Audit Report

OFFICE OF THE INSPECTOR GENERAL

ACQUISITION OF UNMANNED AERIAL VEHICLES

Report No. 93-102

May 27, 1993

Department of Defense

Acronyms

ACO	Administrative Contracting Officer
C/SC	Cost and Schedule Control
DAB	Defense Acquisition Board
DCAA	Defense Contract Audit Agency
FAR	Federal Acquisition Regulation
GAO	General Accounting Office
JPO	Joint Project Office
OR	Operational Requirement
OSD	Office of the Secretary of Defense
PDR	Preliminary Design Review
UAV	Unmanned Aerial Vehicle

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202

May 27,1993

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)
ASSISTANT SECRETARY OF THE AIR FORCE (FINANCIAL MANAGEMENT AND COMPTROLLER)
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Audit Report on the Acquisition of the Unmanned Aerial Vehicles (Report No. 93-102)

We are providing this final report for your information and use. It addresses the adequacy of the acquisition management for Unmanned Aerial Vehicles.

Comments from the Office of the Under Secretary of Defense for Acquisition, the Department of the Navy, the Department of the Air Force, and the Defense Logistics Agency on a draft of this report were considered in preparing the final report. The comments conformed to the requirements of DoD Directive 7650.3 and there are no unresolved issues. Therefore, no additional comments are required.

The courtesies extended to the audit staff are appreciated. If you have questions on this audit, please contact Mr. John Meling, Program Director, at (703) 614-3994 (DSN 224-3994) or Mr. David Wyte, Project Manager, at (703) 693-0497 (DSN 223-0497). Appendix H lists the distribution of this report. The audit team members are listed inside the back cover.

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Assistant Inspector General
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Office of the Inspector General, DoD

Report No. 93-102 May 27, 1993
Project No. 2AS-0040

ACQUISITION OF UNMANNED AERIAL VEHICLES

EXECUTIVE SUMMARY

Introduction. The family of Unmanned Aerial Vehicles (UAVs) is being developed by DoD to complement the Military Departments' manned reconnaissance needs for the mid-1990s and beyond. The UAVs are autonomous vehicles designed to survive in high-threat environments and will provide battlefield commanders near real time, high-quality imagery of heavily defended areas during day and night operations. Of the family of UAVs, the Short Range, Close Range, and Medium Range UAV programs are managed by the Defense Acquisition Board (DAB). DoD estimates that development and procurement costs for the three UAV programs will total $5.8 billion in then-year dollars from FY 1989 to beyond FY 2000.

Objectives. The audit objective was to evaluate the overall management of the UAV acquisition programs included in the calendar year 1991 DoD UAV Master Plan. Specifically, the audit determined whether the Short Range, Close Range, and Medium Range UAV programs were being cost-effectively developed and readied for procurement. We also reviewed associated internal controls.

Audit Results. Since 1988, the UAV Joint Project Office (JPO) and Office of the Secretary of Defense have initiated several actions to facilitate overall management of UAV programs. However, our audit identified three conditions requiring further management action.

o The Navy and Air Force's acquisition requirements for Medium Range UAVs were overstated. As a result of our audit, the Navy and Marine Corps reassessed and reduced their requirements by 37 UAVs with an estimated acquisition cost of about $148 million. We concluded that the Air Force could also reduce its Medium Range UAV requirements by an estimated 100 air vehicles and 9 surface launchers with an acquisition cost of about $407.2 million (Finding A).

o The JPO did not adequately address and resolve Air Force concerns on the design of the Medium Range UAV surface launcher. As a result, the JPO has contracted for a Medium Range UAV surface launcher that will not satisfy Air Force users' operational and maintenance requirements (Finding B).

o The Defense Contract Management Command's administrative contracting officer did not ensure that the appropriate contract loss ratio factor was used when adjusting progress payment requests on contract number N00019-89-C-0173. Based on the estimated contract cost at completion, we estimated that from $3.1 million to $11.6 million in premature progress payments was paid to the contractor for claimed costs through August 1992. The unearned progress payments will result in the Government's unnecessarily incurring as much as $400,000 in interest annually to fund the premature progress payments (Finding C).

Internal Controls. The audit identified internal control weaknesses as defined by Public Law 97-255, Office of Management and Budget Circular A-123, and DoD Directive 5010.38. Controls over the design for the Medium Range UAV surface launcher (Finding B) and progress payments for the Medium Range UAV (Finding C) were inadequate. Our review on internal controls is discussed in Part I.

Potential Benefits of Audit. The Navy and Marine Corps avoided an estimated $148 million in procurement costs by reducing their requirements for Medium Range UAVs by 37. The Air Force could avoid as much as $407.2 million in procurement costs if it reduces the requirement for Medium Range UAVs and surface launchers. The savings resulting from the reductions would occur after FY 1998. Appendix F lists other potential benefits.

Summary of Recommendations. We recommended that:

o the Air Force Medium Range UAV requirements be revalidated and be consistent with force structure limitations;

o the design of the Medium Range UAV surface launcher be reviewed and Air Force concerns with the design be resolved; and

o an appropriate contract loss ratio factor be applied against future progress payment requests on contract number N00019-89-C-0173 based on a reconciliation of differences between the Administrative Contracting Officer, the procuring activity, and the Defense Contract Audit Agency concerning the estimated contract cost at completion.

Management Comments. The Air Force responded that it revalidated its requirements for Medium Range UAV air vehicles and surface launchers and intended to reduce air vehicle requirements from 260 to 145 and to defer surface launcher requirements based on force structure limitations. The Defense Logistics Agency responded that the administrative contracting officer was in the process of reconciling and determining the most appropriate contract loss ratio factor to be applied against future progress payment requests on contract number N00019-89-C-0173. In response to Finding D of the draft report, which raised a funding question, the Navy maintained that contractor integration, test, and evaluation efforts for the Short Range UAV program were correctly obligated against procurement funds because contractor test and evaluation efforts questioned were considered system acceptance tests of nondevelopmental items rather than developmental tests. The acceptance test results were to be used in the contractor selection process for determining which contractor would be awarded additional production quantities. Accordingly, the Navy nonconcurred with the audit finding on "Developmental Test Funding for Short Range UAVs" and the audit recommendations.

Audit Response. We withdrew Finding D. after analysis of Navy comments to the draft report. The Navy provided a logical explanation that the DoD Budget Guidance Manual permitted the use of procurement funds. All parties concerned, including the Defense Acquisition Board, considered the Short Range UAV prototype systems built by the two competing contractors as nondevelopmental items because the prototype systems consisted of commercially available components that required minimal modifications and integration effort. Accordingly, the parties considered the tests performed as part of the selection process as system acceptance tests that are fundable with procurement funds in accordance with guidance in the DoD Budget Guidance Manual.

Details on managements' comments and audit responses are in Part II of the report, and the full texts of managements' comments are in Part IV.

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This report was prepared by the Acquisition Management Directorate, Office of the Inspector General for Auditing, DoD. Copies of the report can be obtained from the Information Officer, Audit Planning and Technical Support Directorate, (703) 614-6303 (DSN 224-6303).

Part I - Introduction

Background

The family of Unmanned Aerial Vehicles (UAVs) is being developed by DoD to complement the Military Departments' manned reconnaissance needs for the mid-1990s and beyond. The UAVs are autonomous vehicles designed to survive in high-threat environments and will provide battlefield commanders near real time, high-quality imagery of heavily defended areas during day and night operations. The primary missions of UAVs are reconnaissance, surveillance, and target acquisition. By using UAVs to perform these dangerous missions, DoD expects to increase the survivability of manned aircraft and to free pilots for missions that require the flexibility of manned aircraft.

In 1988, Congress directed the DoD to consolidate the management of the DoD nonlethal UAV programs because of the need for common and interoperable systems and to prepare an annual UAV Master Plan. In response, DoD established the UAV Executive Committee for oversight, formed the UAV Joint Project Office, and designated the Navy as the Executive Service. In 1991, DoD dissolved the UAV Executive Committee and assigned program oversight to the Defense Acquisition Board (DAB). DoD has submitted an annual UAV Master Plan to Congress yearly since 1989.

Of the family of UAVs, the Short Range, Close Range, and Medium Range UAV programs are managed by the DAB. Appendix A provides a description of the three UAV programs. DoD estimates that development and procurement costs for the three UAV programs will total $5.8 billion in then-year dollars from FY 1989 to beyond FY 2000.

Objectives

The audit objective was to evaluate the overall management of the UAV acquisition programs included in the calendar year 1991 DoD UAV Master Plan. Specifically, the audit determined whether the Short Range, Close Range, and Medium Range UAV programs were being cost-effectively developed and prepared for procurement. We followed our critical program management elements approach for the audit. Under this approach, the objectives and scope of the audit were tailored to the status of the three UAV programs in the acquisition process. In performing the audit, we reviewed requirements; acquisition planning; mission-critical computer resources; reliability, availability, and maintainability status; level of configuration control; test and evaluation; cost and schedule assessment; contracting; and production preparedness. We also reviewed related internal controls.

After the survey, we determined that additional audit work was not warranted for mission-critical computer resources; reliability, availability, and maintainability status; level of configuration control; and production preparedness (Appendix B). During the survey, we also identified issues in acquisition planning and test and evaluation, which are discussed in "Other

Matters of Interest." Part II addresses findings and recommendations pertaining to the remaining three program management elements of program requirements, cost and schedule assessment, and contracting.

Scope

This economy and efficiency audit was performed from May to November 1992 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD, and accordingly included such tests of internal controls as were deemed necessary. We obtained and reviewed acquisition strategies and plans, system operating requirements, contracts, cost data, logistics support plans, life-cycle-cost estimates, budgetary data, test and evaluation master plans, systems interface plans, training plans, and procurement data, dated from FY 1988 to FY 1992. We also interviewed DoD, Army, Navy, Air Force, and contractor officials responsible for the UAV programs. Appendix G lists the activities visited or contacted.

A lawyer from the Office of General Counsel, DoD, assisted in our review of developmental test funding for the Short Range UAV program.

Internal Controls

We assessed internal controls applicable to the critical program management elements of the three DAB-managed UAV programs. We evaluated internal control techniques, such as management plans and reports, written policies and procedures, design reviews, and various means for independent review of the program. The audit identified internal control weaknesses, as defined by Public Law 97-255, Office of Management and Budget Circular A-123, and DoD Directive 5010.38, relating to program requirements, contracting, and program funding.

We found that controls were not in place to ensure that surface launcher design concerns raised by the Air Force were satisfactorily resolved (Finding B). We found that controls were not in place to ensure that the appropriate methodology was used to compute progress payment entitlements on the Medium Range UAV contract (Finding C). Recommendations B.1.a., B.1.b., B.1.c., B.2., and C.1., if implemented, will correct these weaknesses. The final report will be provided to the senior officials responsible for internal controls within the Departments of the Navy and Air Force and the Defense Logistics Agency.

Prior Audits and Other Reviews

Since December 1988, the UAV program has been the subject of four audits by the General Accounting Office that were directly related to our audit objectives. Appendix C provides summaries of these audits.

Other Matters of Interest

During the audit, we identified three areas of concern. These areas were projected funding shortfalls for the Short Range, Close Range, and Medium Range UAVs; integration testing of the Medium Range UAV system; and the Short Range UAV maintainability demonstration.

Funding Shortfalls. DoD has not programmed sufficient funds to procure Short Range, Close Range, and Medium Range UAV systems. To address these shortfalls, the Joint Project Office (JPO) plans to extend system delivery schedules to match available funding.

Medium Range UAV Integration Tests. Although the JPO Medium Range UAV Program Office has been coordinating its acquisition with related program offices, systems integration remains a risk. The Medium Range UAV Program Office has identified numerous issues that may affect systems integration tests among the Medium Range UAV, the Common High Bandwidth Data Link-Shipboard Terminal, the Joint Service Imagery Processing System - Navy, the Tactical Aircraft Mission Planning System, the Advanced Tactical Air Reconnaissance System, the Common Data Link, the Modular Interoperable Surface Terminal, the Mission Support System, the F/A-18 aircraft, and the RF-16 aircraft. To coordinate its efforts with other test participants, the JPO Medium Range UAV Program Office has established Memorandums of Agreement with related program offices. In addition, the UAV Medium Range Program Office is holding Interface Control Working Group and Program Managers Summit meetings with them to assure that issues identified by the Program Office are resolved.

Short Range UAV Maintainability Demonstration. The technical test evaluation of Israel Aircraft Industries' Hunter UAV disclosed that defective components or line-replaceable units could not be identified through the UAV's built-in-test systems. The systems are internal fault detection systems that electronically identify and isolate system malfunctions. Properly working fault detection systems determine the operational status of the UAV and provide suitability information for evaluating UAV reliability, availability, and maintainability. During the technical evaluation test, the Hunter UAV fault detection systems detected only 23 of 90 possible faults and correctly identified only 1 of 90 malfunctioning line replaceable units. The JPO Short Range UAV Program Office plans to verify that the contractor has corrected shortcomings with the Hunter UAV fault detection systems during initial operational testing in

FY 1994. The Program Office needs to ensure that planned tests will verify that the Hunter UAV fault detection system will detect faults not detected during the technical test evaluation.

Part II - Findings and Recommendations

Finding A. Requirement for Medium Range Unmanned Aerial Vehicles

The Navy and Air Force had not updated their Medium Range UAV requirements. Documents justifying requirements did not correspond with force structure reductions after political and territorial changes in eastern Europe and the former Soviet Union. Consequently, the Navy and Air Force's acquisition requirements for Medium Range UAVs were overstated. As a result of our audit, the Navy and Marine Corps reassessed and reduced their Medium Range UAV requirement by 37 UAVs with a proposed acquisition cost of about $148 million. We concluded that the Air Force could also reduce its Medium Range UAV requirements by 100 air vehicles and 9 surface launchers with a combined acquisition cost of about $407.2 million.

Background

The Navy and Air Force had established acquisition requirements for a total of 525 Medium Range UAVs (Navy - 265 UAVs and Air Force - 260 UAVs). Navy and Air Force criteria for determining requirements follows.

Navy Criteria. The Office of the Chief of Naval Operations approved the "Operational Requirement (OR) for a Baseline Medium Range Remotely Piloted Vehicle" in March 1987. In the OR, the Navy established the methodology for the acquisition requirement of 265 Medium Range UAVs based on a requirement to deploy UAVs to 14 carrier air wings and to 6 Marine Corps F/A 18D squadrons. The Navy planned to assign 10 UAVs to each deployed carrier air wing (a total of 140 UAVs), and the Marine Corps planned to assign 12 UAVs to each F/A 18D squadron (a total of 72 systems). The remaining 53 UAVs (20 percent of the total UAV procurement) were to be held as attrition spares at Navy inventory control points. The Medium Range UAV "Manpower Estimate Report," (undated), stated that all operational and maintenance support for the UAVs would be provided by existing Navy and Marine Corps aircraft squadron personnel.

Air Force Criteria. An Air Force study, "Air Force Decision on Tactical Reconnaissance," completed in 1989, established the acquisition requirement for 260 Medium Range UAVs based on a force structure of five active F-16R (Reconnaissance) squadrons. The Air Force established a requirement for 20 UAVs per F-16R squadron (a total of 100 UAVs) based on the estimated number of UAVs needed for reconnaissance of fixed targets during the first 30 days of a major regional conflict. The Air Force stated that the F-16R squadrons would surface launch 80 percent of the UAVs and air launch 20 percent of the UAVs. To enable the five F-16R squadrons to launch 80 percent of their UAVs from the ground, the JPO planned to contract for

15 surface launchers (3 surface launchers per F-16R squadron). Of the remaining requirement of 160 UAVs, 150 were to be stored as wartime spares (approximately 30 UAVs for each F-16R squadron) and 10 were to be used for training.

According to the Manpower Estimate Report (the Report), the F-16R squadrons will operate and maintain the UAVs. The Report stated that 2.9 spaces per UAV (58 direct on- and off-equipment maintenance personnel) were required to maintain the 20 UAVs attached to each of the F-16R squadrons. This requirement equates to 290 maintenance personnel for the five F-16R squadrons. Also, the Report stated that the Air Force planned to fill the 290 billets with personnel who currently support the F-4 aircraft in the five Air Force Reconnaissance squadrons. However, the Report stated that the 290 billets may not be available if the F-4 aircraft is deleted from the inventory of the reconnaissance squadrons before the UAVs are fielded.

Quantitative Acquisition Requirements for Medium Range UAVs

Navy and Air Force acquisition requirements were overstated because the Navy and Air Force had not updated their Medium Range UAV acquisition requirements based on reductions in Navy and Air Force force structures.

Navy Acquisition Requirement. Since March 1987, the Navy has reduced its force structure for aircraft carriers from 14 to 11. The Navy OR provided for the procurement of 30 Medium Range UAVs for the 3 deployed carrier air wings being eliminated from the Navy's force structure. Another 7 Medium Range UAVs (20 percent of the reduced total UAV procurement) were to be held as attrition spares at Navy inventory control points for the 3 carrier air wings. Accordingly, the Navy no longer has an acquisition requirement for 37 Medium Range UAVs as a result of force structure reductions.

Air Force Acquisition Requirement. Since 1989, the Air Force has significantly reduced its planned F-16R squadron force structure, which correlated to its acquisition requirement of 260 Medium Range UAVs. Because of political and territorial changes in Eastern Europe and the former Soviet Union, the Air Force has significantly realigned its planned F-16R squadrons. Specifically:

o The Air Force has reduced its planned F-16R aircraft procurement from 108 aircraft to 54 aircraft. As a result, the Air Force effectively eliminated Medium Range UAV requirements related to two F-16R squadrons. Instead of assigning F-16R aircraft to 5 active F-16R squadrons, the Air Force plans to assign 36 F-16R aircraft to 2 National Guard reconnaissance squadrons and evenly divide the remaining 18 F-16R aircraft among 3 active Air Force composite wings.

o The Air Force plans to use only the two National Guard reconnaissance squadrons to surface launch Medium Range UAVs. As a result, the Air Force has eliminated the need to procure Medium Range UAV surface launchers to support three F-16R squadrons.

In reference to the Air Force requirements study, the Air Force was planning to procure 40 Medium Range UAVs for the two F-16R squadrons that were effectively eliminated by the force structure reduction. Another 60 Medium Range UAVs (30 UAVs for each F-16R squadron) were to be held as wartime spares for the two F-16R squadrons. In addition, the Air Force planned to procure nine surface launchers to support the three F-16R squadrons that will no longer surface launch Medium Range UAVs. Accordingly, the Air Force no longer has the infrastructure to support the acquisition of 100 Medium Range UAVs and nine surface launchers.

Validation of Requirements

At our request, on September 4, 1992, the JPO asked that the Navy and Air Force validate their Medium Range UAV requirements in view of force structure reductions.

Navy Response. On September 24, 1992, the Office of the Chief of Naval Operations responded that the Navy reduced its Medium Range UAV acquisition requirement by 37, from 265 to 228, based on its reduced force structure of 11 deployed carrier air wings. Therefore, the Navy will avoid Medium Range UAV proposed acquisition costs after FY 1998 of about $148 million for the 37 UAVs.

Air Force Response. On November 18, 1992, the Air Force responded that it had revalidated the continued need for 260 Medium Range UAVs based on the number of fixed targets that would require reconnaissance and surveillance during the first 30 days of a major regional conflict. Also, the Air Force responded that "while air launching a UAV improves the UAV's combat radius, it takes away a manned penetrating sortie." Accordingly, the Air Force asserted that the requirement to deploy 80 percent of the UAVs by surface launch and 20 percent of the UAVs by air launch remained valid. However, the Air Force, in validating its Medium Range UAV acquisition requirement, did not determine whether it was feasible to deploy, operate, and maintain 260 Medium Range UAVs during the first 30 days of a major regional conflict in consideration of its reduced F-16R squadron infrastructure.

Conclusion

The Air Force no longer has a valid requirement for 100 of the 260 Medium Range UAVs estimated to cost $400 million and 9 of the 15 surface launchers

estimated to cost $7.2 million. This reduction is based on the revised F-16R squadron infrastructure, which can support 160 Medium Range UAVs during the first 30 days of a major regional conflict. Savings resulting from the reduced requirement would occur after FY 1998.

Recommendation and Management Comments

We recommend that the Air Force Deputy Chief of Staff Plans and Operations reduce the Air Force's acquisition requirement for Medium Range UAVs by 100 and Medium Range UAV surface launchers by 9, based on the reduced F-16R squadron infrastructure.

Management Comments. The Air Force Deputy Chief of Staff, Plans and Operations, concurred wih the recommendation, stating that Medium Range UAV air vehicle and surface launcher requirements were revalidated. As a result, the Deputy Chief of Staff stated that the Air Force intends to reduce air vehicle requirements from 260 to 145 and to defer surface launcher requirements based on force structure limitations. Full text of management comments is in Part IV.

Finding B. Design Requirements for Surface Launcher

The Navy-led JPO did not adequately address and resolve Air Force concerns on the design of the Medium Range UAV surface launcher. This condition was caused by the JPO not adequately reassessing the surface launcher design when the Navy cancelled its ship launcher requirement and not properly resolving action items identified by the preliminary design review (PDR). Also, the JPO did not establish a joint program operating agreement with the Air Force to ensure that decisions concerning the surface launcher design were adequately coordinated. As a result, the JPO has contracted for a Medium Range UAV surface launcher that will not satisfy Air Force users' operational and maintenance requirements.

Background

Air Force Requirement. The Air Force report, "System Operational Requirements Document for an Unmanned Air Reconnaissance System," dated June 16, 1990, and revised September 11, 1991, requires the Medium Range UAV surface launcher design to be:

o simple and allow a minimum of platform handling;

o easily maintainable and designed to allow one person to lift, move, and operate the equipment safely;

o easily deployable;

o reliable;

o quick to turnaround; and

o inherently capable of sustaining its sortie rates in a combat environment.

Contract Requirement. On June 30, 1989, the JPO contracted with Teledyne Ryan Aeronautical Corporation to develop a common Medium Range UAV surface launcher to support Navy ship and Air Force ground launcher requirements. While trying to meet Navy requirements and yet achieve commonality with the Air Force, the JPO contracted for a surface launcher

design that did not fully satisfy Air Force users' operational and maintenance requirements. Specifically, the design did not satisfy Air Force users' requirements for simplicity and maintainability. The contract required the design of a manually deployed 300-foot launch cable that will require handling by more than one person to lift, move, and operate the surface launcher when individuals are in chemical warfare gear or during adverse weather. Also, the design was not easily maintainable because extensive time will be required to replace line-replaceable units within the UAV when on the surface launcher.

Joint Program Procedures. DoD Instruction 5000.2, part 12, section B, "Joint Programs," requires the lead DoD Component to establish and maintain joint program operating agreements with other participating Components to establish operating procedures for coordinating requirements affecting the other Components and for resolving problems and disagreements concerning the requirements. Also, part 9, section A, "Configuration Management," requires the lead DoD Component to develop and document mutual agreements and procedures for the configuration management of the item.

Preliminary Design Reviews. PDRs are conducted on each configuration item during the engineering and manufacturing phase of the acquisition process to evaluate the progress, technical adequacy, and risk resolution of the selected design approach. DoD Instruction 5000.2 does not give specific guidance to conduct the PDR but does require tailored application of Military Standard 1521B, "Technical Reviews and Audits for Systems, Equipments, and Computer Software," June 4, 1985. Military Standard 1521B states that the program manager provides formal acknowledgment of completing the PDR to the contractor after receiving the PDR minutes. The contracting agency sets the adequacy (acceptance) of the contractor's PDR performance by notification of:

o approval that the review was satisfactorily completed,

o contingent approval that the review is not considered completed until resolution of resultant action items, or

o disapproval if the review was seriously inadequate.

Acceptance should acknowledge that the PDR was conducted and resultant action items have been resolved to the Government's satisfaction.

Satisfaction of Air Force Users' Requirements

The Navy-led JPO has not taken the necessary actions to address Air Force surface launcher design requirements and to resolve documented surface launcher design concerns.

Navy Requirement Cancellation. In April 1990, the Navy cancelled its requirement for a Medium Range UAV ship launcher. As a result, contract requirements for the Medium Range UAV surface launcher design could have been modified and tailored to satisfy Air Force users' operational and maintenance requirements more fully. However, we found that no action had been taken by the JPO to modify surface launcher design requirements in the contract since the Navy's ship launcher requirement was cancelled.

Preliminary Design Review Action Items. The JPO held the PDR for the Medium Range UAV surface launcher in April 1992. At the PDR, the JPO documented 59 action items that Teledyne Ryan Aeronautical was required to resolve. On May 20, 1992, the JPO contingently approved the PDR, stating that the contractor had satisfactorily resolved 53 of the 59 action items. The JPO stated that final approval was contingent on the contractor's satisfactory resolution of the remaining six action items. Our review of the 53 action items accepted as resolved by the JPO disclosed that the JPO had accepted 25 action items as resolved before the contractor had completed appropriate corrective actions. In addition, the JPO had not established a tracking system to ensure that the contractor took appropriate corrective actions.

For example, 1 of the 25 PDR action items stated that to maintain the surface launcher as designed, more than one person would be required to access the tape or communications security equipment within the 2-minute time requirement. Without corrective action, the surface launcher design will not satisfy the Air Force's requirement for one person being able to lift, move, and operate (access) the equipment safely and may impact the Air Force's ability to sustain its sortie rates in a combat environment.

Appendix D lists three other examples of PDR action items requiring resolution. Based on our analysis, the JPO reinstated 7 of the 25 previously closed PDR action items as launcher design issues requiring further contractor action to resolve. The remaining 18 PDR action items have not been reopened but we believe they should be, including the PDR action item example discussed in the above paragraph.

Documented Air Force Users' Design Concerns. On August 7, 1992, the Air Force Air Combat Command sent a letter to the Air Force Operational Test and Evaluation Center that raised concerns as to whether the surface launcher design

would satisfy Air Force users' operational and maintenance requirements. With respect to the Air Force's stated user requirements, the letter identified 28 concerns with the surface launcher design. These concerns addressed operator safety, support equipment, ease of repairs, and power pallet issues.

For example, 1 of the 28 Air Force concerns involved the Air Force's operational requirements of minimum UAV platform handling and quick turnaround. To satisfy the two operational requirements, Air Force officials stated that maintenance personnel must be capable of replacing defective Medium Range UAV components while the UAV is mounted on the surface launcher. Instead, the surface launcher design will require user maintenance personnel to defuel the launcher-mounted UAV and unmount the UAV from the launcher before replacing defective UAV components. The JPO has not taken corrective action because it stated that the Air Force's quick turnaround requirement can be satisfied by Air Force maintenance personnel. After defueling and unmounting the defective UAV, personnel can mount a substitute Medium Range UAV air vehicle before the defective UAV is repaired. Although the JPO's proposal may meet the Air Force's turnaround operational requirement, the proposal does not satisfy the operational requirement of minimum platform handling. Appendix E lists three other examples of Air Force users' launcher design concerns that need to be addressed by the JPO.

Joint Service Participation

The JPO had not established a joint program operating agreement with the Air Force as required to ensure that decisions concerning the surface launcher design were adequately coordinated and resolved. In addition, the Air Force did not ensure that its requirements for and concerns with the surface launcher design were acted on by the JPO because the Air Force had not designated an office of primary responsibility to coordinate and address Air Force surface launcher requirements and concerns. In our opinion, the lack of a JPO joint program operating agreement and an Air Force office of primary responsibility significantly contributed to the JPO's not reassessing and modifying the surface launcher design contracted for when the Navy cancelled its requirement for the ship launcher and the JPO's prematurely closing out PDR action items affecting the satisfaction of Air Force users' requirements.

Conclusion

As contracted for, the JPO will procure a Medium Range UAV surface launcher that will not satisfy Air Force users' operational and maintenance requirements. Since the Navy cancelled its requirement for a ship launcher, the JPO and Air Force need to agree as to whether the Medium Range UAV surface launcher design as contracted for is acceptable, should be modified to satisfy Air Force users' requirements, or should be terminated and redesigned. The Air Force's ability to deploy, operate, and maintain Medium Range UAVs effectively from the surface will be compromised unless the surface launcher design problems are adequately resolved.

Recommendations and Management Comments

1. We recommend that the Director, Unmanned Aerial Vehicle Joint Project Office:

a. Reassess and modify as appropriate the Medium Range Unmanned Aerial Vehicle surface launcher design contracted for to satisfy stated Air Force users' operational and maintenance requirements.

b. Require Teledyne Ryan Aeronautical Corporation to resolve the 25 preliminary design review action items for the surface launcher that were closed before appropriate contractor corrective actions were taken.

c. Establish a joint program operating agreement with the Air Force for the Medium Range UAV surface launcher as required by DoD Instruction 5000.2, part 12, section B.

Management Comments. The Navy agreed with the finding conclusion that the Medium Range UAV surface launcher design contracted for will not satisfy Air Force user's operational and maintenance requirements. However, the Navy stated that the surface launcher design contracted for was agreed to by the Navy and the Air Force when the contract was awarded in 1989. The Navy stated that it was not in a position to fund the required contract modification cost without supplemental funding from the Air Force. The Navy contended that the Air Force, when given the alternative, chose to live with the existing surface launcher design rather than budget Air Force funds to cover the contract

modification costs. Accordingly, the Navy stated that it nonconcurred with Recommendation B.1.a. The Navy further stated that the point may be moot since the Air Force deferred the requirement for the surface launcher.

The Navy concurred with Recommendation B.1.b., stating that the UAV Joint Project Office will provide the Inspector General evidence for each of the 25 preliminary design review action items that the contractor has satisfactorily resolved the action item or that the Joint Project Office has reopened the action item for resolution by the contractor.

The Navy concurred with Recommendation B.1.c., stating that the UAV Joint Project Office will conclude a new agreement with the Air Force that establishes roles and responsibilities of the two Services with respect to the continued design and development of the Medium Range UAV. The agreement will include the Medium Range UAV surface launcher if the Air Force reinstates the requirement. Full text of management comments is in Part IV.

Audit Response. We agree that implementation of Recommendation B.1.a. is now moot because the Air Force deferred the requirement for the surface launcher.

2. We recommend that the Assistant Secretary of the Air Force (Acquisition) designate an office of primary responsibility for the Medium Range UAV surface launcher to coordinate and address Air Force requirements and design concerns with the JPO.

Management Comments. When responding to Finding A, the Air Force Deputy Chief of Staff, Plans and Operations, stated that the Air Force no longer planned to use Medium Range UAV surface launchers to deploy Medium Range UAVs based on force structure limitations. Therefore, the Air Force deferred its surface launcher requirements. In addition, he stated that the Air Force requires the capability to launch one air vehicle every hour to satisfy wartime taskings while the current surface launcher design is capable of launching only one air vehicle every 6 hours. Further, he stated that the UAV Joint Project Office had advised the Air Force that modifying the surface launcher design to increase the air vehicle launch rate would involve considerable expense. Full text of managements comments is in Part IV.

Finding C. Progress Payments

The Defense Contract Management Command's administrative contracting officer (ACO) did not ensure that the appropriate contract loss ratio factor was used when adjusting progress payment requests submitted by Teledyne Ryan Aeronautical Corporation on contract number N00019-89-C-0173. This condition occurred because the ACO did not use the results of contractor cost and schedule control (C/SC) system reviews performed after May 1992 to adjust the loss ratio factor used in future progress payment computations. Based on the estimated contract cost at completion, we estimated that from $3.1 million to $11.6 million in premature progress payments were paid to the contractor. The unearned progress payments resulted in the Government unnecessarily incurring as much as $400,000 in interest annually to fund the premature progress payments.

Background

In June 1989, the JPO awarded Teledyne Ryan Aeronautical Corporation a fixed-price incentive contract with a ceiling price of $186.8 million for 30 prototype Medium Range UAVs. Contract number N00019-89-C-0173 required the contractor to have an accounting system that satisfied C/SC system requirements as stated in the DoD Federal Acquisition Regulation Supplement subpart 52.234-7001. Compliant C/SC systems ensure that contractors have effective management control systems that relate cost, schedule, and technical performance. Also, compliant C/SC systems ensure that DoD managers have accurate, valid, timely, and auditable contract performance information on which to make responsible management decisions.

DoD Review. The Services are responsible for determining that their contractors have and implement C/SC systems that meet the Federal Acquisition Regulation (FAR) criteria. DoD Instruction 5000.2, "Defense Acquisition Policies and Procedures," February 23, 1991, requires the Services to validate that the contractor's C/SC system meets the FAR criteria and operates in accordance with the criteria through subsequent application reviews of the contract. The procuring activity is responsible for establishing a team to conduct the subsequent application review or other C/SC system review. The Defense Contract Management Command is responsible for monitoring contractor implementation of the C/SC system and application of the C/SC system to contracts. The Defense Contract Audit Agency (DCAA) is

responsible for conducting audits of contractor systems and assisting the Defense Contract Management Command and procuring organizations with contract administrative and oversight functions.

Progress Payment Limitations. FAR, subpart 32.503-6, requires the contracting officer to compute a loss ratio factor and adjust future progress payment requests to exclude the amount of the potential loss when the sum of total costs incurred plus the estimated costs to complete the performance exceed the contract price. In May 1992, the ACO began applying a contract loss ratio factor of 98.1 percent to adjust subsequent progress payment requests based on contract cost and performance information in Teledyne Ryan Aeronautical's C/SC system. The ACO projected a contract cost at completion of $190.4 million ($3.6 million more than the contract ceiling price).

Cost and Schedule Control System Reviews

The ACO did not ensure that the appropriate contract loss ratio factor was used when adjusting progress payment requests submitted by Teledyne Ryan Aeronautical Corporation on contract number N00019-89-C-0173. This condition occurred because the ACO did not use the results of contractor C/SC system reviews performed after May 1992 to adjust the loss ratio factor used in future progress payment computations. Based on their C/SC system reviews, the ACO, the procuring organization, and the DCAA determined the contract loss ratio factors, as shown in Table 1.

Table 1. Loss Ratio Factor Determinations

Reviewer	Date Review Completed	Estimated Contract Cost at Completion	Computed Loss Ratio Factor
ACO	July 1992	$229,869,000	81.3 percent
Procuring Activity	August 1992	$242,908,000	76.9 percent
DCAA	October 1992	$207,175,000	90.2 percent

Because of identified shortcomings in the validity of data in the C/SC system, the reviewers developed independent estimates of costs to complete the contract. Because different methods were used, the reviewers' estimates of the cost to

complete the contract and resulting contract loss ratio factors varied. Regardless of the method used, the three reviewers determined contract loss ratio factors that significantly differed from the May 1992 98.1 percent loss ratio factor being applied by the ACO against contractor progress payment requests.

Despite the results of the C/SC system reviews, the ACO had not adjusted the contract loss ratio factor downward since May 1992. When asked, the ACO stated that he was delaying adjusting the factor downward until Teledyne Ryan Aeronautical completed installation of a new C/SC system. The contractor initially estimated that the new C/SC system would be installed by April 1992. Subsequently, the contractor had extended the estimated installation date to October 1992. As of January 27, 1993, the new C/SC had yet to be fully implemented. In our opinion, the ACO was not protecting the Government's interest by delaying the decision to adjust contractor progress payment requests.

Potential Effect on Progress Payments

We estimated that from $3.1 million to $11.6 million in premature progress payments have been paid to the contractor based on the loss ratio factors determined after May 1992 by the ACO, procuring activity, and DCAA. We also estimated that the Government will incur unnecessarily as much as $400,000 in annual interest by not adjusting downward the loss ratio factor.

Conclusion

Based on the results of C/SC system reviews completed subsequent to May 1992, we concluded that the ACO needs to develop an appropriate contract loss ratio factor to be applied in adjusting future contract progress payment requests to protect the Government's interest. The ACO will need to reconcile this estimate at completion with the procuring activity and DCAA in developing the appropriate loss ratio.

Recommendations, Management Comments, and Audit Response

We recommend that the Administrative Contracting Officer, Defense Contract Management Area Operations, San Diego:

1. Determine the most appropriate contract loss ratio factor to apply against progress payment requests on contract number N00019-89-C-0173, based on a reconciliation between the Administrative Contracting Officer, the procuring organization, and the Defense Contract Audit Agency on estimated contract cost at completion.

2. Adjust future Teledyne Ryan Aeronautical Corporation progress payment requests on contract number N00019-89-C-0173, based on the newly developed contract loss ratio.

Management Comments. The draft report recommendations were addressed to the Contracting Officer, Naval Air Systems Command. The Navy advised that Recommendations C.1. and C.2. should be redirected to the Administrative Contracting Officer, Defense Contract Management Area Operations, San Diego. In this respect, the Navy stated that it concurred with the Defense Logistics Agency's comments on Recommendations C.1. and C.2.

The Defense Logistics Agency concurred with Recommendations C.1. and C.2., stating that the Administrative Contracting Officer, Defense Contract Management Area Operations, San Diego, was in the process of reconciling and determining the most appropriate contract loss ratio factor on contract number N00019-89-C-0173 and would adjust future contract progress payment requests based on the newly developed contract loss ratio. However, the Defense Logistics Agency nonconcurred with the report's contention that the administrative contracting officer's delay in adjusting contract loss ratio factors applied against contract progress payment requests was an internal control deficiency. In the Defense Logistics Agency's opinion, no estimated contract cost at completion estimates were demonstrably more valid than the estimate the administrative contracting officer decided to use for progress payment purposes. Regardless of the nonconcurrence, the Defense Logistics Agency stated that it was revising policy guidance to emphasize to administrative contracting officers the need to document:

o the rationale used for selecting the estimated contract cost at completion for progress payment purposes and

o the plan for future progress payment's estimated contract cost at completion reviews based on contract risk assessment.

Full text of managements comments is in Part IV.

Audit Response. In response to management comments, we redirected Recommendations C.1. and C.2. in the draft report from the Contracting Officer, Naval Air Systems Command, to the Administrative Contracting Officer, Defense Contract Management Area Operations, San Diego. Defense Logistics Agency comments received were responsive to Recommendations C.1. and C.2.

Part III - Additional Information

Appendix A. Descriptions of Unmanned Aerial Vehicles

The three UAV programs managed by the DAB are described below:

Short Range Unmanned Aerial Vehicle System. The Short Range UAV system is the developmental baseline for the family of Short Range, Close Range, Vertical Takeoff and Landing, and Endurance UAVs. The Short Range UAV system acquisition strategy is designed to ensure interoperability and maximize commonality among the family of UAVs through the fielding and evaluation of an initial baseline configuration and future block upgrades to meet the Army and Marine Corps' full operational requirements. The Short Range UAV system will provide near real time reconnaissance, surveillance, and target acquisition capabilities as much as 150 kilometers beyond the forward line of own troops and will meet the requirements of the Army commanders at command division level and Marine Corps commanders of the expeditionary brigades.

On August 25, 1989, the UAV Executive Committee approved Milestone II (Developmental Approval)/Milestone IIIA (Prototype Production Approval) for the Short Range UAV system. During Milestone II/IIIA, contracts were awarded to two contractors to develop and test prototype systems. On January 19, 1993, the DAB approved Milestone IIIB (Low-Rate Initial Production Approval) for seven additional Short Range UAV systems and plans to hold the Milestone III (Full-Rate Production) program review in the spring of 1995.

The JPO estimates that the cost to develop and procure 50 Short Range UAV systems will total about $2.5 billion in then-year dollars.

Close Range Unmanned Aerial Vehicle System. The Close Range UAV system acquisition strategy is to procure a system consisting of integrated off-the-shelf technologies that have a high degree of interoperability and commonality with the Short Range UAV system. The Close Range UAV system will provide near real time reconnaissance, surveillance, and target acquisition capabilities as much as 30 kilometers beyond the forward line of own troops and will meet the requirements of the Army and Marine Corps commanders at division and subordinate levels of command.

On January 30, 1990, the UAV Executive Committee approved Milestone 0 (Concept Studies Approval) for the Close Range UAV system. During Milestone 0, contracts were awarded to six contractors to develop competitive

air vehicle prototypes and to three contractors to develop competitive air vehicle payload prototypes. The DAB had planned to hold the Milestone I (Concept Demonstration Approval)/Milestone II (Developmental Approval) program review in September 1993 but has delayed the review indefinitely until funding issues are resolved.

In 1992, the Under Secretary of Defense for Acquisition designated the Close Range UAV program as a Defense Acquisition Pilot Program in accordance with Public Law 101-510. The JPO estimates that the cost to develop and procure 172 Close Range UAV systems will total about $1 billion in then-year dollars.

Medium Range Unmanned Aerial Vehicle System. The Medium Range UAVs are small profile, high-speed, fully autonomous vehicles that are capable of air and ground launches. With the Advance Tactical Air Reconnaissance System mission payload, the air vehicles are being developed to support reconnaissance requirements for the Navy, Air Force, and Marine Corps in the late 1990s and beyond. The Medium Range UAVs will be used to collect imagery data on fixed targets at ranges as much as 650 kilometers from launch point.

On June 22, 1989, the UAV Executive Committee approved Milestone II (Development Approval) for the Medium Range UAV system. Immediately thereafter, the JPO awarded a fixed-price incentive contract, totaling $69.6 million, to Teledyne Ryan Aeronautical Corporation to develop and test two composite Medium Range UAVs in June 1989. The JPO restructured the contract in June 1991 to accommodate structural and Advance Tactical Air Reconnaissance System configuration changes. As a result of the program restructuring, the JPO added the requirement for the development and testing of 27 metallic Medium Range UAVs and increased the contracted cost to $186.8 million. The DAB had planned to hold a special program review in July 1993 but has delayed the review indefinitely until the Navy completes a successful critical design review. The Milestone IIIA (Low-Rate Initial Production Approval) program review is planned for December 1995.

The JPO estimates that the cost to develop and procure 525 Medium Range UAV systems will total about $2.3 billion in then-year dollars.

Appendix B. Areas Not Requiring Further Review

During the survey phase of the audit, we determined that additional audit work was not warranted for the following program management elements.

Mission-Critical Computer Resources. The Short Range UAV Program Office was adequately managing mission-critical computer resources. As required by DoD Standard 2167, "Defense System Software Development," February 29, 1988, the contractor was generating software engineering changes and software discrepancy reports. The Program Office was maintaining visibility over the contractor's software configuration management system and obtaining required software documentation.

Similarly, the Close Range UAV Program Office had prepared a "Computer Resources Life-Cycle Management Plan," December 23, 1991, to manage mission-critical computer resources in accordance with DoD Instruction 5000.2. The Plan stressed the use of commercial off-the-shelf components, nondevelopmental items, and reusable hardware and software from the Short Range UAV program.

The Medium Range UAV Program Office was also effectively monitoring mission-critical software resources development. The Program Office was receiving monthly software status reports from the contractor and was planning to hold Computer Resource Working Group quarterly meetings.

Reliability, Availability, and Maintainability Status. The Short Range UAV Program Office had determined the inherent reliability, availability, and maintainability status for the Short Range UAV based on a technical evaluation test completed in June 1992. The Program Office plans to determine the operational reliability, availability, and maintainability status of the Short Range UAV during operational tests in FY 1994.

The Close Range UAV Program Office was estimating its reliability, availability, and maintainability program status based on available Short Range UAV test results. The Short Range UAV test results should be representative because of the high degree of interoperability and commonality of components planned between the two UAV programs.

The Medium Range UAV contractor was performing developmental tests to provide an initial estimate of the expected reliability, availability, and maintainability for the air vehicle. Accordingly, the Medium Range UAV Program Office will have reliability, availability, and maintenance estimates available before the low-rate initial production decision planned for late FY 1995.

Level of Configuration Control. The Short, Close, and Medium Range UAV Program Offices were adequately controlling the configuration design of UAV programs in accordance with requirements in DoD Instruction 5000.2. Specifically, the Short Range UAV configuration management officer was tracking contractor engineering change requests and engineering change orders. Further, the Program Office had held required functional configuration audits in accordance with Military Standard 490, "Specification Practices," June 4, 1985.

The Close Range UAV Program Office had developed plans necessary to control the configuration as required by DoD Instruction 5000.2. The plans developed included the "Configuration Management Plan," January 27, 1992, and the "Technical Data Management Plan," January 30, 1992.

Similarly, the Medium Range UAV Program Office had developed required configuration control plans. The plans developed included the "Configuration Management Plan" and a draft "Joint Configuration Management Plan for the Medium Range UAV." In addition, the Program Office had established a Configuration Control Board to review contractor engineering change proposals, deviation requests, and waiver requests.

Production Preparedness. This program management element was only applicable to the Short Range UAV program. The Short Range UAV Program Office had prepared the required production preparedness reports for the two Short Range UAV contractors in the spring of 1991. The Program Office did not identify any high-risk areas in its production preparedness assessments.

Appendix C. Prior Audits and Other Reviews

On September 4, 1992, the General Accounting Office (GAO) issued Report No. GAO/NSIAD 92-311 (Office of the Secretary of Defense [OSD] Case No. 9141), "More Testing Needed Before Production of Short Range System." The GAO found that sufficient testing had not been performed to demonstrate that the Short Range UAV system was ready for production. GAO stated that DoD planned to start production based on limited testing that did not adequately address several critical system performance capabilities. Accordingly, GAO concluded that DoD would be committing to the acquisition of a largely unproven system if production was started as scheduled. GAO recommended that the Secretary of Defense defer the limited production until realistic operational testing provides reasonable assurance that the system will perform satisfactorily. Although GAO did not obtain official agency comments on the report, the JPO nonconcurred with the recommendations, stating that a comprehensive evaluation of the system's performance had been accomplished through developmental testing. On January 19, 1993, the DAB approved Low-Rate Initial Production for seven Short Range UAV systems.

On March 25, 1991, GAO issued Report No. GAO/NSIAD 91-2 (OSD Case No. 8563), "Unmanned Aerial Vehicles: Medium Range System Components Do Not Fit." The GAO found that the Advance Tactical Air Reconnaissance System payload would not fit in the Medium Range UAV and that the UAV's cooling system may be inadequate. The GAO recommended that the Secretary of Defense ensure that the solution to the payload fit problem preserve the commonality goals of the Medium Range UAV, Advance Tactical Air Reconnaissance System, and Joint Services Imagery Processing System programs. The GAO also recommended that the Services obtain advance written concurrence or nonconcurrence from program offices for proposed changes in separately developed inter-related programs to ensure that integration problems do not occur in future programs. The DoD responded that the fit problem would be resolved by redesigning the Medium Range UAV to accommodate the Advance Tactical Air Reconnaissance System. The DoD further responded that the operational scenario in which the cooling capability could be exceeded was low risk. In this respect, the UAV Program Manager proposed a design change to reduce the risk of overheating. The DoD also stated that a mechanism already existed, through configuration control boards, to ensure changes in a subsystem of one program are coordinated with other related programs.

On September 28, 1990, GAO issued Report No. GAO/NSIAD 90-234 (OSD Case No. 8410), "Realistic Testing Needed Before Production of Short Range System." GAO found that the Short Range UAV acquisition strategy provided

for testing in an environment not representative of where the system is to be deployed. GAO also reported that DoD planned to begin full-rate production of the Short Range UAV system before verifying that this system could be modified to meet Navy requirements. GAO recommended that the Secretary of Defense require operational testing of the Short Range UAV in diverse, realistic environments to provide reasonable assurance that it will meet requirements before permitting limited production of the land-based UAV system. GAO also recommended that the Secretary limit Short Range UAV system production until satisfactory performance of the Navy variant is demonstrated. DoD stated that the system's acquisition strategy and test program were consistent with applicable DoD directives and that the system would be tested in representative operational environments. DoD responded that an adequate evaluation of the system's operational effectiveness and suitability could be accomplished without testing in all environments in which the system may be employed. DoD also stated that a Navy variant would be operationally tested before the full-rate production decision is made.

On December 9, 1988, GAO issued Briefing Report No. GAO/NSIAD 89-41BR (OSD Case No. 7481-A), "Assessment of DoD's Unmanned Aerial Vehicle Master Plan." GAO found that the DoD UAV Master Plan promised some commonality in Service UAVs by providing for an affordable family of UAV systems. This family of systems will maximize commonality consistent with different Service operational missions and environments. GAO also commented that the Master Plan did not include lethal UAVs and target drone programs and did not address potential duplication between UAVs and manned aircraft that perform the same or similar missions. The report contained no recommendations. DoD generally agreed with the evaluation.

Appendix D. Examples of Action Items From the Surface Launcher Preliminary Design Review

Action Item	Affect	Status
Center of Gravity Shift - The air vehicle's center of gravity appears to shift due to fuel burn-off while awaiting launch.	A shifting of the UAV on the surface launcher will impact the predictability of UAV flight. As a result, the UAV is incapable of sustaining required Air Force combat sortie rates.	JPO Action: The JPO closed the action item stating the issue is to be addressed at the PDR held for the Medium Range system. However, the JPO did not address the issue at the PDR held for the Medium Range UAV system. JPO Audit Response: Based on our analysis, the JPO reopened this action item for contractor resolution.
Support Equipment - The contractor did not identify the required support equipment for surface launcher operations and maintenance.	An identification of necessary support equipment is required to determine whether the surface launcher can be easily maintained and deployed in accordance with stated Air Force users' requirements.	JPO Action: The JPO closed the action item stating the issue is to be addressed at the support equipment PDR to be held in calendar year 1993. JPO Audit Response: The JPO did not reopen the action item. In our opinion, the action item should remain open until it is resolved by the contractor.
Safety Radius - The operational ground crews, limited by the 300-foot control cable, may be too close to the launcher if there is an explosion.	As designed, the surface launcher cannot be safely operated by operational ground crews if there is a launch accident with compound detonation of booster, air vehicle, and power pallet fuels.	JPO Action: The JPO closed the action item based on the contractor's promise to reassess the potential effect of compound detonations. JPO Audit Response: Based on our audit analysis, the JPO reopened the action item because the contractor had not followed through on his promise.

Appendix E. Examples of Air Force Concerns on the Surface Launcher Design

Concern	Affect	Status
The medium range UAV can not be transported on the surface launcher.	The Air Force requirement for a minimum of UAV platform handling and necessary support equipment will not be satisfied if the Medium Range UAV cannot be transported on the surface launcher.	JPO Action: The JPO does not plan to take action, stating that using the launcher to transport a UAV ties up the launcher and would not alleviate the requirement for additional transport equipment. Adequacy of JPO Response: The JPO response does not consider the Air Force requirement for ease of deployment and a minimum of platform handling.
The compressor unit should have an automatic moisture-drain system installed.	Current design requires operators to drain the system manually every 30 days. The Air Force stated that this manpower-intensive effort does not meet its austere operational requirements.	JPO Action: The JPO does not plan to take action, stating that the compressor system has a manual drain, which is functional, and the operational impact appears to be minimal. Adequacy of JPO Response: The JPO response does not take into consideration the cost of Air Force manpower to drain the compressor unit every 30 days versus the cost of installing an automatic moisture-drain system. In our opinion, the JPO needs a cost tradeoff analysis before an informed decision can be made concerning the Air Force's request.
There is no fuel indicator on the UAV.	During fueling, fuel overflow may contaminate personal chemical warfare gear.	JPO Action: The JPO does not plan to take action. Adequacy of JPO Response: Lack of JPO action may adversely affect the safety of Air Force maintenance personnel.

Appendix F. Summary of Potential Benefits Resulting From Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
A.	Economy and Efficiency. Reduce the number of Air Force Medium Range UAVs to be procured from 260 to 160 and related surface launchers to be procured from 15 to 6 based on the reduced F-16-R infrastructure.	Funds put to better use. Air Force could avoid as much as $4.8 million in procurement costs over the Future Years Defense Program as result of their deferred requirement for Medium Range UAV surface launchers.*
B.1.a.	Internal Control and Compliance with Regulation. Will ensure that the Medium Range UAV surface launcher design contracted for satisfies Air Force users' operational and maintenance requirements.	Nonmonetary.

* Cost avoidance broken out by fiscal year ($ million):

1996	1997	1998	Total
$1.6	$1.6	$1.6	$4.8

In addition, costs as much as $407.2 could be avoided after FY 1998 as a result of the reduced Medium Range UAV requirement. The Navy and the Marine Corps have reduced their Medium Range UAV requirements avoiding costs as much as $148 million after FY 1998.

Appendix F. Summary of Potential Benefits Resulting From Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
B.1.b.	Internal Control and Compliance with Regulation. Will ensure that review action items identified at the Medium Range UAV surface launcher preliminary design review are satisfactorily resolved in accordance with Military Standard 1521B.	Nonmonetary.
B.1.c.	Internal Control. Will enhance communication and coordination between the JPO and the Air Force on the Medium Range UAV surface launcher.	Nonmonetary.
B.2.	Internal Control. Will enhance communication and coordination between the JPO and the Air Force on the Medium Range UAV surface launcher.	Nonmonetary.
C.1.	Internal Control and Compliance with Regulations. Will ensure that the most appropriate contract loss ratio factor is applied against future progress payment requests on contract number N00019-89-C-0173.	Unquantifiable. A loss ratio factor had not been determined.
C.2.	Economy and Efficiency. Will apply the most appropriate contract loss ratio factor against future progress payment requests on contract number N00019-89-C-0173.	Unquantifiable. A loss ratio factor had not been determined.

Appendix G. Activities Visited or Contacted

Office of the Secretary of Defense

Office of the Under Secretary of Defense for Acquisition, Washington, DC
Office of the Director, Defense Research and Engineering, Washington, DC
Office of the Assistant Secretary of Defense (Command, Control, Communications and Intelligence), Washington, DC
Office of the Assistant Secretary of Defense (Production and Logistics), Washington, DC
Office of the Assistant Secretary of Defense (Program Analysis and Evaluation), Washington, DC
Office of the Comptroller of the Department of Defense, Washington, DC
DoD Coordinator for Drug Enforcement Policy and Support, Washington, DC
Unmanned Aerial Vehicle (UAV) Offices:

- Joint Project Office, Washington, DC
- Close Range UAV Program Office, Huntsville, AL
- Medium Range UAV Program Office, Washington, DC
- Short Range UAV Program Office, Huntsville, AL
- Very Low Cost UAV Program Office, Quantico, VA

Department of the Army

Deputy Chief of Staff, Operations and Plans, Washington, DC
U.S. Army Materiel Command, Alexandria, VA
U.S. Army Missile Command, Huntsville, AL

Department of the Navy

Assistant Secretary of the Navy (Research, Development and Acquisition), Washington, DC
Naval Air Systems Command, Arlington, VA
Naval Center for Cost Analysis, Washington, DC
Pacific Missile Test Center, Point Mugu, CA

Department of the Air Force

Office of the Deputy Chief of Staff Plans and Operations, Washington, DC
Air Combat Command, Langley, VA
Air Force Materiel Command, Aeronautical Systems Center, Wright-Patterson Air Force Base, OH

Other Defense Organizations

Defense Contract Audit Agency, San Diego, CA
Defense Contract Management Area Operations, San Diego, CA

Non-DoD Organizations

U.S. General Accounting Office, Dayton, OH
U.S. General Accounting Office, Huntsville, AL

Contractor

Teledyne Ryan Aeronautical Corporation, San Diego, CA

Appendix H. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition
Comptroller of the Department of Defense
Unmanned Aerial Vehicle (UAV) Offices:

Joint Project Office
Close Range UAV Program Office
Medium Range UAV Program Office
Short Range UAV Program Office

Department of the Army

Secretary of the Army
Inspector General, Department of the Army

Department of the Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Naval Air Systems Command

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Deputy Chief of Staff, Plans and Operations
Air Combat Command

Non-Defense Activities

Office of Management and Budget
U.S. General Accounting Office, National Security International Affairs Division, Technical Information Center

Chairman and Ranking Minority Member of each of the following Congressional Committees and Subcommittees:

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Operations
House Subcommittee on Legislation and National Security, Committee on Government Operations

Part IV- Management Comments

Office of the Under Secretary of Defense for Acquisistion Comments

Final Report Reference

OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301 3000

ACQUISITION

13 APR 1993

Mr. Donald E. Reed
Director,
Acquisition Management Directorate
Office of the Inspector General
400 Army Navy Drive
Arlington, VA 22202-2884

Dear Mr. Reed:

I am responding to the Draft Audit Report on the Acquisition of the Unmanned Aerial Vehicles (UAV), project number 2AS-0040. While there were no findings or recommendations addressed to USD(A), the following general comments are provided to improve the accuracy of the report.

Finding A discusses reducing Medium Range (MR) UAV requirements due to force structure reductions. The Joint Requirements Oversight Council (JROC) 12 January 1993 memorandum requested that the UAV Special Study Group further review UAV requirements and systems in light of a changed threat and the corresponding force structure and funding changes. This review is to be briefed to the JROC on 13 May 1993. The outcome of this review may impact MR UAV procurement quantities for both the Navy and Air Force.

25 In Appendix A, page 27, reference is made to the Defense Acquisition Board (DAB) program reviews for the Close Range (CR) and MR UAV systems. The CR UAV Milestone I/II planned for September 1993 has been delayed until funding issues are resolved. Likewise the MR UAV program review planned for July 1993 will be rescheduled after a successful Critical Design Review is completed by the Navy.

Thank you for the opportunity to review and comment on the draft report. I hope this information is useful as you finalize your report.

Sincerely,

Frank Kendall
Director
Tactical Systems

Department of the Navy Comments

THE ASSISTANT SECRETARY OF THE NAVY
(Research, Development and Acquisition)
WASHINGTON, D C 20350-1000

MAY 4 1993

MEMORANDUM FOR THE DEPARTMENT OF DEFENSE ASSISTANT INSPECTOR GENERAL FOR AUDITING

Subj: DRAFT AUDIT REPORT ON THE ACQUISITION OF UNMANNED AERIAL VEHICLES (Project No. 93-2AS-0040)

Ref: (a) DODIG Memorandum of 16 February 1993

Encl: (1) DON Response to Draft Audit Report

In response to your memorandum, reference (a), we have reviewed the subject audit report. Detailed comments are forwarded as enclosure (1).

Edward C Whitman

Edward C. Whitman

Department of the Navy Response

to

DODIG Draft Audit Report of 16 February, 1993

on

The Acquisition of Unmanned Aerial Vehicles
Project No. (93-2AS-0040)

Finding A:

The Navy and Air Force had not updated their Medium Range UAV requirements. Documents justifying requirements did not correspond with force structure after political and territorial changes in eastern Europe and the former Soviet Union. Consequently, the Navy and Air Force's acquisition requirements for Medium Range UAVs were overstated. As a result of our audit, the Navy and Marine Corps reassessed and reduced their Medium Range UAV requirement by 37 UAVs with a proposed acquisition cost of about $148 million. We concluded that the Air Force could also reduce its Medium Range UAV requirements by 100 air vehicles and 9 surface launchers with a combined acquisition cost of about $407.2 million.

DON Position:

Partially Concur. In response to questions by the DODIG the UAV Joint Project Office (JPO) requested a validation of the Medium Range (MR) UAV requirement by the Chief of Naval Operations. The Chief of Naval Operations responded, ltr Ser N880D4/2U605289 of 24 September 1992, by reducing Navy requirements for the MR UAV because of the reduction in planned deployable carrier air wings, at the same time the Marine Corps requirement of 72 MR UAVs was validated. This DON position will be reviewed by the Joint Requirements Oversight Council (JROC) on 13 May, until such time the position is not considered final. The finding does not clearly define the auditor's methodology in computing the monetary savings asserted, and while monetary savings are probable, it is premature to assess total savings at this time.

Recommendation A:

We recommend that the Air Force Deputy Chief of Staff Plans and Operations reduce the Air Force's acquisition requirement for Medium Range UAVs by 100 and Medium Range UAV surface launchers by 9 based on the reduced F-16R squadron infrastructure.

DON Position:

Recommendation not directed at, or within control of, the DON.

Finding B:

The Navy-led JPO did not adequately address and resolve Air Force concerns on the design of the Medium Range UAV surface launcher. This condition was caused by the JPO not adequately reassessing the surface launcher design when the Navy canceled its ship launcher requirement and not properly resolving action items identified by the preliminary design review (PDR). Also, the JPO did not establish a joint program operating agreement with the Air Force to ensure that decisions concerning the surface launcher design were adequately coordinated. As a result, the JPO has contracted for a Medium Range UAV surface launcher that will not satisfy Air Force users' operational and maintenance requirements.

DON Position:

Partially concur. The MR UAV surface launcher design is based upon the Detail Specification requirement for the subject contract. USAF representatives participated in the development of the Detail Specification package and were on both the Source Selection team and the original Preliminary Design Review (PDR) team which reviewed these items in 1989. Therefore, the surface launcher contracted for is based upon the launcher design that was agreed to by both parties at the time of contract award. At the time of the contract modification in 1991 and subsequent PDRs, issues were raised about the suitability of the ground launcher and its ability to meet several requirements of the USAF. However, addressing these issues to the satisfaction of the USAF would have necessitated modifying the contract and in turn increased costs. Modifications to the airframe had already increased contract costs to the limit of available funds. When given the choice between executing the modifications with USAF budgeted funds or living with the existing surface launcher design the USAF chose the latter course of action.

The JPO and the USAF established a Memorandum of Agreement in 1985 assigning responsibility for air vehicle development to the DON and payload development to the USAF. This agreement satisfies DOD Instruction 5000.2, part 12, section B. However, it is vague and it has been overcome by events, most notably the Congressional action chartering the JPO. The DON agrees with the Inspector General that the practice of closing action items solely on the basis of planned activity by the contractor is unsatisfactory. The DON does not dispute either finding, but does dispute the inference that these shortcomings precipitated the USAF design concerns. The active participation at design review meetings by the USAF and their involvement in the development of the specification lead the DON to conclude that lack of communication or coordination is not the cause for any deficiencies with the present surface launcher design.

The point may become moot because on 16 April 1993 the USAF Air Combat Command acknowledged the reductions in MR UAV quantities

discussed in Finding (A) and also deferred their requirement for a ground launcher. The reduction in the required quantity of MR UAVs and the deferral of the surface launcher requirement are subject to review by the JROC.

Recommendation B1:

We recommend that the Director, Unmanned Aerial Vehicle Joint Project Office:

a) Reassess and modify as appropriate the Medium Range Unmanned Aerial Vehicle surface launcher design contracted for to satisfy stated Air Force users' operational and maintenance requirements.

DON Position:

Do not concur. The DON and the Air Force have deferred the requirement for a surface launcher. If the JROC affirms this decision a redesign will not be required at this time. As a part of the MR UAV development contract two surface launchers will be delivered by Teledyne Ryan Aeronautical (TRA) Corporation. The Navy will work to insure that all known requirements are incorporated into the design to the extent that contract modifications are not required.

b) Require Teledyne Ryan Aeronautical Corporation to resolve the 25 preliminary design review action items for the surface launcher that were closed before appropriate contractor corrective actions were taken.

DON Position:

Concur. The UAV JPO will provide evidence that TRA has taken satisfactory corrective measures on any action item that is now closed and is in dispute by the Inspector General. Any action items for which closing actions can not be documented will be reopened. A report detailing these actions will be forwarded to the Inspector General no later than 1 July 1993.

c) Establish a joint program operating agreement with the Air Force for the Medium Range UAV surface launcher as required by DoD Instruction 5000.2, part 12, section B.

DON Position:

Concur. The present MOA lacks sufficient detail and was written prior to the 1988 Congressional action chartering the UAV JPO. There is a meeting of the JROC, scheduled for 13 May 1993, at which UAV requirements will be determined. Within 120 days of this meeting the UAV JPO will conclude a new agreement with the USAF establishing roles and responsibilities of the two services with respect to continued design and development of the MR UAV, to include the surface launcher if it is still a requirement.

Recommendation B2:

We recommend that Assistant Secretary of the Air Force (Acquisition) designate an office of primary responsibility for the Medium Range UAV surface launcher to coordinate and address Air Force requirements and design concerns with the JPO.

DON Position:

Recommendation not directed at, or within control of the DON.

Finding C:

The Defense Contract Management Command's Administrative Contracting Officer (ACO) did not ensure that the appropriate contract loss ratio factor was used when adjusting progress payment requests submitted by Teledyne Ryan Aeronautical Corporation on contract number N00019-89-C-0173. This condition occurred because the ACO did not use the results of contractor cost and schedule control (C/SC) system reviews performed after May 1992 to adjust the loss ratio factor used in future progress payment computations. Based on the estimated contract cost at completion, we estimated that from $3.1 million to $11.6 million in premature progress payments were paid to the contractor. The unearned progress payments resulted in the Government unnecessarily incurring as much as $400,000 in interest annually to fund the premature progress payments.

DON Position:

Do not concur. The DON concurs with the Defense Logistics Agency's comments on this subject. The DODIG finding is based upon the assumption that data gathered from the contractor's Cost/Schedule Control (C/SC) system after May 1992 was valid information. In fact, the contractor's C/SC system was decertified in December 1992 due to problems associated with a change in the system from a main frame computer to individual PC work stations. Both the Administrative Contracting Officer (ACO) and the program office team knew of the system change and considered the data flawed during the six month period preceding the decertification. The estimates at completion (EAC) quoted in the DODIG draft report were taken from working papers and were taken out of context. In each case, the agency purported to have developed the sigular EAC reported in the draft audit actually developed a range of estimates. The range estimates were computed because the data were questionable and there are multiple methods of computing EACs. These range estimates were then given to the program office and the ACO to assist them in their decision processes. The salient point is that the situation was being monitored continuously and decisions were being made according to policy and professional judgement.

Recommendation C1:

We recommend the Contracting Officer, Naval Air Systems Command determine the most appropriate contract loss ratio factor to apply against progress payment requests on contract number N00019-89-C-0173, based on a reconciliation between the Administrative contracting Officer, the procuring organization, and the Defense Contract Audit Agency on estimated contract cost at completion.

DON Position:

Partial concurrence. The DCMC ACO is the responsible individual for establishing an independent EAC for purposes of making progress payments, not the Naval Air Systems Command contracting officer. The EAC is under study at this point and will be revised according to findings by 30 May 1993.

Recommendation C2:

Adjust Future Teledyne Ryan Aeronautical Corporation progress payment requests on contract number N00019-89-C-0173, based on the newly developed contract loss ratio.

DON Position:

Concur. A new EAC and loss ratio will be computed by the ACO by 30 May 1993 and will be applied to the subject contract at that time.

FINDING D: The JPO incorrectly budgeted and obligated FY 1991 program procurement funds for contractor integration, test, and evaluation of Short Range UAV prototypes. The JPO justified the use of procurement funds rather than research, development, test and evaluation (RDT&E) as required, based on the definition of the Short Range UAV acquisition as a nondevelopmental item acquisition. As a result, Short Range UAV test and evaluation costs totaling $6.2 million in FY 1991 were incorrectly obligated against procurement funds. Adjustments to correct the misapplication could result in an Anti-deficiency Act violation.

DON Position:

Do not concur. The IG's position that this was an RDT&E effort is based on two sentences from the statement of work. By relying on language in the statement of work requiring the contractors to "design, fabricate and assemble components" and "perform all functions, procure material and conduct all testing required to integrate various components," and without any further support for its position, the IG concluded that the JPO could not support its position that the SR-UAV system is an NDI program and that the "JPO was unable to procure, as initially intended, off-the-shelf Short Range UAV systems that did not require RDT&E

engineering, design, and integration effort."

As recognized by the IG, the JPO intended for the SR-UAV program to be an NDI effort. The IG fails to support the inference that a different type of program, i.e., R&D, resulted. Integration of existing, commercially available subsystems into one system is not equivalent to the design and development of a system from components that are not commercially available. Also, merely because the system as a whole must be tested does not mean that this was an R&D program. The testing in this case was conducted as part of the process down selecting to one contractor and to ensure that the integrated subsystems worked properly as a whole. The fact that all of the offerors on the SR-UAV RFP requested that the resulting contracts be firm fixed price further validates the JPO's position that no development work was necessary.

The Short Range Unmanned Aerial Vehicle (SR-UAV) system is composed of fully-developed, off-the-shelf subsystems. According to the statement of work for the SR-UAV program, the following subsystems are required to be integrated: an air vehicle, a mission planning control station, modular mission payloads, launch and recovery equipment, a ground data terminal, a remote video terminal, an airborne data relay payload, peculiar support equipment, and common support equipment.

In January, 1989, the Program Manager from the Army Missile Command at Redstone Arsenal, Huntsville, Alabama provided the following information to the JPO in support of the use of procurement funds at that time:

> RDT&E funding is required for change to an existing system which significantly alters its configuration/performance or changes its basic mission capability. ... Subsystems anticipated for use in the SR-UAV are off-the-shelf and are fully developed and qualified in other applications. Existing hardware will provide the required mission capability with minor modification to their existing capabilities. The integration task does not change this capability. Since we do not significantly change the mission capability, it is not a developmental activity. ... Comments from Industry affirm this logic. Industry stated that equipment was available and that integration was the primary task that had to be accomplished for the SR-UAV program....

The SR-UAV program was structured as an NDI program with two contracts awarded for Phase I, the acquisition of essentially commercial items for testing and operational evaluation. The $6.2 million in procurement funds questioned by the DOD IG was used to fund CLIN 0207, "Downselect Testing & Evaluation Support." The purpose of this testing was to assess each contractor's system against the required operational

effectiveness and suitability criteria under realistic battlefield conditions to downselect to one follow-on low-rate production contractor.

When the question arose concerning which type of funds to obligate for the downselect testing, guidance was obtained from the DOD Budget Guidance Manual paragraph 251.5.E.1 which states that "[t]he acquisition of commercial items for testing and operational evaluation **which do not require RDT&E engineering, design or integration effort will be financed by** Operation and Maintenance or Procurement appropriations ...." [emphasis added] "RDT&E" in the above phrase modifies all three efforts. The IG has provided no support for the position that the SR-UAV program consisted of RDT&E engineering, RDT&E design, or RDT&E integration.

Paragraph 251.5.E.2 of the DOD Budget Guidance Manual states that the conduct of testing that is not associated with RDT&E will be financed in procurement and/or operations and maintenance appropriations as appropriate. Examples of such testing cited in paragraph 251.5.E.2 include: acceptance, quality control, and operation and maintenance of equipment acquired for use under appropriations other than RDT&E.

Based on the fact that acquisition decisions from both EXCOM and the DAB reviews concurred with the LRIP decision, the integration of the commercially available items required for the SR-UAV was considered minimal and clearly met the intent and requirements of the DOD Budget Guidance Manual 251.5.E.3. CLIN 0207 of the contracts specifies that the contractors will provide all supplies and services necessary to support the down select testing and evaluation in accordance with the statement of work, Appendix 7, Test and Evaluation Requirements. Procurement funds were used to purchase the subsystems for the SR-UAV. The purpose of the testing conducted for CLIN 0207 was for Government acceptance of the contractor's system as well as to ensure that the system met the Government's requirements. As stated above under paragraph 251.5.E.2, RDT&E funds cannot be used to perform production acceptance testing on equipment purchased with procurement funds. Therefore, RDT&E funds could not have properly been used for the conduct of the down select testing in this case. (Based on these test results, McDonnell Douglas was eliminated before the next production phase of the contract.)

The IG also quotes paragraph 251.3 of the DOD Budget Guidance Manual that states that if there is a doubt as to which type of appropriation to use, the doubt should be resolved in favor of using RDT&E. In this case, however, no doubt existed. Even the IG recognizes that the JPO intended the SR-UAV to be an NDI program. Even if, later in the program, there may have been more testing or integration work performed than anticipated by the contractors as well as the Government, that fact would not invalidate the original intent or essential nature of the program.

The fact that this program is NDI and not developmental is further validated by the fact that all five offerors on this program requested firm fixed price contracts rather than the fixed price incentive type proposed by the Government. The fact that the subsystems and components were commercially available resulted in a low risk program.

Recommendation D:

We recommend that the Director, Unmanned Aerial Vehicle Joint Project Office, correct research, development, test, and evaluation funds for the incorrect obligation of procurement funds for contractor integration, test, and evaluation efforts on contract numbers N00019-89-C-0346 and N00019-89-C-0347 totaling $6.2 million during FY-91. If sufficient research, development, test, and evaluation funds are not available, report the anti-deficiency act violation to Congress, in accordance with United States Code, title 31, section 1351.

DON Position:

Do not concur. The use of procurement funds was appropriate for CLIN 0207 in both contracts because the SR-UAV program was for the acquisition of essentially commercial items for testing and operational evaluation and, more specifically, CLIN 0207 was for testing used for a part of the down select process and not for developmental testing. Therefore, no misuse of procurement funds for CLIN 0207 occurred and no adjustment of funding is required.

Department of the Air Force Comments

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

16 APR 1993

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

SUBJECT: Department of Defense Inspector General Report, "Draft Audit Report on the Acquisition of Unmanned Aerial Vehicles," Dated February 16, 1993 DOD IG Report Number 2AS-0040, "INFORMATION MEMORANDUM"

This is in reply to your draft audit report requesting the Air Force Deputy Chief of Staff Plans and Operations provide Air Force comments on the subject report. The Air Force concurs with Finding A of the subject report.

The Air Force based its procurement of the Medium Range Unmanned Aerial Vehicle (MR-UAV) on a tactical reconnaissance force structure that has gone through several evolutions since the start of the Follow on Tactical Reconnaissance System (FOTRS) program. Originally, the Air Force planned to field six F-16R squadrons. Five of these squadrons were to be equipped with twenty MR-UAV systems each, in a flight dedicated to their employment. Currently, the Air Force intends to field two F-16R squadrons in the Air Reserve Component (ARC) and three flights of six aircraft attached to active duty composite wings. This realignment has reduced the available manpower and will not support the planned inventory of 260 MR UAV.

As a result, the Air Force intends to reduce its planned acquisition to 145 MR-UAVs. MR-UAVs will be deployed at a 1:1 ratio to aircraft for total of 54 MR-UAVs. Another 81 vehicles will be stored for backup attrition inventory (BAI) and 10 vehicles will be used for training.

Additionally, concerns about the surface launcher's ability to support required sortie generation rates have caused the Air Force to defer the ground launch requirement.

The primary action office (PAO) point of contact for the subject report is Major Michael Nowak, HQ USAF/XORR, 703-697-3715.

1 Atch
AF/XO Comments

LARRY L. HENRY, Maj Gen, USAF
Director of Operational Requirements
DCS, Plans and Operations

DRAFT DOD IG REPORT - DATED 16 FEBRUARY 1993
(DOD IG PROJECT NO. 2AS-0040)

AUDIT REPORT ON THE ACQUISITION OF UNMANNED AERIAL VEHICLES

AIR FORCE DEPUTY CHIEF OF STAFF
PLANS AND OPERATIONS
COMMENTS

FINDING A: The DOD IG reported that the Air Force's and Navy's force structure requirements did not reflect political and territorial changes in Eastern Europe and the former Soviet Union resulting in an overstated requirement for MR UAVs. The report went on to recommend the Air Force could downsize its force structure by 100 vehicles and 9 surface launchers for a combined acquisition cost savings of $407.2M.

XO RESPONSE: Concur. The realignment of tactical reconnaissance assets since the start of the FOTRS program has reduced the number of tactical reconnaissance squadrons and corresponding manpower. Currently, the Air Force intends to field two F-16R squadrons in the Air Reserve Component (ARC) and three flights of six aircraft each attached to active duty composite wings. As this force structure will not support a 260 MR UAV inventory, we intend to reduce our planned acquisition to 145 MR-UAVs. MR-UAVs will be deployed at a 1:1 ratio with aircraft for total of 54 MR-UAVs. An additional 81 vehicles will be stored for backup aircraft inventory (BAI) at a 1:1.5 ratio and 10 vehicles will be used for training. The BAI figure is valid based on the expected attrition rates of the vehicles in combat. Additionally, concerns about the capability of the ground launcher to support required sortie generation rates, have caused the Air Force to defer the MR-UAV ground launch requirement. The current ground launcher has a single vehicle launch every six hours; the Air Force requires a one vehicle per hour launch rate to satisfy our wartime taskings. According to the JPO, increasing the ground launch rate would involve considerable expense.

FINDINGS B/C/D: Not directed to Air Force Deputy Chief of Staff Plans and Operations.

Defense Logistics Agency Comments

DEFENSE LOGISTICS AGENCY
HEADQUARTERS
CAMERON STATION
ALEXANDRIA, VIRGINIA 22304-6100

IN REPLY REFER TO DLA-CI

21 APR 1993

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING
DEPARTMENT OF DEFENSE

SUBJECT: Draft Report on the Acquisition of Unmanned Aerial Vehicles, (Project No. 2AS-0040)

This is response to your 16 February 1993 request.

3 Encl

JACQUELINE G. BRYANT
Chief, Internal Review Division
Office of the Comptroller

cc: DLA-ACA
DLA-LRP

FORMAT 1 of 3

TYPE OF REPORT: AUDIT DATE OF POSITION: 20 Apr 93

PURPOSE OF INPUT: INITIAL POSITION

AUDIT TITLE AND NO.: Acquisition of Unmanned Aerial Vehicles (Project No. 2AS-0040)

FINDING C: PROGRESS PAYMENTS. The Defense Contract Management Command's administrative contracting officer (ACO) did not ensure that the appropriate contract loss ratio factor was used when adjusting progress payment requests submitted by Teledyne Ryan Aeronautical Corporation on contract number N00019-89-C-0173. This condition occurred because the ACO did not use the results of contractor cost and schedule control (C/SC) system reviews performed after May 1992 to adjust the loss ratio factor used in future progress payment computations. Based on the estimated contract cost at completion, we estimated that from $3.1 million to $11.6 million in premature progress payments were paid to the contractor. The unearned progress payments resulted in the Government unnecessarily incurring as much as $400,000 in interest annually to fund the premature progress payments.

DLA COMMENTS: Nonconcur. The ACO based the May 1992 estimate at completion (EAC) for progress payment purposes on an independent assessment of the contractor's performance. This independent assessment included consideration of C/SC data, and program office input. Subsequent to the May 1992 progress payment submittal the contractor's C/SC data became suspect. The DCMC Contract Administration Office (CAO) continued to monitor the reports generated by the system and actively worked to resolve C/SC system deficiencies. While the program office working papers recognized a potential range of EAC's from $179 million to $243 million, they also recognized the C/SC data was flawed and offered no opinion on a "Most Probable EAC." The 6 OCT 92 DCAA opinion was also qualified because the C/SC system "does not produce reliable data." The DCAA estimates ranged from $177 million to $235 million and their "most representative" was based on a cumulative formula which excluded consideration of schedule performance. We do not believe there are any estimates that are demonstrably more valid than the EAC the ACO independently decided to utilize for progress payment purposes for the period addressed in the audit.

Additionally, in August 1992, DCMC issued policy letter 92-5 (enclosed) emphasizing the ACO's responsibility to consider available surveillance information, including C/SC information, in their progress payment assessments. This policy letter will be revised to emphasize the need to document the rationale utilized for selecting the EAC for progress payment purposes, and the ACO's plan for future progress payment EAC reviews based on contract risk assessment.

INTERNAL MANAGEMENT CONTROL WEAKNESS:
(X) Nonconcur. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; however, weakness is not considered material. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; weakness is material and will be reported in the DLA Annual Statement of Assurance.

ACTION OFFICER: Stephen J. Herlihy, DCMC-ACA, (703) 274-7726
PSE REVIEW/APPROVAL: FRANK L. WOJTASZEK, JR., Acting Director Contract Management, DLA-A

DLA APPROVAL: Helen T. McCoy, Deputy Comptroller

w/Attachment

FORMAT 2 of 3

TYPE OF REPORT: AUDIT DATE OF POSITION: 20 Apr 93

PURPOSE OF INPUT: INITIAL POSITION

AUDIT TITLE AND NO.: Acquisition of Unmanned Aerial Vehicles
(Project No. 2AS-0040)

RECOMMENDATION 1: We recommend the Contracting Officer, Naval Air Systems Command, determine the most appropriate contract loss ratio factor to apply against progress payment requests on contract number N00019-89-C-0173, based on a reconciliation between the Administrative Contracting Officer, the procuring organization, and the Defense Contract Audit Agency on estimated contract cost at completion.

DLA COMMENTS: Concur with the recommended course of action; however, the DCMC Administrative Contracting Officer (ACO) is the individual responsible for establishing the estimate at completion for progress payment purposes. The ACO is currently establishing a revised EAC based on a subjective assessment of all available data including C/CSCS data, program office input, and DCAA recommendations. The ACO will then establish a revised EAC for progress payment purposes, and apply the associated loss ratio factor.

DISPOSITION:
(X) Action is ongoing. Estimated Completion Date: 30 MAY 93
( ) Action is considered complete.

RECOMMENDATION MONETARY BENEFITS:
DLA COMMENTS:
ESTIMATED REALIZATION DATE:
AMOUNT REALIZED:
DATE REALIZED:

INTERNAL MANAGEMENT CONTROL WEAKNESS:
(X) Nonconcur. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; however, weakness is not considered material. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; weakness is material and will be reported in the DLA Annual Statement of Assurance.

ACTION OFFICER: Stephen J. Herlihy, DCMC-ACA, (703) 274-7726
CASE REVIEW/APPROVAL: FRANK L. WOJTASZEK, JR., Acting Executive Director Contract Management, DLA-A

DLA APPROVAL: Helen T. McCoy, Deputy Comptroller

FORMAT 3 of 3

TYPE OF REPORT: AUDIT DATE OF POSITION: 20 Apr 93

PURPOSE OF INPUT: INITIAL POSITION

AUDIT TITLE AND NO.: Acquisition of Unmanned Aerial Vehicles
(Project No. 2AS-0040)

RECOMMENDATION 2: We recommend the Contracting Officer, Naval Air Systems Command, adjust future Teledyne Ryan Aeronautical Corporation progress payment requests on contract number N00019-89-C-0173, based on the newly developed contract loss ratio.

DLA COMMENTS: Concur with the recommended course of action; however, the DCMC ACO is the individual responsible for establishing an independent EAC for progress payment purposes. The ACO is currently establishing a revised EAC based on a subjective assessment of all available data including; C/CS data, program office input, and DCAA recommendations. A new EAC will be established and a new loss ratio will be applied. The ACO will continue to monitor the contractor's performance and continue to revise the progress payment EAC throughout the life of the contract.

DISPOSITION:
(X) Action is ongoing. Estimated Completion Date: 30 MAY 93
( ) Action is considered complete.

RECOMMENDATION MONETARY BENEFITS:
DLA COMMENTS:
ESTIMATED REALIZATION DATE:
AMOUNT REALIZED:
DATE REALIZED:

INTERNAL MANAGEMENT CONTROL WEAKNESS:
(X) Nonconcur. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; however, weakness is not considered material. (Rationale must be documented and maintained with your copy of the response.)
( ) Concur; weakness is material and will be reported in the DLA Annual Statement of Assurance.

ACTION OFFICER: Stephen J. Herlihy, DCMC-ACA, (703) 274-7726
PSE REVIEW/APPROVAL: FRANK L. WOJTASZEK, JR., Acting Executive Director Contract Management, DLA-A

DLA APPROVAL: Helen T. McCoy, Deputy Comptroller

DEFENSE LOGISTICS AGENCY
[illegible] MANAGEMENT COMMAND
AMMUNITION STATION
[illegible] VIRGINIA 22[illegible]

DCMC-E

21 AUG 1992

SUBJECT: DCMC-D Letter No. 92-5, Use of Key Data During the Progress Payment Review and Approval Process.

TO: Commanders of Defense Contract Management Districts
Commander, Defense Contract Management Command International

1. A General Accounting Office review, conducted during 1991, found that Defense Contract Management Command procedures did not require the Administrative Contracting Officer (ACO) to consider monthly surveillance reports during the review and approval of progress payment requests.

2. The results of Contract Administration Office surveillance provides valuable insight into contractor performance through analysis of information gathered from the contractor management control systems (cost/schedule, production scheduling, quality, etc.), as well as on-site physical surveillance of contractor operations.

3. To ensure that this information is considered during the progress payment review process, Program and Technical Support personnel shall provide the ACO with copies of their monthly surveillance reports. These reports must clearly address any negative performance trends which may result in schedule slippage or increased Estimate at Completion. The ACO shall review the surveillance reports to determine the need to (1) perform an out-of-cycle progress payment review, (2) reassess the contractor risk category, and/or (3) remove the contract from the automated payment system and perform monthly progress payment reviews.

4. Please ensure this information is provided to your field personnel. Any questions regarding this policy may be directed to Mr. David Robertson, DCMC-EP, (703) 617-7200, DSN 667-7200 or Mr. Stephen Herlihy, DCMC-AC, (703) 274-7726, DSN 284-7726.

CHARLES R. HENRY
Major General, USA
Commander

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