

November 1, 2006



Acquisition

Acceptance and Surveillance of F-16
Mission Training Center Simulation
Services
(D-2007-008)

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AFB	Air Force Base
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MTC	Mission Training Center
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November 1, 2006

MEMORANDUM FOR COMMANDER, OPERATIONS AND TRAINING BRANCH,
HEADQUARTERS UNITED STATES AIR FORCE
COMMANDER, AIR COMBAT COMMAND
DIRECTOR, SIMULATOR SYSTEMS GROUP,
AERONAUTICAL SYSTEMS CENTER
DIRECTOR, DEFENSE CONTRACT MANAGEMENT
AGENCY

SUBJECT: Report on the Acceptance and Surveillance of F-16 Mission Training Center
Simulation Services (Report No. D-2007-008)

We are providing this report for information and use. We considered management comments on a draft of this report when preparing the final report.

Comments on the draft of this report conformed to the requirements of DoD Directive 7650.3 and left no unresolved issues. Therefore, no additional comments are required.

We appreciate the courtesies extended to the staff. Questions should be directed to James L. Kornides at (614) 751-1400 x211 or Amy J. Frontz at (303) 676-7392. See Appendix E for the report distribution. The team members are listed inside the back cover.

By direction of the Deputy Inspector General for Auditing:

A handwritten signature in cursive script, reading "Paul J. Granetto".

Paul J. Granetto, CPA
Assistant Inspector General and Director
Defense Financial Auditing Service

Department of Defense Office of Inspector General

Report No. D-2007-008

November 1, 2006

(Project No. D2005-D000FJ-0171.001)

Acceptance and Surveillance of F-16 Mission Training Center Simulation Services

Executive Summary

Who Should Read This Report and Why? DoD personnel responsible for managing, executing, and overseeing contracts for services, including aircraft simulations, should read this report. It discusses the need for better acceptance testing and contract surveillance for an Air Force F-16 aircraft simulation training services contract.

Background. In June 1999, the Air Force awarded a contract to Lockheed Martin Integrated Systems to acquire F-16 aircraft simulation services. The Air Force planned to use the simulation services, which include cockpit simulators, to provide mission training to its F-16 pilots. The Contractor was required to develop, deliver, and maintain Mission Training Centers that provided simulation services in accordance with Government approved performance specifications that included simulating advanced F-16 missions.

Results. The Air Force accepted substandard Contractor performance and paid \$145 million for simulation services that did not meet critical contract specifications. The Mission Training Centers did not simulate 14 of the 16 missions specified in the contract and there were deficiencies in the services the Air Force accepted. Additionally, the limited service was impaired by repeated computer system failures. As a result, the Air Force did not achieve the enhanced training capability it anticipated and pilots were continuing to use the F-16 aircraft to perform required mission training at a cost of more than \$5,400 an hour. The Air Force needs to analyze the existing capabilities of each F-16 Mission Training Center site against contracted requirements and reduce service payments through the end of the contract in June 2007 for any requirements not provided.

The Air Force is in the process of developing a new contract for future F-16 simulation services and it plans to spend \$582 million to obtain services under the new contract as early as 2007. The Air Force needs to be certain that problems experienced in the 1999 contract for F-16 simulation services are avoided in the future by performing better acceptance testing and contract surveillance. The Director, Simulator Systems Group, Aeronautical Systems Center, needs to coordinate with Air Combat Command and Defense Contract Management Agency personnel to require contractors to demonstrate that simulation services meet all statement of work requirements prior to service acceptance, formalize the test discrepancy reporting and resolution process for simulation service contracts, and require quality assurance surveillance plans to be developed in conjunction with the statement of work for all simulation service contracts as required by the Federal Acquisition Regulation. The Commander, Operations and Training Branch, Headquarters United States Air Force needs to update Air Force instructions to identify roles and responsibilities for the management and administration of simulation service contracts and mandate training for quality assurance personnel performing oversight of simulation service contracts.

Air Force Comments. The Assistant Secretary of the Air Force (Acquisition) took exception to details within the findings of the report. We did not make changes to the draft report as a result of the Assistant Secretary's comments. However, we provided a detailed audit response to the Assistant Secretary's comments in Appendix D of this report. The Assistant Secretary concurred with the recommendations. The Assistant Secretary stated the Air Force will work with the Defense Contract Management Agency to monitor the contractor's performance and reduce service payments if services do not meet contractual requirements. The Assistant Secretary stated no additional services are planned for the current F-16 Mission Training Center simulation service contract and the Air Force will ensure all contractual requirements are met prior to accepting future simulation services. The Assistant Secretary stated the Air Force will formalize the discrepancy reporting and resolution process in future simulation service contracts. The process will include the date each discrepancy is identified, tested, and resolved. The Assistant Secretary stated that the Defense Contract Management Agency is currently drafting a quality assurance surveillance plan for Mountain Home Air Force Base and the Air Force is working closely with the Defense Contract Management Agency to develop quality assurance surveillance plans for future simulation services. The Assistant Secretary of the Air Force (Acquisition) comments were fully responsive with respect to the recommendations. Therefore, no further comments are required. See the Finding Section of the report for a discussion of management comments and the Management Comments section of the report for a complete text of the Secretary's comments.

The Director, Current Operations and Training, Headquarters United States Air Force, concurred with the finding and recommendations. The Director is revising Air Force Instruction 36-2251 "Management of Air Force Training Systems" to more clearly define roles and responsibilities of personnel who manage and administer simulation service contracts. The Director stated that Headquarters Air Combat Command is doing the same for Air Force Instruction 36-2248 "Operation and Management of Aircrew Training Devices." The Director stated the revisions of Air Force Instruction 36-2251 and Air Force Instruction 36-2248 will also mandate training for Air Force personnel when a Defense Contract Management Agency contracting officer delegates quality assurance duties. The Director's comments were fully responsive. Therefore, no further comments are required. See the Finding Section of the report for a discussion of management comments and the Management Comments section of the report for a complete text of the Director's comments.

Defense Contract Management Agency Comments. Although not required to comment, the Deputy, Operations Group, Defense Contract Management Agency Dayton provided comments on the finding. The Deputy stated that his office has identified for improvement certain internal processes in areas of site reporting procedures, lines of communication, and training. The Deputy also stated that his office is rewriting the memorandum of agreement with the Air Force and has taken action to improve their level of support for all simulator programs. For a full text of Defense Contract Management Agency comments, see the Management Comments section of the report.

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Background

This is the second audit of an existing Air Force contract for F-16 Mission Training Center (MTC) simulation services. We performed the first audit¹ at the request of the Under Secretary of Defense for Acquisition, Technology, and Logistics and examined events directed by Ms. Darleen Druyun for compliance with Federal acquisition policy. This audit examined contracting issues that did not involve actions taken or directed by Ms. Druyun.

The Air Force uses several Aircrew Training Devices to provide F-16 pilot training. Aircrew Training Devices complement training available in the aircraft and provide training that is prerequisite to in-flight performance. The training offered in the devices cannot be fully conducted in the aircraft because of safety, airspace, equipment, and security restrictions.

Historically, F-16 pilots used low-fidelity simulators which are capable of providing stand alone training but not F-16 mission rehearsal training. The Unit Training Device is the most common training device but only provides marginal aircraft weapons training and is incapable of training important missions including suppression of enemy air defenses and deployment of high speed anti-radiation missiles.

The F-16 MTC program was established to provide simulation service including cockpits that simulate the form, fit, and function of the F-16 aircraft with 360 degree visual systems and high fidelity flight and weapon simulations. Each F-16 MTC can include up to four simulators (cockpits) and their associated instructor operator stations, threat stations, modular control equipment workstations, and a brief/debrief station.

The F-16 MTC is intended to be part of a larger distributed mission training system that integrates E-3, F-15, and F-16 weapons system simulators to perform mission training. Additionally, the F-16 MTC includes the capability to train in theatre-specific environments and combat situations, thus overcoming constraints that now limit war preparation.

The program is managed by the procuring contracting office, Aeronautical Systems Center Headquarters Simulator Systems Group (formerly the Training Systems Product Group) located at Wright-Patterson Air Force Base (AFB), Ohio. Air Force Major Command personnel manage the overall F-16 pilot training requirements and system training plan. Air Force project officers and quality assurance representatives provide daily oversight of the F-16 MTC operations and are responsible for monitoring Contractor performance.

In June 1999, the Air Force awarded a contract with a ceiling price of \$359 million to Lockheed Martin Integrated Systems (the Contractor) for F-16 MTC simulation services using commercial item acquisition procedures. The Contractor agreed to develop and deliver F-16 MTCs that provide simulation

¹ DoD Inspector General Report No. D-2006-065, "Procurement Procedures Used for the F-16 Mission Training Center Simulator Services," March 24, 2006.

services in accordance with Government-approved performance specifications, and to keep the F-16 MTC consistent, or concurrent, with the F-16 aircraft. The contract called for a limited single-cockpit simulation service (level B) and required an upgrade on the single cockpits to full multi-ship simulation services (level C).

The Air Force pays the Contractor for F-16 MTC simulation services based on an hourly service rate and pays 100 percent of the billed hours each month if the Contractor maintains at least 95-percent operating availability. The contract includes a complex formula for calculating service availability and establishes a point system based on the availability of the various elements of the F-16 MTC (See Appendix C for details).

At the time of the audit, the Contractor was providing full (level C) simulation service on 14 cockpits located at Shaw AFB, South Carolina; Mountain Home AFB, Idaho; Spangdahlem Air Base, Germany; and Misawa Air Base, Japan. The Air Force paid the Contractor \$145 million for F-16 MTC services through April 2006 and the existing contract is scheduled to expire in June 2007.

The Air Force is in the process of re-competing the requirement for F-16 MTC simulation services at an estimated value of \$582 million and expects to award a contract in FY 2006.

Objective

The audit objective was to determine whether the management and oversight of the F-16 MTC simulation service contract ensured that services provided met contract requirements. See Appendix A for a discussion of the scope and methodology and Appendix B for prior audit coverage.

Acceptance and Surveillance of F-16 MTC Simulation Services

The Air Force paid \$145 million for substandard contractor performance including simulation services that did not meet critical contract specifications. The Mission Training Centers did not simulate 14 of the 16 missions specified in the contract and there were deficiencies in the services the Air Force accepted. In addition, the limited training service provided was further impaired by repeated computer system failures. These conditions existed because the Air Force did not ensure that:

- all required testing was successfully completed prior to service acceptance, and that discrepancies identified during testing were promptly resolved;
- roles and responsibilities for contract surveillance were properly defined, and that personnel monitoring contract performance were adequately trained; and
- a standardized quality assurance surveillance plan was in place to appropriately penalize the contractor for limitations with service availability.

As a result, the Air Force did not achieve the enhanced training capability it anticipated and pilots were continuing to use the F-16 aircraft to perform required mission training at a cost of more than \$5,400 an hour.

F-16 MTC Contract Requirements

Air Force contracting personnel clearly outlined the specifications for F-16 MTC simulation services in the statement of work, performance specifications list, and training task list that were a part of the contract awarded to Lockheed Martin Integrated Systems in 1999. The Air Force required that the MTCs be capable of training all procedures specified in the training task list. Specifically, the training task list identified more than 900 pilot training tasks, which comprised 16 required aircraft missions.

Prior to delivery and start of service, the contractor was required to demonstrate that the F-16 MTC provided full mission training capability and functioned in accordance with contract requirements. The Air Force specified that tests were to be conducted at the Contractor's facility and essential test discrepancies (problems that prevent the simulator from performing specific functions essential for mission training) identified during the process were to be documented and resolved. The contract required the F-16 MTC device to remain in plant until essential test discrepancies were resolved by a team consisting of a test director, subject matter experts, and Government representatives.

Testing of F-16 MTC Simulation Services

The Air Force did not ensure that all required testing was successfully completed prior to acceptance of F-16 MTC services. The Contractor delivered and started multi-ship (level C) simulation service at Shaw AFB in January 2003 even though the F-16 MTC had not successfully completed in-plant testing. In addition, numerous essential discrepancies existed that prevented adequate mission training and the process for reporting and resolving discrepancies was never formalized.

In-Plant Testing Results. The Air Force performed an assessment of the F-16 multi-ship service at the Contractor's Akron, Ohio, facility from August 19 to September 6, 2002. The assessment identified 209 discrepancies, of which 161 were considered essential discrepancies that had to be corrected prior to successful completion of the assessment. The Air Force team stopped the assessment testing prior to completion of all of the tests because of system stability problems. During the second week of testing, less than 25 percent of missions were considered fully successful. Therefore, not all missions and mission elements were able to be assessed. The test team decided to wait until all essential discrepancies were corrected to complete the assessment.

On October 7, 2002, the Contractor held a ready-to-ship assessment meeting with Air Force test officials. The Contractor indicated there were 415 outstanding discrepancies, which included the 209 identified during the Air Force assessment. The Air Force test director stated that a mutual decision was reached in the meeting to hold off shipping the F-16 MTC until essential discrepancies were completed and a follow-up training assessment could be completed. However, the Contractor shipped the F-16 MTC to Shaw AFB in January 2003 without correcting essential discrepancies and successfully completing the required assessment. Because the training assessment was not completed and not all missions and related elements were tested, the Air Force had no assurance that all essential discrepancies were identified.

Post-Delivery Testing Results. The Air Force test team performed additional testing at Shaw AFB in January 2003. The team identified 112 discrepancies that had been previously identified by Contractor and Air Force test personnel but were never corrected. In addition, the team identified 49 new discrepancies.

The Air Force test team again returned to Shaw AFB in July 2003 to determine if previously identified discrepancies had been corrected but experienced a large number of computer system failures. The team reported that proper resolution of previously identified discrepancies could not be adequately tested until system stability was established. Through limited testing, the team noted that previously identified discrepancies had not been corrected. The Air Force test team identified the test discrepancy reporting process as a problem area and recommended that the process for resolving test discrepancies be formalized. At the time of the audit, Air Force officials still had not formalized the discrepancy reporting process nor resolved the process for closure and resolution of test discrepancies.

Contract Surveillance Roles, Responsibilities, and Training

Roles and responsibilities for surveillance of the contract for F-16 MTC simulation services were not properly defined and personnel monitoring contract performance were not adequately trained.

Contract Management and Execution. Air Force Instruction 36-2248, “Operation and Management of Aircrew Training Devices,” May 1, 1998, specifies Air Combat Command as the combat air forces² representative for managing and providing policy and guidance for training systems common to the combat air forces. The Air Combat Command Training Support Squadron is identified as the office of primary responsibility for fielded training devices but the Training Support Squadron did not have a role in the management and execution of the contract for F-16 MTC simulation services. This role was assumed by the Aeronautical Systems Center, Simulator Systems Group.

A memorandum of agreement for the planning and testing of the F-16 MTC contract was signed in April 2001, almost 2 years after contract award. The memorandum established the responsibilities for Aeronautical System Center, Air Combat Command, the 29th Training Support Squadron, and the 346th Training Squadron. The memorandum specifically identified the combat air forces responsibilities and relationships as those identified in Air Force Instruction 36-2248. However, the cited instruction did not address the acquisition of commercial simulation services, such as those provided by the F-16 MTC contract.

Contract Administrative Services. The Defense Contract Management Agency (DCMA) is the DoD Component that works directly with Defense suppliers to help ensure that supplies and services are delivered on time, at projected costs, and meet all performance requirements. A memorandum of agreement between the Air Force Simulator Systems Group and DCMA was signed in August 1998 to establish the DCMA Dayton, Ohio, office as the single DCMA office responsible for contract administrative services for all Simulator Systems Group contracts. In contrast to the agreement, the Simulator Systems Group retained the authority for reviewing and approving the Contractor’s monthly invoices for F-16 MTC simulation services. This resulted in confusion as to the specific roles and responsibilities. For example, one F-16 MTC project officer was sending reports on poor contractor performance to DCMA instead of Simulator Systems Group officials responsible for monitoring payments at the time.

Training of Surveillance Personnel. Air Force F-16 MTC quality surveillance personnel did not receive adequate training to perform the required quality assurance functions. During site visits to Shaw AFB, Mountain Home AFB, and Spangdahlem Air Base, Air Force F-16 MTC quality surveillance personnel stated that they had never received formal training on quality assurance for training devices or related simulation services. Air Force Instruction 36-2248

² The Combat Air Forces are comprised of the following Air Force Major Commands: Air Combat Command, United States Air Forces Europe, Pacific Air Forces, Air National Guard, Air Force Reserve Command, and Air Education and Training Command.

provides specific information on an annual command-directed training device quality assurance workshop that includes training sessions on career development, quality assurance policy, and contract administration. The instruction specifies that representation should include all project officers and quality assurance representatives responsible for aircrew training devices. Air Force F-16 MTC quality surveillance personnel at the sites we visited informed us that they had not been able to attend the quality assurance workshop or obtain comparable training because their units did not provide the necessary funding.

Quality Assurance Surveillance

A standardized quality assurance surveillance plan was not prepared and implemented to appropriately penalize the contractor for limitations with service availability. Because a quality assurance surveillance plan was not prepared, pilot feedback forms used to grade simulation services were not standardized or consistently completed, and the methodology used to determine the availability of the service was not consistently applied and validated.

In order to ensure the Government receives the goods and services it has purchased, a mechanism must be in place to validate that the goods and services delivered meet the requirements of those purchased. This mechanism is known as a quality assurance surveillance plan. Federal Acquisition Regulation part 46 “Quality Assurance” subpart 46.4, “Government Contract Quality Assurance,” states that a quality assurance surveillance plan should be prepared in conjunction with the preparation of the contract statement of work and should specify all work requiring surveillance and the method of surveillance.

Completion of Pilot Feedback Forms. Air Force MTC quality surveillance personnel used pilot feedback forms to monitor Contractor performance. If a pilot feedback form identified a deficiency with the simulation service or identified the training session as non-effective, the Contractor should have been appropriately penalized. The pilot feedback forms were originally developed by the Contractor and have been modified several times by Air Force personnel. Each F-16 MTC location was using a different version of the pilot feedback form.

Pilot feedback forms were not always completed and returned to the Air Force MTC quality surveillance personnel. For example, at Shaw AFB during a 6-month period beginning in May 2005, there were more than 40 instances where pilots did not complete and return feedback forms. In addition, pilot feedback forms were not returned to Spangdahlem Air Base MTC quality surveillance personnel for 11 out of 19 days of simulator operation during November 2005. Air Force MTC quality surveillance personnel cannot adequately measure Contractor performance without the pilot feedback forms.

Surveillance of Simulator Service Availability. The Air Force did not consistently apply and validate the methodology used to determine service availability at Shaw AFB, Mountain Home AFB, and Spangdahlem Air Base. Because this was a commercial services contract, we expected that the Air Force would simply pay for actual time spent in the MTC based on an established

hourly rate. However, the contract for F-16 simulation services included a complex formula for calculating service availability and established a point system based on the availability of the various elements of the F-16 MTC. To illustrate its complexity, details on the service availability formula from the contract are provided in Appendix C. As discussed below, the formula was not consistently applied and validated.

Surveillance Activities at Shaw AFB. The project officer for the F-16 MTC located at Shaw AFB developed his own quality assurance surveillance plan because one did not exist when he arrived in June 2003, which was a year after limited simulation service (level B) began in May 2002. Pilot feedback forms were reviewed and service availability was calculated as part of the daily surveillance activities. In addition, quality surveillance personnel accumulated a wide array of information on the F-16 MTC utilization including mission late starts, cockpit utilization, training time loss and non-effective mission rates. The information was reported to Aeronautical Systems Center and Major Command officials responsible for the management of the F-16 MTC simulation service contract but was not used to hold the Contractor accountable for performance.

In an attempt to hold the Contractor to the performance specifications of the contract, Shaw AFB MTC personnel changed their methodology for scheduling simulation service and calculating service availability. In doing so, Shaw AFB personnel were able to demonstrate several months where the simulator service did not meet the 95-percent availability threshold required by the contract. However, Contractor personnel continued to submit monthly availability percentages that were higher than those calculated by Shaw AFB personnel. During the period of June 2003 through October 2005 there were seven instances where the Shaw AFB project officer calculated availability for simulation service below 95 percent. However, on five of the seven occasions payments were based on the higher availability rates calculated by the Contractor.

For example, in December 2003, the Contractor calculated a 91-percent availability rate for F-16 MTC simulation services at Shaw AFB. The Shaw AFB project officer calculated a 79-percent availability rate for those same services. The contract identifies the project officer as the final authority for determining availability, yet the Contractor was paid based on the 91-percent availability it calculated. Furthermore, the availability formula in the contract allowed for the Contractor to be paid at an even higher rate. When service availability falls below 95 percent, the Air Force pays the invoice based on a calculated percentage equal to the actual availability percentage divided by 95 percent. For this example, the Air Force paid 96 percent of the amount the Contractor invoiced for service. Therefore, even though the Air Force calculated availability at 79 percent of the required service, the Contractor was paid for 96 percent of the amount billed.

Surveillance Activities at Mountain Home AFB. Surveillance activities at Mountain Home AFB differed greatly from those performed at other MTC sites and did not provide effective Contractor oversight. The project officer at the F-16 MTC located at Mountain Home AFB was not using a quality assurance surveillance plan when we visited the site in November 2005.

At Mountain Home AFB minimal quality assurance surveillance was performed. The project officer in place during our November 2005 site visit was the sixth project officer since initial F-16 simulation service began in October 2002. The project officer reviewed the Contractor's availability percentage report and compared it to the pilot feedback forms to determine mission reporting accuracy. However, there were instances where pilots identified missions as non-effective for training but the Contractor reported them as effective. For example, simulator missions flown on four separate occasions in November 2004 were identified as non-effective training by the pilots for various reasons. In contrast, the Contractor reported the same missions as effective. Furthermore, from June through August 2005, no surveillance activities were performed because the project officer was deployed. A new quality assurance representative was appointed during the project officer's deployment but was not aware of what surveillance activities were required.

Surveillance Activities at Spangdahlem Air Base. Surveillance activities at Spangdahlem Air Base differed from those performed at other MTC sites and did not provide effective Contractor oversight. The project officer at the F-16 MTC located at Spangdahlem Air Base had a copy of the quality assurance surveillance plan developed at Shaw AFB, but was not using it during our site visit in February 2006.

At Spangdahlem Air Base the quality assurance surveillance performed by the quality assurance representative consisted of a tally of effective and non-effective missions flown in the simulator reported to the wing commander. The quality assurance representative did not use this information to determine the accuracy of the Contractor-reported availability. For example, pilots reported a two-ship simulator mission flown on October 18, 2005, as non-effective training. The quality assurance representative also reported the mission as non-effective in his summary. In contrast, the Contractor reported all missions on October 18th, 2005, as effective.

Although the quality assurance representative reported effective and non-effective mission data to the wing commander, the representative did not consistently report this information to F-16 MTC contract management officials. While this information may be useful for the wing, officials responsible for F-16 MTC contract management could use the information to hold the contractor accountable for failing to meet the specifications of the contract.

Certification of F-16 MTC Simulation Capabilities

The contract for F-16 MTC simulation services required the services to be integrated into the F-16 ready aircrew program and the respective training syllabus. However, the official certification performed by Air Force experts did not recommend that any of the mission events specified in the contract statement of work be certified for ready aircrew program accreditation.

Air Force Instruction 11-2F-16, Volume 1, "F-16 Aircrew Training," May 1, 1998, establishes the minimum Air Force F-16 pilot training qualification

standards. The F-16 pilot training program is designed to progress pilots from initial qualification training to mission qualification training and, finally, to continuation training. Continuation training involves the basic flying skills to ensure safe operation of the aircraft (non-ready aircrew program training) and specific mission-related training required to accomplish the unit's assigned mission (ready aircrew program training).

Air Force Instruction 36-2248 provides guidance for certification of aircrew and mission simulators. The Air Combat Command Training Support Squadron establishes simulator certification policy and guidance and the 29th Training Support Squadron implements Air Combat Command policy and manages the certification program. New training devices require initial certification after the device is installed and the Air Force has completed acceptance testing. The certification process is designed to ensure that training devices are maintained to their design configuration and provide accurate and credible aircrew training in accordance with Air Force instructions.

The first official simulator certification report on the F-16 MTC was issued in January 2005, approximately 2 years after delivery of full (level C) simulation service. The report summarized the results of the initial certification that was conducted in October 2004 at Shaw AFB. The certification report stated that the F-16 MTC provided satisfactory support for normal and emergency procedures, instrument tasks, element coordination and air-to-ground procedural training.

The report stated that the F-16 MTC was not being maintained to design configuration and performance of the F-16 aircraft, which significantly restricted training effectiveness for mission qualification training and continuation training. Additionally, upgrade and continuation training were degraded by errors in the visual environment, and mission rehearsal training was not possible because of the lack of Distributed Mission Training capability. Observed mission reliability of 72 percent and simulator certification questionnaire comments revealed a continuing concern about mission training lost because of system failures and reboots. The report did not recommend any of the mission events specified in the contract for F-16 MTC simulation services to be certified for ready aircrew program accreditation.

Effects on Mission Training

The F-16 MTCs were not capable of providing mission training in accordance with the Air Force ready aircrew program requirements. Pilots were only obtaining limited training for non-ready aircrew program requirements, which could be obtained in existing training devices. As a result, the Air Force has not realized the enhanced training capability it anticipated and Air Force pilots must continue using the F-16 aircraft to perform required mission training at a cost of more than \$5,400 an hour.

Each Air Force Major Command is responsible for developing training requirements based on its specific mission. Headquarters Air Combat Command periodically issues tasking messages that provide guidance on which ready and

non-ready aircrew program events can be accomplished in aircrew training devices. In its December 2005 tasking message, Headquarters Air Combat Command indicated that only two non-ready aircrew program mission events required by the contract (emergency procedures and tactics) could be trained in the F-16 MTC. These requirements could also be trained in older aircrew training devices such as the Unit Training Device. None of the 14 specific missions required by the contract (See Table 1) were listed as trainable in the F-16 MTC.

Table 1. Contracted Missions Not Trainable in the MTC

1. Killer Scout
2. Air Interdiction
3. Close Air Support
4. Nuclear Operations
5. Defense Counter Air
6. Offensive Counter Air
7. Basic Fighter Maneuvers
8. Air Combat Maneuvering
9. Combat Search and Rescue
10. Medium Altitude Operations
11. Weather Approach Procedures
12. Night Vision Goggle Operations
13. Suppression of Enemy Air Defenses
14. Low Altitude Navigation and Targeting Infrared for Night

Summary

The Air Force did not properly and effectively manage the F-16 MTC simulation service contract and has continued to pay for simulation service that never met the specified training requirements. Authorities did not make the Contractor correct essential test discrepancies and system stability problems and demonstrate that the MTC could perform mission training prior to shipment. In addition, roles and responsibilities for contract surveillance were not properly defined and personnel monitoring contract performance were not adequately trained. Furthermore, the inconsistent surveillance of daily MTC operations did not appropriately penalize the Contractor for limitations with simulation services. The Air Force penalized the Contractor by reducing the service payments by \$561,000 at three MTC sites, which represented less than one percent of the \$145 million total payments. We believe the penalties have been insignificant and did not suit the serious non-conformance issues that the Air Force experienced.

Management Comments on the Finding and Audit Response

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

Recommendations and Management Comments

1. We recommend that the Director, Simulator Systems Group, Aeronautical Systems Center, coordinate with Air Combat Command and Defense Contract Management Agency personnel to:

a. Analyze the existing capabilities of each F-16 Mission Training Center site against contracted requirements and reduce service payments through the end of the contract in June 2007 for any requirements not provided.

Air Force Comments. The Assistant Secretary of the Air Force (Acquisition) concurred with the finding and recommendation. The Air Force agreed to reduce service payments to the contractor if the F-16 Mission Training Center simulation services do not meet contractual requirements. The Air Force, in association with the Defense Contract Management Agency, will monitor the contractor's performance to ensure the Air Force is receiving all contractually required services.

b. Require contractors to demonstrate that simulation services meet all statement of work requirements prior to accepting the service.

Air Force Comments. The Assistant Secretary of the Air Force (Acquisition) concurred with the finding and recommendation. The Air Force stated that additional services are not planned for the current F-16 Mission Training Center simulation service contract. However, for future simulation service contracts, the Air Force will ensure all contractual requirements are met prior to accepting service.

c. Formalize the test discrepancy reporting and resolution process for simulation service contracts. The process should include a description of each discrepancy (problem that prevents the simulator from performing specific functions essential for mission training) and the date each discrepancy is identified, tested, and resolved.

Air Force Comments. The Assistant Secretary of the Air Force (Acquisition) concurred with the finding and recommendation. The Air Force stated the request for proposal for the follow-on F-16 Mission Training Center simulation service contract identifies detailed requirements, including those recommended above, for a formalized deficiency reporting system.

d. Develop quality assurance surveillance plans in conjunction with the statement of work for all simulation service contracts as required by Federal Acquisition Regulation.

Air Force Comments. The Assistant Secretary of the Air Force (Acquisition) concurred with the finding and recommendation. The Air Force stated that the Defense Contract Management Agency is currently drafting a quality assurance surveillance plan for the F-16 Mission Training Center site at Mountain Home Air Force Base. The Air Force is working closely with the Defense Contract Management Agency to develop, in accordance with the Federal Acquisition Regulations, quality assurance surveillance plans for the follow-on F-16 Mission Training Center simulation service contract.

2. We recommend that the Commander, Operations and Training Branch, Headquarters United States Air Force update Air Force instructions to:

a. Identify roles and responsibilities for the management and administration of simulation service contracts.

Air Force Comments. The Director, Current Operations and Training, Headquarters United States Air Force, concurred with the finding and recommendation. The Director is revising Air Force Instruction 36-2251 “Management of Air Force Training Systems” to more clearly define the roles and responsibilities of personnel who manage and administer simulation service contracts throughout all major commands. Headquarters Air Combat Command is doing the same for the combat air forces in Air Force Instruction 36-2248 “Operation and Management of Aircrew Training Devices.” The planned completion for these revisions is December 31, 2006.

b. Mandate training for quality assurance personnel performing oversight of simulation service contracts.

Air Force Comments. The Director, Current Operations and Training, Headquarters United States Air Force, concurred with the finding and recommendation. The revisions to Air Force Instruction 36-2251 and Air Force Instruction 36-2248 will mandate training for Air Force personnel when a Defense Contract Management Agency contracting officer delegates quality assurance duties.

Defense Contract Management Agency Comments. Although not required to comment, the Deputy, Operations Group, Defense Contract Management Agency Dayton provided the following comments on the finding. The Deputy stated that Defense Contract Management Agency Dayton has identified for improvement certain internal processes in areas of site reporting procedures, lines of communication, and training. The Deputy stated that his office is currently rewriting the memorandum of agreement with the Air Force and has taken action to improve their level of support for all simulator programs. For a full text of the Defense Contract Management Agency Dayton comments, see the Management Comments section of the report.

Appendix A. Scope and Methodology

This audit was performed as a result of conditions that came to our attention during our audit of “Procurement Procedures Used for F-16 Mission Training Center Simulator Services” (Report No. D-2006-065). The original audit was performed at the request of the acting Under Secretary of Defense for Acquisition, Technology, and Logistics. An internal study was commissioned in November 2004 in response to admissions by the Principal Deputy Assistant Secretary of the Air Force (Acquisition and Management) from 1993 to 2002 that indicated the Principal Deputy may have allowed personal interests to affect her judgment on acquisition decisions. During our prior review we identified a number of issues with the Air Force management and oversight of the contract for F-16 MTC services. For this audit, we determined whether the management and oversight ensured that services provided met contract specifications.

We reviewed the Federal Acquisition Regulation, Air Force Instructions, and the F-16 MTC simulator service request for proposal, statement of work, performance specifications, and contract clauses. We reviewed F-16 MTC simulation service pilot feedback data from three of the four F-16 MTC facilities.

We interviewed Headquarters Air Combat Command personnel, including the Chief and Deputy Chief of the Flight Operations and Training Division, Air and Space Operations Directorate, and personnel from the Distributed Mission Operations Branch, Directorate of Requirements. We also interviewed personnel from the Air Combat Command Training Support Squadron, and the 29th Training Support Squadron of the Air Force Warfare Center 53rd Wing 53rd Test Management Group. We interviewed Aeronautical System Center personnel including the Chief of Contract Management, Contracting Officer, Program Manager, and General Counsel. We interviewed the project officers and quality assurance representatives at three of the four F-16 MTC locations. We also interviewed personnel from DCMA.

We performed this audit at Headquarters Air Combat Command, the Air Combat Command Training Support Squadron, the 29th Training Support Squadron at Eglin AFB, Florida, Headquarters Aeronautical System Center, DCMA Dayton, the 20th Fighter Wing at Shaw AFB, the 52nd Fighter Wing at Spangdahlem Air Base, and the 366th Fighter Wing at Mountain Home AFB. We performed this audit from November 2005 through August 2006 in accordance with generally accepted government auditing standards. The scope of the audit was limited in that we did not visit or interview personnel from the Misawa Air Base, 35th Fighter Wing F-16 MTC location. In addition, the scope of the audit was limited in that we did not review the managers’ internal control program because it was not an announced objective of the audit.

Use of Computer-Processed Data. We did not use computer-processed data to perform this audit.

Government Accountability Office High-Risk Area. The Government Accountability Office has identified several high-risk areas in DoD. This report provides coverage of the “DoD Contract Management” high-risk area.

Appendix B. Prior Coverage

During the last 5 years, the Government Accountability Office (GAO), the Department of Defense Inspector General (DoD IG), and the Air Force Audit Agency have issued four reports discussing the F-16 MTC, and three reports discussing surveillance of service contracts. Unrestricted GAO reports can be accessed over the Internet at <http://www.gao.gov>. Unrestricted DoD IG reports can be accessed at <http://www.dodig.mil/audit/reports>. Air Force Audit Agency reports can be accessed over the Internet at <http://www.afaahq.af.mil>.

GAO

GAO Report No. GAO-05-274, "Opportunities to Improve Surveillance on Department of Defense Service Contracts," March 17, 2005

DoD IG

DoD IG Report No. D-2006-065, "Procurement Procedures Used for F-16 Mission Training Center Simulator Services," March 24, 2006

DoD IG Report No. D-2006-010, "Contract Surveillance for Service Contracts," October 28, 2005

Air Force

Air Force Audit Agency Report No. F2006-0018-FDE000 "Distributed Mission Operations, 52d Fighter Wing, Spangdahlem AB, Germany," 25 January 2006

Air Force Audit Agency Report No. F2005-0039-FBN000 "F-16 Simulators, 366th Fighter Wing, Mountain Home AFB ID," 2 May 2005

Air Force Audit Agency Report No. F2004-0051-FDM000 "Flight Simulator Utilization, 20th Fighter Wing, Shaw AFB SC," 5 May 2004

Air Force Audit Agency Report No. F2002-0044-WN0000 "Service Contracting Quality Assurance Evaluation Program, Air Research Laboratory, Kirtland AFB NM," 27 August 2002

Appendix C. Simulator Service Availability Accounting

Contract Clause A-016. Service Availability Accounting

A. Level A Availability Accounting

1. The Level A system is segregated into the following elements:

ACC F-16 Level A Elements
 Cockpit with IOS
 Visual
 Combat environment

2. The cockpit with IOS and either the Visual or the Combat environment must be available for Availability to be non-zero.

a. All three elements being available are scored as 100% availability.

b. The cockpit plus either of the other two elements is scored as 66% availability. An element is non-available from the time that the Government first reports the outage. Failure of the contractor's problem reporting system does not constitute a failure to notify. An element becomes available again upon successful completion of repair.

c. Monthly availability is calculated according to the following formula:

$$\text{Lvl A Availability (\%)} = \left(\frac{\# \text{ hours at 100\%} * 100 + \# \text{ hours at 66\%} * 66}{\text{Total number of hours in month}} \right)$$

d. The total number of hours in a month are number of days in a month * 24 hours a day. For example, January has 31 days, so it has 31 * 24 = 744 hours.

B. Level B and Level C Availability Accounting

1. The F-16 Block 40/50 system is segregated into the following system elements:

ACC F-16 MTC	Elements	Points
Brief/DB System	2 room	2 (1 each)
IOS	4 stations	4 (1 each)
Pilot Stations*	4 cockpits	4 (1 each)
Manned Threats	4 stations	4 (1 each)
Mission Control Equip	1 station	1
Local Network	1 network	1
Long Haul Connect	1 system	5
Observation Area	1 room	1
Total Elements Available		22

*Pilot stations include the synthetic environment to support the scheduled mission.

NOTE: These segments may be adjusted based on contractor selected design of the system. For example, if a separate threat environment exists to support each cockpit, a threat environment element may be added and counted like 4 cockpits or manned threats.

2. The MTC shall have 95% availability. Each of the above elements will contribute the points indicated toward the monthly service availability calculation:

$$\text{Availability (\%)} = \left(\frac{\text{Available Required Elements} - \text{Not Mission Capable Elements}}{\text{Required Elements}} \right) * 100$$

a) Required Elements. Required elements are identified on the final daily schedule (normally 1600 the day prior) presented to the contractor. Schedule changes coordinated after a final schedule is established will not be charged against the contractor if the contractor is unable to support late request. However, additional points can be achieved for a training mission by supporting late schedule changes (see paragraph 2.d below and examples). If these elements on the final daily schedule are classified Not Mission Capable Elements, these elements will be excluded from the definition of required elements.

b) Available Required Elements. An element is considered available if the element was used in the mission and provided or supported effective mission training for the primary trainees or objectives. If the element is down, in a degraded condition, or not able to be used to support the mission and/or objective due to failure of another element, the element is considered not available. (Ex: If the cockpit stations fail, it is very unlikely that any elements can be considered available.) If team training is scheduled and the team is non-effective, all elements scheduled by the team shall be considered non-effective. The crew or instructor responsible for accomplishing the mission will determine mission effectiveness. If long-haul connections are disrupted due to problems at remote sites (e.g., power, phone lines) there will be no decrement to the mission points.

NOTE: The basis for the effective/non-effective decision will be patterned after wing policy for accomplishing effective training flights in the aircraft. Crews will attempt alternate missions in an attempt to get effective training; however, basic qualification type missions, emergency procedure practice and/or instrument missions will not normally substitute for team mission training unless a team member specifically has that mission type as an identified training requirement.

c) Not Mission Capable Elements. An element is considered "Not Mission Capable" (NMC) when it is down for a period exceeding one day. This NMC category protects the government from the circumstance of being unable to schedule a desired mission because the mission requires the use of an NMC element, and the element is known to be NMC. For example, two instructor stations are down for an extended period of time. If the user only schedules two instructors due to this condition, the contractor would continue to get 100%

availability without the NMC provision. Thus, any mission conducted during a period that any element is NMC will lose element points for NMC elements.

d.) Any missions requested by the user and supported by the contractor after the final daily schedule is presented to the contractor are credited to the required elements available (numerator) of the availability formula and zero points are added to the required elements (denominator). If late requested elements are only partially effective or are not effective, the contractor is not penalized in any way; however, no points for the mission will be included in the availability accounting period.

3. The on-site Project Officer (PO) is the final authority for determining whether the device meets the mission requirements. The MTC contractor and PO shall meet as required, but not less than weekly, to resolve the accounting of availability factors. The ANG POs will meet with the contractor no less than monthly. Availability shall be calculated on a monthly basis but a review of the factors will be accomplished weekly while the events are still current. In the event of a disagreement between the Government and the contractor's accounting of mission availability data, the decision of the PO shall stand with the contractor's position documented at the point(s) of disagreement. Complete details of events/problems that affect the training schedule including facility conditions and any other factors affecting the availability of the device shall be documented by the contractor, certified by PO and attached to the contractor's service billing invoice.

4. Each month the cumulative elements available for all missions (available required elements minus NMC elements) will be divided by the cumulative elements required for all missions to calculate the monthly availability percentage. This monthly availability percentage will then be multiplied by the hours available for that month for billing purposes. If no missions are scheduled or flown in any given month, the availability rating will be 100% as long as the contractor staffs the MTC.

5. Under no circumstances shall the availability percentage be more than 100% in any month.

6. Availability will not be calculated until operational service starts.

7. Availability for a day that no elements are scheduled or used will be 100%; however, zero points will be added to both elements of the formula, 0 scheduled, 0 used.

8. Availability for level A and B service will be a subset of the MTC elements using the same scheduled versus effective formula.

The following examples are provided for clarification:

Example One:

Force Protection Mission Commander Upgrade Training: Long haul DMT with 4 x F-15C at Eglin, AWACS at Tinker, 4 x F-16C cockpits the F-16 site.

Elements Required/Scheduled	Points
1 Briefing system	1 point
2 IOS	2 points
4 Pilot Stations	4 points
4 Threat Stations	4 points
1 Mission Control Station	1 point
Local network	1 point
Mission Observation	1 point
Debrief System	1 point
1 Long Haul Connect	5 points
1 debriefing system	1 point
Elements required/scheduled	21 points

Case I: All required elements are logged effective by the crew, the availability rating is 21/21 for the scheduled mission.

Case II: One pilot station in the second element lost the visual display system 10 minutes after the mission started. The second element “aborted” and had no reasonable alternate mission. The second element instructor station was no longer required. The primary mission was conducted with a 2-ship element and logged as effective for the mission upgrade pilot because the syllabus allowed a 2-ship lead for this specific mission. One IOS and two cockpits became non-effective, therefore, 3 elements are non-effective for a score of 18/21.

Case III: The mission commander upgrade pilot station failed for loss of visual display system 15 minutes after the mission started. The DMT wide mission was not stopped and the F-15 flight lead at Eglin took over the force protection lead. F-16 cockpits were swapped and the mission restarted 15 minutes later and attempted as a two ship but timing, other minor delays and mission flow did not allow the F-16 upgrade pilot to accomplish the required training; therefore, Non Effective. No effective mission training was accomplished in the period. The availability rating is 0/21.

Example Two:

One element (2-ship) is scheduled for a DMT SEAD mission and the second element is flying local low level and range familiarization ride with two threat stations for support. The local mission requested no MTC briefing

Elements	Points
1 Briefing system	1 point
2 IOS	2 points
4 Pilot Stations	4 points
4 Threat Stations (2 for each mission)	4 points
1 Local network	1 point
1 Long haul Network/Setup	5 points
2 Debriefing systems	2 points
Elements required/scheduled	20 points

Case I: All required elements are logged effective by the crew for Missions #1 and #2. The availability rating is 20/20 for the scheduled missions.

Case II: The DMT mission was non-effective due to a failure in the MTC Contractor's equipment inside the MPOP. One DMT mission pilot and the instructor stayed and did a single ship emergency procedure mission to prepare for an upcoming qualification requirement. The local mission went as scheduled. Loss of one cockpit, two threat stations, and the long haul network (8 element points) were deducted for an availability of 12/20. If the DMT mission failure is determined to be out of the control of the MTC Contractor (ex: O&I connectivity issues), the loss would not be counted.

Case III: The DMT mission goes as planned but the second element is a no-show. Availability is 20/20.

Example Three:

No mission is scheduled for the period on the final daily schedule. The user requests to add a 4 ship local mission requiring the following after the final schedule:

Elements Required/Not Scheduled	Points
1 Briefing System	1 point
1 IOS	1 points
4 Pilot Stations	4 points
Combat Environment	1 point
1 Debriefing System	1 point
Local network	1 point
Elements Required/Not scheduled	9 points
Elements Required/Scheduled	0

Availability is 9 points for 0 points required. 9 will be added to the available elements (numerator) for the cumulative period. No points will be added to the required (denominator) elements. For example, if the contractor points for the cumulative period was 390/412 (94.6%), the new score would be 399/412 (96.8%).

C. Availability Accounting Applicable to All Orders

1. This section C is applicable to any order placed under this contract: Level A, Level B, or Level C training.
2. The system or element will be counted as available if downtime is time lost due to excusable delays as defined in FEDERAL ACQUISITION REGULATION 52.212-4(f).
3. Availability of 95% or better will be billed at 100% of the hourly rate. If availability were to drop below 95%, the Government would pay a fraction of the hourly rate. That fraction would be actual availability divided by 95%.

Appendix D. Air Force Management Comments on the Finding and Audit Response

This Appendix contains a summary of management comments on the finding and our audit response. See the Management Comments section of the report for a completed text of the Assistant Secretary of the Air Force (Acquisition) comments.

Air Force Management Comments on Certification of F-16 MTC Simulation Capabilities. The Assistant Secretary of the Air Force (Acquisition) disagreed with the finding on the certification of F-16 MTC Simulation Capabilities and cited page 8 of the draft report that states, “the contract for F-16 MTC required the services to be integrated into the F-16 Ready Aircrew Program.” The Assistant Secretary stated that this is an error in fact because the Ready Aircrew Program accreditation was not a contractual requirement. The Assistant Secretary stated that the statement in the report regarding the Ready Aircrew Program accreditation appeared to be a misunderstanding of the Air Force’s simulation certification results and a Ready Aircrew Program letter dated December 5, 2005, and requested removal of all references to Ready Aircrew Program accreditation as a requirement. The Assistant Secretary provided the following additional clarification:

a. The government conducts a simulator certification to validate training capability. Simulated events are evaluated and assigned a training value code. A training value code of 1, 2, or 3 indicates an event is certified for formal training (January 2005 simulator certification report, table 1). The simulator certification team may also further recommend training value code 1 events (fully replicate the aircraft) for accreditation in the Ready Aircrew Program as prescribed by Air Force Instruction 36-2248, paragraph 5.5.1. Air Combat Command/A3T is the authority for Ready Aircrew Program certification, and while they carefully consider simulator certification recommendations, they are not bound by them. The contractor has no control on Ready Aircrew Program accreditation of simulator capabilities.

b. For some events, a training value code 1 rating requires simulation capabilities that are not available, not affordable, or unnecessary for the role or a particular MTC; for example, the Air Force intentionally did not state requirements for capabilities such as depth perception, 20/20 resolution, and simulated motion. This meant many of the events, and therefore mission, would never receive a training value code 1 rating. While the contractor must ensure all tasks from the Training Task List in the Statement of Work placed on contract are certified for formal training (training value code 1-3), they do not have to ensure all tasks receive a simulator certification recommendation for inclusion in the Ready Aircrew Program (training value code 1). Paragraph 3.0.6 of the Statement of Work requires the contractor to conduct assessments “to the level necessary to ensure that the F-16 MTC can be integrated into the F-16 Ready Aircrew Program and the respective training syllabus, as applicable.” The above is clarification to show why Ready Aircrew Program accreditation is not, and could not be, a

contractual requirement. It is therefore not appropriate to have a finding that assesses contractor performance based on Ready Aircrew Program.

c. In assessing contractor performance, the simulator certification demonstrated 89 percent of the applicable tasks could be incorporated into the training syllabus (i.e. certified for formal training) as shown in the January 2005 simulator certification report, table 2.2. Although not a contractual requirement, the following explains the issue of Ready Aircrew Program accreditation for the F-16 MTC. Air Combat Command/A3T conducted an additional training analysis and determined credit for Ready Aircrew Program requirements could be assigned to the F-16 MTC. However, a decision was made in April 2005 to re-compete the contract and period of performance for current services was set to end June 2007. As a result, they did not mandate Ready Aircrew Program credit in the MTC, with a concurrent reduction in live training requirements, because they could not replace the live training if there was a break in service between contracts.

Audit Response to Air Force Comments on Certification of F-16 MTC Simulation Capabilities. We disagree that the reference to the Ready Aircrew Program is an error in fact because the information in our report regarding the Ready Aircrew Program was taken directly from contractual documents. The Ready Aircrew Program is directly referenced in the contract Statement of Work and Integrated Master Plan. Section 3.0.6 of the statement of work specifically states that “The Training Capability Requirements Assessments shall be conducted to the level necessary to ensure that the F-16 MTC can be integrated into the Ready Aircrew Program and the respective training syllabus, as applicable.”

This statement is also included in section 1.2 of the Integrated Master Plan. Further, attachment 4, figure 1.3-1, event 3, of the Integrated Master Plan specifically states that during the training capabilities requirements assessment “the MTC team will also agree that training plans and objectives correlate with the Air Force syllabus and the Ready Aircrew Program.” In regards to certification of MTC services, section 3.9.6 of the Statement of Work states:

The Government will conduct a simulator certification on all simulation service elements to validate the training capability of the training simulation service. Support of simulator certification shall include personnel to operate and maintain the simulation systems during the initial and annual simulator certification.

Furthermore, Air Force experts create simulator certification test plans and develop mission training scenarios based on Ready Aircrew Program requirements. The simulator certification is used to evaluate aircrew training devices to determine if they provide credible training for specific flight events.

Payments for F-16 MTC simulation services began in June 2002 at Shaw AFB. However, the initial simulator certification report was not issued until January 2005. The simulator certification report did not recommend any mission events as credible to Ready Aircrew Program requirements. Specifically, the simulator certification overall conclusion states:

While providing satisfactory support for normal and emergency procedures, instrument tasks, element coordination and air-to-ground procedural training, non-concurrency with MMC 3.3+ significantly restricts training effectiveness for mission qualification training and continuation training. Additionally, Two/Four-Ship Flight Lead Upgrade, Instructor Pilot Upgrade, Mission Commander Upgrade and Continuation Training are degraded due to errors in the visual environment and mission rehearsal training cannot be accomplished due to the lack of Distributed Mission Operations capability.

Air Force Comments on Effects on Mission Training. The Assistant Secretary of the Air Force (Acquisition) disagreed with the finding on the effects on mission training and cited Page 10 of the draft report which states that the MTC did not have the capability to train 14 of the 16 missions in the Statement of Work. The Assistant Secretary stated that at the time of the simulator certification, only 10 of the 16 missions specified in the Statement of Work were applicable for training at Shaw AFB and that the majority of tasks in these 10 missions were credited for formal training. The Assistant Secretary requested that the report accurately reflect the number of applicable missions and include an assessment of trainable tasks. Additional details were provided on the importance of assessing trainable tasks as well as entire missions.

a. Paragraph 1.2 in the Statement of Work is a collective list of the 16 missions specified for F-16 Block 40/50 MTCs. Some missions are not applicable to both block configurations (Shaw AFB has only Block 50 aircraft). Additionally, each unit trains to their local designated operating capability statement, which may not include all the missions for a given configuration. At Shaw AFB at the time of the simulator certification, only 10 missions were applicable. The 6 non-applicable missions are listed below:

1. Low Altitude Navigation & Targeting Infrared for Night - applies to Block 40 configuration only (Performance Specification, paragraph 3.2.1.1)
2. Close Air Support - revising aircraft tactics at time of simulator certification, therefore did not evaluate.
3. Killer Scout - not a contractual requirement; can obtain capability through technology insertion (Statement of Work, paragraph 1.1.2.1)
4. Combat Search and Rescue - not a contractual requirement; can obtain capability through technology insertion (Statement of Work, paragraph 1.1.2.1)
5. Night Vision Goggles - capability added to contract but delivery date was several months after the simulator certification.
6. Nuclear Operations - Block 50 mission but not performed by Shaw AFB unit

b. Paragraph 3.2.2 of the Performance Specification states that the MTC shall “provide the capability to train F-16 Training Task List tasks in accomplishment of the F-16 missions and operations listed in paragraph 3.2.1.” Assessing the number of trainable tasks, therefore, is a more accurate reflection of the F-16 MTC’s capabilities and the contractor’s technical performance than assessing trainable missions on an all-or-nothing basis.

c. As noted earlier, the simulator certification conducted at Shaw AFB in October 2004 evaluated 741 applicable training tasks and certified 89 percent for formal training (i.e. they received a training value code rating of 1, 2, or 3). Deficiencies of the MTC at the time prevented it from simulating 6 percent of the tasks. An additional 4 percent were for the Night Vision Goggle mission, which wasn't yet contractually required, as noted above. [Note: Since October 2004, the contractor resolved deficiencies and added Night Vision Goggle capability; these tasks are ready to be certified at the next simulator certification.] The remaining 1 percent were either inconsistent with unit doctrine or seldom accomplished by unit pilots. No evaluated tasks were rated uncertified for formal training (training value code 4). These results found in paragraph 2.2.1 of the January 2005 simulator certification report.

d. The simulator certification also included pilot evaluations. Thirty-two pilots evaluated the MTC's "capability...to provide advance mission training (weapons employment, mission rehearsal, tactics, defensive reactions, etc.)" Five of them rated the MTC satisfactory, 23 rated it excellent, and four rated it outstanding (January 2005 simulator certification report, supplement B).

e. From very early in its fielding, even prior to the simulator certification, the F-16 MTC provided a great deal of high-quality training. A comment from an Operation Iraqi Freedom F-16 pilot on 21 March 2003 illustrates this well. "I was 'downtown' at the start of tonight's activities...The cool part is that the location of my flight and the tactics employed were exactly like we were practicing in the MTC at Shaw AFB before we left. It was pretty cool to see the terrain and scenario as practiced. Talk about mission rehearsal." Today, it provides even more high-quality training to our pilots.

Audit Response to Air Force Comments on Effects on Mission Training. We acknowledge that the Air Force has received some additional training benefits with the F-16 MTC. However, the Air Force is not receiving the services for which it contracted. The Air Force states that a majority of the tasks in the 10 missions were certified for formal training. However, each mission requires subsets of training tasks performed simultaneously. During the audit, we interviewed the Test Director for the 29th Training Systems Squadron who was responsible for the only official simulator certification of the F-16 MTC. The simulator certification Test Director stated that the inability of a small number of tasks prevents mission training capability. Therefore, while pilots may obtain some benefit from the ability to train specific tasks, the pilots are unable to obtain full mission training.

The Air Force wrote the contract for F-16 MTC in such vague terminology that it makes it extremely difficult to objectively evaluate the adequacy of simulation services provided by the contractor. The Air Force cites training value codes and percentages of applicable tasks that were certified for formal training but none of these terms are discussed or defined anywhere in the contractual documents. In contrast, the statement of work does list the missions that were to be trained in the F-16 MTC. Specifically, section 1.2 of the Statement of Work states:

The Contractor shall confirm the MTC training task list with Air Combat Command. The Contractor shall define the core typical

mission training profiles and scenarios from the training descriptions provided. Training activities shall include Mission Qualification Training, Two/Four-Ship Flight Lead Upgrade, Instructor Pilot Upgrade, Mission Commander Upgrade, and Continuation Training. Preliminary objectives shall be derived for future Air Expeditionary Force Preparation and Mission Rehearsal. The confirmed missions to be trained in the MTC shall include:

- a. Defense Counter Air
- b. Offensive Counter Air
- c. Suppression of Enemy Air Defenses
- d. Low Altitude Navigational and Targeting Infrared for Night
- e. Medium Altitude Operations
- f. Tactics
- g. Air Interdiction
- h. Weather Approach Procedures
- i. Emergency Procedures
- j. Basic Fighter Maneuvers
- k. Air Combat Maneuvers
- l. Close Air Support
- m. Killer Scout
- n. Combat Search and Rescue
- o. Night Vision Goggle Operations
- p. Nuclear Operations

The Air Force states that at the time of the simulator certification only 10 of the 16 mission listed in the statement of work were applicable for training at Shaw AFB. Our finding addresses the fact that the contract listed 16 specific missions to be trained in the MTC and that only 2 of the missions were certified for Ready Aircrew Program training at the time of our review. If there are missions that were not applicable during the simulator certification at Shaw AFB we would have expected to see them addressed during a simulator certification at the applicable MTC site. The Air Force response fails to acknowledge that the contract required a simulator certification to be performed as each MTC site was activated, and annually thereafter. Simulator certifications were not conducted as sites were activated and none of the four operational sites have successfully completed an annual simulator certification as required by the contract. At the time of the audit, the Air Force had four active MTC sites, yet only one simulator certification has been completed. This was the initial F-16 MTC simulator certification that was conducted at Shaw AFB in October 2004 and the official report was not issued until January 2005 (Note that payments for simulator services began in June 2002). The missions that were not applicable to Shaw AFB should have been tested during a simulator certification at the applicable site. However, these simulator certifications were never accomplished.

The Air Force response also makes reference to pilot evaluations included in the simulator certification report. The pilot survey form is a subjective evaluation, not an objective overall evaluation of the simulator and its capability to meet contract requirements. The results of pilot surveys were not mentioned anywhere in the contractual documents as a measure of contractor performance. Additionally, in response to another question on the same F-16 MTC survey eight of thirty-one pilots rated the MTC as unsatisfactory or marginal because it was

unable to start a scheduled mission on time and complete the mission without disruptions such as computer crashes or reboots. The January 2005 simulator certification report revealed that observed mission reliability was only 72 percent. In addition, the simulator certification Test Director informed us that poor system stability continues to be a problem and has impacted the successful completion of simulator certifications at other operational MTC sites.

Appendix E. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition, Technology, and Logistics
Director, Acquisition Resources and Analysis
Under Secretary of Defense (Comptroller)/Chief Financial Officer
Deputy Chief Financial Officer
Deputy Comptroller (Program/Budget)
Director, Program Analysis and Evaluation
Director, Defense Procurement and Acquisition Policy

Department of the Army

Auditor General, Department of the Army

Department of the Navy

Naval Inspector General
Auditor General, Department of the Navy

Department of the Air Force

Assistant Secretary of the Air Force (Acquisition)
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force
Commander, Air Combat Command

Combatant Command

Inspector General, U.S. Joint Forces Command

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Contract Management Agency
Director, Defense Finance and Accounting Service
Director, Defense Intelligence Agency
Director, Defense Logistics Agency
Director, National Security Agency
Director, Defense Systems Management College
Commander, Defense Contract Management Dayton Ohio

Non-Defense Federal Organization

Office of Management and Budget

Congressional Committees and Subcommittees, Chairman and Ranking Minority Member

Senate Committee on Appropriations

Senate Subcommittee on Defense, Committee on Appropriations

Senate Committee on Armed Services

Senate Committee on Homeland Security and Governmental Affairs

House Committee on Appropriations

House Subcommittee on Defense, Committee on Appropriations

House Committee on Armed Services

House Committee on Government Reform

House Subcommittee on Government Efficiency and Financial Management, Committee on Government Reform

House Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform

House Subcommittee on Technology, Information Policy, Intergovernmental Relations, and the Census, Committee on Government Reform

Assistant Secretary of the Air Force (Acquisition) Comments



OFFICE OF THE ASSISTANT SECRETARY

DEPARTMENT OF THE AIR FORCE
WASHINGTON DC

25 SEP 2006

MEMORANDUM FOR DEPUTY INSPECTOR GENERAL FOR AUDITING
OFFICE OF THE INSPECTOR GENERAL
DEPARTMENT OF DEFENSE

FROM: SAF/AQ

SUBJECT: Report on Acceptance and Surveillance of F-16 Mission Training Center (MTC)
Simulation Services; August 2, 2006, Report Number D2005FJ-0171.001

1. This is in reply to your memorandum requesting the Assistant Secretary of the Air Force (Financial Management and Comptroller) provide Air Force comments on the subject report. We appreciate the opportunity to review and provide comments.
2. We concur with both recommendations and have begun implementing them along with our own lessons learned on Training Simulation Service contracts. Detailed responses to the recommendations, along with our implementation plan, are included in Attachment 1.
3. However, we do not concur with some of the findings, primarily on F-16 MTC certification and effects on training. We believe the draft report leads the reader to incorrect conclusions. While there is room for improvement in verifying contractor compliance, the Air Force is receiving a far greater amount of capability than the report indicates. Attachment 2 shows this by providing additional information on contractual requirements. I request your consideration in revising this information prior to publishing the final report.
4. My staff stands ready to provide additional information and to work with you on your final report preparations. My point of contact is Major Tim Dickinson at 703-588-7724.

A handwritten signature in cursive script that reads "Sue C. Payton".

SUE C. PAYTON
Assistant Secretary of the Air Force
(Acquisition)

2 Attachments:

1. Air Force Response to DOD IG Recommendations
2. Air Force Non-concurrence with DOD IG Findings

Attachment 1: Air Force Response to DOD IG Recommendations
DOD IG Draft Report, "Acceptance and Surveillance of F-16 Mission Training Center
Simulation Services;" August 2, 2006, Report Number D2005FJ-0171.001

RECOMMENDATION 1: The DOD IG recommends that the Director, Simulator Systems Group, Aeronautical Systems Center, coordinate with Air Combat Command and Defense Contract Management Agency (DCMA) personnel to:

a. Analyze the existing capabilities of each F-16 Mission Training Center (MTC) site against contracted requirements and reduce service payments through the end of the contract in June 2007 for any requirements not provided.

AF RESPONSE: The Air Force will reduce service payments to the contractor if the F-16 MTC simulation services they provide do not meet contractual requirements. This approach was taken in the past and will remain part of our contract management strategy. The 677 Aeronautical Systems Group (677 AESG, formerly the Simulator Systems Group), in association with DCMA, will monitor the contractor's performance to ensure the Air Force is receiving all contractually required services.

b. Require contractors to demonstrate that simulation services meet all statement of work requirements prior to accepting the service.

AF RESPONSE: Additional services are not planned for the current F-16 MTC simulation service contract. For future simulation service contracts, the 677 AESG will ensure all contractual requirements are met prior to acceptance of the service.

c. Formalize the test discrepancy reporting and resolution process for simulation service contracts. The process should include a description of each discrepancy (problem that prevents the simulator from performing specific functions essential for mission training) and the date each discrepancy is identified, tested, and resolved.

AF RESPONSE: The request for proposal for the follow-on F-16 MTC simulation service contract identifies detailed requirements, including those recommended above, for a formalized deficiency reporting system.

d. Develop quality assurance surveillance plans in conjunction with the statement of work for all simulation service contracts as required by Federal Acquisition Regulations.

AF RESPONSE: DCMA is currently drafting a quality assurance surveillance plan for the F-16 MTC site at Mt. Home AFB. Quality assurance surveillance plans are complete for all other F-16 MTC sites. The 677 AESG is working closely with DCMA to develop, in accordance with the FARs, quality assurance surveillance plans for the follow-on F-16 MTC simulation service contract.

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RECOMMENDATION 2: The DOD IG recommends that the Commander, Operations and Training Branch, Headquarters United States Air Force update Air Force instructions to:

a. Identify roles and responsibilities for the management and administration of simulation service contracts.

AF RESPONSE: The Director, Current Operations and Training, Headquarters United States Air Force (AF/A3O), is revising AFI 36-2251 "Management of Air Force Training Systems" to more clearly define the roles and responsibilities of personnel who manage and administer simulation service contracts throughout all major commands. Headquarters Air Combat Command (ACC/A3O) is doing the same for the combat air forces in AFI 36-2248 "Operation and Management of Aircrew Training Devices." The planned completion for these revisions is 31 December 2006.

b. Mandate training for quality assurance personnel performing oversight of simulation service contracts.

AF RESPONSE: The revisions to AFI 36-2251 and AFI 36-2248 will also mandate training for Air Force personnel when a DCMA contracting officer delegates quality assurance duties to them.

Attachment 2: Air Force Non-concurrence with DOD IG Findings

DOD IG Draft Report, "Acceptance and Surveillance of F-16 Mission Training Center Simulation Services;" August 2, 2006, Report Number D2005FJ-0171.001

Introduction. The capabilities of all our Mission Training Centers (MTC) continue to improve, as does our management of training simulation service contracts. In the case of the current F-16 MTC contract, the Air Force agrees a better job of testing and surveillance should have been done to ensure requirements were met before simulation services began. All elements of the service should have been tested and the essential discrepancies resolved prior to equipment leaving the contractor's facility. However, the Air Force disagrees with the finding that stated, "*The Mission Training Centers did not simulate 14 of the 16 missions specified in the contract,*" as noted in the Executive Summary. While it took us longer than planned, the Air Force is receiving a far greater amount of capability than the report indicates. There are several elements to this issue that are not considered in the draft report that we believe should be included in the final report.

FINDING: Certification of F-16 MTC Simulation Capabilities. Page 8 of the report states, "The contract for F-16 MTC...required the services to be integrated into the F-16 ready aircrew program."

AF RESPONSE: This is an error in fact because RAP accreditation is not a contractual requirement. The statement appears to be a misunderstanding of the Air Force's simulation certification (SIMCERT) results and a RAP letter dated 5 December 2005. We request removal of all references to RAP accreditation as a requirement. Additional clarification is provided below.

a. The government conducts a SIMCERT to validate training capability. Simulated events are evaluated and assigned a Training Value Code (TVC). A TVC of 1, 2, or 3 indicates an event is certified for formal training (SIMCERT Report, Table 1). The SIMCERT team may also further *recommend* TVC 1 events--fully replicate the aircraft--for accreditation in the RAP (AFI 36-2248, paragraph 5.5.1). ACC/A3T is the authority for RAP certification, and while they carefully consider SIMCERT recommendations, they are not bound by them. The contractor has no control on RAP accreditation of simulator capabilities.

b. For some events, a TVC 1 rating requires simulation capabilities that are not available, not affordable, or unnecessary for the role of a particular MTC; for example, the Air Force intentionally did not state requirements for capabilities such as depth perception, 20/20 resolution, and simulated motion. This meant many of the events, and therefore missions, would never receive a TVC 1 rating. While the contractor must ensure all tasks from the Training Task List in the Statement of Work (SOW) placed on contract are certified for formal training (TVC 1-3), they do not have to ensure all tasks receive a SIMCERT recommendation for inclusion in the RAP (TVC 1). Paragraph 3.0.6 of the SOW requires the contractor to conduct assessments "to the level necessary to ensure that the F-16 MTC can be integrated into the F-16 RAP and the respective training syllabus, *as applicable.*" The above is clarification to show why RAP accreditation is not, and could not be, a contractual requirement. It is therefore not appropriate to have a finding that assesses contractor performance based on RAP.

c. In assessing contractor performance, the SIMCERT demonstrated 89% of the applicable tasks could be incorporated into the training syllabus i.e. certified for formal training (SIMCERT Report, Table 2.2). Although not a contractual requirement, the following explains

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the issue of RAP accreditation for the F-16 MTC. ACC/A3T conducted an additional training analysis and determined credit for RAP requirements could be assigned to the F-16 MTC. However, a decision was made in Apr 05 to re-compete the contract and period of performance for current services was set to end Jun 07. As a result, they did not mandate RAP credit in the MTC, with a concurrent reduction in live training requirements, because they could not replace the live training if there was a break in service between contracts.

FINDING: Effects on mission training. Page 10 of the report indicates the MTC did not have the capability to train 14 of the 16 missions in the SOW.

AF RESPONSE: At the time of the SIMCERT, only 10 of the 16 missions listed in the SOW were applicable for training at Shaw AFB. The majority of tasks in these 10 missions were certified for formal training. We request the report accurately reflect the number of applicable missions and include an assessment of trainable tasks. The importance of assessing trainable tasks *as well as* entire missions is described below.

a. Paragraph 1.2 in the SOW is a collective list of the 16 missions specified for F-16 Block 40/50 MTCs. Some missions are not applicable to both block configurations (Shaw AFB has only Block 50 aircraft). Additionally, each unit trains to their local designated operating capability statement, which may not include all the missions for a given configuration. At Shaw AFB at the time of the SIMCERT, only 10 missions were applicable. The 6 non-applicable missions are listed below:

1. Low Altitude Navigation & Targeting Infrared for Night (LANTIRN) - applies to Block 40 configuration only (Performance Specification, paragraph 3.2.1.1)
2. Close Air Support - revising aircraft tactics at time of SIMCERT, therefore did not evaluate
3. Killer Scout - not a contractual requirement; can obtain capability through technology insertion (SOW paragraph 1.1.2.1)

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capability; these tasks are ready to be certified at the next SIMCERT.] The remaining 1% were either inconsistent with unit doctrine or seldom accomplished by unit pilots. No evaluated tasks were rated uncertified for formal training (TVC 4). These results are found in paragraph 2.2.1 of the SIMCERT report.

d. The SIMCERT also included pilot evaluations. Thirty-two pilots evaluated the MTC's "capability...to provide ADVANCED MISSION training (weapons employment, mission rehearsal, tactics, defensive reactions, EW, etc.)" Five of them rated the MTC *satisfactory*, 23 rated it *excellent*, and four rated it *outstanding* (SIMCERT Report, Supplement B).

e. From very early in its fielding, even prior to the SIMCERT, the F-16 MTC provided a great deal of high-quality training. A comment from an Operation Iraqi Freedom F-16 pilot on 21 March 2003 illustrates this well. "*I was 'downtown' at the start of tonight's activities... The cool part is that the location of my flight and the tactics employed were EXACTLY like we were practicing in the MTC at Shaw before we left. It was pretty cool to see the terrain and scenario as practiced. Talk about mission rehearsal.*" Today, it provides even more high-quality training to our F-16 pilots.

Summary. The draft report findings mentioned above do not provide an accurate assessment of F-16 MTC capabilities. One finding in particular--*the MTC did not simulate 14 of the 16 missions*--leads the reader to conclude the Air Force achieved very little return on investment. While there is room for improvement in verifying contractor compliance, which we are working on, the Air Force achieved a far greater amount of capability than the report indicates. The F-16 MTC has been providing significant training benefits over the older devices since early 2003 and today numerous tasks are prepared for incorporation into the F-16 Ready Aircrew Program. We appreciate your consideration in updating this information in your final report.

Defense Contract Management Agency Dayton Comments



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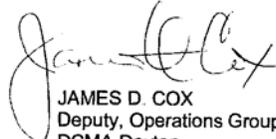
MEMORANDUM FOR OFFICE OF THE DEPUTY INSPECTOR GENERAL FOR
AUDITING OF THE DEPARTMENT OF DEFENSE,
DEFENSE FINANCIAL AUDITING SERVICE

SUBJECT: DCMA Management Comments, Report on the Acceptance and
Surveillance of F-16 Mission Training Center Simulation Services
(Project No. D2005-D000FJ-0171.001)

Defense Contract Management Agency (DCMA) Dayton takes no exceptions to any of the findings contained in the draft report, and the report contains no recommendations directly addressed to our organization. However, in our role as the single DCMA office responsible for contract administration services for the Air Force Simulator Systems Group (SMSG), we can take this occasion to review any possible opportunities for improvement in our support of SMSG in particular, and in the administration of Simulator contracts in general.

From our review and analysis of the draft report, we have identified for improvement certain DCMA Dayton internal processes in the areas of site reporting procedures, lines of communication, and training. We have taken action on these to improve our level of support to SMSG not only for the F-16 program, but all SMSG programs. We are currently rewriting our Memorandum of Agreement with SMSG to incorporate these process changes, and formalize our support in assisting SMSG, and the Air Force, in meeting their requirements.

We appreciate the opportunity to comment on this draft report. If you have any questions or require additional information, please contact me at 937-656-3079, email james.cox@dcma.mil.


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