

Audit



Report

OFFICE OF THE INSPECTOR GENERAL

**QUALITY ASSURANCE FUNCTIONS AT THE
DEFENSE CONTRACT MANAGEMENT AREA
OPERATIONS, CEDAR RAPIDS, IOWA**

Report No. 94-091

May 4, 1994

Department of Defense

Additional Copies

To obtain additional copies of this report, contact the Secondary Reports Distribution Unit, Audit Planning and Technical Support Directorate, at (703) 614-6303 (DSN 224-6303) or FAX (703) 614-8542.

Suggestions for Future Audits

To suggest ideas for or to request future audits, contact the Planning and Coordination Branch, Audit Planning and Technical Support Directorate, at (703) 614-1868 (DSN 224-1868) or FAX (703) 614-8542. Ideas and requests can also be mailed to:

Inspector General, Department of Defense
OAIG-AUD (ATTN: APTS Audit Suggestions)
400 Army Navy Drive (Room 801)
Arlington, Virginia 22202-2884

DoD Hotline

To report fraud, waste, or abuse, call the DoD Hotline at (800) 424-9098 (DSN 223-5080) or write to the DoD Hotline, The Pentagon, Washington, D.C. 20301-1900. The identity of writers and callers is fully protected.

Acronyms

DCMAO
QAR

Defense Contract Management Area Operations
Quality Assurance Representative



**INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884**

May 4, 1994

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Report on Quality Assurance Functions at the Defense Contract Management Area Operations, Cedar Rapids, Iowa (Report No. 94-091)

We are providing this report for your review and comments. The report was prepared in response to a request from Senator Tom Harkin to review a series of alleged quality assurance problems at the Defense Contract Management Area Office, Cedar Rapids, Iowa.

DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. The Commander, Aviation and Troop Command, Army Materiel Command, did not comment on a draft of this report. Therefore, we request comments by July 5, 1994.

We appreciate the courtesies extended to the audit staff. If you have any questions on this audit, please contact Mr. Salvatore D. Guli, Program Director, at (703) 692-3025 (DSN 222-3025) or Mr. C.J. Richardson, Project Manager, at (703) 692-3220 (DSN 222-3220). See Appendix F for the distribution of the report. The audit team members are listed inside the back cover.

A handwritten signature in black ink that reads "Robert J. Lieberman".

Robert J. Lieberman
Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 94-091
(Project No. 2CF-0053.02)

May 4, 1994

QUALITY ASSURANCE FUNCTIONS AT THE DEFENSE CONTRACT MANAGEMENT AREA OPERATIONS, CEDAR RAPIDS, IOWA

EXECUTIVE SUMMARY

Introduction. A quality assurance engineer at the Defense Contract Management Area Office, Cedar Rapids, Iowa, a field office of the Defense Logistics Agency, alleged that quality assurance on seven contracts was mismanaged. The allegations were made to Senator Tom Harkin, who requested that the Inspector General, DoD, review them (Appendix A).

Objectives. The primary audit objective was to review allegations about the seven contracts. We also reviewed the adequacy of management's Internal Management Control Program and internal controls applicable to the quality assurance function associated with the allegations at the Defense Contract Management Area Operations, Cedar Rapids.

Audit Results. We substantiated the allegations on one of the seven contracts. We concluded that the Army procured and used helicopter extended-range fuel tanks that contained fuel lines that were not fastened to a specified degree of tightness. If the fuel lines in the extended-range fuel tanks ever came loose, fuel would not transfer into the main fuel tank. Details on the results of our review of the substantiated allegation are discussed in Part II. The allegations on the other six contracts were not substantiated. Appendix B summarizes each allegation and the audit results.

Internal Controls. We did not identify any internal control weaknesses. Management's Internal Management Control Program was adequate in so far as it related to our audit objectives. See Part I for a discussion of the internal controls reviewed.

Potential Benefits of Audit. The audit will result in more operationally complete specifications for extended-range fuel tanks used in the AH-64A Apache and the UH-60A Blackhawk helicopters. We are unable to quantify the monetary benefits of having more operationally complete specifications. Appendix D summarizes the potential benefits resulting from the audit.

Summary of Recommendations. We recommended the Army establish specific tightness, or torque, requirements for the fasteners that secure the fuel lines in AH-64A Apache and UH-60A Blackhawk helicopter extended-range fuel tanks.

Management Comments. The Commander, Aviation and Troop Command, Army Materiel Command, did not comment on a draft of this report. Command officials verbally agreed, however, to establish torque requirements for the fasteners. We request written comments by July 8, 1994.

Table of Contents

Executive Summary	i
Part I - Introduction	
Background	2
Objectives	2
Scope and Methodology	2
Internal Controls	3
Prior Audits and Other Reviews	3
Part II - Finding and Recommendation	
Tightness Requirement for Fuel Line Fasteners	6
Part III - Additional Information	
Appendix A. Senator Tom Harkin Request for Review	10
Appendix B. Allegations and Audit Results	11
Appendix C. Contracts Awarded for Extended-Range Fuel Systems	15
Appendix D. Summary of Potential Benefits Resulting From Audit	16
Appendix E. Organizations Visited or Contacted	17
Appendix F. Report Distribution	19

This report was prepared by the Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD.

Part I - Introduction

Introduction

Background

In December 1992, Senator Tom Harkin requested on behalf of a constituent, a quality assurance engineer at the Defense Contract Management Area Operations (DCMAO), Cedar Rapids, Iowa, that the Inspector General, DoD, review allegations of quality assurance mismanagement on five contracts (Appendix A). The quality assurance engineer alleged that mismanagement caused DoD to use unsafe products and that the mismanagement would cost DoD millions of dollars. In April 1993, the quality assurance engineer requested Senator Harkin's office to add two additional contracts to the review.

Objectives

The primary audit objective was to review allegations that the Defense Logistics Agency mismanaged quality assurance on seven contracts. We also reviewed the adequacy of management's Internal Management Control Program and internal controls applicable to the quality assurance function at the DCMAO, Cedar Rapids. See the finding in Part II for a discussion of one substantiated allegation and Appendix B for the results of our review of all allegations.

Scope and Methodology

Audit Information, Methodology, and Locations. We reviewed information pertinent to the allegations on the seven contracts in Senator Harkin's inquiry. The contracts were awarded by the Army, the Air Force, and the Defense Logistics Agency from 1987 through 1991. The seven contracts were valued at a total of \$34,052,184. We obtained our audit information primarily by examining the seven contract files and by examining records and conducting interviews at the Defense Logistics Agency; at DCMAO, Cedar Rapids; at military buying commands; and with contractors during May through October 1993. Appendix E lists the organizations visited or contacted. We did not rely on computer-processed data to achieve the audit objectives or use statistical sampling procedures in the audit.

Use of Technical Experts. The Audit Policy and Technical Support Directorate, Assistant Inspector General for Auditing, Office of the Inspector General, DoD, provided engineering assistance to evaluate the technical and engineering issues in five of the seven contracts.

Audit Period and Standards. This economy and efficiency audit was conducted from April through December 1993 in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD. Accordingly, the audit included tests of internal controls as necessary. No potential monetary benefits are associated with this audit; see Appendix D for other potential benefits.

Internal Controls

We reviewed implementation of the DoD Internal Management Control Program and the adequacy of internal controls at the DCMAO, Cedar Rapids, applicable to the procurement and acceptance of safe and conforming products from DoD contractors. In the course of our audit, we found no material internal control weaknesses related to the quality assurance function at DCMAO, Cedar Rapids, as defined by DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987.

Prior Audits and Other Reviews

No audits or other reviews addressed this specific topic in the last 5 years.

Part II - Finding and Recommendation

Tightness Requirement for Fuel Line Fasteners

We substantiated the quality assurance allegation as it applied to Army contract DAAJ09-90-C-0660. We found that the fuel line fasteners used to secure the fuel lines inside the extended-range fuel tanks of AH-64A Apache and UH-60A Blackhawk helicopters were not secured, or torqued, to a specified tightness. The Army did not have a contractual requirement to torque the fuel line fasteners to a specific tightness. The Army believed that a torque requirement was unnecessary because the chance of an in-flight fuel line separation was remote and that Army maintenance personnel would need a specialized tool to maintain a specified tightness. Improperly fastened fuel lines may separate from the extended-range fuel tanks during operation, resulting in a failure to transfer fuel to the main fuel tanks, and may potentially result in the helicopter running out of fuel.

Background

In this report, we use the Army term "extended-range fuel tanks" to refer to the terms "extended-range fuel systems," used in the contract, and "booster tanks," referred to in the original allegation. The Army identified a requirement to extend the flight ranges for the AH-64A Apache and the UH-60A Blackhawk helicopters. Extended-range fuel tank kits were developed in 1984 to extend the range of the helicopters. A kit consists of two 230-gallon extended-range fuel tanks, installation parts, and a cradle. Flight ranges are extended when fuel transfers from the extended-range fuel tank to the main tank as fuel is consumed. From FYs 1988 through 1993, the Army awarded 6 contracts, totaling \$38.2 million, for the procurement of 1,685 extended-range fuel tank kits (Appendix C). The allegation referred to one contract for extended-range fuel kits, DAAJ090-90-C-0660, awarded to Brunswick Corporation.

Government Quality Assurance

In December 1990, a Government quality assurance representative (QAR) from DCMAO, Cedar Rapids, found that the fastener, a B nut used to secure an extended-range fuel tank fuel line on an Army helicopter, was loose. The QAR tested the tightness on several B nuts and found that he could loosen one of the B nuts with his fingers. Fuel will not transfer from the extended-range fuel tanks to the main tank if the fuel lines separate. The QAR found that the Army had no torque specification for the B nut that secured the fuel lines. The QAR

also found that the contractor used a wrench to tighten the B nut instead of a special tool and that the contractor did not use specific torque requirements to tighten the B nut.

Army Decision on QAR Recommendations

The QAR recommended that the Aviation and Troop Command, St. Louis, Missouri, provide specific torque requirements for the B nut fasteners used in the extended-range fuel tanks. The Aviation and Troop Command decided not to follow the QAR's recommendation, believing that the chance of the fuel lines separating in flight was remote.

Technical Data Package Modification

In 1984, Fibertek, Incorporated, developed the technical data package for the extended-range fuel tanks to sell to the Army. The original technical data package included specific torque requirements for the B nut that secured the fuel lines in the extended-range fuel tanks. The Army requested that Fibertek, Incorporated, delete the torque requirements in the drawings for the B nut fuel line fasteners because Army maintenance personnel did not have the proper tool needed to torque the B nut to the specified tightness. Fibertek, Incorporated, deleted the torque requirement as requested and sold the technical data package to the Army.

Army Maintenance Procedures

Army aviation unit and intermediate maintenance technical manuals 55-1520-238-23-1, "Army Aviation Unit and Intermediate Maintenance Manual," June 7, 1988, for the AH-64A Apache helicopter and 55-1520-237-23-6, "Army Aviation Unit and Intermediate Maintenance Manual," August 29, 1989, for the UH-60A Blackhawk and the EH-60A helicopters are used to instruct maintenance personnel on fastener tightening procedures. The manuals do not specifically address the B nuts that secure the fuel lines in the helicopter extended-range fuel tanks. The Army decided to rely on general aircraft maintenance manual tightening procedures rather than specific torque requirements because the Army did not have a specialized tool that was needed to torque the B nuts to a specified tightness. The Army did not buy specialized tools to torque the B nuts because Aviation and Troop Command engineering managers believed the chance of the fuel lines separating in flight was remote.

Effect on Mission Accomplishment

A loose fuel line in the extended-range fuel tank would interrupt the flow of fuel from the extended-range fuel tank to the main fuel tank. Failure of fuel to transfer would result in an imbalanced load and could result in a decision to abort the mission because the expected range of the helicopter would be reduced. In our opinion, it is possible that the fuel lines could separate in flight. That possibility represents an unnecessary risk that could jeopardize accomplishment of a mission. We discussed this possibility with officials from the Aviation and Troop Command and they agreed to establish a torquing requirement for tightening the B nuts securing the fuel lines in the extended-range fuel tank.

Recommendations for Corrective Action

We recommend that the Commander, Aviation and Troop Command, Army Materiel Command:

1. Specify a torque requirement for tightening fuel line fasteners (B nuts) in all existing and future contracts for extended-range fuel tanks for the AH-64A Apache and the UH-60A Blackhawk helicopters.
2. Revise Army technical manual 55-1520-238-23-1, "Army Aviation Unit and Intermediate Maintenance Manual," June 7, 1988, for the Army AH-64A Apache helicopter, and Army technical manual 55-1520-237-23-6, "Army Aviation Unit and Intermediate Maintenance Manual," August 29, 1989, for UH-60A Blackhawk and EH-60A helicopters to include torquing requirements for fasteners securing fuel lines in the extended-range fuel tanks of AH-64A Apache and the UH-60A Blackhawk helicopters that are undergoing field maintenance or overhaul.

Management Comments

The Commander, Aviation and Troop Command, Army Materiel Command, did not respond to the draft of this report in time to be incorporated in the final report. If comments to the draft are received, we will consider them as comments to the final report. Otherwise, we request comments to the final report by July 5, 1994.

Part III - Additional Information

Appendix A. Senator Tom Harkin Request for Review

TOM HARKIN
D-10

800 336-3184
TTY 202 522-4630
COMMITTEE
AGRICULTURE
APPROPRIATIONS
SMALL BUSINESS
LABOR AND HUMAN
RESOURCES

United States Senate
WASHINGTON, DC 20510-1502

December 8, 1992

Derek Vander Schaaf
Deputy Inspector General
Department of Defense
4000 Army Navy Dr
Arlington, VA 22202

Dear Mr. Vander Schaaf:

I am writing on behalf of * concerning the difficulties he is experiencing communicating alleged problem defense contracts to his employer, the Quality Assurance Director of the Defense Logistics Agency.

Enclosed is a letter I received from * expressing his concern about five contracts, which he believes are unsafe and costing the government millions of dollars. The programs are described in * documentation and include such programs as the Chaparral missile warhead improvement program, a 230-gallon booster fuel tank manufacturing contract, the Value Engineering program, and a DLA contract involving the fabrication and delivery of the torpedo loading cranes for the Navy.

I would like to express my interest on behalf of * I would appreciate it if you would review the information provided to me by him. You may send your response to Nicole Durbin, in my Cedar Rapids office at the address listed below.

Thank you, in advance, for your assistance.

Sincerely,
Tom Harkin
Tom Harkin
United States Senator

TH/bncl

*Information subject to the Privacy Act deleted.

Appendix B. Allegations and Audit Results

Senator Tom Harkin requested the Inspector General, DoD, to review allegations that cited quality assurance mismanagement on seven contracts. This appendix describes the seven contracts, the allegations regarding each contract, and the audit results.

Contract DLA700-87-C-8080

Background. The Defense Construction Supply Center, Columbus, Ohio, awarded the contract, valued at \$666,812, to Koehring Cranes and Excavators, Incorporated, for construction and purchase of torpedo loading cranes for the Navy. The DCMAO, Cedar Rapids, provided a quality assurance engineer to support DCMAO, Milwaukee, Wisconsin, in an evaluation of a failed first article test.

Allegations. The contractor misrepresented the facts when stating that the cranes were commercial-type cranes. In addition, the cranes had serious structural deficiencies, rendering them unsafe.

The quality assurance engineer's immediate supervisor ignored the technical findings regarding structural deficiencies in the cranes and recommended approval of the first article test report that resulted in the acceptance of unsafe cranes.

Audit Results. We did not substantiate the allegations. Koehring Cranes and Excavators, Incorporated, changed the crane design after the cranes failed a first article test. Subsequent performance tests showed that the design change made the cranes stronger. The Defense Construction Supply Center, as the contracting office and the contract administration office, relied on the Navy's technical judgment as the buyers of the cranes. The Navy relied on demonstration tests and annual performance tests that showed that the cranes could perform safely with loads exceeding the maximum amounts by 25 percent. Based on the performance tests and a professional opinion from the Chairman, Crane Subcommittee, Society of Automotive Engineers, Incorporated, an engineer from the Office of the Inspector General, DoD, rendered an opinion that the cranes were of a commercial type and that the cranes were safe for their intended use.

Appendix B. Allegations and Audit Results

Contract DAAEO7-87-C-J061

Background. The Tank-Automotive Command, Warren, Michigan, awarded the contract, valued at \$20,228,048, to Fruehauf Corporation for the construction and purchase of semitrailer petroleum tanks for the Army. The DCMAO, Cedar Rapids, provided quality assurance support for the contract.

Allegations. Fruehauf Corporation did not comply with the contractual requirements for qualification and certification of welders and weldments. Thus, the contractor stands to gain more than \$1 million in windfall profits. Also, the contractor claims to have verbal and not written approval from the Government to disregard the contractual requirement.

Audit Results. We did not substantiate the allegations. Fruehauf Corporation complied with the terms of the contract for qualification and certification of welders and weldments. The DCMAO, Cedar Rapids, QAR approved the Fruehauf Corporation quality assurance plan for qualifying welders and for welding procedures applicable to constructing the semitrailer petroleum tanks. We also found that the Government periodically inspected weldments and reviewed the qualifications of the welders used on the contract and did not report any exceptions.

Contract DAAC89-90-C-0113

Background. The Missile Command, Redstone Arsenal, Alabama, awarded the contract, valued at \$168,000, to Precision Machine, Incorporated, for construction and purchase of the M250 warhead body as part of the Chaparral Missile Improvement Program. The DCMAO, Cedar Rapids, loaned its quality assurance engineer to the Army to assist in the Chaparral Missile Improvement Program.

Allegations. DCMAO, Cedar Rapids, frustrated the quality assurance engineer's efforts to implement a value engineering proposal and to fulfill the contractual requirements and eventually caused termination of the contract when DCMAO management required the quality assurance engineer to work on DCMAO mission work. The DCMAO action was punitive to the quality assurance engineer and deprived the Government of savings of \$1 million.

Audit Results. We did not substantiate the allegations. DCMAO, Cedar Rapids, management acted reasonably in managing the quality assurance engineer's time and the Government was not deprived of \$1 million of savings. DCMAO actions had no bearing on the contract. Missile Command terminated the contract for convenience because it did not plan to buy any more Chaparral missiles.

Contract DAAJ09-90-C-0660

Background. The Aviation and Troop Command awarded the contract, valued at \$2,605,675, to Brunswick Corporation for the manufacture and purchase of helicopter 230-gallon extended-range fuel tanks for the Army. The DCMAO, Cedar Rapids, provided quality assurance support for the contract.

Allegations. The B nut fasteners in the extended-range fuel tanks were not being properly tightened to preclude loosening while the helicopters were in service. Loose fasteners may adversely affect flight safety of the combat helicopters by reducing the range of the helicopters and possibly causing engine failure.

Audit Results. We substantiated the allegation that the B nut fasteners were not properly tightened to preclude loosening while in flight. Tightening requirements were not specified in the contractual technical data package for the B nut fasteners used to secure fuel lines inside the extended-range fuel tanks for the AH-64A Apache and the UH-60A Blackhawk helicopters. We concluded that the chances were remote that loose B nut fasteners would result in a flight safety condition. However, loosened fuel lines in the extended-range fuel tanks could result in a decision to abort the mission. For details, see Part II, Finding and Recommendation.

Contract F04606-90-C-0019

Background. The Sacramento Air Logistics Center, McClellan Air Force Base, California, awarded the contract, valued at \$1,195,232, to Brunswick Corporation for the purchase of pressure source bottles for Air Force F-111 aircraft. The DCMAO, Cedar Rapids, provided quality assurance support for the contract.

Allegations. A research and development effort to substitute kevlar for fiberglass for the Air Force F-111 pressure source bottles was incorrectly processed as a value engineering change proposal and, as a result, the contractor received monetary benefits.

Audit Results. We did not substantiate the allegations. The value engineering change proposal was not incorrectly processed. Governing regulations do not prevent contractors from submitting proposed technical changes or value engineering change proposals based on requests from Government procuring activities. The value engineering change proposal was not implemented because kevlar was rejected as a substitute material for fiberglass. The contract was closed, and Brunswick Corporation did not receive any monetary benefits from the engineering change proposal.

Contract DAAA09-91-C-0010

Background. The Armament, Munitions, and Chemical Command, Rock Island, Illinois, awarded the contract, valued at \$3,501,191, to MI-T-M Corporation for the purchase of steam cleaners. The DCMAO, Cedar Rapids, provided quality assurance support for the contract.

Allegations. The design, fabrication, and testing of the steam cleaners did not meet the requirements of the description for purchase specified in the contract. As a result, the buying activity accepted nonconforming and technically deficient parts.

Audit Results. We did not substantiate the allegations. The audit showed that the Government QAR accepted the steam cleaners as fully conforming to the contract specifications. The users of the steam cleaners did not report any manufacturing defects. We concluded that any deficiencies were minor and did not materially affect the use of the steam cleaners.

Contract DAAJ09-91-C-0925

Background. The Aviation and Troop Command awarded the contract, valued at \$5,687,226, to Delavan, Incorporated, for the manufacture and purchase of helicopter nozzle fuel injectors. The contract was modified to change the place of performance for 10,170 nozzle fuel injectors from the Delavan-Des Moines, Iowa, facility to the Delavan-Carrol, Iowa, facility and to add first article testing. The DCMAO, Cedar Rapids, provided quality assurance support for the contract.

Allegations. Verification of the structural and functional integrity of the test fixtures used at the Delevan-Des Moines facility was needed because the test fixtures at the Delavan-Carrol facility were deficient. In the course of qualifying the new Delavan-Carrol facility for production, the contractor described it to be "identical" in all respects to the main Delevan-Des Moines facility. However, QARs discovered that the test fixture at the Delavan-Carrol facility, used for acceptance of the finished nozzle fuel injectors, was deficient and had to be redesigned.

Audit Results. We did not substantiate the allegations. The Delavan-Carrol facility deficiencies in the test fixture were corrected and the nonconforming nozzle fuel injectors that passed the deficient test fixture were repaired or replaced. In addition, QARs at DCMAO, Cedar Rapids, informed the audit team that the two Delavan facilities and test fixtures were not identical. The test fixtures at the Delavan-Carrol facility are digital, whereas the test fixtures at the Delavan-Des Moines facility are analog. The Army has not reported quality problems on the nozzle fuel injectors manufactured at the Delavan-Des Moines facility.

Appendix C. Contracts Awarded for Extended-Range Fuel Systems

<u>Contract</u>	<u>Contractor</u>	<u>Type of Helicopter</u>	<u>Number of Units</u>	<u>Kits</u>	
				<u>Cost Per Unit</u>	<u>Total Cost</u>
DAAJ09-88-C-0543	Fibertek, Incorporated	Blackhawk	112	\$32,312	\$ 3,618,944
		Blackhawk	45	22,335	1,005,075
		Apache	86	29,274	2,517,564
DAAJ09-89-C-0027	Fibertek, Incorporated	Blackhawk	150	32,996	4,949,400
		Apache	90	30,052	2,704,680
DAAJ09-90-C-0658	Fibertek, Incorporated	Blackhawk	127	22,707	2,883,789
		Apache	147	20,318	2,986,746
DAAJ09-90-C-0660	Brunswick Corporation	Blackhawk	31	39,917	1,237,427
		Apache	37	36,941	1,366,817
DAAJ09-91-C-1077	Fibertek, Incorporated	Blackhawk	119	20,992	2,498,048
		Blackhawk	4	20,992	83,968
DAAJ09-93-D-0086	Brunswick Corporation	Blackhawk	300	17,630	5,289,000
		Apache	<u>437</u>	16,078	<u>7,026,086</u>
Total			<u>1,685</u>		<u>\$38,167,544</u>

Appendix D. Summary of Potential Benefits Resulting From Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
1.	Program Results. Establishes a torque requirement that reduces the chance of fuel lines loosening in AH-64A Apache and UH-64A Blackhawk helicopter fuel tanks.	Nonmonetary.
2.	Program Results. Establishes a maintenance requirement to torque the B nut fasteners to a specific tightness on fuel lines in extended-range fuel tanks during maintenance or overhaul.	Nonmonetary.

Appendix E. Organizations Visited or Contacted

Department of the Army

Army Materiel Command, Alexandria, VA
Aviation and Troop Command, St. Louis, MO
Missile Command, Redstone Arsenal, AL
Tank-Automotive Command, Warren, MI
Training and Doctrine Command, Fort Lee, VA
Corpus Christi Army Depot, Corpus Christi, TX
Pueblo Army Depot, Pueblo, CO
Tooele Army Depot, Tooele, UT

Department of the Navy

Atlantic Division, Naval Facilities Engineering Command, Virginia Beach, VA
U.S. Naval Academy Public Works Department, Annapolis, MD
U.S. Naval Station Public Works Division, Guantanamo Bay, Cuba
Naval Construction Battalion Center, Port Hueneme, CA

Department of the Air Force

Sacramento Air Logistics Center, McClellan Air Force Base, CA

Defense Organizations

Defense Logistics Agency, Alexandria, VA
Defense Construction Supply Center, Columbus, OH
Defense Contract Management Area Operations, Cedar Rapids, IA
Defense Contract Management Area Operations, Milwaukee, WI
Defense Contract Management Area Operations, Omaha, NE

Non-Defense Organizations

American Society of Mechanical Engineers, New York, NY
American Welding Society, Miami, FL
Brunswick Corporation, Lincoln, NE

Appendix E. Organizations Visited or Contacted

Non-Defense Organizations (cont'd)

Chairman, Crane Subcommittee Society of Automotive Engineers, Incorporated,
Chattanooga, TN
Fibertek Division of Alcoa Composites, Incorporated, Springville, UT
Fruehauf Corporation, Omaha, NE
Koehring Cranes and Excavators, Incorporated, Waverly, IA

Appendix F. Report Distribution

Department of the Army

Secretary of the Army
Assistant Secretary of the Army (Financial Management)
Commander, Army Materiel Command
Commander, Aviation and Troop Command
Inspector General, Department of the Army
Auditor General, Department of the Army

Department of the Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Inspector General, Department of the Navy
Auditor General, Naval Audit Service

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Inspector General, Department of the Air Force
Auditor General, Air Force Audit Agency

Defense Organizations

Director, Defense Logistics Agency
Commander, Defense Contract Management District, North Central
Commander, Defense Contract Management Area Operations, Cedar Rapids

Non-Defense Federal Organizations

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

Appendix F. Report Distribution

Non-Defense Federal Organizations (cont'd)

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
Senator Tom Harkin, U.S. Senate

Audit Team Members

Paul J. Granetto	Director, Contract Management Directorate
Salvatore D. Guli	Audit Program Director
C.J. Richardson	Audit Project Manager
Jerry Hall	Auditor
Wanda Locke	Auditor
Jacob Rabatin	Engineer
Ana M. Myrie	Administrative Support