIG) Hotline complaint, received on May 29, 2013, against the C-5 Reliability Enhancement Re-engining Program (RERP). Lockheed Martin Aeronautics Company (Lockheed Martin) is under contract to perform this modification to U.S. Air Force C-5 aircraft.

Background

The C-5 Galaxy is the largest military transport aircraft used by the U.S. Air Force. It provides the U.S. Air Force with a heavy intercontinental-range strategic airlift capability. The C-5 Galaxy was produced by Lockheed Martin and has been operated by U.S. Air Force since 1970. It has been used to support U.S. Military operations since that time, including the Vietnam War, Operation Desert Storm, and Operation Enduring Freedom.

Following a study which concluded that 80% of the C-5 airframe service life remained, the U.S. Air Force began a two-phase program to modernize 1 C-5A, 49 C-5Bs, and 2 C-5Cs. The C-5 Avionics Modernization Program (AMP) was the first phase, which began in 1998. It included the upgrade of electronic systems to improve communications, navigation, and surveillance/air traffic management compliance. The upgrade also added new safety equipment and installed a new autopilot system.

The C-5 RERP is the second phase of C-5 modernization which will bring the configuration baseline to a C-5M. RERP is intended to improve aircraft performance, reliability, maintainability, availability, and reduce total ownership cost. The RERP effort centers around replacing the current engine used throughout the C-5 fleet with a more reliable, commercial off-the-shelf, General Electric F138-GE-100 turbofan engine with increased takeoff thrust, stage-3 noise compliance, and Federal Aviation Regulation pollution compliance. In addition to new engines/pylons, C-5 RERP provides upgrades to wing attachment fittings; new thrust reversers and auxiliary power units; upgrades to the electrical,



hydraulic, fuel, fire suppression, landing gear, and pressurization/air conditioning systems; and airframe structural modifications. Figure 1 shows the extent of the RERP modification.

C-5 RERP

The C-5 RERP modification production contract was awarded to Lockheed Martin in April 2007. The contract designates Defense Contract Management Agency-Lockheed Martin Marietta, referred to as DCMA in this report, as the Contract Administration Office. Initial operational capability was achieved in the second quarter of fiscal year (FY) 2014. As of August 8, 2014, Lockheed Martin had delivered 21 of the 52 modified aircraft. The final C-5 RERP delivery is scheduled for FY 2018.

Prior to October 2012, when the Air Force Materiel Command (AFMC) five-center construct re-organization was implemented, C-5 program management was divided across two different AFMC centers and operated independently for development and sustainment functions. C-5 developmental and modernization efforts, including the C-5 RERP, were managed by the Aeronautical Systems Center (ASC) at Wright-Patterson Air Force Base (AFB), while sustainment efforts were managed by the Warner Robins Air Logistics Center (WR-ALC). As a result

of the October 2012 AFMC re-organization, ASC and WR-ALC C-5 program management functions were combined to create the C-5 Galaxy Division and aligned under the same chain of command. The System Program Office (SPO) is still geographically divided between Wright-Patterson AFB and Robins AFB, known as “SPO-North” and “SPO-South,” respectively. The C-5 Galaxy Division is now led by the System Program Manager (SPM) position and Chief Engineer at Robins AFB. The Development Systems Manager (DSM) and DSM Chief Engineer still reside at Wright-Patterson AFB, under the command of the C-5 SPM.

Hotline Complaint

On May 29, 2013, a DoD OIG Hotline complaint was received about the C-5 RERP Program. The complainant requested an investigation into issues that occurred between June 2010 and May 2013, where the program was not operating in accordance with Federal Acquisition Regulation (FAR), Defense Federal Acquisition Regulation Supplement (DFARS), Department of Defense (DoD), U.S. Air Force, and DCMA guidance. The complainant had six main allegations and cited numerous examples for each.

- A. The Government failed to discourage repeated tender of nonconforming components.
- B. The Government delegated inherently Government functions to Lockheed Martin.
- C. The Government failed to approve and document Lockheed Martin flights.
- D. SPO accepted nonconformances that were corrected at an additional cost to the Government.
- E. DCMA failed to comply with DCMA Instruction for the corrective action process.
- F. The Government failed to ensure that Lockheed Martin used U.S. Air Force service guidance.

We announced this evaluation on September 24, 2013. On September 18, 2013, the Air Force Inspector General released a memorandum report entitled “Department of Defense (DoD) Inspection General (IG) Complaint - DoD/IG Hotline Case #20130531-014165-03 Final Report,” that assessed the safety of flight concerns identified in the hotline allegation. The report concluded that there is an indication of a systemic quality issue, despite the fact that there were no safety of flight concerns identified. As a result of this report and due to competing priorities within the DoD OIG, our evaluation was temporarily suspended on January 15, 2014. We resumed the evaluation on June 16, 2014. The full scope and methodology for this evaluation is described in Appendix A.

Finding A – Substantiated

Failure to Discourage Repeated Tender of Nonconforming Components

We substantiated the allegation. The C-5 SPO and DCMA were not proactively managing the categorization, disposition, and corrective actions for all product nonconformances. In addition, they did not accurately report the contractor's quality assurance nonconformances in Contractor Performance Assessment Reports (CPARs). As a result, the Government failed to establish an environment and an expectation to decrease the number of nonconformances on delivered aircraft.

Allegation

The complainant alleged that C-5 RERP SPO leadership and DCMA failed to comply with FAR Part 46, "Quality Assurance," FAR Subpart 46.4, "Government Contract Quality Assurance," FAR Subpart 46.407, "Nonconforming supplies or services," and FAR Paragraph 46.407(a) by not taking appropriate action to discourage the repeated tender of nonconforming products and services, at significant cost to the Government to repair.

The complainant provided the following examples:

- The number of critical, major, and minor nonconformances has increased on each aircraft delivered and continues to increase for aircraft still in production.
- Numerous instances of damage to aircraft and aircraft parts caused by Lockheed Martin's failure to follow procedures were documented and continue to occur at an increasing rate, resulting in repairs that are performed at significant cost to the Government.
- Numerous documents required to be provided by Lockheed Martin contain errors, were not delivered, or were delivered late and have been accepted at the direction of the C-5 RERP SPO.

Our Evaluation

Allegation Timeframe

Although we substantiated the overarching allegation, some of the specific examples provided by the complainant did not support this allegation as follows:

- We were unable to find evidence of a systemic problem with Lockheed Martin's processing of legacy equipment nonconformances when damage was caused by Lockheed Martin. Several instances were observed where damage to Government assets were caused by Lockheed Martin's performance of incorrect or incomplete procedures or failure to fully comply with appropriate procedures; however, all of these nonconformances were correctly documented as category III Modification Discrepancy Reports (MDRs) and are the responsibility of Lockheed Martin to resolve at no additional cost to the Government.
- We found that the Aircraft Acceptance Reports identified by the complainant as being delivered with errors, late, or never delivered at all were, in fact, delivered prior to the Government's acceptance of aircraft, as contractually required.

Below we identified several program deficiencies which did substantiate the overall allegation.

Contract Variances

Historical program quality metrics demonstrated that there was an increasing trend in product nonconformances during the time of the allegation. Despite the recognition of considerable quality assurance problems on behalf of the Government and Lockheed Martin, the Government continued to rely heavily on the integrity and effectiveness of Lockheed Martin's processes and procedures for dealing with nonconforming materials.

As part of the increasing trend, we found the Government had not taken appropriate action to close and verify all major nonconformances in a timely manner. FAR Subpart 46.101 defines a major nonconformance as "a nonconformance, other than critical, that is likely to result in failure of the supplies or services, or to materially reduce the usability of the supplies or services for their intended purpose." Major nonconformances proposed by Lockheed Martin to be accepted "as-is" during delivery of an aircraft to the Government are documented as a request for variance.

A major variance is defined in the C5 RERP Configuration Management Plan as, “A documented departure or nonconformance involving health, performance, interchangeability, reliability, survivability, maintainability, or durability of the item or its repair parts, effective use of operation, weight, or appearance (when a factor). Major variances will be dispositioned by the [Configuration Control Board] CCB, and are further divided into:

- Major Type A - A variance that documents a nonconformance that impacts the customer baseline. In addition to CCB approval, Major Type A variances will be submitted to the customer for approval prior to delivery of the product/CI.
- Major Type B - A variance that documents a nonconformance that only impacts one or more baselines below the baseline(s) controlled by the customer (contractor-controlled). Major Type B variances only require the approval of the program CCB.
- Minor - A variance that documents a nonconformance that does not materially reduce the usability of the item, or is a departure from established standards having no significant bearing on the effective use or operation of the item. Minor variances require approval of the appropriate CCB. Minor variances are typically used for minor departure from drawing dimensions, processes or tolerances that result in a nonconformance.”

The C-5 RERP effort has generated 42 major variances in the last 5 years; however, 12 of these variances have remained open for 2 to 5 years. These major variances impact several aircraft that have already been delivered. SPO could not provide a definitive plan or schedule for the resolution and closure of the 12 open major variances.

Material Review Board

We found that without Government review or approval, Lockheed Martin performed repair actions, to downgrade the classification of nonconformances from major to minor, which effectively allowed Lockheed Martin to approve the disposition. Furthermore, DCMA did not initiate sub-delegations to DCMA personnel at subtier supplier locations. Through a sub-delegation, DCMA would have additional oversight of program quality assurance activities at critical suppliers and would be responsible for ensuring that products delivered to the Government meet all contractual requirements and are free of nonconformances.

In May 2012, DCMA issued direction to establish a “joint contractor-contract administration office review group,” for Material Review Board¹ (MRB) dispositions. However, there was no evidence that this resulted in any change to the process in use. Due to the lack of this Government oversight, there is no visibility into the Lockheed Martin dispositions of major nonconformances that are determined by Lockheed Martin to affect a configuration baseline below that of the baseline controlled by the Government. These nonconformances are considered Major B variances and thus, do not require Government review or approval of the Lockheed Martin disposition.

Corrective Action Requests and Contractor Performance Assessment Reports

Numerous Corrective Action Requests (CARs) have been issued by DCMA citing Lockheed Martin for nonconformances related to its quality management system, adherence to procedures, and instances where aircraft with nonconformances were presented to the Government for acceptance. Additionally, one Level III CAR documented a “systemic failure of the contractor’s quality management system as per AS9100C and numerous quality system audit (QSR) [sic] findings.” CPARs are often used during source selection to evaluate contractors’ past performance to ensure that the contractor is capable of consistently providing quality, on-time products and services that conform to contractual requirements; therefore, issues that are reported in this forum tend to get high-level visibility as they have the potential to affect future business for the contractor. Contrary to the CARs, SPO rated Lockheed Martin’s quality assurance performance as satisfactory in the CPARs for the past three years. Additionally, information related to CARs reported by SPO in the CPARs has often been incorrect or omitted altogether. Some examples of these CPAR inaccuracies and omissions include the misreporting of the number of CARs issued during the reporting period, sometimes by a significant amount, and the absence of the site-wide level III CAR. The Lockheed Martin site-wide CAR was issued, in May 2013, for “Systemic Failure of the Contractor’s Quality Management System as per AS9100 Rev C.” We also found that the 2011, 2012, and 2013 C-5 semiannual Program Management Review presentations did not address the numerous Level II and III CARs which have remained open for over a year.

Current Condition and Deficiencies

In August 2013, Lockheed Martin implemented the Aeronautics Quality Transformation which was composed of several initiatives including the addition of quality assurance engineer personnel to the program, solicitation of feedback from production line workers for process improvement consideration, and new

¹ Material Review Board is a board consisting of representatives of contractor departments necessary to review, evaluate, and determine or recommend disposition of nonconforming material.

requirements for reporting quality metrics to Lockheed Martin senior leadership. As a result, nonconformances have begun to decrease, beginning in November 2013. However, we identified the following four deficiencies.

- **Excessive Open Variances:** Since the allegation timeframe, there has been no change to the open variances. There are still 12 variances that have remained open for 2 to 5 years that have an impact on delivered aircraft. (See Recommendation A.1.a)
- **Lack of Government MRB:** To date, SPO and DCMA have not established the Government-contractor review group for MRB dispositions. The Government still relies on Lockheed Martin's judgment to classify and disposition nonconforming materials and does not perform adequate oversight of the process. (See Recommendations A.1.b, A.2.a, and A.2.b)
- **Lack of Formal GAT Agreement:** In an effort to reduce the number of nonconformances due to legacy² issues, on May 8, 2014, the Procuring Contracting Officer (PCO) issued a bilateral modification to the production contract to formally implement a Government Advisory Team (GAT). The GAT consists of U.S. Air Force Air Mobility Command (AMC) maintainers from the C-5 U.S. AFB of origin that are on-site to advise on modification, maintenance, repair, and overhaul and provide subject matter expertise for legacy issues. AMC maintainers are active duty members of the U.S. Air Force; therefore, they are able to provide a field experience perspective to the production-line. SPO is paying for its travel costs while on-site at Lockheed Martin. While an agreement exists between SPO and Lockheed Martin, through the contract, there is no formal agreement between SPO and AMC to ensure these maintainers are available during the remainder of the contract. SPO is dependent upon having these maintainers on-site, as the PCO, through discussions with SPO, has put terms and conditions in the contract that allow for Lockheed Martin to renegotiate the costs of two aircraft lots should the Government fail to provide a full GAT contingency. (See Recommendation A.1.c)
- **Inaccurate CPARs:** SPO is still failing to accurately document instances of Lockheed Martin's poor performance in CPARs. For example, the site-wide Level III CAR written against Lockheed Martin's quality management system was still not included in the May 2014 CPAR. Omission of this significant CAR helps create an inaccurate assessment of the program's quality management system. The May 2014 CPAR highlighted two Level II CARs that had been open for two years, but it

² Legacy components on this aircraft are defined as C-5 aircraft components that are part of the original aircraft and not the RERP modification.

neglected to mention the Level II Safety-of-Flight CAR pertaining to the flight control nonconformances that has been open for more than two and a half years. Nonconformances documented in this CAR have affected many of the aircraft delivered to date. (See Recommendation A.1.d)

Management Comments on Finding A and Our Response

Summaries of management comments on the finding and our response are in Appendix C.

Recommendations – Management Comments and Our Response

Recommendation A.1

We recommend the C-5 Reliability Enhancement and Re-engining Program System Program Office:

- a. **develop a formal plan for resolution of variances that includes actionable steps and due dates.**

SPO Comments

SPO concurred and stated:

The program office agrees with the necessity of developing a formal plan for the resolution of variances and believes that the current process provides actionable steps and dates in coordination with the user's operational requirements. For those variances that do not require user coordination, the program office will ensure more timely resolution of the specific contact actions or financial paperwork transactions.

Any required variation is processed and tracked to completion in accordance with the process outlined within AFLCMC/WLS 01 63-01 Galaxy Division Configuration Management via Configuration Control Board, dated October 15, 2014. While recently signed, the program office has been operating to these procedures for the past two years. The process calls for variations to be coordinated amongst the stakeholders to include the using command, Air Mobility Command (AMC). Approved closure plans that are tied to fielded aircraft maintenance actions are

continually managed and tracked by the enterprise and closure dates are determined in coordination with the user to minimally impact aircraft availability. Several open variances, however are tied to future contract actions that have been delayed. Going forward, the program office will aggressively burn down open variances and better steward the closure of future variances. Progress on variance closure is monitored by leadership in a variety of regularly scheduled forums to include bi-monthly Reliability Enhancement Re-engining Program (RERP) Enterprise reviews and weekly Time Compliance Technical Order (TCTO) meetings. However, greater effort and importance will be placed on closure dates.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. On October 10, 2014, SPO provided a document dated September 10, 2014 that included the plans with actual anticipated closure dates. No further comments are required.

- b. establish a Material Review Board process for, and actively participate in, the review and disposition determination of all critical and major product nonconformances.**

SPO Comments

SPO did not concur and stated:

The program office disagrees with this recommendation.

The program office has an established, robust methodology for providing active participation in the review and disposition (solution) determination of all Critical and Major product nonconformances.

Due to terminology differences, the program office failed to adequately inform the DoD IG assessment team on the level of program office involvement in Critical or Major nonconformances. When a Critical or Major nonconformance is suspected, Lockheed Martin provides the statement of condition and a proposed solution. All Use-As-Is and Repair items classified as Critical or Major are routed to the program office for acceptance or rejection via the Configuration Control Board (CCB). These Critical or Major proposed solutions are reviewed in accordance with the CCB Operating Instruction (OI) as described in AFLCMC/WLS 63-01 as part of the variance process prior to aircraft/item DD-250.

Our Response

The comments from SPO do not meet the intent of the recommendation. The process as described by SPO is still reliant on Lockheed Martin to make the determination of the type of nonconformance. We strongly believe that in order for SPO to ensure the products delivered to the Government meet all contractual requirements and are free of nonconformances, Government oversight is required for nonconformance categorization. Additionally, failure to conduct the review of nonconformances and their resolutions until the aircraft is in a ready for delivery state, or DD-250, does not provide the Government an opportunity to propose an alternate solution, which may no longer be feasible once the aircraft is completed. We request further comments from SPO in response to the final report.

- c. generate a memorandum of agreement to ensure that GAT AMC maintainers are available during the remainder of the contract.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The production contract clause H-138 which provides for the GAT presence at Lockheed Martin was coordinated with the lead command, AMC, prior to contract award. However, the program office agrees to coordinate with AMC on a standalone Memorandum of agreement (MOA). The estimated completion date is anticipated to be no later than December 2014.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

- d. ensure that CPARs accurately reflect all CARs and Lockheed Martin's quality assurance performance.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The program office agrees to include applicable and accurate metrics in the next CPAR, due Spring 2015, to more accurately portray quality assurance performance.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

Recommendation A.2

We recommend the Defense Contract Management Agency:

- a. review all nonconforming material dispositions by actively participating in a Joint Government-contractor Material Review Board.**

DCMA Comments

DCMA partially concurred and stated:

DCMA agrees with the necessity for active participation in a formal Joint Government-Contractor Material Review process but not the initial disposition (solution).

The DCMA letter's intent, dated May 17, 2012, was to cite the FAR allowing the contractor to provide a proposed solution on an aircraft discrepancy with the final accept/reject determination given by the government.

DCMA LMM will work with DCMA HQ to coordinate the proper updated guidance letter. However, DCMA has and continues to execute per the FAR.

DCMA utilizes a virtual joint government-contractor review group process versus a physical board.

Lockheed Martin provides the statement of condition and a proposed solution. DCMA LMM provides the government acceptance/rejection determination on 100% of Minor nonconforming material (NCM) in accordance with FAR 46.407. The process is documented for DCMA LMM in SOP-LMM-010A (NCM Review Process); it is documented for Lockheed Martin in AC-4276 (Identification and Disposition of Nonconforming Material Process). IAW FAR 46.407 the government's responsibility is to accept or reject the contractor's nonconformances. All Use-As-Is and Repair items classified as Critical or Major are routed to the PCO for an acceptance/rejection determination per AFLCMC/WLS CCB OI 63-01. The process ensures all proposed solutions are routed to the government for an acceptance/rejection determination prior to aircraft/item DD-250.

Our Response

The comments from DCMA do not meet the intent of the recommendation. The current process timeline only requires Government review of nonconformances prior to final acceptance, DD-250. We strongly believe that by waiting until final acceptance, DCMA cannot properly review nonconformances as the areas where the nonconformances occurred are often no longer accessible when the aircraft is completed. On October 29, 2014, DCMA provided a draft update to the local standard operating procedure for the nonconforming material (NCM) review process; however, this document is a draft and we are only able to evaluate current practice, procedures, and observations. We request further comments from DCMA in response to the final report.

- b. ensure Lockheed Martin does not take disposition action until Government approval has been received.**

DCMA Comments

DCMA did not concur and stated:

DCMA disagrees with this recommendation.

The government is in compliance with FAR 46.407 by providing an acceptance/rejection determination on all NCM items prior to aircraft/item DD-250. 100% of Minor NCM solutions are proposed by the contractor and accepted/rejected by DCMA per guidance given in DCMA LMM SOP-LMM-010A (NCM Review Process) which is approved by the PCO/ACO.

Our Response

The comments from DCMA do not meet the intent of the recommendation. We strongly believe that in order to mitigate required re-work and ensure the products delivered to the Government meet all contractual requirements and are free of nonconformances, Government oversight is required for the dispositioning of nonconformances. Additionally, failure to conduct the review of nonconformances and their resolutions until the aircraft is in a ready for delivery state, or DD-250, does not provide the Government an opportunity to propose an alternate solution, which may no longer be feasible once the aircraft is completed. We request further comments from DCMA in response to the final report.

Finding B – Substantiated

Delegation of Inherently Governmental Functions to Lockheed Martin by SPO and DCMA

We substantiated the allegation. SPO failed to provide Government review and approval of nonconformances against the C-5 RERP modification and legacy components. On March 31, 2011, the MRB authority was delegated to Lockheed Martin by DCMA. The delegation of authority was then rescinded on May 17, 2012, because this is an inherently Governmental function; however, the current practice still allows Lockheed Martin to disposition nonconformances without prior Government approval. As a result, the Government cannot fulfill its responsibility to manage the risks associated with the acceptance of nonconformances.

Allegation

The complainant alleged that SPO leadership, the PCO, and DCMA delegated inherently governmental functions to Lockheed Martin.

The complainant provided the following specific examples:

- The material review board authority for determining classification (minor, major or critical) for all defects and “use as is” disposition for major defects has been delegated to Lockheed Martin.
- Lockheed Martin conducts in-flight checks of aircraft systems as part of aircraft induction³ to document Lockheed Martin’s claims of legacy defects.

Our Evaluation

Allegation Timeframe

MRB Authority

We substantiated the claim that DCMA delegated inherently governmental functions to Lockheed Martin. On March 31, 2011, DCMA provided an official letter that delegated MRB disposition authority to Lockheed Martin for minor nonconformances, both for legacy and RERP components. DCMA still reviewed but did not have approval authority for nonconformances that were dispositioned by Lockheed Martin as “accept,” “use as-is,” and “repair.”

³ Aircraft Induction is the process of assessing the current state of the aircraft prior to transferring the custody from Government to contractor.

On May 17, 2012, DCMA rescinded the delegation of MRB authority. DCMA specifically cited FAR Subpart 46.407 (d), which states:

If the nonconformance is minor, the cognizant contract administration office may make the determination to accept or reject, except where this authority is withheld by the contracting office of the contracting activity. To assist in making this determination, the contract administration office may establish a joint contractor-contract administrative office review group. Acceptance of supplies and services with critical or major nonconformances is outside the scope of the review group.

DCMA is the contract administration office for this effort and therefore has the authority for acceptance or rejection of nonconformances. Despite rescission of authority, the process for nonconformances was not in compliance with the FAR. Lockheed Martin unilaterally dispositioned and performed work associated with nonconformances. For “accept,” “use as-is,” and “repair” dispositions, DCMA conducted a post-review and approval only after the work was completed. As a result, DCMA is not fulfilling its responsibility as the MRB authority to ensure that the disposition determination is in the best interest of the Government.

Additionally, we verified that during the time of the allegation the C-5 RERP production contract was updated to allow Lockheed Martin to proceed with corrective actions prior to receiving DCMA review and approval for the legacy C-5 MDRs. The rationale provided by SPO was to mitigate any delay and disruption for Lockheed Martin due to Government review and approval times.

Aircraft Induction

During this evaluation, we verified that the induction process had changed per direction from SPO via a Program Contracting Office Letter (PCOL). Prior to the issuance of the PCOL, the induction process was conducted in accordance with the “C-5M Reliability Enhancement and Re-engining Program (RERP) Low Rate Initial Production Aircraft Acceptance Test Plan.” The Aircraft Acceptance Test Plan documents the U.S. Air Force conducting the induction of the C-5 planes consisting of inflight and grounds checks, and concluding with the transfer of custody of Government property, through a DD Form 1149 sign-off, by the DCMA office.

The PCOL changed the induction process by requesting Lockheed Martin personnel conduct in-flight and ground checks after the C-5 aircraft were transferred to Lockheed Martin at the aircraft home station. The complainant alleged that these processes are inherently governmental; however, we found that the DD Form 1149 signoff is the only inherently governmental function.

Current Condition and Deficiencies

In an effort to provide additional Government oversight, SPO updated the contract to incorporate the addition of an on-site representative (OSR) in May 2014.

However, we still identified the following two deficiencies.

- **Failure to Formally Delegate OSR Authority:** According to the contract, the OSR is a representative of PCO that has cognizance for all legacy technical issues required for safety-of-flight, validation of the RERP modification installation, and the Minimum Equipment List. Additionally, these individuals have the authority to classify legacy defects and to direct Lockheed Martin on which defects to correct under the current contract. The OSR role is being filled by DCMA inspectors, on a two-week rotating basis. The OSR is either functioning as a COR, as defined in DFARS 252.201-7000(a) or as a technical representative, as defined in DFARS 242.7400. Both CORs and technical representatives have a requirement for a formal letter of delegation by the PCO and SPO, respectively. The COR position has additional training requirements, through the Defense Acquisition University, per the DoD COR Handbook, dated March 22, 2012. The current Memorandum of Agreement (MOA) between SPO and DCMA does not define the roles and responsibilities of these individuals and no letters of delegation exist. (See Recommendations B.1.a, B.1.b, and B.2.a)
- **Noncompliant MRB Authority:** Despite rescission of MRB authority provided to Lockheed Martin on May 17, 2012, the process for MRB is still not in compliance with the FAR. Lockheed Martin still unilaterally dispositions and performs the work associated with MRB decisions. (See Recommendation B.2.b)

Management Comments on Finding B and Our Response

Summaries of management comments on the finding and our response are in Appendix C.

Recommendations – Management Comments and Our Response

Recommendation B.1

We recommend that the C-5 Reliability Enhancement and Re-engining Program System Program Office:

- a. **update or generate all required memorandums of agreement, memorandums of understanding, and letters of delegation to ensure level of authority, training, roles, and responsibilities are properly documented for the Government on-site representative.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

Specific on-site representative (OSR) roles and responsibilities, required training and qualifications, and levels of authority will be referenced in the next update to the USAF LCMC DCMA C-5 RERP MOA expected to be signed no later than December 2014.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

- b. **ensure that delegated Government on-site representative personnel have appropriate qualifications commensurate with the level of authority given.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The program office has delegated DCMA LMM as the contract administration office. The OSR is executing their duties as governed by DCMA Overhaul, Maintenance, Modification and Repair (OMMR) instruction DCMA-INST 328. The OSR qualifications and responsibilities will be referenced in updated MOA Annex D per Recommendation B.1.a.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

Recommendation B.2

We recommend that the Defense Contract Management Agency

- a. coordinate with the System Program Office to update memorandums of agreement, memorandums of understanding, and letters of delegation to ensure level of authority, training, roles, and responsibilities are properly documented.**

DCMA Comments

DCMA concurred and stated:

DCMA agrees with this recommendation.

See Recommendation B.1.a.

Our Response

The DCMA comments are responsive and meet the intent of the recommendation. We request that DCMA notify the OIG when the actions are complete. No further comments are required.

- b. ensure that Lockheed Martin's procedures are in compliance with Federal Acquisition Regulations Subpart 46.407 (d) to require Government approval.**

DCMA Comments

DCMA concurred and stated:

DCMA agrees and executes per this recommendation.

See Recommendation A.2.a and A.2.b. In addition, DCMA LMM performs an annual review of Lockheed Martin NCM process documents to ensure any changes made by the contractor do not lead to a noncompliance.

Our Response

The DCMA comments are responsive and meet the intent of the recommendation. We request that DCMA notify the OIG when the actions are complete. No further comments are required.

Finding C – Undetermined

Alleged Failure to Approve and Document Contractor Flights

We were unable to substantiate the allegation, as there was not enough historical documentation available from the allegation timeframe. The current record retention requirement for the paperwork that documents flight verification is 1 year; therefore, any information over a year old has been purged. However, it has been determined that Lockheed Martin is acquiring approval for recent flights and documenting the aircraft hours sufficiently to meet internal requirements and U.S. Air Force needs.

Allegation

The complainant alleged that SPO leadership, the PCO, and DCMA failed to ensure that contractor flights were approved and documented.

The complainant provided the following specific examples:

- Lockheed Martin personnel did not log the aircraft time in accordance with U.S. Air Force guidance, therefore it is impossible to determine how many hours or how much fuel has been consumed accomplishing the induction check flights.
- No actual airframe flight time accumulated by Lockheed Martin personnel during aircraft induction flights and contractor-only flights on the first five aircraft was documented in Air Force Technical Order (AFTO) Form 781s. Therefore, actual aircraft time is unknown, impacting normal maintenance requirements and fuel tracking.

Our Evaluation

Allegation Timeframe

The complainant alleged that contractor flights may have been performed without Government approval. At the time of the allegation, the C-5 RERP contract required Lockheed Martin to comply with DCMA INST 8210.1, "Contractor's Flight and Ground Operations," and DCMA INST 8210.2, "Aircraft Operations." DCMA INST 8210.1 invokes AFI 11-401, "Aviation Management," paragraph 1.9.2, which requires that commanders of flying units ensure each flight is in the direct interest of Government business and does not exceed flying hour allocations

without specific approval. DCMA INST 8210.1 defines the Government Flight Representative (GFR) as the “rated U.S. Military officer, or Government civilian in an aviation position, to whom the Approving Authority has delegated responsibility for approval of contractor flights, procedures, crew-members, and ensuring contractor compliance with applicable provisions.” The GFRs use DCMA Form 644, “Request for Flight Approval,” prior to all C-5 RERP flights.

We requested the DCMA Form 644 records for each flight for the first five and the last four C-5 RERP aircraft deliveries. In accordance with DCMA INST 8210.2, the DCMA Form 644 records are only required to be retained for 1 year; therefore, records could not be provided for the first five C-5 RERP aircraft delivered. For the records received, we were able to compare them against the Lockheed Martin logged flights and engine hours and determined that all flights for the recently delivered C-5 RERP aircraft were documented and approved. As a result, there is not enough information to substantiate this part of the allegation for the time period of the allegation.

The complainant also alleged that Government is failing to require that Lockheed Martin properly record flight and engine hours, through the use of AFTO Form 781. AFI 11-401 references Technical Order (TO) 00-20-1, “Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures,” which is the service guidance for the use of AFTO Form 781s including their use for recording of flight hours. However, AFI 11-401 provides guidance for Government flight crews, and does not contain requirements that would be applicable to the contractor flight crews. TO 00-20-1, paragraph 3.13.1 states “Bailment contractors and air carrier contract operators utilizing USAF airspace vehicle will maintain the AFTO Form 781J and AFTO Form 95 historical documents.” However, this does not apply as the C-5 RERP is not a bailment contract.

Instead of AFTO Form 781, Lockheed Martin is contractually required to record flight and engine hours and provide documentation with the final acceptance of each aircraft delivery. To comply with this contract deliverable requirement, Lockheed Martin records flight and engine hours on a flight and engine time log. Fields within this log are populated with downloaded data obtained from the onboard auxiliary maintenance computer using a removable memory card. The flight and engine log is then hardcopy filed for each aircraft and digitally uploaded into the U.S. Air Force maintenance database, G081, at the delivered C-5 aircraft home base. We confirmed through communication with Aircraft Plans, Scheduling, & Documentation personnel at Dover AFB that the flight and engine data spreadsheets were used to populate G081. Additionally, Lockheed Martin’s flight and engine time log has similar data fields when compared to AFTO Form 781J, so we determined that Lockheed Martin is capable of meeting U.S. Air Force

requirements, even though the AFTO Form 781J is not used on the C-5 RERP contract. As a result, the statement that the aircraft flight time is not recorded on AFTO Form 781J is accurate; however, it is not a requirement for the C-5 RERP contract and does not substantiate the allegation.

Current Condition and Observations

We verified that recent flights have the appropriate approval forms and Flight and Engine Logs. Lockheed Martin's method of recording flight and engine hours is consistent with what is required by the U.S. Air Force; however, this process is performed by one person and is not documented, and thus could be lost or changed if there are changes in personnel. Also, it should be noted that since DCMA Form 644 is only required to be maintained for a year, any future discrepancies in the in G081 may not be able to be verified.

Recommendation – Management Comments and Our Response

Recommendation C

We recommend the C-5 Reliability Enhancement and Re-engining Program System Program Office ensure that Lockheed Martin document its procedure for flight approval and recording process.

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The program office and DCMA are collaborating with Lockheed Martin to codify the currently used flight approval and recording processes.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

Finding D – Substantiated

Alleged Acceptance of Nonconformances that were Corrected at an Additional Cost to the Government

We substantiated the allegation. The Government accepted non-conforming material and other contract deliverables without an equitable adjustment and later had to correct the issues at an additional expense. As a result, the Government is assuming the additional cost to correct nonconformances produced by the Lockheed Martin.

Allegation

The complainant alleged that SPO leadership, the PCO, and DCMA failed to comply with FAR Paragraphs 46.407(a - d), DoD Instruction (DoDI) 5000.02, and MIL-STD-882(E).

The complainant provided the following specific examples:

- SPO accepted inaccurate C-5 RERP drawings and wire diagrams which are now being re-accomplished by the Lockheed Martin at an additional cost of several million dollars to the Government, in violation of FAR Paragraphs 46.407(a-d).
- SPO paid for replacement of engines rather than rejecting the aircraft until the engines are replaced at no cost to the government, in violation of FAR Paragraphs 46.407(a-d).
- SPO accepted 13 engines containing critical low-pressure turbine (LPT) blade defects, in violation of DoDI 5000.02 and MIL-STD-882(E).

Our Evaluation

Allegation Timeframe

We substantiated the allegation that the Government accepted nonconformances that were corrected at an additional cost to the Government.

Drawings and Wiring Diagrams

We confirmed that SPO accepted inaccurate C-5M RERP engineering drawings and wiring diagrams; as a result, Lockheed Martin is correcting approximately 785 drawings at an additional cost in excess of \$14-million to the Government, via several contracting actions. This problem was identified after C-5M aircraft were delivered and the depots began to maintain the aircraft. The maintainers identified the aircraft systems did not match the applicable wiring diagrams.

Lockheed Martin identified that during the System Development and Demonstration (SDD) contract it had not incorporated all changes that were identified in the Time Compliance Technical Orders (TCTOs) into the C-5M configuration baseline delivered to the Government, as required by contract. Lockheed Martin identified that it did not incorporate in excess of 30 TCTOs into the C-5M configuration baseline. TCTOs are changes to an aircraft configuration and typically result in a change to the aircraft's as-maintained baseline. All 30 TCTOs identified resulted in design changes affecting the aircraft as-maintained baseline. The discovery of this discrepancy led to a more comprehensive investigation to determine how many drawings and wiring diagrams needed to be updated.

The investigation and our evaluation determined the following:

- SPO did not identify the correct initial configuration baseline on the SDD contract or the production contract. As a result, Lockheed Martin produced the C-5 RERP original technical data package using the incorrect initial configuration baseline, which included drawings and wiring diagrams. The contracts required Lockheed Martin to establish an M Model (RERP) baseline based on the original as-delivered aircraft drawing TCTOs approved for incorporation as of the contract release date, and configuration changes made through the C-5 AMP program. The required as-delivered baseline was incorrect because it did not contain changes incorporated by the U.S. Air Force after 1995. The C-5 as-maintained baseline in Joint Engineering Data Management Information and Control System (JEDMICS), maintained at Robins AFB - the DoD repository for engineering technical documentation - should have been used to establish the RERP starting baseline, because the C-5 as-maintained baseline in JEDMICS contained all changes incorporated up to 1995.
- The Government controlled baseline in JEDMICS and Lockheed Martin's technical baseline diverged even further after the contract award date. Lockheed Martin SDD and Production contracts only required Lockheed Martin to incorporate changes up to the contract award date. Any changes the U.S. Air Force may incorporate into the as-maintained baseline in JEDMICS, post contract award date, would not be incorporated into Lockheed Martin RERP baseline, nor would changes be evaluated to address the effect it would have on the RERP design. As the two baselines diverged, configuration changes incorporated into aircraft prior to entering RERP Modification could result in configuration changes made being reversed during the RERP modification.

- The technical data package from the SDD contract was delivered without requiring U.S. Air Force approval, resulting in no technical review of the technical data package. The Contract Data Requirements List stated that if the draft Technical Data Package is not acceptable, the contractor shall be notified within 30 days. However, no comments were provided back to the contractor within the 30 days, so the deliverable was accepted by the Government by default.

C-5M Engine Nonconformance

The complainant alleged the Government accepted five C-5M aircraft with nonconforming engines. The Government then replaced the suspect engines after the aircraft were accepted at an additional cost to the Government.

General Electric (GE), the engine manufacturer, notified Lockheed Martin that engines were delivered with a design defect that had a 22 percent probability of a LPT blade tip failure. This design defect could result in the LPT blade tips braking off, and exiting out of the engine tail pipe causing additional damage to the engine. We found that SPO accepted the 5 C-5M aircraft, containing 16 installed engines and 2 spare engines with this known design defect. A safety risk acceptance package was generated; however, a programmatic performance risk was not created to address reliability. GE notified Lockheed Martin that, if this condition occurs in flight, the C-5M is able to fly for up to 15 additional hours; however, when it lands, the removal and replacement of the engine is required to not void the GE warranty, induce further damage, or cause complete engine loss.

Lockheed Martin notified SPO and DCMA of the probability that the LPT blade tip could fail on the engines identified. The Government did not require Lockheed Martin to perform any reliability analysis or to update the reliability model to determine if the reduced reliability of the engines would affect the ability to meet the overall aircraft reliability requirement. FAR Paragraph 46.102(b) requires SPO and DCMA to ensure that supplies or services tendered by the contractor meet contract requirements; however, SPO and DCMA did not perform this action. FAR Paragraph 46.105(a)(2) also requires Lockheed Martin to only tender supplies and services that conform to contract requirements to the Government for acceptance; however, Lockheed Martin did not perform this action. As a result, Lockheed Martin presented five aircraft to DCMA and DCMA accepted the aircraft without ensuring the aircraft conformed to the contract reliability requirements. Without a reliability analysis SPO, DCMA, and Lockheed Martin could not ensure that the aircraft with this condition could meet the reliability and operational availability requirements specified in the "Air Vehicle Modification Specification" and the "Weapon System Specification."

After the five C-5M aircraft were accepted, action was taken by SPO to replace the identified engines to mitigate the risk that the aircraft would not meet operational availability. The replacement engines were provided by GE under warranty. However, SPO paid for removal and installation of the engines at U.S. Air Force maintenance facilities, including procurement of mandatory replacement part kits from Lockheed Martin. The labor and mandatory replacement parts kits associated with the removal and replacement of the engines came to a cost in excess of \$585,000 to the Government. In accordance with FAR Subpart 46.407, SPO should have either rejected these aircraft until Lockheed Martin remedied the nonconformance or conditionally accepted and withheld payment commensurate with the cost for the Government to remedy the nonconformance.

We validated that the Government failed to perform the required reliability analysis to ensure the engines met all program and mission reliability requirements when they were accepted. However, we partially substantiated the example for the following two reasons. We could not validate that the identified engines were nonconforming at the time of acceptance, because the required analysis was not performed. In addition, we could not validate that SPO violated DoDI 5000.02 or MIL-STD-882 during its risk assessment and risk acceptance. We evaluated the risk assessment report, the risk authority approval levels, the GE Technical Service Bulletin, and briefings from GE. We found that SPO did follow the correct process for documenting and accepting the potential safety risk for the LPT blade design defect. There was no evidence to substantiate the claim that program office violated DoD 5000.02 or MIL-STD-882 during its risk assessment and risk acceptance.

Current Condition and Deficiencies

The specific issues cited in the allegation have been resolved or have action plans in place for resolution. The engines with the LPT blade defect have all been replaced; therefore, no aircraft are currently flying with this condition. However, we identified the following two deficiencies.

- **Failure to Establish C-5M Engineering Drawing Baseline:** SPO exercised several contract actions to update the Lockheed Martin C-5 RERP drawings to reflect the correct baseline, fix issues found in the previous drawings, and incorporate missed TCTOs and ECOs during RERP development. C-5 RERP SPO has included Lockheed Martin as a member of the CCB, so that they have more visibility of changes in the fleet and how they affect the production and sustainment of the C-5M. If a change

is initiated from the fleet and has an impact on RERP, the configuration change would require a contract modification to implement the change. In addition, there is a date range of ECOs between 1995-2007, that were produced by the fleet, that have never been evaluated to determine if they would have an effect on the original and/or current C-5 RERP design. (See Recommendation D.2)

- **Failure to Properly Accept Safety Risks:** We identified a new and recent example of the overall allegation related to managing safety risk that still exists. The C-5 SPM is authorizing aircraft flights, by issuing Military Certificates of Airworthiness, even though the Program Executive Officer (PEO) has not accepted a “Serious” safety risk. The issuance of the Military Certificates of Airworthiness took place even though the risk had not been accepted, as required by Air Force Instruction 62-601, “USAF Airworthiness;” DoD Instruction (DoDI) 5000.02; and MIL-STD-882E, “System Safety.” In particular, Air Force Instruction 62-601 states that in the event that a nonconformance exists, a military type certificate can be issued after formal risk acceptance by the appropriate risk acceptance authority in accordance with DoDI 5000.02. This supports the complainant allegation that the risk acceptance process is in violation of DoDI 5000.02 and MIL-STD-882(E). On August 7, 2014, we issued a Notice of Concern (NOC) to the U.S. Air Force, PEO for Air Force Mobility Programs addressing this issue. The U.S. Air Force PEO for Air Force Mobility Programs responded to the NOC on August 20, 2014. In response to the NOC, the PEO signed the C-5 RERP Pylon Drain path risk acceptance package on August 8, 2014, satisfying our concern. In addition, the PEO indicated that the policy and guidance addresses new aircraft or modifications that have never received a military type certificate and has some ambiguity for programs like C-5 RERP that discover risk after the Technical Airworthiness Authority has issued a military type certificate. Appendix B contains the NOC and response. (See Recommendation D.2)

Management Comments on Finding D and Our Response

Summaries of management comments on the finding and our response are in Appendix C.

Recommendations – Management Comments and Our Response

Recommendation D

We recommend that the C-5 Reliability Enhancement and Re-engining Program System Program Office:

1. **provide Joint Engineering Data Management Information and Control System access to Lockheed Martin, and update the contract, if necessary, to ensure a single baseline is established for each C-5M aircraft.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The SPO has already provided Joint Engineering Data Management Information and Control System (JDMICS)[sic] access to Lockheed Martin. Further, the drawing updates are on track and a single baseline has been established for each C-5M aircraft.

Our Response

The SPO comments are responsive; however, during our evaluation, we identified ECOs between 1995-2007, that were produced by the fleet, that have never been evaluated to determine if they would have an effect on the original and/or current C-5 RERP design. We strongly believe that SPO should include this as part of the phased effort to update the drawings. We request that SPO notify the OIG when the actions are complete. No further comments are required.

2. **update its airworthiness certification process to ensure identified risks have been resolved or accepted by the appropriate authority before issuing Military Certificates of Airworthiness.**

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The USAF Airworthiness Office is reviewing the risk acceptance process to ensure clear guidance on the relationship of risk acceptance to airworthiness certification documentation. The SPO will continue to ensure that the Technical Airworthiness Authority (TAA) and the PEO are aware of any risks or emerging issues once they have been identified.

If a risk is identified during production, operations, or sustainment, the program office is responsible for validating the risk and getting the risk accepted by the appropriate authority within 180 days of risk validation (reference AFMC Supplement to AFI 91-202 (July 2013), para 11.1.6.1). In the case of the RERP Pylon Drain Path serious risk that was identified by Lockheed Martin on May 8, 2014, both PEO and TAA were informed by the program office immediately in May and coordinated on the System Safety Risk Acceptance package on 8 August, and 2 July 2014 respectively. The program office had until November 8, 2014 to get the risk formally accepted by the Mobility PEO. The C-5 chief engineer had already developed and tested the remedy for mitigation of the risk and drafted a TCTO by 16 May 2014. The C-5 program office also initiated contractual actions for Lockheed Martin to incorporate the fix on all aircraft still in production in the same time frame. The Air Force TAA is updating the appropriate airworthiness guidance to clarify risk acceptance and Military Certificate of Airworthiness issuance for pre- and post-DD-250 aircraft to ensure proper alignment with DoDI 5000.02.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

Finding E – Substantiated

Alleged Failure to Comply with DCMA Instruction for Corrective Action Process

We substantiated the allegation. Our investigation found instances in which DCMA did not comply with DCMA Instruction (DCMA-INST) 1201, Corrective Action Process. In particular, DCMA failed to: (a) raise the level of CARs in response to ineffective contractor corrective actions, (b) issue a CAR to address a noncompliant Lockheed Martin cost-accounting system, and (c) track re-inspection costs to enable recoupment of these costs from Lockheed Martin. Additionally, since the hotline complaint, DCMA failed to raise the level of a CAR in response to repeat safety-of-flight nonconformances. Currently, DCMA continues to not elevate CARs in accordance with DCMA-INST 1201 and not track re-inspection costs for the purpose of recoupment. As a result, Lockheed Martin has continued to have nonconformances at an additional cost to the Government.

Allegation

The complainant alleged that DCMA failed to comply with DCMA agency level instructions governing the corrective action process.

The complainant provided the following specific examples:

- DCMA used a Letter of Concern and a separate Level III CAR to address continuing nonconformances rather than raise the level of an existing Level III CAR against Lockheed Martin's quality management system to a Level IV CAR.
- DCMA did not raise the level of a CAR following repeated safety-of-flight nonconformances that were identified within a one year period.
- DCMA did not issue a CAR to address a noncompliant Lockheed Martin cost-accounting system.
- DCMA did not consider recoupment of re-inspection costs for habitual re-inspections of supplies that required retesting.

Our Evaluation

Allegation Timeframe

DCMA is responsible for verifying that the aircraft conforms to the contract before the aircraft is accepted by the Government. DCMA verifies conformance through inspections performed at various times during the aircraft modification.

Nonconformances found during DCMA inspections are addressed by DCMA's corrective action process. In this process, DCMA issues a CAR to the contractor to request that corrective actions be implemented to address a nonconformance. The contractor responds by creating a Corrective Action Plan (CAP) that details the steps the contractor will implement to prevent the nonconformance from occurring again. The process includes provisions to raise the level of a CAR in certain circumstances, such as when the contractor's corrective actions prove ineffective or when nonconformances occur repeatedly. Higher level CARs have tighter controls, raise attention to higher levels of management within the contractor's organization, and have potential financial implications.

DCMA-INST 1201 governs the CAR process. Before December 2012, the instruction did not require a CAR to be elevated when the contractor's corrective action was found to be ineffective. Since December 2012, DCMA-INST 1201 has required that "when objective evidence establishes that the contractor's corrective action is ineffective, the contractor's corrective action response shall be rejected and the CAR shall be raised to the next higher level." DCMA issues CARs at four levels as described below.

- Level I: Issued for noncompliances that are minor in nature. Level I CARs are issued at the contractor management level and are to be corrected by the contractor.
- Level II: Issued for noncompliances that are not promptly correctable and warrant root cause analysis and preventive action, or need action by the contractor to determine if other products are affected. A written response from the contractor is required. Noncompliances associated with Critical Safety Item critical characteristics and Safety of Flight (SOF) characteristics are issued at this level at a minimum.
- Level III: Issued for a serious noncompliance, a significant deficiency pursuant to Reference (e), a failure to respond to a lower level CAR, or to remedy recurring noncompliance. Level III CARs are issued at the contractor's management responsible for the company or business segment. In accordance with DCMA-INST 308, "Safety of Flight (SOF)," Level III CARs are required for "repeat" SOF noncompliances.
- Level IV: Issued for contractual noncompliances of a serious nature or when a Level III CAR has been ineffective. Level IV CARs are issued to the contractor's business segment or corporate management. A mandatory review of available contractual remedies, such as cost disallowance, reduction or suspension of payments, revocation of government assumption of risk of loss, business system disapproval, or suspension of product acceptance activities is required.

CAR Elevation

Our investigation found that, during the time period of the allegation, DCMA's practice of not elevating CARs in response to ineffective corrective action did not comply with DCMA-INST 1201. DCMA typically did not raise the level of a CAR when continuing nonconformances indicated that Lockheed Martin's corrective actions were ineffective. In addition, for nonconformances discovered during validation, DCMA's standard practice was to reject the CAP and request Lockheed Martin revise the CAP to address the latest nonconformance.

Between June 2011 and May 2013, DCMA issued a series of Level III CARs and one Letter of Concern to address quality management system breakdowns and the progressive deterioration of Lockheed Martin's ability to maintain controlled processes. For example, in June 2011, DCMA issued a Level III CAR to Lockheed Martin for "failure to execute C-5 RERP quality management system consistent with the requirements of Contract FA8625-07-C-6471." It stated that the identified deficiencies "indicate a systemic problem resulting in the inability to achieve planned results or produce objective evidence of inspection operations," and that "disregard of Aero Code 4276 [Disposition Limits] constitutes a serious breach of Material Review Board authority." In a Letter of Concern DCMA issued a year later in July 2012, DCMA expressed how they were "troubled by the number and nature of CARs on the C-5 program," and had "significant concern about the disconcerting trend this program is experiencing." It also stated that "a sustained culture of program-wide compliance and procedural discipline is required in order to restore our confidence." The most recent Level III CAR, issued nearly a year later in May 2013, was a Lockheed Martin site-wide CAR for "Systemic Failure of the Contractor's Quality Management System as per AS9100 Rev C." It stated that, "DCMA has a high degree of concern with the ongoing pattern of non-compliant practices and lack of procedural discipline associated with Government contracts executed at Lockheed Martin Aeronautics, Marietta, GA (LMA)." It also discussed "the consistent systemic issues identified by DCMA CARs within the past two years," the continuing "escalation" in the number of CARs, and that "the cumulative data shows that the LMA quality management system and leadership have failed to prevent deficiencies and to identify and contain nonconformances prior to presentation to the Government for tender." This last CAR was issued just one week after another Level III CAR was issued for an improperly fastened panel falling off an aircraft in flight. Contrary to DCMA-INST-1201, DCMA issued these last two Level III CARs to address the continuing quality management problems instead of issuing a Level IV CAR. As a result, we substantiated this portion of the allegation.

Six months after the May 2013 site-wide Level III CAR was issued, a Level III CAR that had been issued in 2012 failed validation of the CAP due to a failure to follow procedures that led to over-filling of an aircraft's fuel tanks. The CAP rejection letter provided by DCMA stated that it was "evident a systemic problem continues to exist in the area of procedural discipline." The CAR was not elevated, as required by DCMA-INST 1201, despite the failure of the validation and the continued demonstration of ineffective corrective action by Lockheed Martin, further substantiating the allegation.

In accordance with DCMA-INST 1201, safety-of-flight CARs also should have been elevated for ineffective corrective action but were not. CAR S1111A-11-162, which addressed safety-of-flight nonconformances of the aircraft flight control system, remained at Level II throughout the period of the allegation. This CAR was not elevated despite a pattern of continued nonconformances that indicated Lockheed Martin's corrective actions had been ineffective. DCMA aircrew and quality assurance personnel pursued elevating the CAR by preparing draft Level III CARs in June and December 2012; however, neither of these Level III CARs were issued. Failure to raise this CAR to Level III after the December 2012 revision of DCMA-INST 1201 was not in compliance with the policy.

The complainant asserted that the Level II CAR S1111A-11-162 should have been elevated to Level III based on requirements in DCMA-INST 308, "Safety of Flight (SOF) – QA." This instruction mandates that a Level III CAR be issued for repeat safety-of-flight nonconformances identified within a one-year period. To qualify as a repeat, the nonconformance must involve the same safety-of-flight item and the same nonconforming characteristic. Our investigation did not find any nonconformances that qualified as repeat safety-of-flight nonconformances during the allegation time period, and therefore we could not verify the complainant's assertion that DCMA-INST 308 was violated during this time. However, failure to elevate the CAR was substantiated, not due to a violation of DCMA-INST 308 as the complainant asserted, but for violation of DCMA-INST 1201, as described in the previous paragraph.

Business Systems

The complainant asserted that DCMA failed to issue a CAR to address a noncompliant Lockheed Martin cost-accounting system. In 2007, the C-5 Administrative Contracting Officer (ACO) requested the Defense Contract Audit Agency (DCAA) conduct an audit "to evaluate Lockheed Martin's C-5 Over & Above (O&A) Modification Inspection Record (MIR) process to determine how hours were booked, accounted for and how incurred hours are reconcilable to the not-to-exceed hours per MIR." However, in June 2009, DCAA

cancelled its efforts, stating that while there appeared to be a Cost Accounting Standard (CAS) 401 violation, where the contractor failure to accumulate actual costs in the same manner as they estimated the costs in the related proposal, there is nothing in contract to preclude this. As a result, the Government cannot ensure expenditures are being invoiced accurately on the contract, which could lead to overbilling or overpayment of completed tasks. As of December 2012, DCMA-INST 1201 requires that if DCMA identifies a noncompliance in the contractor's business systems that could be potentially significant, they should coordinate the issue with the Contracting Officer and write a Level III or Level IV CAR. If the issue is later deemed less significant, they should write a Level II CAR instead. While Lockheed Martin's cost-accounting system is capable of meeting CAS-compliance, the way they were operating its business systems created a CAS 401 violation, which is a CAR-worthy noncompliance.

Recoupment of Re-inspection Costs

The complainant asserted that DCMA failed to consider recoupment of re-inspection costs for habitual re-inspections of supplies that require retesting. DCMA-INST 1201 requires that "recoupment of re-inspection costs should be considered if there are habitual rejections of supplies that require retesting, or supplies are consistently not ready for the functional specialist's inspection when inspection is requested." During the time of the allegation, aircraft were routinely presented to the Government with numerous nonconforming conditions that necessitated re-inspection. Lockheed Martin would also frequently request Government flight test or inspection support only to find the aircraft not ready to proceed. During the time frame of the allegation, the ACO requested the DCMA Quality Assurance Group develop the capability to track hours spent performing re-inspections and hours spent responding to Lockheed Martin's requests for inspection when the aircraft was not ready. This capability was added to the database used by DCMA; however, the requirement to input hours was not formally disseminated within DCMA or documented in the local Standard Operating Procedures (SOP), SOP-LMM-005. As a result, personnel did not consistently use the capability, and therefore did not meet the intent of DCMA-INST 1201. DCMA has only pursued recoupment of costs once for re-inspections related to foreign object debris found in the fuel tanks of an aircraft, despite several instances that meet the criteria for recoupment.

Current Condition and Deficiencies

Since the time of the allegation, the CAR process on the C-5 RERP effort has not changed. We identified the following five deficiencies.

- **Failure to Elevate CARs:** DCMA has not taken steps to bring its practices into compliance with the requirements of DCMA-INST 1201 related to raising the level of CARs. Nonconformances that warrant raising the level of a CAR continue to be found, but DCMA has not raised the CAR level. In May and June 2014, for example, several nonconformances of the flight control system were found by DCMA aircrew. These nonconformances constituted repeat safety-of-flight nonconformances, for which issuance of a Level III CAR is mandatory according to DCMA-INST 1201 and DCMA-INST 308. DCMA did not elevate the existing Level II CAR addressing such flight control nonconformances. (See Recommendation E.2.a)
- **Local SOP Not in Compliance with DCMA-INST 1201:** DCMA currently maintains that elevation of a CAR for ineffective corrective action is not required if nonconformances found during the CAP validation are caused by the contractor's failure to adhere to the established process as detailed in the CAP. This position was incorporated in the March 2014 version of SOP-LMM-005. Our investigation found that this position is contrary to the CAR elevation criteria given in DCMA-INST 1201. DCMA-INST 1201 does not provide relief from the CAR elevation requirements when nonconformances found during CAP validation are caused by the contractor's failure to follow its established processes. (See Recommendation E.2.b)
- **Failure to Properly Track Aircrew CARs:** Our investigation found evidence that nonconformances currently being found by DCMA aircrew are not being incorporated into the CAR system. In May and June 2014, for example, DCMA aircrew found a series of flight control nonconformances on two aircraft; these nonconformances have not been addressed in the CAR system. (See Recommendation E.2.c)
- **Failure to Address Deficient Business Systems:** To date, DCMA has not issued a CAR to Lockheed Martin requesting that they address their deficient business system for cost accounting. Although the ACO stated that Lockheed Martin is now providing them with additional accounting reports, the data is still not sufficient to allow DCMA to validate the invoices against the work performed. The ACO indicated that they are maintaining dialog with Lockheed Martin regarding the matter, but nearly half of the aircraft have been delivered, and the Government still cannot ensure expenditures are being invoiced correctly on the contract. (See Recommendation E.1)

- Failure to Recoup Re-inspection Costs:** The March 2014 version of SOP-LMM-005 contains requirements for the DCMA Quality Assurance Group to record time expended for performing re-inspections and responding to contractor requests for inspection when the aircraft is not ready. In addition, the DCMA Quality Assurance Group is now required to provide the hours to the ACO for determination of re-inspection cost recoupment. However, this is only required for Level III and IV CARs, and therefore does not meet the intent of the DCMA-INST 1201 requirement. Furthermore, the DCMA Quality Assurance Group still does not consistently record re-inspection hours in the database tool. As a result, the Government is not holding Lockheed Martin accountable for costs associated with the re-inspection of aircraft. (See Recommendation E.2.d)

Management Comments on Finding E and Our Response

Summaries of management comments on the finding and our response are in Appendix C.

Recommendations – Management Comments and Our Response

Recommendation E.1

We recommend that the C-5 Reliability Enhancement and Re-engining Program System Program Office work with the Procuring Contracting Officer to change the contract to require Lockheed Martin to accumulate and report costs in the appropriate Cost Accounting Standard-compliant manner.

SPO Comments

SPO concurred and stated:

The program office agrees with this recommendation.

The clause in the report that was referred to as being non CAS compliant, H-106, has been modified twice since the hotline complaint; most recently on 30 September 2014. With the revision to H-106, Lockheed Martin will accumulate and report costs in the appropriate CAS-compliant manner. A DCMA CAS audit on H-106 is scheduled to be accomplished by January 2015.

Our Response

The SPO comments are responsive and meet the intent of the recommendation. We request that SPO notify the OIG when the actions are complete. No further comments are required.

Recommendation E.2

We recommend that Defense Contract Management Agency:

- a. review all open Corrective Action Requests and raise the level of any that meet the elevation criteria of DCMA-INST 1201.**

DCMA Comments

DCMA did not concur and stated:

DCMA disagrees with this recommendation.

DCMA continues to meet the intent of DCMA Instruction 1201 in reference to open CAR elevations. DCMA LMM is pursuing policy clarification as stated previously in Finding E prior to executing any potential review.

Our Response

The comments from DCMA do not meet the intent of the recommendation. We strongly believe that our recommendation is in alignment with DCMA-INST 1201 that is currently in effect. It states:

3.12. CAR FOLLOW-UP. Validate Effectiveness of contractor's corrective action. For Level II and higher CARs, a validation review will be conducted by the functional specialist after the contractor completes the corrective actions to ensure full resolution of the noncompliance(s).

3.12.1. A suspense date shall be established for the validation review. The suspense date will follow a suitable corrective/preventive action stabilization period. The follow-up review shall assure that the implementation is effective in preventing recurrence of the noncompliance. Follow-up actions may include process review, product examination, data analysis, and systems audit on relevant elements.

3.12.2. When objective evidence establishes that the Contractor's corrective action is ineffective, the contractor's corrective action response shall be rejected and the CAR shall be raised to the next higher level. The rejection notification letter shall be in writing and include evidence of the inefficacy. The results of the follow-up review shall be documented to include the date completed.

We request further comments from DCMA in response to the final report.

- b. revise the local standard operating procedure, SOP-LMM-005, so that the criteria given for elevating a Corrective Action Request in response to ineffective corrective actions are consistent with those of DCMA-INST 1201.**

DCMA Comments

DCMA concurred and stated:

DCMA agrees with this recommendation.

DCMA LMM agrees the CMO Corrective Action SOP was not definitive in the requirement to elevate a CAR to the next level in accordance with DCMA-INST 1201 para 3.12.2. DCMA LMM archived the Corrective Action Process SOP (SOP-LMM-005) on October 9, 2014 to eliminate any confusion. DCMA LMM has been in communication with DCMA HQ in reference to the revision of the Corrective Action Process Instruction.

Our Response

The DCMA comments are responsive and meet the intent of the recommendation. We request that DCMA notify the OIG when the actions are complete. No further comments are required.

- c. incorporate all aircrew Corrective Action Requests into the Defense Contract Management Agency's Corrective Action Request system.**

DCMA Comments

DCMA concurred and stated:

DCMA agrees with the incorporation of aircrew corrective action requests and continues to execute per the recommendation.

DCMA LMM incorporates all CARs that are developed by the DCMA team, including Government Flight Representative (GFR) and Flight Crew, in accordance with DCMA-INST 1201. Each CAR receives a CAR number from the DCMA CAR eTool and can be tracked and monitored.

The updated instruction DCMA-INST 8210.2 assigns CAR responsibility to the Aviation Program Team (APT). Therefore, discrepancies discovered during aircrew acceptance activities are referred to the entire APT to include Quality Assurance and Engineering for evaluation and

consideration of a CAR. The GFR on behalf of the aircrew has issued four CARs associated with aircraft operations. Per DCMA-INST 1201, not all flight findings merit a CAR (legacy defects or nonconformances) when identified by the contractor or in a joint product examination.

Our Response

The DCMA comments are responsive and meet the intent of the recommendation. No further comments are required.

- d. monitor time and costs associated with re-inspections to allow the Administrative Contracting Officer to seek recoupments from Lockheed Martin.**

DCMA Comments

DCMA concurred and stated:

DCMA agrees with this recommendation.

DCMA LMM modified the Quality Assurance database to mandate capturing the re-inspection costs. The quality teams will generate a monthly report of time and cost spent for re-inspections. The re-inspection cost data will then be provided to the ACO for consideration of recoupment actions. The DCMA LMM Quality Assurance Surveillance Plans will be updated to reinforce this requirement.

Our Response

The DCMA comments are responsive and meet the intent of the recommendation. We request that DCMA notify the OIG when the actions are complete. No further comments are required.

Finding F – Not Substantiated

Alleged Failure to Use U.S. Air Force Service Guidance

We did not substantiate this allegation. Lockheed Martin is not required to follow service guidance, since it is not included in their contract. While there has been damage to the aircraft due to gaps in Lockheed Martin procedures when compared to service guidance, multiple occurrences could not be identified. Additionally, the portion of the allegation referring to operation risk is unsubstantiated since Operational Risk Management (ORM) is being performed per DCMA instructions. While the outcome is not preferred by the aircrew, the ORM practice does not violate requirements or instruction.

Allegation

The complainant alleged that SPO and DCMA leadership failed to ensure the use of service guidance and accepted greater risk levels than what would be typically accepted by the U.S. Air Force.

The complainant provided the following specific examples:

- Lockheed Martin personnel have been repeatedly cited for failure to follow contractor procedures much less service technical orders for maintaining aircraft or aircraft maintenance documentation.
- DCMA requested the addition of service guidance requirements to the contract but was denied by the C-5 RERP SPO and DCMA leadership.
- In winter 2012, the headquarters DCMA Aircraft Operations Inspections (AOIs) survey rated the overall “Flight Operations Element” as low risk; however, the issues with C-5 product quality resulted in an overall “Quality Element” being rated as high risk.

Our Evaluation

Allegation Timeframe

Service Guidance

The complainant alleged that SPO and DCMA leadership failed to ensure the use of service guidance in the C-5 RERP contract. As of June 2011, the C-5 RERP contract required that Lockheed Martin follow DCMA-INST 8210.1, which referenced and defined some limited service guidance, such as AFI 11-401 and other AFIs. However, these documents do not invoke service guidance for performing air and ground procedures for the C-5 RERP aircraft, which are documented in

U.S. Air Force TOs. These TOs include standard operations and maintenance procedures used by the U.S. Air Force. Since SPO did not specifically require the use of these TOs in the contract, Lockheed Martin was not required to perform work in accordance with operations and maintenance TOs.

Lockheed Martin used internal procedures for C-5 RERP operations and maintenance instead of TOs. We evaluated CARs that identified discrepancies between Lockheed Martin's documented procedures and U.S. Air Force TOs. It was identified that damage was caused to the aircraft due to a discrepancy between Lockheed Martin procedure and TO. As a result, aircraft damage occurred that may have been prevented if the Lockheed Martin procedure contained the elements of the TO. It is the responsibility of the GFR to review and ensure that Lockheed Martin procedures align with the respective TOs, as required by DCMA INST-8210.01 Chapter 3.

DCMA INST-8210.01 provides guidance for SPO to work with DCMA and the contractor to ensure relevant service guidance is included in the contract. DCMA recommended that SPO include in the C-5 RERP contract the requirement to adhere to the TOs, though the request was not put into action.

ORM Process

The complainant alleged that SPO and DCMA leadership, failed to ensure operation risk levels mirrored what is normally acceptable by the U.S. Air Force. Prior to flight execution for each C-5 RERP flight, DCMA aircrew used an ORM checklist tool to aid in deciding the operational risk for each flight. ORM checklists evaluated to be Medium or High risks are approved by their unit's Chief of Flight Operations or higher. At the time of the allegation, ORM Mission numbers 20111205C51 and 20130422C51, were assessed at medium and high risk during pre-flight check. The flight crew that identified these risks was still instructed to continue with flight operations after it was approved by the Chief of Flight Operations.

However, this does not violate the ORM procedure. Operational risks assessed as high level are not intended to prohibit flight; rather, identified high risks are intended to bring issues to the attention of the AFMC Headquarters which is why they require higher levels of approval. As defined by DCMA-INST 8210.2 the ORM process is a "decision-making process to systematically evaluate possible courses of action, identify risks and benefits, and determine the best course of action for any given situation." ORM provides insight into the operational risk and is used to help assess if performing the flight under given circumstances are in the best interest

to the Government. Additionally, ORM allows pilots to put in place steps to mitigate flight safety risks that are identified. If enough high-risk elements were determined then the operational risk would be elevated from Green-Low risk to Yellow-Medium risk or Red-High risk. Higher risks require higher levels of authority for approval before flight is allowed.

AOI Process

For the AOI report for Lockheed Martin Marietta dated February 2012, the complainant alleged that the flight operations element should not have been at low risk since the overall quality element was rated high. However, we determined that while the elements were assessed at different levels, there were no contradictions in the AOI report. AOI is defined as a bi-annual risk assessment conducted by DMCA at contractor sites to determine the operational risks for DoD programs. DCMA-INST 8210.2 does not prohibit this variation in risks between elements, and there was no overlapping risk criteria shared between the elements. There is no evidence that DCMA had misclassified the risks, and there was no requirement for DCMA to perform any corrective actions.

Current Condition

In accordance with the contract, Lockheed Martin is not required to use operations and maintenance TOs. Lockheed Martin still uses internal procedures; however, the GAT now provides on-site modification, maintenance, repair, and overhaul subject matter expertise. GAT expertise is available to advise Lockheed Martin on its procedures and GFRs are still responsible for the review and approval of Lockheed Martin procedures.

Appendix A

Scope and Methodology

We conducted this evaluation from June through August 2014, in accordance with the Council of the Inspectors General on Integrity and Efficiency, “Quality Standards for Inspection and Evaluation.” Those standards require that we plan and perform the assessment to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our evaluation objectives.

To evaluate SPO’s management of the C-5 RERP program as related to the allegations, we performed our evaluation at SPO – Wright Patterson AFB and Robins AFB – and at the prime contractor, Lockheed Martin, in Marietta, Georgia. We evaluated each allegation, in full, to determine if allegations are substantiated or not.

To determine the validity of the allegations we:

- interviewed C-5 RERP SPO, DCMA, and Lockheed Martin personnel;
- evaluated contractual deliverable requirements and select document deliverables for compliance with all applicable requirements;
- evaluated C-5 program against applicable laws, regulations, FAR, DFARS, DoD Instructions, and Air Force Instructions;
- evaluated MOAs, memorandums of understanding, letters of delegation, and contracts for C-5 RERP;
- evaluated applicable DCMA instructions and standard operating procedures;
- evaluated DCMA generated CARs and associated CAPs; and
- evaluated Lockheed Martin internal processes and procedures.

We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our evaluation objectives.

Use of Technical Assistance

We used assistance from quality assurance engineers and specialists with a background in defense and aerospace systems. Additionally, our teams included subject matter experts (SMEs) in military aviation safety of flight. We established teams of SMEs who evaluated each allegation to determine the legitimacy of the allegations made in the DoD OIG Hotline complaint. The SME teams consisted of two engineers who had an average of 15 years of quality assurance, safety of flight, and audit experience.

Appendix B

Notice of Concern and Response

NOC to PEO for Air Force Mobility Programs



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

AUG - 7 2014

MEMORANDUM FOR PROGRAM EXECUTIVE OFFICER FOR AIR FORCE MOBILITY PROGRAMS

SUBJECT: Notice of Concern—C-5 Reliability Enhancement and Re-engining Program (RERP)
Hotline Investigative Evaluation (Project No. D2013-DT0TAD-0004)

We are issuing this Notice of Concern to inform you that the Department of Defense, Inspector General (DoD IG) identified an issue that requires your immediate attention. During the DoDIG evaluation of the C-5 RERP performed at the Lockheed Martin Marietta, Georgia facility from July 28, 2014 to August 8, 2014, the DoDIG was provided information regarding an Environmental, Safety, and Occupational Health (ESOH) risk that poses a serious safety concern.

While conducting the modification of C-5 aircraft 87-0040, Lockheed Martin discovered a fuel leak with a potential safety risk. Analysis showed that the leak was a Class D fuel leak (running leak, greater than 8 inches or drops/minute). In addition, the leak path leads through an engine pylon (attachment point of engine to wing) and allows the fuel to drip onto the engine tail cone where the fuel can ignite leading to an aircraft fire. On 8 May 2014, Lockheed sent an unofficial notification to the C-5 Program Office of the potential risk. They followed up with an official notification on 12 May 2014. The C-5 Program Office performed a risk assessment, and rated the risk as "Serious," per MIL-STD-882E (Severity: Catastrophic, Probability: Remote).

Per Department of Defense Instruction (DoDI 5000.02), serious risks must be accepted at the Program Executive Officer (PEO) level. The C-5 Program Office drafted a risk acceptance memorandum and forwarded it through the review process for concurrence and signature. As of the date of this memorandum, the risk acceptance memorandum has not been signed. DoDI 5000.02 and Air Force Instruction (AFI) 62-601 require that individual risks are either resolved or accepted at the appropriate level prior to airworthiness certification. However, the C-5 Program Office has signed two Military Certificates of Airworthiness since the risk was identified, one on 2 June 2014 for Tail Number 87-0044 and one on 23 June 2014 for Tail Number 86-0011. Both aircraft have been flown at Lockheed Martin Marietta, and the first aircraft was accepted under a DD250. Aircraft Tail Number 85-0010 was also accepted after the risk was identified, although the Military Certificate of Airworthiness for that aircraft was signed before the Air Force was notified of the safety issue. This safety risk also applies to 18 out of 21 delivered C-5M aircraft. The C-5 RERP Program Management has taken mitigation measures on the three C-5M (S/N 85-0002, 85-0004, 86-0013) aircraft delivered.

The DoD IG recommends that the C-5 Program Office rescind the Military Certificates of Airworthiness for Tail Numbers 87-0044, 86-0011, 85-0010 and comply with DoDI 5000.02 and AFI 62-601 instructions. In addition, no further Military Certificates of Airworthiness should be issued for C-5 RERP aircraft until the risk is either resolved or accepted by the PEO.

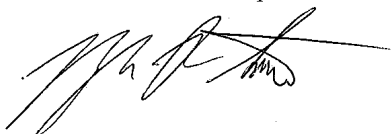
[REDACTED]

NOC to PEO for Air Force Mobility Programs (cont'd)

[REDACTED]

We should receive your response by August 22, 2014. Please forward your response to [REDACTED]. Copies of this response must have the actual signature of the authorizing official for your organization. We intend to include a copy of your response in our report. If you consider any matters to be exempt from public release, you should mark them clearly for the Office of Inspector General's consideration.

We appreciate the courtesies extended to the staff. Please direct questions to [REDACTED]



Randolph R. Stone
Deputy Inspector General
Policy and Oversight

PEO for Air Force Mobility Programs Response to NOC



DEPARTMENT OF THE AIR FORCE
AIR FORCE LIFE CYCLE MANAGEMENT CENTER
WRIGHT-PATTERSON AIR FORCE BASE OHIO

20 AUG 2014

MEMORANDUM FOR DOD OFFICE OF THE INSPECTOR GENERAL
ATTENTION: MR. EDWARD KELL

FROM: AFLCMC/WL
2590 Loop Road West
Building 558
Wright-Patterson, OH 45433

SUBJECT: Notice of Concern, C-5 Reliability Enhancement and Re-engining Program (RERP)
Hotline Investigative Evaluation (Project No. D2013-DTOTAD-0004)

1. The C-5 program office received your notice of concern on 8 August 2014. On the same day your letter was received, I signed the C-5 RERP Pylon Drain Path risk acceptance package. This risk has been accepted for C-5M aircraft and the military certificates of airworthiness that were signed by the System Program Manager (SPM) remain valid.

2. In review of all applicable airworthiness Air Force Instructions (AFIs), policies and guidance, these documents address new aircraft or modifications that have never received a Military Type Certificate (MTC) or Military Flight Release (MFR) from the Technical Airworthiness Authority (TAA). The policy and guidance has some ambiguity for programs like C-5 RERP that discover a risk or issue after the TAA has granted an MTC or MFR. For the C-5 RERP issue of your concern, I was fully aware of the program's risk and the SPM's implemented mitigations. Once I received a coordinated risk acceptance package, per policy, I formally accepted the risk. In addition, the Airworthiness Authority was aware of the risk, but never suspended the MTC or MFR. Finally, the user was aware of the issue and accepted the operational risk associated with fleet operations and did not restrict fleet operations or aircraft acceptance. The SPM's risk mitigation and signature on the MCA were within the intent of appropriate decision makers. As a result of this situation, the TAA's office is reviewing all applicable AFIs, policies, and guidance and evaluating changes that may be needed to remove any ambiguity.

KEVIN W. BUCKLEY, SES
Air Force Program Executive Officer for Mobility

Attachment:
AFLCMC/WL Memo, 8 August 2014

Acknowledgement of Response to NOC



INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22304-1500

AUG 29 2014

MEMORANDUM FOR PROGRAM EXECUTIVE OFFICER FOR AIR FORCE MOBILITY
PROGRAMS

SUBJECT: C-5 Reliability Enhancement and Re-engineering Program (RERP) Hotline
Evaluation (Project No. D2013-DT0TAD-0004)

REFERENCES: (a) Air Force Program Executive Officer for Mobility Memorandum,
"Memorandum for DoD Office of the Inspector General," August 20, 2014
(b) DoDIG Memorandum, "2014-07-08 DODIG - C-5 RERP Notice of
Concern," August 7, 2014

In response to your August 20, 2014, memorandum addressed to the Department of Defense (DoD) Inspector General (IG) (reference (a)), we thank you for your comments and appreciate the time and effort taken in developing a coordinated reply to our Notice of Concern (reference (b)). We agree with the actions you have taken to sign the C-5 RERP Pylon Drain Path risk acceptance package. We also commend you for tasking the Technical Airworthiness authority to review all applicable AFIs, policies, and guidance and evaluating changes that may be needed to remove any ambiguity in the process.

Accordingly, please note that the Notice of Concern and your response will be included in our report. In addition, we are planning to recommend that the C-5 Program Office update their airworthiness certification process to ensure identified risks have been resolved or accepted by the appropriate authority before issuing Military Certificates of Airworthiness.

A handwritten signature in black ink, appearing to read "R. Stone", is positioned above the typed name of the Deputy Inspector General.

Randolph R. Stone
Deputy Inspector General
Policy and Oversight

[Redacted]

Appendix C

Management Comments on the Findings and Our Response

Finding A Management Comments

“The C-5 SPO and DCMA were not proactively managing the categorization, disposition, and corrective actions for all product nonconformances.”

The program office and DCMA disagree with this finding.

The program office and DCMA have proactively executed the Corrective Action Request (CAR) and nonconforming material (NCM) process to influence the contractor’s performance to include decreasing nonconforming product. The IG team concurrence that NCM have decreased since November 2013 supports that position.

Our Response

The process as described by SPO and DCMA is reliant on Lockheed Martin to make the determination of the type of nonconformance and does not include Government review until after the nonconformances have been remedied at the discretion of Lockheed Martin. We strongly believe that in order for SPO to ensure the products delivered to the Government meet all contractual requirements and are free of nonconformances, Government oversight is required for nonconformance categorization and disposition determination. Additionally, failure to conduct the review of nonconformances and their resolutions until the aircraft is in a ready for delivery state, or DD-250, does not provide the Government an opportunity to propose an alternate solution, which may no longer be feasible once the aircraft is completed.

Finding B Management Comments

“SPO failed to provide Government review and approval of nonconformances against the C-5 RERP modification and legacy components. On March 31, 2011, the MRB authority was delegated to Lockheed Martin by DCMA. The delegation of authority was then rescinded on May 17, 2012, because this is an inherently Governmental function; however, the current practice still allows Lockheed Martin to disposition nonconformances without prior Government approval.”

The program office and DCMA disagree with this finding.

In 2011, the Office of Federal Procurement Policy issued a policy letter 11-01 setting forth what is considered an inherently governmental function. Where, as here, the government has the ultimate authority to inspect and accept or reject a contractor presentation of material, the contractor is not performing an inherently governmental function by use of an MRB. (Section 5.1 of policy letter 11-01)

The intent of the March 31, 2011 letter was to allow the contractor to create a proposed disposition (solution). However, the letter was rescinded due to misinterpretation by Lockheed Martin. DCMA never delegated or abandoned its acceptance or rejection authority for Minor nonconformances. As stated previously, DCMA LMM will work with DCMA HQ to coordinate the proper updated guidance letter. The program office and DCMA have and continue to execute per the FAR.

See responses to Recommendations A.1.b, A.2.a and A.2.b.

Our Response

The March 31, 2011, Material Review Board (MRB) Authority letter explicitly states, “This is official notification that DCMA is formally granting Lockheed Martin Marietta (LMM) MRB authority for dispositioning Minor non-conformances. This authority extends to all Programs Site-Wide.” Additionally, if the effective outcome was Lockheed Martin operating with what they believed as Government-delegated MRB authority, then it is still the responsibility of SPO and DCMA to correct. By not rescinding the letter until May 27, 2012, over a year later, DCMA effectively delegated inherently Governmental functions to the contractor for that time period.

Finding D Management Comments

“The Government accepted non-conforming material and other contract deliverables without an equitable adjustment and later had to correct the issues at an additional expense.”

The program office disagrees with this finding.

The program office concedes drawings are currently being updated to ensure the RERP modification and the “As maintained” baselines are merged into one baseline. However, given the timing of the modification, elements of this updated C-5M drawing package would have been accomplished regardless of the baseline used at the start of the System Design and Development program. The “As Maintained” configuration baseline is constantly changing. To enable RERP design work to be accomplished efficiently, a baseline for the contractor to work from had to be established early in the program. The program office concurs that the proper baseline to be furnished to the contractor would have been the “As Maintained” as documented in JEDMICS.

The program office disagrees with specific allegations regarding the acceptance of engines containing low-pressure turbine (LPT) blade defects due to the following:

1. All engines were delivered with a Certificate of Conformance which “certified that the items were delivered in accordance with FAA Production Certificate #108, GE Quality Control Standards, and GE specifications” and were therefore compliant with DoDI 5000.02.
2. The recommendation in GE Service Bulletin SB-72-1446 (agreed to by the FAA for commercial aircraft) was to fly to failure and then replace the engine. Since the engine was under warranty, the immediate focus of the government was to consider the airworthiness/safety and logistics impacts of the vendor recommendation. Risk was assessed as Medium in accordance with MIL-STD-882E, and the risk was accepted by the appropriate authorities. Logistically, however, given the cost and difficulty of performing an engine change OCONUS, a decision was made to change out all suspect engines. The vendor agreed to honor the warranty regardless of whether the blade tip had failed. However the government was responsible for engine change, consumable items, and engine transportation, which is no different than replacing a failed engine under warranty.

3. Blade tip liberation would be a one-time event. It was not considered a reliability issue. Given 18 engines were delivered to the Air Force, each having a 22% chance of failure in the first 400 cycles, four engines could have experienced a blade tip liberation which would have required an unscheduled engine removal. These four unscheduled engine removals would have had an insignificant impact on C-5M operations through 2040, the life of the C-5M fleet.
4. All engines were replaced without a single LPT blade liberation.
5. The customer/user was in agreement with the executed plan.

Our Response

A Certificate of Conformance that “certified that the items were delivered in accordance with FAA Production Certificate #108, GE Quality Control Standards, and GE specifications,” does not ensure that the engines met all of the requirements of the contract, specifically the overall aircraft reliability. If blade tip liberation failure had occurred, it would have affected the reliability as reliability is defined as the probability that an item can perform its intended function(s) without failure for a specified time under stated conditions. The 22% chance of failure applies to each engine individually not as a composite. Overall system reliability is an aggregate of all the component-level reliabilities and cannot be greater than the reliability of a single-point failure part.

Finding E Management Comments

“Our investigation found instances in which DCMA did not comply with DCMA Instruction (DCMA-INST) 1201, Corrective Action Process. In particular, DCMA failed to: (a) raise the level of CARs in response to ineffective contractor corrective actions,”

DCMA disagrees with this finding.

DCMA LMM issues CARs in accordance with DCMA-INST-1201. The Contract Management Office Commander has the authority to determine the appropriate action (to include identifying the appropriate CAR level and escalations) needed to ensure the contractor provide goods and services in accordance with contract requirements.

The DCMA CAR policy does address the escalation of the CAR level when a contractor provides ineffective corrective action. The purpose for escalating a CAR for ineffective corrective action is to assure [sic] the appropriate level of contractor management is involved in providing corrective action where the currently addressed level of management has been ineffective. Particularly, in the area of Level III and Level IV CARs, which require coordination with multiple stakeholders to assure the path pursued is: warranted; necessary (to get the contractor to take corrective action), or; in the best interest of the Government and Program. The instruction is being modified to better express this intent assuring local senior leadership has the discretion regarding the need to escalate as long as they assure the contractor is intending to and making progress toward being fully compliant. The CAR policy update, including the clarification to the escalation criteria, is in coordination with the DCMA policy process at this time.

“(b) (Failed to) issue a CAR to address a noncompliant Lockheed Martin cost-accounting system,”

DCMA disagrees with this finding.

Lockheed Martin’s contractor business systems have been approved by the District Administrative Contracting Officer (DACO) residing at Lockheed Martin Fort Worth (Accounting in March 2009, Estimating in December 2008). Lockheed Martin was in compliance with their business systems. They were also in compliance with the contract for reporting actual costs. Therefore, DCMA LMM did not write a CAR per DCMA Instruction 1201.

DCMA LMM notified the C-5 RERP PCO of possible inadequacies with the R3 (H-106) clause which may allow for inaccuracies in actual

versus estimated costs. DCMA LMM provided recommended changes to the clause. The program office has modified the R3 (H-106) clause, most recently on September 30, 2014. A DCMA LMM CAS audit on the R3 (H-106) clause is scheduled to be accomplished by January 2015.

“(c) (Failed to) track re-inspection costs to enable recoupment of these costs from Lockheed Martin.”

DCMA disagrees with this finding.

Since 2010 DCMA LMM has collected, through the Quality Assurance database, re-inspection costs. In April 2013, DCMA pursued recoupment of costs for re-inspections related to a specific instance of foreign object debris found in the fuel tanks of an aircraft. The government was able to recoup approximately \$4000 for the re-inspection. Currently the DCMA LMM Quality Assurance database mandates capturing re-inspection costs.

“Additionally, since the hotline complaint, DCMA failed to raise the level of a CAR in response to repeat safety-of-flight nonconformances.”

DCMA disagrees with this finding.

The referenced nonconformances are not safety-of-flight per DCMA Instruction 308. Consideration for elevation is the same as referenced earlier in Finding E.

DCMA does recognize the perceived ambiguity of the CAR policy in regard to CAR elevation and is currently coordinating a revision to provide clearer guidance.

Our Response

This evaluation utilizes the instructions that were current at the time of the allegation. DCMA-INST 1201 states the following for CAR Elevation:

3.13. CIRCUMSTANCES WARRANTING RAISING A CAR TO THE NEXT HIGHER LEVEL. CARs shall be raised to the next higher level when a contractor is unwilling or unable to effect corrective action. Examples of circumstances when CARs should be raised include:

3.13.1. Repetitive Level I or II CARs issued in a reasonably short period of time indicating a breakdown of one or more contractor processes or systems.

3.13.2. Contractor is nonresponsive to a CAR.

3.13.3. Multiple rejections of the contractor’s response for the same CAR.

3.13.4. Recurring history of CAR response rejections indicating a breakdown of the contractor's corrective action system.

3.13.5. Contractor fails to implement corrective actions outlined in a CAR response.

3.13.6. Contractor corrective actions are ineffective.

As our report indicates, there are several of these circumstances that occurred without proper CAR elevation. Additionally, as stated in the report, “while Lockheed Martin’s cost-accounting system is capable of meeting CAS-compliance, the way they were operating its business systems created a CAS 401 violation, which is a CAR-worthy noncompliance.” DCMA-INST 1201 states the following in regards to noncompliances identified in business systems:

If the functional specialist identifies a noncompliance (also referred to as a deficiency) that could potentially be considered significant, he or she shall coordinate with the Contracting Officer (CO) responsible for determining the acceptability of the Contractor's business system. In order for the CO to make an initial determination whether a deficiency is “significant” (as defined in DFARS 252.242-7005(b)) (Reference (1)), the draft CAR and appropriate supporting documentation shall be forwarded to the CO.

DFARS 252.242-7005(b) defines a significant deficiency as follows:

“Significant deficiency,” in the case of a contractor business system, means a shortcoming in the system that materially affects the ability of officials of the Department of Defense to rely upon information produced by the system that is needed for management purposes.

The inability to be able to track estimated costs against actual costs meets the criteria for a significant deficiency; therefore, the process as described in DCMA-INST 1201 should have been followed.

Lastly, the CARs referred to in the repeat safety-of-flight nonconformances are all marked on the CAR forms that DCMA filled out as safety-of-flight.

Management Comments

Defense Contract Management Agency



DEFENSE CONTRACT MANAGEMENT AGENCY
3901 A AVENUE, BUILDING 10500
FORT LEE, VA 23801-1809



OCT 23 2014

MEMORANDUM FOR DEPARTMENT OF DEFENSE, INSPECTOR GENERAL, GENERAL
POLICY AND OVERSIGHT

SUBJECT: Draft Report: C-5 Reliability Enhancement Re-engining Program Hotline Evaluation

Thank you for the opportunity to comment on your draft report, "C-5 Reliability Enhancement Re-engining Program Hotline Evaluation", dated 8 Oct 2014.

The C-5 Program Office, Reliability Enhancement Re-engining Program (RERP) and the Defense Contract Management Agency (DCMA) take very seriously the findings and recommendations and we appreciate the DoD IG's efforts to improve our program. To this end, the Air Force will ensure that their disposition processes, practices and contract documentation are aligned with the Federal Acquisition Regulation and Defense Federal Acquisition Regulation Supplement and that their processes are well documented and followed. In addition, we are working with AFLCMC Engineering Directorate to resolve policy ambiguities affecting risk acceptance and airworthiness. Similarly, DCMA is engaged with policy staff to resolve ambiguities concerning Corrective Action Requests (CAR) and Nonconforming Material Review policies.

Enclosure 1 provides a detailed response for each finding and recommendation. Where applicable the combined team is aggressively addressing your recommendations with the goal of continuing to produce a quality, timely, and cost-effective strategic mobility asset for the United States.

The point of contact for this response is Dr. Yvette Weber, (937) 656-9475 or yvette.weber@us.af.mil and Col John Drohan, (770) 494-3271 or John.Drohan@dcma.mil.

KEVIN W. BUCKLEY, SES
Program Executive Officer, Mobility

MARIE A. GREENING
Chief Operations Officer
Defense Contract Management Agency

Attachment: as stated

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

Enclosure 1 - Detailed Discussion of Findings and Recommendations

Finding A – Substantiated: “Failure to Discourage Repeated Tender of Nonconforming Components”

“The C-5 SPO and DCMA were not proactively managing the categorization, disposition, and corrective actions for all product nonconformances.”

The program office and DCMA disagree with this finding.

The program office and DCMA have proactively executed the Corrective Action Request (CAR) and nonconforming material (NCM) process to influence the contractor’s performance to include decreasing nonconforming product. The IG team concurrence that NCM have decreased since November 2013 supports that position.

“In addition, they did not accurately report the contractor’s quality assurance nonconformances in contractor performance assessment reports (CPARs).”

The program office agrees with this finding.

The program office acknowledges that CARs were not reported accurately in contractor performance assessment reports (CPARs) during the allegation timeframe.

Recommendation A.1: We recommend the C-5 Reliability Enhancement and Re-engining Program System Program Office:

- (a) Develop a formal plan for resolution of variances that includes actionable steps and due dates.

The program office agrees with the necessity of developing a formal plan for the resolution of variances and believes that the current process provides actionable steps and dates in coordination with the user’s operational requirements. For those variances that do not require user coordination, the program office will ensure more timely resolution of the specific contact actions or financial paperwork transactions.

Any required variation is processed and tracked to completion in accordance with the process outlined within AFLCMC/WLS O1 63-01 Galaxy Division Configuration Management via Configuration Control Board, dated October 15, 2014. While recently signed, the program office has been operating to these procedures for the past two years. The process calls for variations to be coordinated amongst the stakeholders to include the using command, Air Mobility Command (AMC). Approved closure plans that are tied to fielded aircraft maintenance actions are continually managed and tracked by the enterprise and closure dates

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

are determined in coordination with the user to minimally impact aircraft availability. Several open variances, however are tied to future contract actions that have been delayed. Going forward, the program office will aggressively burn down open variances and better steward the closure of future variances. Progress on variance closure is monitored by leadership in a variety of regularly scheduled forums to include bi-monthly Reliability Enhancement Re-engining Program (RERP) Enterprise reviews and weekly Time Compliance Technical Order (TCTO) meetings. However, greater effort and importance will be placed on closure dates.

- (b) Establish a Material Review Board process for, and actively participate in, the review and disposition determination of all critical and major product nonconformances.

The program office disagrees with this recommendation.

The program office has an established, robust methodology for providing active participation in the review and disposition (solution) determination of all Critical and Major product nonconformances.

Due to terminology differences, the program office failed to adequately inform the DoD IG assessment team on the level of program office involvement in Critical or Major nonconformances. When a Critical or Major nonconformance is suspected, Lockheed Martin provides the statement of condition and a proposed solution. All Use-As-Is and Repair items classified as Critical or Major are routed to the program office for acceptance or rejection via the Configuration Control Board (CCB). These Critical or Major proposed solutions are reviewed in accordance with the CCB Operating Instruction (OI) as described in AFLCMC/WLS 63-01 as part of the variance process prior to aircraft/item DD-250.

- (c) Generate a memorandum of agreement to ensure that GAT AMC maintainers are available during the remainder of the contract.

The program office agrees with this recommendation.

The production contract clause H-138 which provides for the GAT presence at Lockheed Martin was coordinated with the lead command, AMC, prior to contract award. However, the program office agrees to coordinate with AMC on a standalone Memorandum of agreement (MOA). The estimated completion date is anticipated to be no later than December 2014.

- (d) Ensure that CPARs accurately reflect all CARs and Lockheed Martin quality assurance performance.

The program office agrees with this recommendation.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

The program office agrees to include applicable and accurate metrics in the next CPAR, due Spring 2015, to more accurately portray quality assurance performance.

Recommendation A.2: We recommend the Defense Contract Management Agency:

- (a) Review all nonconforming material dispositions by actively participating in a Joint Government-contractor Material Review Board.

DCMA agrees with the necessity for active participation in a formal Joint Government-Contractor Material Review process but not the initial disposition (solution).

The DCMA letter's intent, dated May 17, 2012, was to cite the FAR allowing the contractor to provide a proposed solution on an aircraft discrepancy with the final accept/reject determination given by the government. DCMA LMM will work with DCMA HQ to coordinate the proper updated guidance letter. However, DCMA has and continues to execute per the FAR.

DCMA utilizes a virtual joint government-contractor review group *process* versus a physical board.

Lockheed Martin provides the statement of condition and a proposed solution. DCMA LMM provides the government acceptance/rejection determination on 100% of Minor nonconforming material (NCM) in accordance with FAR 46.407. The process is documented for DCMA LMM in SOP-LMM-010A (NCM Review Process); it is documented for Lockheed Martin in AC-4276 (Identification and Disposition of Nonconforming Material Process). IAW FAR 46.407 the government's responsibility is to accept or reject the contractor's nonconformances. All Use-As-Is and Repair items classified as Critical or Major are routed to the PCO for an acceptance/rejection determination per AFLCMC/WLS CCB OI 63-01. The process ensures all proposed solutions are routed to the government for an acceptance/rejection determination prior to aircraft/item DD-250.

- (b) Ensure Lockheed Martin does not take disposition action until Government approval has been received.

DCMA disagrees with this recommendation.

The government is in compliance with FAR 46.407 by providing an acceptance/rejection determination on all NCM items prior to aircraft/item DD-250. 100% of Minor NCM solutions are proposed by the contractor and accepted/rejected by DCMA per guidance given in DCMA LMM SOP-LMM-010A (NCM Review Process) which is approved by the PCO/ACO.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

Finding B – Substantiated: “Delegation of Inherently Governmental Functions to Lockheed Martin by SPO and DCMA”

“SPO failed to provide Government review and approval of nonconformances against the C-5 RERP modification and legacy components. On March 31, 2011, the MRB authority was delegated to Lockheed Martin by DCMA. The delegation of authority was then rescinded on May 17, 2012, because this is an inherently Governmental function; however, the current practice still allows Lockheed Martin to disposition nonconformances without prior Government approval.”

The program office and DCMA disagree with this finding.

In 2011, the Office of Federal Procurement Policy issued a policy letter 11-01 setting forth what is considered an inherently governmental function. Where, as here, the government has the ultimate authority to inspect and accept or reject a contractor presentation of material, the contractor is not performing an inherently governmental function by use of an MRB. (Section 5.1 of policy letter 11-01)

The intent of the March 31, 2011 letter was to allow the contractor to create a proposed disposition (solution). However, the letter was rescinded due to misinterpretation by Lockheed Martin. DCMA never delegated or abandoned its acceptance or rejection authority for Minor nonconformances. As stated previously, DCMA LMM will work with DCMA HQ to coordinate the proper updated guidance letter. The program office and DCMA have and continue to execute per the FAR.

See responses to Recommendations A.1.b, A.2.a and A.2.b.

Recommendations B.1: We recommend that the C-5 reliability Enhancement Re-engining Program System Program Office:

- (a) Update or generate all required memorandums of agreement, memorandums of understanding and letters of delegation to ensure level or authority, training, roles and responsibilities are properly documented for the Government on-site representative.

The program office agrees with this recommendation.

Specific on-site representative (OSR) roles and responsibilities, required training and qualifications, and levels of authority will be referenced in the next update to the USAF LCMC DCMA C-5 RERP MOA expected to be signed no later than December 2014.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

- (b) Ensure that delegated Government on-site representative personnel have appropriate qualifications commensurate with the level of authority given.
The program office agrees with this recommendation.

The program office has delegated DCMA LMM as the contract administration office. The OSR is executing their duties as governed by DCMA Overhaul, Maintenance, Modification and Repair (OMMR) instruction DCMA-INST 328. The OSR qualifications and responsibilities will be referenced in updated MOA Annex D per Recommendation B.1.a.

Recommendation B.2: We recommend that the Defense Contract Management Agency:

- (a) Coordinate with the System Program Office to update memorandums of agreement, memorandums of understanding and letters of delegation to ensure level of authority, training, roles and responsibilities are properly documented.

DCMA agrees with this recommendation.

See Recommendation B.1.a.

- (b) Ensure that Lockheed Martin's procedures are in compliance with Federal Acquisition Regulations Subpart 46.407 (d) to require Government approval.

DCMA agrees and executes per this recommendation.

See Recommendation A.2.a and A.2.b. In addition, DCMA LMM performs an annual review of Lockheed Martin NCM process documents to ensure any changes made by the contractor do not lead to a noncompliance.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

Finding C – Undetermined: “Alleged Failure to Approve and Document Contractor Flights”

Recommendation C: We recommend the C-5 Reliability Enhancement Re-engining Program System Program Office ensure that Lockheed Martin document its procedure for flight approval and recording process.

The program office agrees with this recommendation.

The program office and DCMA are collaborating with Lockheed Martin to codify the currently used flight approval and recording processes.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
 Project No. D2013-DT0TAD-0004.000
 C-5 SPO and DCMA Findings, Recommendations and Responses

Finding D - Substantiated: “Alleged Acceptance of Nonconformances that were Corrected at an Additional Cost to the Government”

“The Government accepted non-conforming material and other contract deliverables without an equitable adjustment and later had to correct the issues at an additional expense.”

The program office disagrees with this finding.

The program office concedes drawings are currently being updated to ensure the RERP modification and the “As maintained” baselines are merged into one baseline. However, given the timing of the modification, elements of this updated C-5M drawing package would have been accomplished regardless of the baseline used at the start of the System Design and Development program. The “As Maintained” configuration baseline is constantly changing. To enable RERP design work to be accomplished efficiently, a baseline for the contractor to work from had to be established early in the program. The program office concurs that the proper baseline to be furnished to the contractor would have been the “As Maintained” as documented in JEDMICS.

The program office disagrees with specific allegations regarding the acceptance of engines containing low-pressure turbine (LPT) blade defects due to the following:

1. All engines were delivered with a Certificate of Conformance which “certified that the items were delivered in accordance with FAA Production Certificate #108, GE Quality Control Standards, and GE specifications” and were therefore compliant with DoDI 5000.02.
2. The recommendation in GE Service Bulletin SB-72-1446 (agreed to by the FAA for commercial aircraft) was to fly to failure and then replace the engine. Since the engine was under warranty, the immediate focus of the government was to consider the airworthiness/safety and logistics impacts of the vendor recommendation. Risk was assessed as Medium in accordance with MIL-STD-882E, and the risk was accepted by the appropriate authorities. Logistically, however, given the cost and difficulty of performing an engine change OCONUS, a decision was made to change out all suspect engines. The vendor agreed to honor the warranty regardless of whether the blade tip had failed. However the government was responsible for engine change, consumable items, and engine transportation, which is no different than replacing a failed engine under warranty.
3. Blade tip liberation would be a one-time event. It was not considered a reliability issue. Given 18 engines were delivered to the Air Force, each having a 22% chance of failure in the first 400 cycles, four engines could have experienced a blade tip liberation which would have required an unscheduled engine removal. These four unscheduled engine

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

removals would have had an insignificant impact on C-5M operations through 2040, the life of the C-5M fleet.

4. All engines were replaced without a single LPT blade liberation.
5. The customer/user was in agreement with the executed plan.

Recommendation D: We recommend that the C-5 Reliability Enhancement Re-engining Program System Program Office:

- (a) Provide Joint Engineering Data Management Information and Control System access to Lockheed Martin, and update the contract, if necessary, to ensure a single baseline is established for each C-5M aircraft.

The program office agrees with this recommendation.

The SPO has already provided Joint Engineering Data Management Information and Control System (JDMICS) access to Lockheed Martin. Further, the drawing updates are on track and a single baseline has been established for each C-5M aircraft.

- (b) Update its airworthiness certification process to ensure identified risks have been resolved or accepted by the appropriate authority before issuing Military Certificates of Airworthiness.

The program office agrees with this recommendation.

The USAF Airworthiness Office is reviewing the risk acceptance process to ensure clear guidance on the relationship of risk acceptance to airworthiness certification documentation. The SPO will continue to ensure that the Technical Airworthiness Authority (TAA) and the PEO are aware of any risks or emerging issues once they have been identified. If a risk is identified during production, operations, or sustainment, the program office is responsible for validating the risk and getting the risk accepted by the appropriate authority within 180 days of risk validation (reference AFMC Supplement to AFI 91-202 (July 2013), para 11.1.6.1). In the case of the RERP Pylon Drain Path serious risk that was identified by Lockheed Martin on May 8, 2014, both PEO and TAA were informed by the program office immediately in May and coordinated on the System Safety Risk Acceptance package on 8 August, and 2 July 2014 respectively. The program office had until November 8, 2014 to get the risk formally accepted by the Mobility PEO. The C-5 chief engineer had already developed and tested the remedy for mitigation of the risk and drafted a TCTO by 16 May 2014. The C-5 program office also initiated contractual actions for Lockheed Martin to incorporate the fix on all aircraft still in production in the same time frame. The Air Force TAA is updating the appropriate airworthiness guidance to clarify risk acceptance and

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000

C-5 SPO and DCMA Findings, Recommendations and Responses

Military Certificate of Airworthiness issuance for pre- and post-DD-250 aircraft to ensure proper alignment with DoDI 5000.02.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

Finding E – Substantiated: “Alleged Failure to Comply with DCMA Instructions for Corrective Action Process”

“Our investigation found instances in which DCMA did not comply with DCMA Instruction (DCMA-INST) 1201, Corrective Action Process. In particular, DCMA failed to:

(a) raise the level of CARs in response to ineffective contractor corrective actions,”

DCMA disagrees with this finding.

DCMA LMM issues CARs in accordance with DCMA-INST-1201. The Contract Management Office Commander has the authority to determine the appropriate action (to include identifying the appropriate CAR level and escalations) needed to ensure the contractor provide goods and services in accordance with contract requirements.

The DCMA CAR policy does address the escalation of the CAR level when a contractor provides ineffective corrective action. The purpose for escalating a CAR for ineffective corrective action is to assure the appropriate level of contractor management is involved in providing corrective action where the currently addressed level of management has been ineffective. Particularly, in the area of Level III and Level IV CARs, which require coordination with multiple stakeholders to assure the path pursued is: warranted; necessary (to get the contractor to take corrective action), or; in the best interest of the Government and Program. The instruction is being modified to better express this intent assuring local senior leadership has the discretion regarding the need to escalate as long as they assure the contractor is intending to and making progress toward being fully compliant. The CAR policy update, including the clarification to the escalation criteria, is in coordination with the DCMA policy process at this time.

“(b) (Failed to) issue a CAR to address a noncompliant Lockheed Martin cost-accounting system,”

DCMA disagrees with this finding.

Lockheed Martin’s contractor business systems have been approved by the District Administrative Contracting Officer (DACO) residing at Lockheed Martin Fort Worth (Accounting in March 2009, Estimating in December 2008). Lockheed Martin was in compliance with their business systems. They were also in compliance with the contract for reporting actual costs. Therefore, DCMA LMM did not write a CAR per DCMA Instruction 1201.

DCMA LMM notified the C-5 RERP PCO of possible inadequacies with the R3 (H-106) clause which may allow for inaccuracies in actual versus estimated costs. DCMA LMM provided recommended changes to the clause. The program office has modified the R3 (H-106) clause, most recently on September 30, 2014. A DCMA LMM CAS audit on the R3 (H-106) clause is scheduled to be accomplished by January 2015.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000
C-5 SPO and DCMA Findings, Recommendations and Responses

“(c) (Failed to) track re-inspection costs to enable recoupment of these costs from Lockheed Martin.”

DCMA disagrees with this finding.

Since 2010 DCMA LMM has collected, through the Quality Assurance database, re-inspection costs. In April 2013, DCMA pursued recoupment of costs for re-inspections related to a specific instance of foreign object debris found in the fuel tanks of an aircraft. The government was able to recoup approximately \$4000 for the re-inspection. Currently the DCMA LMM Quality Assurance database mandates capturing re-inspection costs.

“Additionally, since the hotline complaint, DCMA failed to raise the level of a CAR in response to repeat safety-of-flight nonconformances.”

DCMA disagrees with this finding.

The referenced nonconformances are not safety-of-flight per DCMA Instruction 308. Consideration for elevation is the same as referenced earlier in Finding E.

DCMA does recognize the perceived ambiguity of the CAR policy in regard to CAR elevation and is currently coordinating a revision to provide clearer guidance.

Recommendation E.1: We recommend that the C-5 Reliability Enhancement Re-engining Program System Program Office work with the Procuring Contracting Officer to change the contract to require Lockheed Martin to accumulate and report costs in the appropriate Cost Accounting Standard-compliant manner.

The program office agrees with this recommendation.

The clause in the report that was referred to as being non CAS compliant, H-106, has been modified twice since the hotline complaint; most recently on 30 September 2014. With the revision to H-106, Lockheed Martin will accumulate and report costs in the appropriate CAS-compliant manner. A DCMA CAS audit on H-106 is scheduled to be accomplished by January 2015.

Recommendation E.2:

(a) Review all open Corrective Action Requests and raise the level of any that meet the elevation criteria of DCMA-INST 1201.

DCMA disagrees with this recommendation.

DCMA continues to meet the intent of DCMA Instruction 1201 in reference to open CAR elevations. DCMA LMM is pursuing policy clarification as stated previously in Finding E prior to executing any potential review.

Defense Contract Management Agency (cont'd)

C-5 Reliability Enhancement Re-engining Program Hotline Evaluation
Project No. D2013-DT0TAD-0004.000

C-5 SPO and DCMA Findings, Recommendations and Responses

- (b) Revise the local standard operating procedure, SOP-LMM-005, so that the criteria given for elevating a Corrective Action Request in response to ineffective corrective actions are consistent with those of DCMA-INST 1201.

DCMA agrees with this recommendation.

DCMA LMM agrees the CMO Corrective Action SOP was not definitive in the requirement to elevate a CAR to the next level in accordance with DCMA-INST 1201 para 3.12.2. DCMA LMM archived the Corrective Action Process SOP (SOP-LMM-005) on October 9, 2014 to eliminate any confusion. DCMA LMM has been in communication with DCMA HQ in reference to the revision of the Corrective Action Process Instruction.

- (c) Incorporate all aircrew Corrective Action Requests into the Defense Contract Management Agency's corrective Action Request System.

DCMA agrees with the incorporation of aircrew corrective action requests and continues to execute per the recommendation.

DCMA LMM incorporates all CARs that are developed by the DCMA team, including Government Flight Representative (GFR) and Flight Crew, in accordance with DCMA-INST 1201. Each CAR receives a CAR number from the DCMA CAR eTool and can be tracked and monitored.

The updated instruction DCMA-INST 8210.2 assigns CAR responsibility to the Aviation Program Team (APT). Therefore, discrepancies discovered during aircrew acceptance activities are referred to the entire APT to include Quality Assurance and Engineering for evaluation and consideration of a CAR. The GFR on behalf of the aircrew has issued four CARs associated with aircraft operations. Per DCMA-INST 1201, not all flight findings merit a CAR (legacy defects or nonconformances) when identified by the contractor or in a joint product examination.

- (d) Monitor time and costs associated with re-inspections to allow the Administrative Contracting Officer to seek recoupments from Lockheed Martin.

DCMA agrees with this recommendation.

DCMA LMM modified the Quality Assurance database to mandate capturing the re-inspection costs. The quality teams will generate a monthly report of time and cost spent for re-inspections. The re-inspection cost data will then be provided to the ACO for consideration of recoupment actions. The DCMA LMM Quality Assurance Surveillance Plans will be updated to reinforce this requirement.

Acronyms and Abbreviations

ACO	Administrative Contracting Officer
AFB	Air Force Base
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFTO	Air Force Technical Order
AMC	Air Mobility Command
AMP	Avionics Modernization Program
AOI	Aircraft Operations Inspection
ASC	Aeronautical Systems Center
CAP	Corrective Action Plan
CAR	Corrective Action Request
CAS	Cost Accounting Standard
CCB	Configuration Control Board
CPAR	Contractor Performance Assessment Report
DCAA	Defense Contract Audit Agency
DCMA	Defense Contract Management Agency
DFARS	Defense Federal Acquisition Regulation Supplement
DoD	Department of Defense
DoDI	Department of Defense Instruction
DSM	Development Systems Manager
ECO	Engineering Change Order
FAR	Federal Acquisition Regulation
GAT	Government Advisory Team
GE	General Electric
GFR	Government Flight Representative
JEDMICS	Joint Engineering Data Management Information and Control System
LMA	Lockheed Martin Aeronautics
LPT	Low-Pressure Turbine
MDR	Modification Discrepancy Report
MIR	Modification Inspection Record
MOA	Memorandum of Agreement
MRB	Material Review Board
NOC	Notice of Concern

Acronyms and Abbreviations (cont'd)

O&A	Over & Above
OIG	Office of the Inspector General
ORM	Operational Risk Management
OSR	On-site Representative
PCO	Procuring Contracting Officer
PCOL	Program Contracting Office Letter
PEO	Program Executive Officer
RERP	Reliability Enhancement and Re-engining Program
SDD	System Development and Demonstration
SME	Subject Matter Expert
SOF	Safety of Flight
SOP	Standard Operating Procedure
SPM	System Program Manager
SPO	System Program Office
TCTO	Time Compliance Technical Order
TO	Technical Order
WR-ALC	Warner Robins Air Logistics Center

Whistleblower Protection

U.S. DEPARTMENT OF DEFENSE

The Whistleblower Protection Enhancement Act of 2012 requires the Inspector General to designate a Whistleblower Protection Ombudsman to educate agency employees about prohibitions on retaliation, and rights and remedies against retaliation for protected disclosures. The designated ombudsman is the DoD Hotline Director. For more information on your rights and remedies against retaliation, visit www.dodig.mil/programs/whistleblower.

For more information about DoD IG reports or activities, please contact us:

Congressional Liaison

congressional@dodig.mil; 703.604.8324

Media Contact

public.affairs@dodig.mil; 703.604.8324

Monthly Update

dodigconnect-request@listserve.com

Reports Mailing List

dodig_report@listserve.com

Twitter

twitter.com/DoD_IG

DoD Hotline

dodig.mil/hotline



DEPARTMENT OF DEFENSE | INSPECTOR GENERAL

4800 Mark Center Drive
Alexandria, VA 22350-1500
www.dodig.mil
Defense Hotline 1.800.424.9098

