



DEPARTMENT OF DEFENSE

# AUDIT REPORT

NONCONFORMING PRODUCTS PROCURED  
BY THE DEFENSE INDUSTRIAL SUPPLY CENTER

NO. 90-113

September 27, 1990

*Office of the  
Inspector General*





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

September 27, 1990

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION  
ASSISTANT SECRETARY OF DEFENSE (PRODUCTION AND  
LOGISTICS)  
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Final Report on the Audit of Nonconforming Products  
Procured by the Defense Industrial Supply Center  
(Report No. 90-113)

This is our final report on the Audit of Nonconforming Products Procured by the Defense Industrial Supply Center (the Supply Center) for your information and use. Comments on a draft of this report were considered in preparing the final report. The Contract Management Directorate made the audit from July 1988 to February 1990. The objectives of the audit were to determine the extent to which products procured by the Supply Center conformed to contractual specifications, to determine the reasons contributing to the acceptance of nonconforming products by the Supply Center, to determine what preventive measures can be taken to reduce the number of nonconforming items accepted by the Supply Center, and to evaluate the effectiveness of internal controls related to the identification of nonconforming products in the Defense supply system. The audit included random tests of \$1.02 billion of inventory in 20 Federal Supply Classes procured by the Supply Center.

Overall, the Department of Defense Quality Assurance Program needed improvement. The poor quality of products procured reflected the poor quality controls applied by the contractors who supplied the products. Some of the suppliers in the audit sample had previously pleaded guilty to fraud charges and admitted to falsifying test data for certain products included in our audit universe. The Supply Center did not receive the quality products for which it paid. Specifically, we projected that \$171 million of the parts universe had major nonconformances and \$453 million had minor nonconformances to contract specifications. The relative precision of the estimate with 95 percent confidence was about  $\pm 38$  percent. The parts reviewed were required to be manufactured to specifications cited in DoD drawings and military standards and had been accepted at contractors' plants and at Defense depots.

The Supply Center coordinated and managed the product testing for the audit. It employed independent laboratories to test the parts to determine the extent of nonconformances. Characteristics such as markings, paint color, and minor surface flaws that were not essential to the performance of the parts, were not tested for or identified as nonconformances in this

audit. Supply Center engineers identified each part's essential and critical characteristics, such as dimensions, hardness, and material content. The Supply Center and the audit team jointly identified nonconformances as major or minor. The major nonconformances identified were deviations to such an extent from product specifications that there was an adverse effect on safety, health, reliability, durability, performance, or interchangeability. The minor nonconformances were deviations to a lesser extent from specifications and individually did not adversely affect safety, health, reliability, durability, performance, or interchangeability. However, the combined effect of several minor nonconformances could adversely effect the part and cause them to be major nonconformances. In this report, the terms parts and products are used interchangeably as common terms to describe the Supply Center inventory.

At the time of this report the Defense Logistics Agency (DLA) and the Supply Center were implementing a number of quality initiatives as part of the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. In addition, the Supply Center had an active program for testing "grade 8" bolts and "class 3" fasteners before acceptance. These initiatives had a positive effect on the quality of products procured by the Supply Center. However, several areas not specifically covered by the Action Plan need to be included in the effort to improve the quality of spare and repair parts. The results of the audit are summarized in the following paragraphs, and the findings and audit recommendations are contained in Part II of this report.

An estimated 62 percent of 1.28 billion parts was nonconforming because the DoD Quality Assurance Program did not work adequately for the acquisition of industrial products, including spare and repair parts, for 16 of 20 Federal Supply Classes. The poor quality of the products procured reflected the poor performance of the contractors who supplied the products and the existence of major risks to the quality of products in the Defense supply system. We projected that the Supply Center paid about \$624 million for products that contained major and minor nonconformances to contract specifications. To improve the quality of spare and repair parts, we recommended that the Under Secretary of Defense for Acquisition develop a policy that employs laboratory testing as a principal quality assurance tool. We also recommended that DoD develop a policy to use the results of testing and other prior performance information related to quality as a significantly weighted evaluation factor in the source selection process. We directed several recommendations to DLA to improve overall implementation of the Action Plan to improve the quality of spare and repair parts (Finding A, page 7).

Critical application spare and repair parts, some of which affect the safety of the user, were not identified as critical to the Supply Center's contracting officers. This resulted in

inappropriate levels of quality assurance and a lack of testing for a projected 40,000 critical application National Stock Numbered items, of which an estimated 19,000 affected the safety of military personnel. We recommended that the Assistant Secretary of Defense (Production and Logistics) establish a priority action plan for the Military Departments to identify critical application products for correct coding in the Contract Technical Data Files maintained by the DLA Supply Centers (Finding B, page 35).

The Product Quality Deficiency Report Program, which was designed to provide feedback on product quality, was ineffective and incomplete. As a result, product quality feedback that was needed to improve the procurement process for spare and repair parts was not provided. We recommended that DLA change current joint regulations to require preparation of Quality Deficiency Reports for all nonconforming products regardless of where the product was inspected and accepted (Finding C, page 43).

The Depot Product Quality Audit Program did not accurately measure the effectiveness of the DLA Quality Assurance Program. Consequently, the rate of nonconformances used to measure the overall quality effectiveness was understated. We recommended that DLA assign responsibility to the DLA Supply Centers for measuring the quality effectiveness of their acquisition operations (Finding D, page 53).

A draft of this report was provided to the Under Secretary of Defense (Acquisition), Assistant Secretary of Defense (Production and Logistics), Assistant Secretary of the Army (Financial Management), Assistant Secretary of the Navy (Financial Management), Assistant Secretary of the Air Force (Financial Management and Comptroller), and Director, Defense Logistics Agency. We received comments from the Assistant Secretary of Defense (Production and Logistics) and the Comptroller, Defense Logistics Agency. Comments were not requested from the other addressees. The comments are summarized in Part II of this report. The complete texts of the comments are in Appendixes Q and R.

The Assistant Secretary of Defense (Production and Logistics) generally nonconcurred with the recommendations. The basis for the Assistant Secretary's nonconcurrences was that implementation of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts provided the solution to the problems presented in the report. We contend that the Action Plan was incomplete and did not identify selective product acceptance testing as a principal quality assurance tool.

The DLA generally nonconcurred with the recommendations. DLA's comments indicated that the problems described in this report can be corrected through implementation of the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts. The DLA also stated that it believed that about



20 percent of the material was nonissuable (contained major nonconformances) and not the 27 percent the audit projected. Further, DLA established a goal of receiving no more than 5 percent nonissuable material by 1995. DLA's goal for improvement in quality is, in our opinion, still not sufficiently restrictive, in that it would consider as satisfactory the receipt of \$50 million in nonissuable products out of every \$1 billion spent. Also, DLA's Action Plan does not provide the quality assurance actions needed to significantly improve the quality of spare and repair parts. DLA can achieve the needed improvement through implementation of the audit report recommendations.

The audit identified internal control weaknesses as defined by Public Law 97-255, Office of Management and Budget Circular No. A-123, and DoD Directive 5010.38. The review of internal controls is summarized in Part I of the report and weaknesses are detailed in Findings A through D.

DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Comments must be provided to us within 60 days of the date of this report. Recommendations A.3.a., A.3.b., A.3.c., A.3.d., A.3.e., A.3.f., C.1. and C.2.b. of the draft report were deleted from the final report and the remaining recommendations were renumbered accordingly. The recommendations requiring additional comments and the findings and recommendations that were revised for the final report are provided in Appendix S. The specific action needed to resolve each recommendation is in Part II of this report.

We determined that \$250 million in monetary benefits would be realized by implementing Recommendations A.2.a., A.2.b., A.2.c., A.2.d., A.2.e.(1), A.2.e.(2), A.2.e.(3), and A.2.f. DLA disagreed with the monetary benefits described in the draft report. We request that DLA review Finding A, reconsider its position on the monetary benefits, and provide additional comments for the final report. The monetary benefits described in this report (Appendix O) are subject to mediation in the event of nonconcurrence or failure to comment.

Please contact Mr. Salvatore D. Guli, Program Director, on (703) 614-6285 (AUTOVON 224-6285), or Mr. C. J. Richardson, Project Manager, on (703) 614-7300 (AUTOVON 224-7300), if you have any questions concerning this report. Appendix U lists the

distribution of this report. A list of the audit team members is in Appendix T. We appreciate the courtesies and cooperation extended to the team during this project.

A handwritten signature in black ink, appearing to read 'E. Jones', with a stylized, cursive script.

Edward R. Jones  
Deputy Assistant Inspector General  
for Auditing

cc: Secretary of the Army  
Secretary of the Navy  
Secretary of the Air Force



REPORT ON THE AUDIT OF  
NONCONFORMING PRODUCTS PROCURED BY  
THE DEFENSE INDUSTRIAL SUPPLY CENTER

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Prepared by:  
Contract Management Directorate  
Project No. 8AC-0038

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FINAL REPORT ON THE AUDIT OF NONCONFORMING PRODUCTS  
PROCURED BY THE DEFENSE INDUSTRIAL SUPPLY CENTER

PART I - INTRODUCTION

Background

The Federal Acquisition Regulation (FAR) provides policies to ensure that supplies acquired through Government contracts conform to the contracts' quality requirements. The responsibility for quality in the production of spare parts is divided between the contractor and the Government. The contractor is responsible for controlling the quality of products during production and offering to the Government for acceptance only those products that conform to contract requirements. Government agencies are responsible for ensuring that products offered by contractors meet contract requirements.

DoD relies on the contractor's quality control system for ensuring that products meet contract requirements. Generally, the quality control system employed by the contractor is determined by the type of quality requirement that is stipulated in the contract. Higher level quality requirements go considerably beyond the standard inspection requirement described in the FAR, Part 46. The standard inspection requirement states that the contractor shall have an inspection system satisfactory to the Government. The standard inspection contract clause is generally considered to be satisfactory if the Government believes it will result in satisfactory products. The higher level quality requirements that are specified in the contracts covered in our audit are Military Inspection 45208A, "Inspection System Requirements" (MIL-I-45208A), and Military Quality 9858A, "Quality Program Requirements" (MIL-Q-9858A).

The contractor's responsibility for MIL-I-45208A is to provide an inspection system that ensures all supplies or services will conform to contract requirements. The inspection system must be documented and available for a Government representative's review before production and throughout the life of the contract. After a review of the system, the Government, at its option, may furnish written notice of the acceptability or nonacceptability of the inspection system. Additional requirements in MIL-I-45208A include inspection and testing documentation, adequate test equipment, and implementation of process controls. A contractor that implements the higher level quality requirement for MIL-Q-9858A automatically must meet the inspection requirement in MIL-I-45208A. In addition to the MIL-I-45208A inspection and testing requirements, MIL-Q-9858A emphasizes quality management, and purchasing and manufacturing controls.



Defense contracting officers rely on Government quality assurance representatives to review the contractor quality control systems to ensure that goods and services conform to contract requirements. The reviews include examinations of contractor quality control procedures, inspections, and contractor actions to correct deficiencies. Government quality assurance representatives were assigned either to plant representative offices at the production facilities of large contractors or to Defense Contract Administration Services Management Areas (recently renamed as the Defense Contract Management Area Operations) as in-plant or nonresident quality assurance representatives servicing numerous smaller contractors.

In March 1990, the Under Secretary of Defense (Acquisition) issued an Action Plan for Continuously Improving the Quality of Spare and Repair Parts that represents a comprehensive approach to the improvement of quality assurance in DoD. As part of the overall effort, the Defense Logistics Agency (DLA) is a leader in developing and instituting initiatives to improve the quality of spare and repair parts purchased. In 1989, in conjunction with ongoing initiatives, DLA developed its version of the Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System (Appendix A). The objective of the DLA Action Plan is to ensure corrective action and to effect continuous improvement of the overall quality of material entering and being stored within the DoD logistics pipeline. Our summary of DLA's quality initiatives is included in the outline of the Action Plan's 25 objectives in Appendix A.

The Defense Industrial Supply Center (the Supply Center) is one of six Supply Centers in DLA that provide supply systems support to DoD. In 1987, the Supply Center employed about 2,400 people. The Supply Center's mission includes the management of over 872,000 National Stock Numbered items that generally include a variety of industrial products. Supply acquisitions from January 1, 1986, through December 31, 1987, cost about \$1.5 billion.

### Objectives and Scope

The objectives of the audit were to determine the extent of nonconforming products procured by the Supply Center; to determine the reasons contributing to the acceptance of nonconforming products by the Supply Center; to determine what preventive measures can be taken to reduce the number of nonconforming products accepted by the Supply Center; and to evaluate the effectiveness of internal controls related to the identification of nonconforming products in the Defense supply system.

For the period January 1, 1986, through December 31, 1987, the Supply Center received over 1.281 billion ready-to-issue industrial parts for which DoD had technical data. These parts represented 114,695 National Stock Numbers in 55 Federal Supply Classes (FSC's).

The scope of the audit was to examine 99,409 National Stock Numbers in 20 FSC's procured by the Supply Center. This audit universe consisted of about 1.278 billion industrial parts valued at \$1.02 billion (Appendix B). The audit universe was limited to parts that were classified as ready-to-issue, that had identifiable technical data, that were procured by the Supply Center, and that were received between January 1, 1986, and December 31, 1987. These parts were procured by contracts and delivery orders awarded by the Supply Center between 1984 and 1987. Using the statistical sampling plan and methodology in Appendix C, we selected 160 National Stock Numbered items in 20 FSC's for testing from the Supply Center's on-hand stocks as of September 1988.

The 160 National Stock Numbered items were randomly selected from 6 Defense depots. The sample results were statistically projected to the individual universe values for each of the 20 FSC's tested. Our estimate of nonconforming parts and the dollar value of those parts were calculated at the 95-percent confidence level with a relative precision of  $\pm 27$  percent of the estimate for the number of parts and  $\pm 38$  percent for the total dollar value of those parts.

Of 160 National Stock Numbered items, 145 items were tested and evaluated. For the 145 items, we examined 172 contracts and delivery orders awarded to 110 contractors from August 1984 to August 1987. The remaining 15 National Stock Numbered items were excluded because the Supply Center could not locate complete contract specifications needed to adequately evaluate the results of testing. We also evaluated the internal controls related to quality assurance in the preaward and postaward stages of the 172 contracts. In addition, we performed on-site reviews of the contractors' quality control practices and DoD's plant representative quality assurance procedures for 53 of the 172 contracts and delivery orders at 29 of the 110 contractors' production facilities.

This performance audit was conducted at the Supply Center from July 1988 to February 1990 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 considered necessary. Activities visited or contacted during the audit are listed in Appendix P.

## Internal Controls

A review of the internal control program documentation and its implementation showed that internal controls were inadequate to identify, before the award of contracts, those contractors who have histories of producing poor quality products. Further, internal controls were not adequate to ensure the identification of major nonconforming products before the parts were accepted into the inventory at the Supply Center. Recommendations 2.a. through 2.f. in Finding A; Recommendations 2., 3.a., and 3.b. in Finding B; Recommendations 1.a., 2.b.(1), and 2.b.(2) in Finding C; and Recommendations 2.a.(3), 2.a.(4), and 2.b. in Finding D, if implemented, will correct these weaknesses.

## Prior Audit Coverage

Only one other audit addressed the extent of nonconforming products in DoD: DoDIG Report No. 89-065, "Nonconforming Products in the Defense Supply System at Warner Robins Air Logistics Center," April 10, 1989. This report is described in detail in Appendix D. The report contained a recommendation to the Assistant Secretary of Defense (Production and Logistics) to incorporate provisions in a draft DoD Directive for

. . . a program that will use laboratory testing as a tool for verification that spare parts procured against higher level quality requirements for tactical end items conform with certain preidentified technical specifications before the spare parts are accepted. The testing program should emphasize 'safety critical' designated parts and those results should be used in implementation of a DoD-wide product deficiency reporting and feedback system.

The Deputy Assistant Secretary of Defense (Logistics) concurred with the recommendation and stated that general policy guidance would be included in a new directive on Total Quality Management. The DoD Action Plan features use of laboratory testing as a tool for identifying nonconformances in safety critical parts. The issuance of the new directive on Total Quality Management was canceled as a result of the Defense Management Review in 1990. DoD plans to place the policy guidance in another DoD Directive.

Other DoDIG and General Accounting Office reports that addressed quality assurance issues and defective parts are listed in Appendix D.

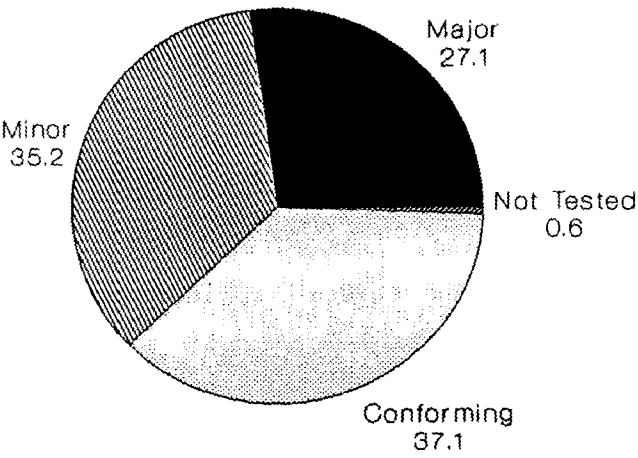
**PART II - FINDINGS AND RECOMMENDATIONS**

**LIST OF FINDINGS, RECOMMENDATIONS, MANAGEMENT  
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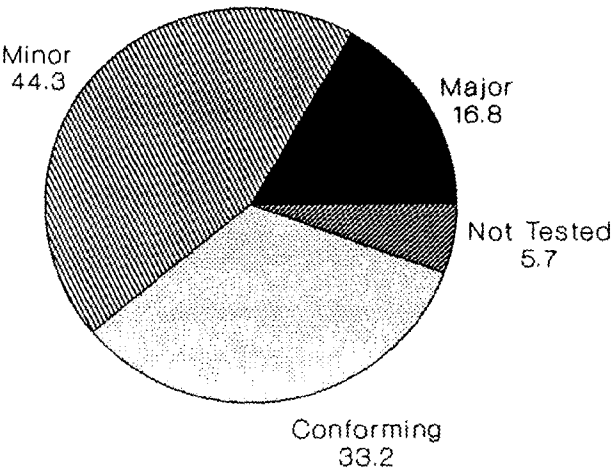
STATISTICAL PROJECTIONS OF TEST RESULTS

BY NUMBER OF PARTS



(Percents)

BY DOLLAR VALUE



(Percents)

## A. Nonconforming Products

### FINDING

A statistical sample of 1.28 billion parts procured by the Defense Industrial Supply Center (the Supply Center) showed that 62 percent of the parts was nonconforming and 27 percent was major nonconforming parts and potentially unusable. The estimated value of major nonconforming products was \$171.6 million, and the estimated value of minor nonconforming products was \$453.1 million. The poor quality of the products procured reflected the poor performance of the contractors who supplied the products. These parts were accepted by the Government because the DoD Quality Assurance Program (the Program) did not work adequately. The Program lacks the support of a DoD policy that would use laboratory testing as a principal quality assurance tool. The Supply Center did not have effective testing procedures for identifying poor performing contractors or for barring them from future procurement competitions. As a result, the Supply Center did not receive the quality products it paid for from many contractors during 1986 and 1987. We estimated that by investing \$10 million to \$20 million, the Supply Center can avoid the cost of accepting about \$250 million of nonissuable material during the next 5 years.

### DISCUSSION OF DETAILS

Summary of Test Results. We found minor or major nonconformances to contract requirements for 96 of the 145 sampled National Stock Numbered items tested in 20 Federal Supply Classes (FSC's). In addition, we determined that 36 of the nonconforming items affected the safety of military personnel. As shown graphically in the charts on page 6, we projected that about 796 million, or 62 percent, of 1.28 billion products had nonconformances. The value of the nonconformances was \$624.7 million, or 61 percent, of the \$1.02 billion of products in our audit universe. Contracting officers or their agents should reject nonconforming products. A summary of the test results for each FSC is in Appendix E. A summary of the projections of the test results to the audit universe for each of the 20 FSC's is in Appendix F.

Testing Methodology. The Supply Center's Engineering and Standardization Directorate provided engineering support to develop the testing methodology for the audit sample. Specialists from the Directorate's Test and Evaluation Division prepared test plans based on the drawings and specifications cited in the contracts for 145 of the 160 National Stock Numbered items in our review. The test plans concentrated on the major or critical dimensional, physical, and chemical characteristics cited in the

drawings and specifications for the products. A DoDIG engineer reviewed the test plans and generally agreed with the plans used to conduct the tests.

The Supply Center's Test and Evaluation Division selected the commercial testing facilities for each type of test (dimensional, physical, or chemical). The Test and Evaluation Division controlled the audit sample for testing and retesting. A DoDIG engineer evaluated the capabilities of 10 commercial laboratories that were used to test most of the audit samples (Appendix G).

Laboratory test results were sent to the Supply Center's Test and Evaluation Division and to the audit team. The Test and Evaluation Division made an initial analysis of the test results. Based on the evaluation of the Test and Evaluation Division, DoDIG engineers determined whether each nonconformance was major or minor in accordance with Federal Acquisition Regulation 46.407 and discussed the evaluations with the Supply Center engineers to reach an agreement on each nonconforming part in the audit sample. Most major nonconformances were retested at a second laboratory to verify the original test results. An example of major and minor nonconformances was found on the threads of the bolts in our sample. Some bolts were unusable because the thread dimensions were wrong. This was a major nonconformance. On the other hand, some bolts contained burrs on the threads. If the burrs were not too excessive, they were considered to be minor nonconformances because the performance of the bolt was not adversely affected. For each sampled part with a major nonconformance, Appendix H details the parts, contracts, contractors, and test results.

DoD Quality Assurance. DoD policy does not require the use of laboratory testing as a quality assurance tool. Laboratory testing performed on selected contracts before product acceptance provides a stronger assurance that spare and repair parts will conform to major technical specifications. We discussed this concept with officials in the Office of the Assistant Secretary of Defense (Production and Logistics) in July 1988. Subsequently, we recommended in our Audit Report No. 89-065, "Nonconforming Products in the Defense Supply System at Warner Robins Air Logistics Center," April 10, 1989, that the Assistant Secretary of Defense (Production and Logistics) develop a program for the use of testing in DoD Quality Assurance Programs.

In response to the audit, the Under Secretary of Defense (Acquisition) signed in March 1990, the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts, which features the use of laboratory testing as a tool for identifying nonconforming products. However, in a separate analysis of the Action Plan, the Deputy Inspector General, DoD, commented that the Action Plan does not provide an adequate role

for selective quality assurance acceptance testing of critical application parts that represent a quality risk to DoD.

Definitions and Terminology. The Federal Acquisition Regulation (FAR), Military Standards 1520C and 109B, and DLA Regulation 8200.10 all contain varying definitions and terminology regarding a nonconformance. The difference in terminology caused confusion for Defense managers and contractors involved in the acquisition, supply management, and production of industrial products. Parts that do not conform to contractual specifications are called nonconformances or defects. Nonconformances and defects are commonly classified as major or minor.

Although the FAR does not define a major nonconformance, it states:

. . . (a) Contracting officers should reject supplies or services not conforming in all respects to contract requirements. (b) Contractors ordinarily shall be given an opportunity to correct or replace nonconforming supplies or services when this can be accomplished within the required delivery schedule. (c) The contracting officer shall ordinarily reject supplies or services when the nonconformance adversely affects safety, health, reliability, durability, performance, interchangeability of parts or assemblies or any other basic objective of the specification. (d) If the nonconformance is minor, in that it does not affect any of the factors referred to in (c) above, the cognizant contract administration office may make the determination to accept or reject . . . .

DLA Regulation 8200.10, "Control of Nonconforming Material," defines a Type II Nonconformance with the same definition the FAR uses for a minor nonconformance. DLA Regulation 8200.10 also defines a Type I nonconformance in the same words the FAR uses for rejecting a nonconforming product.

When determining whether a nonconformance is major or minor, contractors, Government quality assurance representatives, and DoD engineers usually refer to definitions in Military Standard 109B, "Quality Assurance Terms and Definitions," and Military Standard 1520C, "Corrective Action and Disposition System for Nonconforming Material." Also, contractors and DoD engineers occasionally substitute the definitions of major defects for major nonconformances. At the Supply Center, the term "major nonconformance" was used to mean the product was not usable or at least not issuable unless the Military Departments' Engineering Support Activities determined that the product could be used under certain circumstances.



DLA's interpretation of the definitions in the Military Standards for a minor or major nonconformance or defect varied from the definition provided in the FAR. For example, the definition of a major defect in Military Standard 109B, as a nonconformance "... likely to result in failure or to reduce materially the usability . . ." of an item, is often substituted by DLA for the definition of a major nonconformance. DLA's use of this definition resulted in parts containing minor and major nonconformances being used on military equipment. These parts are called serviceable, or even usable, by DLA but may have limitations placed on their use. Unserviceable parts are categorized as either repairable or condemned. The lack of standard terms created confusion for personnel in OSD, DoDIG, DLA contract administration offices, the Supply Center, and contractors' organizations. Several commonly used definitions for major and minor nonconformances, Type I and Type II nonconformances and defects are in Appendix K. For this audit report, we used the FAR guidance as criterion and the guidance was applied in a manner similar to the example of the nonconforming bolt on page 8.

Contractors' Quality Control Practices. We reviewed the quality control practices on 53 contract delivery orders (hereafter referred to as contracts) for 29 contractors. Nonconforming products were provided by 23 contractors who had not implemented adequate quality control inspection procedures. We determined that adequate contractor inspections were not always performed, appropriate test equipment and fixtures were not always used, and the quality control function lacked independence, as described below. A summary of the contracts and contractors visited is in Appendix L, and an analysis of contractor quality control practices is in Appendix M.

Contractor Inspections. We determined that 23 of the 29 contractors did not perform adequate quality control inspections on 43 of the 53 contracts. Of the 43 contracts, 20 contained major nonconformances and 23 contained minor nonconformances. The contractor's inspections were inadequate because they failed to identify and reject a nonconforming product. For example, the inspection at one contractor's facility failed to detect a physical nonconformance in an electrical power cable (sample number 139). The contractor, a distributor, did not inspect the cable before it was shipped to the Government. The cable was shipped directly to a Defense depot from the manufacturer's facility. On such contracts the distributor normally receives a certificate of conformance from the manufacturer. The distributor was unable to provide us with a copy of the certificate of conformance for the contract we reviewed. As a matter of practice, this distributor does not perform tests on the products of its suppliers. Additional details for sample number 139 are in Appendix H, page 28.

During our visits to manufacturing facilities, we confirmed the lack of adequate quality control inspection practices for two repetitive nonconformances, inadequate chamfers and protective plating. These inadequacies could adversely affect the performance and the durability of fasteners in general. A chamfer is a beveled edge at the end of the fastener specified with a dimension for length and an angle for the bevel. The purpose of the chamfer is to center the fastener and provide a starter thread to ensure proper mating with threads in the next higher assembly. Absence of a chamfer will result in some fasteners misthreading on the mating part. In 11 of the 28 contracts that called for a fastener with a chamfer, the fasteners supplied did not have a chamfer or nonconformed to a large degree. DoD is paying for a chamfer and the contracting officer should insist on receiving what is paid for. Fasteners are electro-plated for durability. Good quality controls are needed to ensure correct plating. Thirty contracts in the audit sample required plating, but fasteners supplied on seven contracts were not plated or were inadequately plated. The deficiency can result in premature corrosion of the part. When we brought this to the attention of the Supply Center's Engineering and Standardization Director, he said that he would have chamfers and plating included as part of the standard test plan used in all future product verification inspections and in other comprehensive laboratory tests where these specifications applied.

Test Equipment and Fixtures. Fifteen of the 29 contractors did not have adequate test equipment and fixtures to measure completed parts in 30 of the 53 contracts. Inadequacies ranged from distributors not having test equipment or not using another organization's test equipment, to manufacturers having limited testing devices that did not satisfy necessary quality control procedures. For example, the test equipment and fixtures at one contractor's facility failed to detect several dimensional nonconformances that occurred in annular ball bearings (sample number 36). The contractor's inspection equipment consisted of minor hand held gauges, and the contractor acknowledged that the gauges will not measure the dimensions specified in the contract. Additional details for sample number 36 are in Appendix H, page 2.

Independence of Quality Control Function. DoD Quality Assurance and Reliability Handbook 50, "Evaluation of a Contractor's Quality Program," prescribes that personnel performing quality control functions should have sufficient organizational freedom to identify and evaluate problems in quality. However, the quality control functions were not properly segregated at 10 of the 29 contractors for 22 of the 53 contracts. For 6 of the contractors visited, the President,

Vice President or the Director of Production also acted as the quality control manager or representative. For example, at one contractor's facility the Corporate Director also held the position of Quality Control Manager. The company's quality control manual stated that material from each supplier should be tested at least once a year, but material from the supplier of the metal bar in our audit sample number 150 was not tested. Quality control responsibilities should be independent of the production department to help ensure that production quotas do not override the need for quality. Additional details for sample number 150 are in Appendix H, page 30.

Adequacy of Government Quality Assurance. Government quality assurance representatives provided source inspection on 37 of the 53 contracts. Of these 37 source inspection contracts, 31 contained nonconformances (15 major nonconformances and 16 minor nonconformances). Higher level quality requirements specified in Military Inspection 45208A, "Inspection System Requirements" (MIL-I-45208A), and Military Quality 9858A, "Quality Program Requirements" (MIL-Q-9858A), were required on only 4 of the 31 contracts. Based on the critical application of the parts, higher level quality requirements were appropriate for 28 of the 31 contracts with nonconformances. Government quality assurance representatives' reviews of material and related inspection reports were inadequate for 24 of the 31 contracts. For example, a Government quality assurance representative failed to detect that a substitute material was provided in metal bars, even though the material provided was clearly stated on the subcontractor's specification narrative and customer delivery receipt, and it was different than the metal required by the contract. Additional details for sample number 151 are in Appendix H, page 31.

In another instance, a contractor that was included in our audit sample was also the subject of an official complaint. The contractor manufactured pumps and neglected the calibration of its gauges and some of its other inspection tools. During the audit, a quality control inspector at the company wrote to his congressman and described his concerns about serious quality problems at the contractor's plant. Quality assurance representatives from the Defense Contract Management Command (DCMC) investigated his allegations and took action to suspend acceptance of future receipts until the quality problems were resolved. While the DCMC acted quickly and appropriately, DCMC should have detected the problems at this contractor long before the company's quality control inspector wrote the letter.

Procurement Risks. Contractors who provide poor quality products represent a substantial risk to the quality of the Supply Center's inventory. The Supply Center needs to effectively employ all of the quality related management tools

available to the contracting officer to ensure that poor performing contractors are identified and when necessary, eliminated from the field of competition. On the other hand, an equal effort is needed to identify truly good performers and to encourage their continued good performance with powerful incentives.

Debarment for Poor Quality. Objective six of the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System is to combat poor performance using debarment and suspension procedures. DLA's debarment of contractors for poor performance has increased since November 1987, and the number of debarments recommended by the Supply Center has also increased.

We concluded that debarments at the Supply Center were related to indictments that resulted from product substitution, not from histories of multiple contracts where major nonconforming products were involved. There were no written procedures by which a decision to test additional on-hand and future receipts is made to determine whether or not to pursue debarment.

Contracting officers obtained limited quality history information by referring to specific National Stock Number (NSN) procurement histories as well as a nonautomated special review list of contractors who have a history of poor performance. However, contracting officers acknowledged that they did not refer to the consolidated contractor quality history data in the Quality Evaluation Program to determine a contractor's competency prior to award. The Quality Evaluation Program is designed to provide a summary of quality related information, including the quality deficiencies and positive laboratory test results for a contractor. This consolidation of procurements for various NSN's would be very useful in assisting the contracting officer with award decisions and with determinations on whether to proceed with an action on a recommendation for debarment.

"Blue Chip" Contractors. The "Blue Chip" vendor program was established to identify reliable contractors, who consistently provide good performance in terms of "on-time" deliveries that are free of other complaints, and to provide the "Blue Chip" vendor with incentives for continued good performance. These incentives can become a risk to the Supply Center if the Supply Center's criteria for selection do not include sufficient objective measures to identify truly good performance. One of the objective measures of good performance should be comprehensive laboratory tests of products against the quality requirements in the contract. This is not done to confirm contractors considered for the Supply Center's "Blue Chip" contractor program.

A contractor who first appeared on the Supply Center's April 1989 list of 11 "Blue Chip" contractors was also included in our audit sample as the supplier of products on eight contracts. The products on seven of the eight contracts nonconformed to the quality requirements of the contract, and products on four contracts had major nonconformances. We discussed the test results with the Supply Center, after which the contractor's name was deleted from the "Blue Chip" vendor program list. However, the Supply Center did not accept our recommendation to test the products of "Blue Chip" applicants prior to placing the applicants in the "Blue Chip" program. The Supply Center did not conduct product verification testing for the other 10 contractors on the "Blue Chip" list. Additional details on these four contracts are in Appendix H, pages 5, 6, 16, and 19.

Supply Center Quality Initiatives. The Supply Center was actively engaged in managing the problems created by contractors who supplied products identified as nonconforming to the quality specifications in the contract. During 1987 and 1988, the Supply Center initiated a product verification inspection program that placed a contractual requirement on contractors to submit "grade 8" bolts for testing by commercial laboratories prior to accepting the parts. In addition, contracts required Certifications of Quality Compliance with the contract quality requirements for all "class 3" fasteners. Both the "grade 8" bolts and "class 3" fasteners are commonly used in critical applications. The Certifications of Quality Compliance were instituted to show that proper quality control testing was performed by the manufacturer. After the product verification inspections and the quality compliance program were instituted, the number of nonconforming products dropped significantly from the previous year. In November 1988, the Supply Center reported to DLA that the rate of nonconforming "class 3" fasteners declined from about 40 percent in 1987 to about 10 percent. The "grade 8" bolts experienced even better improvement.

In our opinion, the Supply Center can realize success in the 10 FSC's listed below similar to its successes with "class 3" fasteners. The Supply Center should target the large dollar buys and other major risk procurements in each FSC for comprehensive laboratory tests. We believe the Supply Center should expend about \$4 million in fiscal year 1991 to test products in the FSC's listed below and other risk areas. Thereafter, the expenditures should be reduced as the need for testing decreases, as it should, because contractors will provide products that conform to contract specifications. We estimate that over a 5-year period expenditures for testing would be about \$10 million to \$20 million. The testing associated with the risk areas cited in this finding, as well as tests of statistically sampled items discussed in Finding D of this report, will avoid the need to replace about \$250 million of nonissuable products during the next 5 years.

Federal Supply Classes Containing  
Over \$1 Million of Major Nonconforming Material

<u>Federal Supply Class</u>	<u>Nomenclature</u>	<u>Value of Major Nonconforming Products (million)</u>
1680	Miscellaneous Aircraft Accessories, Components	\$ 12.4
5305	Screws	49.2
5306	Bolts	20.1
5307	Studs	4.0
5310	Nuts and Washers	2.8
5315	Nails, Keys, and Pins	7.3
5320	Rivets	18.7
5330	Packing and Gasket Materials	11.0
6145	Wire and Cable, Electrical	42.7
9530	Bars and Rods, Nonferrous Base Metals	1.9
		<u>\$170.1</u>

Cost Reimbursements. We discussed with DLA and the Supply Center the need to obtain reimbursements for test costs from contractors who provide nonconforming products. The Supply Center subsequently initiated its own program of obtaining voluntary refunds, partial reimbursements, or replacements for nonconforming products. The Supply Center's program included charging those contractors for the cost of testing as well as other costs related to the nonconforming products. In our opinion, the Supply Center has established a sound approach for establishing a legal debt that the contractor must pay or appeal. Either way, the Supply Center has sent the message to contractors that it will insist on receiving the quality products paid for. However, the Supply Center needs to do more in identifying poor quality performers so that contractors who provide good quality products will receive the competitive advantages they deserve.

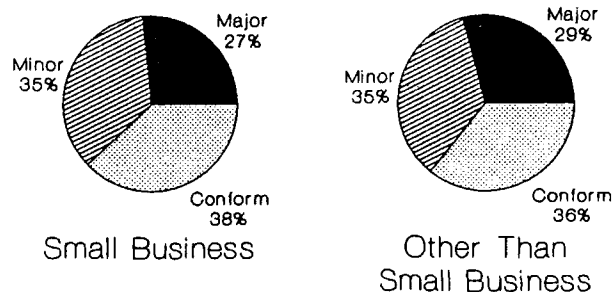
Analysis of Contractor and Quality Assurance Factors. In response to DoD management questions directed to problem areas regarding the quality of products procured for the Defense supply system, we analyzed our test results four ways: by size of business (small business and other than small business); by type of supplier (distributor and manufacturer); by site of inspection (source and destination); and by level of quality requirements in the contract (standard inspection and higher level quality requirements). The analysis focused on the rate of nonconforming parts, the value of nonconforming parts, and the performance of contractors on the 172 contracts in the audit sample. Contractors performed poorly on about 69 percent of the 172 contracts. Comparisons of the test results for the 172 contracts are in

Appendix I. Analysis of the test results is displayed graphically and discussed in the following paragraphs.

Size of Business. We compared the quality of products supplied by small business concerns to those supplied by other than small business concerns. We estimated that small businesses accounted for 75 percent of the total parts procured in our audit universe. A comparison of the nonconformance rates and the projections by parts and by dollars is in Appendix J.

The charts below show that both small business concerns and other than small business concerns provided high rates of nonconforming parts.

### CONFORMANCE OF PARTS BY SIZE OF BUSINESS



Generally, the basis for contract awards in our sample was low offer. In our opinion, part of the cause for the poor quality of parts from small businesses was correctable by expanding the use of evaluation factors for past performance that would enable contracting officers to make awards based on "best value." Contracting by "best value" recognizes that low price can be a false economy and takes past performance and quality into consideration as evaluation factors as well as low offer. The Supply Center did not use quality as an evaluation factor for awards that involved small businesses because it did not have a complete and reliable data base of contractor performance history.

Contracting laws and regulations are the basis for procedures established to handle low offers from small businesses. These procedures are different in a few significant ways from the procedures that apply to offers from large businesses. Contracting officers are free to exercise judgment in determining whether responsive large businesses have the necessary elements of responsibility to perform under contract. However, contracting officers may not reject low, small business offers as nonresponsive without first referring the matter to the

U.S. Small Business Administration (SBA), even when the competition is strictly limited to two or more small business concerns. If one of these small businesses is the low offeror and has a history of providing nonconforming products, and another small business has a history of providing conforming products, the contracting officer cannot simply reject the low offeror as nonresponsible. SBA has the legal authority to make final determinations on the responsibility of small firms to perform under proposed contracts. If the SBA issues a Certificate of Competency on a particular acquisition for a particular small firm, the contracting officer must award to that firm. The Certificate of Competency requirement applies if the small business was determined to have performed poorly and was therefore nonresponsible, and all further consideration of its otherwise "winning" offer was terminated on that basis. An agency decision to deny an award to a small business concern on the basis that the overall ranking of the small business offer was lowered due to its score under a past performance evaluation factor is not eligible for review under the Certificate of Competency requirement.

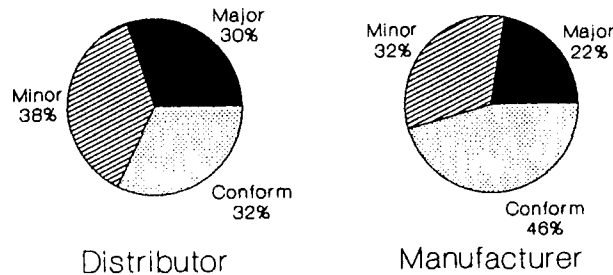
The Defense Logistics Agency (DLA) and the Supply Center developed a few modest evaluation factors under the "best value" concept by which offerors with good quality histories may be evaluated as the low offeror. This is done by adding a cost to the offer of a poor performing contractor. In some cases these evaluation procedures may preclude the need for a responsibility determination and allow the contracting officer to reject an otherwise low offeror who may have a poor quality history. But if the firm with a history of supplying nonconforming products is still the low offeror after evaluation, the contracting officer must refer the matter to the SBA if a small business is determined to be nonresponsible. This procedure often adds 15 days to the acquisition process even when the SBA concurs with the contracting officer in rejecting the offer. The delay and the extra paperwork involved may function in some cases as a disincentive to reject small business firms with poor quality histories. This process is designed to assist small businesses in improving their operations. However, it is not meant to forgive poor past performance. To improve the quality of products procured from suppliers, Defense Supply Centers need to develop evaluation factors relating to past performance and include those factors in contract solicitations. Requests for proposals should clearly describe substantial weight in the contract award process for past performance of the competing offerors. This does not require a change of existing statutes and regulations. It does require the Supply Center to maintain a reliable data base that can provide timely and accurate information regarding a contractor's past performance.

Type of Supplier. We compared the quality of parts supplied by distributors to those supplied by manufacturers. We estimated that distributors accounted for 62.5 percent of the



total parts procured in the audit universe. The charts below show that both distributors and manufacturers provided high rates of nonconforming parts. Comparisons of the nonconformance rates and the projections by number of parts and by dollars are in Appendix J.

## CONFORMANCE OF PARTS BY TYPE OF SUPPLIER



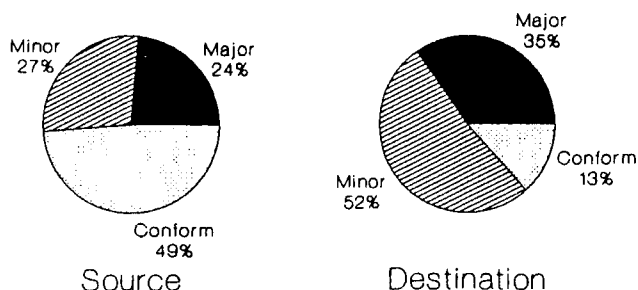
The dollar value of distributor procurements was 45.6 percent of the audit universe. However, distributors provided 57 percent of the \$171.5 million of major nonconforming products (Appendix J.)

Manufacturers had quality control test equipment and the ability to control quality in order to satisfy the Government quality assurance requirements. Distributors generally did not have this capability, nor did they rely on other facilities for product testing. Instead, distributors relied on certificates of conformance from their subcontractor manufacturers. Certificates of conformance generally satisfy the Government requirements under standard inspection. Often the certificates of conformance contained qualifying statements that limited the manufacturer's legal responsibility to the distributor. During the audit, the Defense Logistics Agency (DLA) issued a contracting policy that applies equivalent quality and technical requirements to manufacturers and distributors alike.

Site of Inspection. We compared the quality of parts supplied by source inspected contracts to those supplied by destination inspected contracts. We estimated that parts inspected at source accounted for 68 percent of the total parts procured in our audit universe. The benefit of source inspection is that the Government has the ability to reject a contractor's part before it is shipped to a Government receiving point. The charts below show that high rates of nonconforming parts were accepted at both destination and source. The percentage of the

number of parts that conformed was substantially higher when the product was inspected at source. Comparisons of the nonconformance rates and the projections by parts and dollars are in Appendix J.

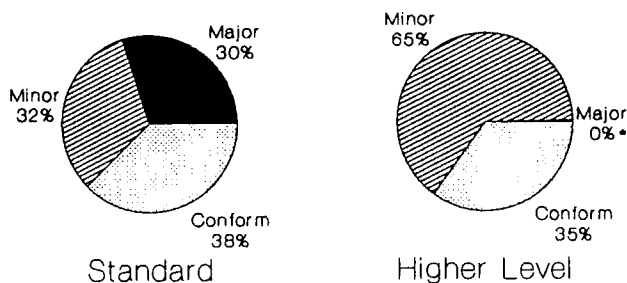
## CONFORMANCE OF PARTS BY SITE OF INSPECTION



However, in a similar comparison by dollar value, a reverse trend was evident. Only 59 percent of the dollar value of destination inspected parts was related to nonconforming parts, whereas 67 percent of the dollar value of source inspected parts was related to nonconforming parts.

Level of Quality Requirement. We compared the quality of products supplied by standard inspection requirements to those supplied under higher level quality requirements. Ninety-one percent of the products in our sample were supplied by the standard inspection requirement. The charts below show that high rates of nonconforming parts were provided under both standard inspection and higher level quality requirements. However, practically all of the reported major nonconforming products were provided under standard inspection quality assurance requirements. Comparisons of the nonconformance rates and the projections by parts and dollars are in Appendix J.

## CONFORMANCE OF PARTS BY LEVEL OF QUALITY REQUIREMENT



• Major for higher level quality requirement was actually 0.2%.

In a similar comparison by dollar value, standard inspection accounted for 40 percent conforming parts, whereas higher level quality assurance had only 14 percent conforming parts (but virtually all of the nonconformances in the higher level category were minor).

Conclusion. Quality cannot be inspected into products. It must be built in by manufacturers who control quality as part of the manufacturing process. The DoD quality assurance system is an integrity-based system. The contractor is responsible for the quality of the product supplied to the Government for acceptance. Recognizing that the quality of products supplied to the Defense Supply System is substantially inferior to what it should be, DoD formulated the Total Quality Management Strategy with the objective of achieving continuous improvement in quality. The strategy, as applied to the acquisition of spare and repair parts, depends on reliable contractors. Unfortunately, the initiatives formulated to implement the strategy do not provide for an accurate means of measuring the progress of the initiatives or for the aggressive identification of suppliers of poor quality products. The quality assurance initiatives described in DLA's Action Plan to Improve the Quality of Spare and Repair Parts in the DoD Logistics System focus attention on some weak areas in the production process, but do not focus enough attention on product testing. In our opinion, product testing represents the single most effective form of quality assurance at this stage of the Total Quality Management Program. Ideally, a mix of testing before and after acceptance, as well as in-plant quality assurance, will provide the best payoff. However, until Total Quality Management is a mature strategy, proven by the objective measurement of product testing, DoD should use product testing as the primary means of product quality assurance. DoD's commitment to accept only quality products may provide the best incentive to motivate industry to adopt quality processes and a more proactive role in Total Quality Management.

#### RECOMMENDATIONS, MANAGEMENT COMMENTS AND AUDIT RESPONSE

The Assistant Secretary of Defense (Production and Logistics) and the Comptroller, Defense Logistics Agency, provided comments on the findings and recommendations. The complete texts of the comments are in Appendixes Q and R. Draft report recommendations A.3.a., A.3.b., A.3.c., A.3.d., A.3.e. and A.3.f. were deleted from this final report.

#### Recommendations to the Under Secretary of Defense for Acquisition and the Assistant Secretary of Defense (Production and Logistics)

Recommendation A.1.a. We recommend that the Under Secretary of Defense (Acquisition) develop policy that employs laboratory

testing as a principal quality assurance tool. This policy should be included in DoD Directive 5000.2, "Defense Acquisition Management Policy and Procedures," in DoD Directive 4140.1, "Supply Policy," and as part of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. The policy should state that the purpose of the testing is to verify that spare and repair parts procured for tactical end items conform with certain preidentified technical specifications before the parts are accepted. The testing program should emphasize parts designated as "critical" and the need for the Military Departments and the Defense Logistics Agency to periodically test the products of any contractor. The policy should require reporting the test results for major nonconformances to all DoD buying activities as part of a DoD-wide product deficiency reporting and feedback system.

Management Comments. The Assistant Secretary of Defense (Production and Logistics) concurred. The Assistant Secretary stated that "Objective No. 22 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System, published on March 4, 1990, is directed to expanding and enhancing DoD's capability to perform laboratory testing and evaluation of parts. While this recommendation specifically advocates that laboratory testing be used as a principal quality assurance tool for verifying that spare and repair parts procured for tactical end items conform with specifications, implementation of the Action Plan, with its total approach to solving potential nonconformances, is deemed adequate to fulfill the intent of this recommendation."

Audit Response. The Assistant Secretary's proposed action does not satisfy the intent of the recommendation. Objective No. 22A of the DoD Action Plan simply states, "Expand and enhance DoD's capability to perform laboratory testing and evaluation of parts through cost reimbursable sharing of in-house and contracted laboratory testing resources." The recommendation requires a specific DoD policy commitment to selective product acceptance testing targeted at suppliers who represent a risk of providing defective critical application products. We request the Assistant Secretary to reconsider his position and provide additional comments to the final report.

Recommendation A.1.b. We recommend that the Assistant Secretary of Defense (Production and Logistics) standardize the terminology and definitions for a nonconformance in DoD Guidance. Standardization should occur through the use of one set of terms and definitions for a nonconformance. The guidance should exclude nonstandard terms and provide a standard definition to such words as "Nonconformance," "Minor Nonconformance," "Major Nonconformance," "Type I Nonconformance," "Type II Nonconformance," "Defect," "Major Defect," and "Minor Defect" in the Military Standards and bring the terms into agreement with the

Federal Acquisition Regulation guidance. The definition should be specific and should support the intent of the Federal Acquisition Regulation guidance for rejection of nonconforming products because the nonconformance adversely affects safety, health, reliability, durability, performance, interchangeability of parts or assemblies, or any other basic objective of the specification.

Management Comments. The Assistant Secretary of Defense (Production and Logistics) concurred. The Assistant Secretary stated that "Actions to establish definitions are underway. Specifically, a similar finding in DoDIG Report No. 89-065, 'Nonconforming Products in the Defense Supply System at Warner Robins Air Logistics Center,' April 10, 1989, was resolved through arbitration, setting a time table for convening a study group to address this issue. In addition, the FAR/DFARS Quality Assurance Committee agreed to recommend a DFARS definition change which would incorporate the MIL-STD-109D as the standard definition for use. This issue is expected to be resolved by October 30, 1990."

Audit Response. The action taken does not satisfy the intent of the recommendation. The proposed standardized definition lacks specificity and does not agree with the current Federal Acquisition Regulation guidance. The MIL-STD-109D phrase "to reduce materially the usability of the unit for its intended purpose" causes the definition to lose meaning and to be less enforceable than the definition in the Federal Acquisition Regulation. The FAR definition is specific in its description of the reasons for rejection of a product.

The degree of specificity provided by the Federal Acquisition Regulation supports the implementation strategy for Objective No. 8 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts. Objective No. 8 requires rejection or corrections of nonconforming products. Implementation of this objective is related to the enforcement of the inspection clause. That clause gives the Government the right to require the contractor, after notice of defects or nonconformances, to repay such portion of the contract as is equitable under the circumstances if the contracting officer elects not to require correction or replacement. The difference in interpretation of the phrase "to reduce materially the usability of the unit for its intended purpose" weakens the Government's case for full reimbursement or replacement. To address the need for specificity in the definition, we added the following sentence to our original recommendation. "The standards should be specific and should support the intent of the Federal Acquisition Regulation guidance for rejection of nonconforming products because the nonconformance adversely affects safety, health, reliability, durability, performance, interchangeability of parts, or any other basic objective of the specification." We request that the Assistant Secretary reconsider his position, in view of the clarified recommendation and explanation, and provide further comment to the final report on this recommendation.

Recommendation A.1.c. We recommend that the Assistant Secretary of Defense (Production and Logistics) develop a policy to incorporate evaluation criteria pertaining to prior contract performance into the solicitation evaluation process. This policy would expand on Objective No. 4 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts to encourage the use of quality factors in the source selection process. The policy should include use of weighted quality evaluation criteria based on prior performance data derived from product testing and other sources.

Management Comments. The Assistant Secretary's comments pertained to the draft report's recommendation for legislative change to the Small Business Act. We have changed that recommendation in this final report.

Audit Response. We met with the Procurement Policy Council for the Small Business Administration to discuss the recommendation that was in the draft report. Based on our discussions, we changed our recommendation. Therefore, we request the Assistant Secretary provide additional comments to the final report on the revised recommendation.

#### Recommendations to the Director, Defense Logistics Agency

In the draft report, we recommended that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for Recommendations 2.a. through 2.f. In its response to each recommendation, DLA nonconcurred and stated

It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC (or other Supply Center) as lead to test or recommend policy based on specific circumstances. This is done on a case-by-case basis as needs arise.

We accepted DLA's reason for not using the Defense Industrial Supply Center as the lead Supply Center to implement the

recommendations. Accordingly, we revised the recommendations for the final report by removing that part of the recommendation pertaining to the use of the Defense Industrial Supply Center as the lead Supply Center to implement the recommendations. Therefore, we request that DLA reconsider its position on Recommendations 2.a. through 2.f. and provide additional comments to the final report.

Recommendation A.2.a. We recommend that the Director, Defense Logistics Agency develop policies and programs for expanding the applications of product verification inspections and Certificates of Quality Compliance to reduce the acceptance of nonconforming products in specific areas of risk.

Management Comments. DLA nonconcurred and stated that it is entirely within the scope of the Supply Center's responsibilities to develop and test programs peculiar to its mission. DLA already developed and published an Independent Laboratory Test Program in July 1989 which identified specific parameters for random selection of material for laboratory testing. Also, based on the recognized need, the DLA also published a plan in August 1989 for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System.

Audit Response. DLA did not respond to the recommendation to expand the use of product verification inspections and Certificates of Quality Compliance, both of which are normally applied prior to acceptance. Product verification inspections and Certificates of Quality Compliance were cited by the Executive Director of Quality Assurance in testimony to Congress as the principal reason for the significant improvement in quality of the "grade 8" bolts. Neither the DLA's Laboratory Testing Program nor the DLA Action Plan provides for the expansion of these very effective quality assurance tools. As stated in the audit report, contractors represent the principal risk to quality. Expanded use of product verification inspections and the Certificates of Quality Compliance should not only be related to critical application parts, but also be targeted at types of suppliers that represent a high risk to quality. Accordingly, we revised the recommendation for the final report and request DLA to reconsider its position on this recommendation and provide additional comments to the final report.

Recommendation A.2.b. We recommend that the Director, Defense Logistics Agency develop a 5-year program to comprehensively test, in a qualified laboratory facility, some product from every supplier of critical application products or spare and repair parts for use on tactical end items, in accordance with the major preidentified technical specifications listed in a contract.

Management Comments. DLA nonconcurrent and stated that the recommendation incorrectly implies that DLA has not considered laboratory testing as a viable method to help counter the nonconforming parts problem. The DLA Laboratory Testing Program requires testing. The items nominated for testing must be weapon system coded critical. The DLA Laboratory Testing Program is one of the key elements in the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts.

Audit Response. DLA did not respond to the recommendation to test some products from every supplier of critical application products. The results of product testing represent some of the most objective and reliable information available for contractor profiles. The identification of reliable contractors is one of DLA's most significant challenges. Neither the DLA Laboratory Testing Program nor DLA's Action Plan provides for including the results of tests in the profile of every contractor who supplied critical parts.

Recommendation A.2.c. We recommend that the Director, Defense Logistics Agency develop policies and programs for ensuring that contracting officers consult and evaluate the consolidated history, contained in the Quality Evaluation Program, of the apparent winner of awards for products for which DLA has the technical data to determine if a poor quality history exists.

Management Comments. DLA nonconcurrent and stated that Supply Center Contracting Officers have on-line computer access to certain quality information and easy access to the Customer Depot Complaint System and the Quality Evaluation Program. Also, DLA has the lead to develop an automated data base that provides a common Contractor Quality History Profile, which will be accessible at buyer work stations.

Audit Response. DLA's comments were not responsive to the recommendation. Contracting officers at the Supply Center did not consult the Quality Evaluation Program prior to the award of a contract.

Recommendation A.2.d. We recommend that the Director, Defense Logistics Agency develop policies for improving current programs for identifying suppliers who should be recommended for debarment based on a history of providing poor quality products. For contractors who are found to represent a risk, direct that sufficient additional product testing be performed to determine if those contractors should be debarred. The program should be designed to assess the quality history for any contractor whose product is determined to be nonissuable and to determine if the contractor represents a risk to the quality of the Defense Logistics Agency's inventory.



Management Comments. DLA nonconcurred and stated that an effective system already exists to identify and debar contractors that have a history of providing poor quality products. In 1989, DLA debarred numerous contractors based on criminal convictions for quality violations. Many of those convictions resulted from reports by DLA personnel to criminal investigative organizations. More importantly, DLA frequently takes action to protect the procurement process even in the absence of criminal charges. In 1989, DLA debarred 45 contractors who had not been criminally charged but were determined to be poor performers who failed to meet quality requirements.

Audit Response. One of the weaknesses in the DLA Action Plan is the lack of aggressive action to identify suppliers who should be debarred based on a history of providing poor quality products. Our research of Supply Center related debarments showed that only contractors who were criminally charged were debarred for poor performance. DLA's present policies regarding debarment need the additional emphasis provided by implementing this recommendation.

Recommendation A.2.e. We recommend that the Director, Defense Logistics Agency develop a program to test the products of suppliers who represent a substantial risk to the quality of the Defense Industrial Supply Center's inventory. The program should include some testing of products from: (1) suppliers who have long-term contracts and/or who have contracts for large procurements of related types of products. During fiscal years 1991 and 1992, large dollar procurements for National Stock Numbers in Federal Supply Classes 1680, 5305, 5306, 5307, 5310, 5315, 5320, 5330, 6145, and 9530 should be targeted for product testing prior to acceptance. Testing in these Federal Supply Classes should be continued until the rate of nonconformances and the amount of major nonconforming material detected during acceptance testing drops to insignificant levels; (2) suppliers who provide critical (especially safety critical) products; and (3) suppliers who have histories of performing poorly or who have violated the integrity principles of contracting.

Management Comments. DLA nonconcurred and stated that the Laboratory Test Program provides sufficient flexibility to tailor laboratory testing to individual circumstances and unique requirements. It is also sufficiently flexible to embrace the specifics contained in the recommendations. Also, the size or type of the procurement should not be a criterion for testing; only item criticality, previous unsatisfactory performance, and other specific criteria should be determinative of increased levels of testing. Consequently, laboratory testing is best integrated with other initiatives as part of a total programmatic approach to material quality improvements.

Audit Response. (This recommendation has been changed to include details that were in Recommendation A.3.e. of the draft, which was deleted in the final report.) DLA's Laboratory Testing Program outlines some procedures for testing critical application products that are source inspected and destination inspected for depot stocks. However, the Laboratory Testing Program inadequately addresses the risks addressed in this recommendation. DLA's criterion to test only products that have critical application codes, while ignoring large investments, is not prudent. The Laboratory Testing Program needs some specific implementing guidance to target types of suppliers, not just National Stock Numbers. There are hundreds of thousands of National Stock Numbers, many of which are miscoded as to whether they are critical or not. Poor performing suppliers represent the principal risk to quality; therefore, the Laboratory Testing Program should include some testing of products from suppliers who have long-term contracts and/or who have contracts for large procurements of related types of products, suppliers who provide critical application (especially safety critical) products, and suppliers who have histories of performing poorly or who have violated the integrity principles of contracting.

Recommendation A.2.f. We recommend that the Director, Defense Logistics Agency develop policies for including additional quality related criteria for the "Blue Chip" preferred vendor program to: (1) eliminate from consideration for the "Blue Chip" vendor program for a specified period contractors who provide unusable products in any Federal Supply Class, (2) require results on comprehensive laboratory tests on products from at least two contracts for each National Stock Numbered item or group of National Stock Numbered items for a contractor to qualify for the "Blue Chip" vendor program, and (3) consider the results of any product inspection conducted during the previous 2 years regardless of when the contract was completed or when the products were received.

Management Comments. DLA nonconcurred, stating that the Blue Chip Program at the Defense Industrial Supply Center (DISC) is that Center's version of Competition for Performance. Although slight variations in membership criteria exist among the centers, Competition for Performance everywhere is currently based on timeliness of delivery and conformance of items and conditions of shipment to contractual terms.

Additional Competition for Performance criteria, including the establishment by the contractor of a viable statistical process control system, are being considered for the overall Competition for Performance Program. DLA is also exploring additional benefits accruing to a listed contractor (Quality Vendor), including long-term contractual relationships.

Audit Response. (This recommendation has been changed to include details that were in Recommendation A.3.f. of the draft, which was deleted in the final report.) DLA should be concerned with enlisting only qualified participants into the "Blue Chip" program. The program should be restricted to companies that provide quality products. DLA and the Supply Center should be mindful that if a contractor will provide poor quality in one Federal Supply Class, other Federal Supply Classes supplied by that contractor are also at risk. There is a need for a definite time period so that equal treatment is enforceable. We request that DLA reconsider its position on the recommendation and provide additional comments to the final report.

### Finding

Management Comments. DLA nonconcurred with the finding. DLA agreed there was nonconforming material in the DoD inventory, but it did not concur with the magnitude or scope of the problem as outlined in the draft report, or with our projections, conclusions, and recommendations.

DLA objected to a variety of items regarding the statistical sample and the related projections. It did not agree that 11,426 items were tested because many of these items were feet of wire in a continuous coil. Also, DLA did not agree that the universe of 1.28 billion parts should include "Class 3" critical items that were purged from the inventory because of defects that affected the safety of personnel. DLA also felt that individual test results were used to characterize the entire population condition based on the worst part and that this characterization distorted the projection. DLA's analysis of the data showed only 19 percent of the items as unusable. DLA quoted the MIL-STANDARD 109B definition of a minor nonconformance and characterized minor nonconforming products as "transparent" to the user. DLA concluded that, within the sample, the parts showed a marked improvement in quality each year from 1985 to 1987, which it felt was due to the concerted efforts of DLA and the Supply Center to improve the quality of products procured, and that the trend would continue as DLA initiatives fully matured. DLA projected that by 1993, at least 95 percent of the material in the inventory would be fully usable. In another part of their response DLA stated that it had a goal of achieving 95 percent usable material by the close of 1995.

DLA also commented on the Summary of Test Results stating that 61 NSN's had items with minor nonconformances and 33 NSN's had items with major nonconformances. In no case did DLA note an item, found as nonconforming to contract specifications, which affected safety. Based on tri-Service Engineering Support Activities' determinations, DLA asserted that material with major nonconformances accounts for less than 19 percent of the audit sample.

DLA provided additional comments on the statistical sample. DLA described purported flaws in the execution of the sampling plan that were discussed with the DoDIG's Statistician and the Audit Project Manager in March 1990. The purported flaws were classified as unit of issue/unit of measurement discrepancies, retesting bias, classification bias, and confidence interval calculation errors.

According to DLA, unit of issue/unit of measurement discrepancies caused certain NSN's to receive more weight than justified. This resulted in biasing the projections. DLA opined that statistical bias occurred because the retests focused on the defective characteristics and parts only. Retests were performed on 30 percent of the material, and the net effect was to increase the number and percentage of defective material. Classification bias was described by DLA as changes in the classification of nonconformances by the DoDIG after the audit was completed. DLA noted the changes were negotiated with the Supply Center. However, subsequent feedback from Engineering Support Activities indicated that some major nonconforming parts were usable and therefore should be minor nonconforming parts. The confidence interval calculation errors were the difference between  $\pm 5$  percent and  $\pm 42$  percent on percentage of nonconforming parts and  $\pm 27$  percent and  $\pm 39$  percent relative precision on dollar projections.

DLA also commented on the analysis of contractor and quality assurance factors. The analysis of source inspection versus destination inspection showed that both inspection sites accepted 18 percent unusable parts. DLA analyzed the type and size of contractors from whom products were procured by the Supply Center. The following distribution was found: distributors, 50 percent; small manufacturers, 28 percent; and large manufacturers, 22 percent. DLA found that distributors provided the most nonconforming material followed by small manufacturers and then large manufacturers.

DLA also analyzed the audit data by contract year and found that 16 percent of the sample was for 1985 contracts, 55 percent for 1986 contracts, and 29 percent for 1987 contracts. DLA noted that the DoDIG analyzed this aged information as if it were a single year and used it to characterize today's DLA Quality Assurance policies, programs, and practices as ineffective in detection and prevention of Government receipt of nonconforming material.

DLA contended that the data for each year indicated a decreasing trend for major nonconforming material and an increasing trend for fully usable material. DLA asserted the improvement trend was a direct result of concerted long-term DLA and Supply Center efforts to improve the level of conforming material manufactured

for Government use. DLA credited improvement in the quality of material to recent initiatives such as Industry conferences, Counterfeit Materiel/Unauthorized Product Substitution Program, Depot Receiving/Inspection Modernization, Quality Vendor/"Blue Chip" Program, Continuous Improvement Program, Laboratory Testing Program, Family Buy Program, and In-Plant Quality Evaluation Program. The Supply Center has also developed its own unique programs, which have contributed to this long-term improvement: Laboratory Testing of "Grade 8" and "Class 3" Fasteners; Contract Clauses for Certificates of Quality Conformance, Statistical Process Control, and Product Verification Inspection; and supplier profiles.

DLA concluded its comments on the finding by concurring with the need for standard definition. On April 17, 1990, the FAR/DFARS Quality Assurance Committee approved changes to the definitions for critical, major, and minor nonconformances.

Audit Response. The DLA comments and actions contradict the agreement signed by the Director of DLA on May 6, 1988, to support the audit. In our opinion, DLA nonconcurred with the finding because it has a basic philosophical disagreement with providing a principal quality assurance role for product testing. In DLA's view, testing should be relegated to a subordinate role.

Before this audit began in July 1988, we coordinated an agreement with the Director, Defense Logistics Agency to obtain DLA's support and cooperation for the Audit of Nonconforming Products Procured by the Supply Center. The audit represented a large investment in audit resources, travel funds, DLA inventory for testing, and management time at DLA and the Defense Industrial Supply Center. It was agreed that the auditors would keep DLA and the Supply Center management informed and that management would fully support the audit. The testing of the products was coordinated and managed by the Supply Center. As such, DLA was responsible for ensuring that 5 to 10 items were tested for each sample. DLA misrepresents the tests when it uses the term "DoDIG tests." The testing was managed by DLA to support the audit. The sensitivity of the subject required that the most accurate evaluation of nonconformances be performed. The auditors and management agreed to cooperate completely in obtaining correct information. It was further agreed that classifications of nonconformances would be fully discussed between the DoDIG audit team and Supply Center management.

The working agreement was executed to the satisfaction of the Supply Center's management and the DoDIG. Periodic briefings and discussions were held with managers at the Supply Center and the Directorate of Quality at DLA. Three different resolution meetings were held with Supply Center managers and engineers to discuss the correct classification of a nonconformance (major or

minor). Representatives from the Office of the Executive Director of Quality, DLA were present at every meeting. DLA representatives never suggested that a more correct classification of major or minor nonconformances would be needed for the purposes of projection. At the conclusion of the resolution meeting in January 1990, every nonconformance was agreed to with Supply Center managers. DLA representatives only commented that the tri-Services Engineering Support Activities would be needed to determine if the parts with major nonconformances were unusable. DLA did not refer any of the minor nonconformances to the Engineering Support Activities. We previously decided not to pursue these parts because of the extra time and expense required to obtain more complete verification and because the audit had already identified sufficient major nonconforming products to clearly show that the quality assurance system was not working adequately. In addition, representatives of the Engineering Support Activities have not had the opportunity to discuss the details of any of the nonconformances with DoDIG engineers. Therefore, the Engineering Support Activities had only limited information on which to make evaluations.

Regarding DLA's objections on the number of units tested, we discussed our methodology with DLA's Defense Operations Research Organization and agree that some adjustments were appropriate. We reduced the number tested from 11,426 items to 7,054 items. We disagree with DLA's comments that we should delete the Class 3 critical items purged from stock in 1987 and 1988 from the universe of 1.28 billion items. The absence of those items from the Supply Center's inventory made our projections more conservative. Although they were included in the universe of 1.28 billion items, the large number of known defective parts was not available for the test sample. The Defense Quality Assurance Program did not work at all for the "Class 3" critical items that were purged from stock. Regarding DLA's claim that individual test results characterized whole populations of parts, we employed a sensitivity analysis to smooth the effect of the large samples on the rest of the population. It should be noted that the sensitivity analysis most often affected conforming National Stock Numbers and the distortion of large conforming samples on the population.

We cannot rely on DLA's estimate that only 19 percent of the parts was unusable. As shown in the "Defense Logistics Agency Position," Appendix H, DLA inaccurately classified parts (audit sample no. 150, Appendix H, pages 30-31) and referenced the wrong Engineering Support Activities for other parts (audit sample no. 87, Appendix H, pages 16-17). In addition, DLA did not send all of the pertinent information to the Engineering Support Activities. DLA also misquoted the MIL-STANDARD definition for a minor defect, but more importantly, referred to minor nonconformances as "transparent" to the user. This is an

unacceptable position. One of the major DLA initiatives is to reduce the number of material review board actions on minor nonconformances. The use of a term like "transparent" sends the wrong message to Defense contractors and indicates a very weak commitment to the program in place for obtaining high quality products for the DoD inventory.

We agree with DLA's contention that the quality of products should improve in the future. DLA's estimate of improvement to 95 percent usable parts based on in-place programs is overly optimistic and highly speculative. The claim that implementation of the DLA Action Plan will result in raising the percentage of usable parts to the 90-percent level is still optimistic speculation, even when assisted by additional factors such as the proposed Fastener Quality Act, continued aggressive investigation and prosecution of fraudulent contractors, and the use of testing in a principal quality assurance role. In our opinion, a significant improvement in product quality will not occur until the Supply Center is only doing business with reliable suppliers who provide high quality products.

DLA's concerns regarding some of the problems noted in the execution of the statistical sampling plan were previously discussed with the Supply Center during the audit. The problems were easy to resolve but required the testing and destruction of more products. It was mutually agreed with the Supply Center that additional destructive testing of more products was not needed because sufficient numbers of products with nonconformances were already identified. Additional testing to merely improve statistical confidence units was not considered economical. The problems concerning the sampling plan were all minor.

The units of product pulled from inventory and the number of products tested were all fully coordinated with managers at the Supply Center. The DLA Director of Quality representatives showed no interest in the sample until the testing for the audit was completed. The unit of issue discrepancies had a minor statistical effect. We did not use DLA's unit of issue method because it was inconsistent and, we believe, incorrect to measure a coil of wire as feet in one instance and then as a single drum or coil in the next instance. We consistently measured in feet and this accounts for the major difference in test units. We agreed with DLA's logic on the retesting bias, and we eliminated the retested units from the number tested.

There was no classification bias. DLA's comments are misleading in this area. The nonconformance classifications were resolved with the Supply Center. DLA's subsequent reclassifications of major nonconformances were inappropriate because DLA apparently did not provide complete test information to the Engineering Support Activities they asked to determine the usability of the nonconforming products. Finally, we agreed that adjustments to

estimates of relative precision were appropriate. The revised estimates of relative precision are  $\pm 27$  percent for parts and  $\pm 38$  percent for dollar projections.

We cannot statistically agree with DLA's method for analyzing contractor and quality assurance factors. The audit sample was statistically selected as a representative sample of the audit universe of 20 Federal Supply Classes. The quantity of parts selected for testing was only large enough to make single division determinations. Therefore, we can only statistically compare manufacturers to distributors and small businesses compared to other than small businesses. We cannot statistically comment on the accuracy of DLA's comparisons of distributors to small business manufacturers or other than small business manufacturers.

Likewise, the audit sample had no relationship to the year the contract was awarded. The audit sample had meaning only to the receipts during the 2-year period under review. DLA's time based improvement trends in contracting and quality assurance and its projections into the future are DLA's own analyses and are not statistically based on the audit sample. Also, DLA inaccurately credits certain recent initiatives for improvements in 1987. Most of the programs listed were initiated in 1988 and 1989 and the benefits of some are not expected until a future date.





## B. Critical Application Products

### FINDING

About 44,000 National Stock Numbered critical application parts were not identified and coded as critical for reference by the Supply Center's contracting officer. The criticality identification was required by law and by DLA regulations. The parts were not correctly coded because the Services did not always identify the parts to the Supply Center as critical, and the Supply Center did not obtain engineering support to determine whether the parts, identified as critical in the Weapon System Support Program, should also have been identified as critical in the Contract Technical Data File. Not coding critical parts as such resulted in the use of lower level quality assurance inspection requirements and a lack of targeting for quality assurance initiatives for a projected 40,000 National Stock Numbers of which an estimated 19,000 (of 34,000 safety critical NSN's) affected the safety of military personnel on ships and aircraft. The high levels of nonconformances identified for parts with standard inspection requirements increased the exposure of military personnel to safety risks.

### DISCUSSION OF DETAILS

Background. The Services are responsible for identifying products that have a critical application. DLA Regulation 3200.1 (a Joint Service Regulation) defines a critical application item as one that is essential to weapon systems performance, the preservation of life, or safety of operating personnel. The applicable Military Department should identify critical application products when DLA requests engineering support. As part of the request, each Defense Supply Center submits a complete procurement data package to the Military Department for determination of the criticality of the applications of the weapon system related product in question.

Coding of Critical Application Products. Using the National Inventory Record's Weapon System Support Program Codes, the Contract Technical Data File, and survey questions that we sent to the end item buying centers in the Military Departments, we projected that about 73,000 National Stock Numbered items in our audit universe of 99,000 National Stock Numbered items were critical application parts. The Contract Technical Data File is the reference that the Supply Center uses to determine the appropriate level of quality assurance and whether any quality initiatives should be applied to the contract based on the criticality of the part. We estimated that only about 29,000 of the 73,000 National Stock Numbered items were coded as critical on the Contract Technical Data File. Of the 44,000 (73,000-29,000) items not coded as critical, 4,000 items were procured under higher levels of quality assurance.

There was no supporting documentation for why apparently critical application parts were not coded as critical on the Contract Technical Data File. We identified two sources, the Service's end item support activities and the National Inventory Record, to confirm the accuracy of the criticality codes in the Contract Technical Data File. End item support activities in the Services confirmed that most of the products coded as critical in the National Inventory Record were critical. We concluded that the Supply Center had not obtained engineering support to determine whether the criticality codes in the National Inventory Record should also apply to the Contract Technical Data File.

Use of Critical Coding. Understanding the use and criticality of the products the Supply Center manages is essential to cost-effective quality assurance and is absolutely necessary if the Supply Center is to effectively comply with Section 805, Title VIII of the National Defense Authorization Act for Fiscal Year 1989.

Section 805 states

... In procuring any spare or repair part that is critical to the operation of an aircraft or ship, the Secretary of Defense shall require the contractor supplying such part to provide a part that meets all appropriate qualification and contractual quality requirements as may be specified and made available to prospective offerors. In establishing the appropriate qualification requirements, the Secretary of Defense shall utilize those requirements, if available, which were used to qualify the original production part, unless the Secretary of Defense determines in writing that any or all such requirements are unnecessary.

Our audit shows that the Supply Center did not apply appropriate quality assurance requirements in its contracts because it had not identified about 59 percent of the critical parts in its inventory. Based on answers to survey questions we received from the users in the Military Departments, we estimated that about 34,000 National Stock Numbered items managed by the Supply Center had critical applications that affected the safety of military personnel. We also projected that only 15,000 of the 34,000 National Stock Numbered items affecting safety were identified as critical on the Contract Technical Data File and 23,000 of the 34,000 National Stock Numbered items were coded as critical on the National Inventory Record.

For example, the Marine Corps identified a machine bolt as having a critical application on the Heavy 20 Millimeter Howitzer. If the bolt failed, the safety of military personnel would be

adversely affected. The bolt was coded as critical on the National Inventory Record, but not on the Contract Technical Data File at the Supply Center. Consequently, the bolt was not identified as critical in the contract and the bolt was procured from a distributor on a fast pay, destination acceptance contract. Additional details on this part are in Appendix H, page 8.

The lack of understanding regarding the critical safety application of the parts in the Supply Center's inventory was demonstrated after the detection of defective wire cable that is commonly used on submarines and ships. In September 1989, the Commander of the Supply Center issued a safety alert on low smoke electrical wire cable covering several National Stock Numbered items. The alert message indicated that smoke from the cable could be toxic when it burned. In October 1989, the Navy followed this message with its own Navy-wide safety alert to users of the defective cable, which was suspended from issue as unsafe. The message stated that the majority of cable recently manufactured used jacketing material that could not meet the requirements for safety or service. The cable failed tests for smoke generation and immersion. In addition, it "catastrophically failed flame propagation tests."

The defective jacketing material adversely affected 189 National Stock Numbered items used on a variety of ships and submarines. None of the 189 National Stock Numbered items were coded as critical or as safety critical parts on the Contract Technical Data File or on the contracts issued. The value of 290 contracts issued for these types of defective cable between 1983 and 1989 was about \$14.4 million. Users of the low smoke cable informed us that failure of the cable would adversely affect the safety of military personnel because of the toxic smoke and loss of combat systems.

The criticality codes contained in the National Inventory Record and the Contract Technical Data File need to be reconciled, and determinations are needed from the Military Departments on which Supply Center products are critical application products. The disparities between the criticality coding record sources of our sample items are shown by National Stock Number in Appendix N.

In addition to the Section 805 requirements, many of the initiatives in the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System are targeted at critical parts.

End Item Use. We learned that the Supply Center did not know the end item use for 112 of the 145 National Stock Numbered items we tested. Supply Center personnel provided us with points of contact in the Services that were often incorrect. However, we identified a knowledgeable point of contact that provided the

end item use on 113 of the 145 items. We determined that the end item use for 83 critical application items in our sample was on either ships or aircraft. Section 805 requires that appropriate contract quality requirements be met for these parts.

Finding A of the report showed that there was a significant difference in the quality of parts provided through standard inspection versus those provided by higher level inspection. In our opinion, whenever the Supply Center elects to use standard inspection for a critical application part, selective product acceptance testing will be needed to satisfy the intent of Section 805's quality requirements.

#### RECOMMENDATIONS, MANAGEMENT COMMENTS AND AUDIT RESPONSE

Recommendation B.1. We recommend that the Assistant Secretary of Defense (Production and Logistics) establish a priority action for the Military Departments to identify critical application products managed by the Defense Logistics Agency's Supply Centers.

Management Comments. The Assistant Secretary concurred and stated that action to establish an initiative to create a Military Service critical item listing for DLA Supply Centers will be completed by October 1, 1990.

Audit Response. The proposed action will satisfy the intent of the recommendation if the critical item listing can be completed by October 1, 1991.

Recommendation B.2. We recommend that the Director, Defense Logistics Agency, develop policies and programs for identifying National Stock Numbered items with critical applications as well as determining whether they are safety critical. This should be accomplished by requesting the Military Departments to make a determination on all future transfers of National Stock Numbers for management by the Defense Logistics Agency.

Management Comments. Although DLA nonconcurred, it stated that it is coordinating with the Military Services on a change to DoD 4140.26-M, Defense Integrated Materiel Management Manual for consumable items. The change would require Military Services to identify whether an item is used in a critical application, or is safety critical, before the transfer of the item to DLA for item management.

Audit Response. The action initiated by DLA during the audit should satisfy the intent of the recommendation when the Integrated Materiel Management Committee agrees to change the Defense Integrated Materiel Management Manual for consumable items. We request that a date for changing the manual be provided in comments to the final report.

Recommendation B.3.a. We recommend that the Commander, Defense Industrial Supply Center institute a continuous program to request that the Military Departments make a determination of whether or not items coded as critical or most critical application parts in the Weapon System Support Program should be coded as critical in the Contract Technical Data File.

Management Comments. DLA nonconcurred with the recommendation as worded in the draft report. DLA stated that the codes, the use of the codes, and the definition of the codes are being confused. The Weapon System Indicator Code does not determine or designate item criticality from the manufacturing perspective where additional quality assurance is required. Whether or not a part is used on a weapon system is not in itself reason to designate the part as critical. The application, criticality to system function, complexity, and critical characteristics all play a role in determining criticality.

Audit Response. The use of the codes is not at issue. The meaning of the essentiality codes in the Weapon System Support Program and the lack of critical application codes in the Contract Technical Data File are at issue. DLA's response indicates a need to be more specific in our recommendation. We revised our recommendation to state, "We recommend that the Commander, Defense Industrial Supply Center institute a continuous program to request the Military Departments make a determination of whether or not items coded as critical or most critical application parts in the Weapon System Support Program should be coded as critical in the Contract Technical Data File."

The criticality codes used in the Contract Technical Data File (CTDF) and the DLA Weapon System Support Program are used by DLA for very similar quality assurance purposes. The criticality code in the CTDF is used by the Supply Center to determine the level of quality assurance to assign to each contract. The essentiality codes in the Weapon System Support Program are used by DLA depots and Defense Supply Centers as the criteria for the DLA Laboratory Testing Program to determine which critical products to test for conformance to contract specifications (as well as for other supply management purposes).

The definition for critical application in the CTDF as stated by DLAR 3200.1 is as follows:

An item which is essential to weapon systems (e.g., F-15 Aircraft, Attack submarine, M1 tank) performance (item failure will preclude the weapon system or component thereof from being fully operational), the preservation of life in emergencies (e.g., parachutes, marine life preservers), or safety of operating personnel.

The explanation for weapon system essentiality in the Weapon System Support Program as stated by DLAR 4140.38, and further delineated in MIL-STD-1552, is very similar to the definition for critical application in the CTDF. The essentiality codes (which are expressed in terms of most critical to least critical) indicate the degree to which failure of the part affects the ability of the end item or weapon system to perform the intended operation. The applicable codes indicate that failure of a most critical part will render the end item inoperable or failure of the part will adversely affect personnel safety. Because we revised the recommendation, we request that DLA provide additional comments to the final report.

**Recommendation B.3.b.** We recommend that the Commander, Defense Industrial Supply Center ensure that higher level quality requirements or product acceptance testing requirements are included in all contracts that contain National Stock Numbered items that have critical applications.

**Management Comments.** DLA nonconcurred. DLA stated that all critical items are reviewed and higher level quality requirements (MIL-I or MIL-Q) are applied where appropriate. FAR Clause 52.246.2, "Inspection of Supplies, Fixed Price," is always included in the purchase of critical application items.

**Audit Response.** We disagree that all critical items were reviewed and that the appropriate quality requirement levels were applied. The Supply Center's review was based on the criticality codes in the Contract Technical Data File, which was incomplete and inaccurate. Of the 145 National Stock Numbers (NSN's) in our audit sample listed in Appendix N, 43 NSN's were coded as critical by the CTDF but only 16 of the 43 were designated for higher level quality assurance requirements. Also, there were 48 NSN's that were coded as most critical by the essentiality codes of the Weapon System Support Program but only 9 were assigned higher level quality assurance requirements. Further, 15 of the NSN's listed in Appendix N were coded both critical in the CTDF and most critical in the Weapon System Support Program, but only 5 of the 15 NSN's were assigned a higher level quality requirement. In addition, Finding A showed that 99 percent of the nonissuable products was supplied under FAR Clause 52.246.2, which further demonstrates the need for additional quality assurance. Therefore, we request that DLA reconsider its position on the recommendation and provide additional comments to the final report.

**Recommendation B.3.c.** We recommend that the Commander, Defense Industrial Supply Center identify the use of all critical application products on the National Inventory Record or the Contract Technical Data File.

Management Comments. DLA nonconcurrent and stated that the identification of parts that have critical application is an Engineering Support Activities responsibility. Reviews for criticality are performed by the Services at the time of transfer to new item managers.

Audit Response. According to DLAR 4140.38, the Services are responsible for maintaining application and essentiality data on items registered in the Weapon System Support Program. The Supply Center also has a definite responsibility for ensuring that criticality codes are correctly maintained. Also, the regulation provides that items suspected of being erroneously coded will be reviewed by the Supply Center with the appropriate Service. If the Supply Center would refer to the Weapon System Support Program codes, it would find reasons to suspect that thousands of items may be erroneously coded in the Contract Technical Data File. In addition, the Supply Center should know the end item use of the critical application parts it manages. We found that the Supply Center often did not know how the part was used or where a knowledgeable source for such information existed. Accordingly, we request that DLA reconsider its position on the recommendation and provide additional comments to the final report.

#### Finding

Management Comments. DLA nonconcurrent and stated that the DISC has not overlooked, or failed to determine as critical, 41,000 NSN's for safety and/or mission requirements. Simply because an item is installed on a ship, aircraft, or tank does not render it as a mission and/or a safety critical part. The projected quantity of NSN's not identified or coded as critical for reference by the Supply Center's contracting officer is fallacious, and founded on incomplete research and understanding of the methods used to determine criticality. DISC could use the Weapon System Indicator Code (WSIC) in the National Inventory Record as a means of prioritizing the review and request for engineering support. However, the WSIC was not intended to equate to item criticality as defined in DLAR 3200.1. The WSIC is a one-position character code indicating the degree to which a failure to supply the item will affect the ability of the weapon system to perform its intended operation. The code for weapon systems as recorded in the National Inventory Record indicates supply system criticality. The code in the Contract Technical Data File indicates item criticality. Item criticality is what establishes the quality assurance level. Data calls initiated by contracting officers always address the need for Product Verification Testing and higher level quality assurance requirements. Regardless, both codes are provided to the contracting officer in the purchase request package for use in determining the proper level of contract quality assurance requirements.



Audit Response. The projected quantity of 41,000 NSN's cited in the draft report was determined to be about 44,000 NSN's based on additional information received after the draft report was issued. DLA's response does not recognize the meaning of the Weapon System Support Program's essentiality codes. The explanation for essentiality of a Weapon System Indicator Code of the Weapon System Support Program for a National Stock Numbered item is stated in DLAR 4140.38 and further delineated in MIL-STD-1552. Essentiality is the degree to which failure of the part affects the ability of the end item or weapon system performance of the intended operation. The explanation of the Weapon System Support Program essentiality codes is similar to the Contract Technical Data File definition of critical application as stated in DLAR 3200.1. Critical application is defined as "an item which is essential to weapon system performance (item failure will preclude the weapon system or component from being fully operational), the preservation of life in emergencies, or safety of operating personnel."

We have not misinterpreted the meanings of these codes. DLA depots use Weapon System Support Program essentiality codes to implement the DLA Laboratory Testing Program for testing critical application parts. The Defense Electronics Supply Center uses the same codes to select critical application electronic parts for testing. The testing conducted by the depots and the Defense Electronics Supply Center are performed for quality assurance purposes. Similarly, the Supply Center relies on the critical application codes in the Contract Technical Data File to determine the level of quality assurance to apply to the contract. Accordingly, we request that DLA reconsider its position and provide additional comments to the final report.

## C. Product Quality Deficiency Report Program

### FINDING

DLA's implementation of the DoD Product Quality Deficiency Report Program (the Program) was incomplete and ineffective. Of 124 potential nonconforming products identified during the audit, the Supply Center prepared only 39 Product Quality Deficiency Reports, and only 14 of those reports were satisfactorily finalized within a reasonable period of time. The Program's reporting requirements were incomplete because they did not apply to parts that had been inspected and accepted at destination. The Program was ineffective because the action point (the Supply Center) frequently did not prepare Product Quality Deficiency Reports, and the support activities at the Defense Contract Management Command did not properly respond to all of the reports they received. As a result, the Program did not provide product quality feedback needed to improve the acquisition process for spare and repair parts.

### DISCUSSION OF DETAILS

Background. DoD established the Program to provide a system for reporting product quality deficiencies, correcting the causes of the deficiencies, and maintaining the status of, and feedback on, product quality deficiencies. In addition, the Program was to provide a cross-component system to provide feedback on product quality information to activities responsible for procurement, contract administration, and related logistical functions so that action could be initiated to correct and prevent product quality deficiencies.

The Program is part of the Quality Assurance Program required by DoD Directive 4155.1, "Quality Program," and implemented within DLA under DLAR 4155.24 (a Joint Service regulation), "Product Quality Deficiency Report Program." The Joint regulation requires DoD Components to establish a management information system for processing Product Quality Deficiency Reports and collecting quality deficiency information related to contractor performance. For that purpose, DLA Manual 4155.2, "Quality Assurance Program Manual for Defense Supply Centers and Defense Industrial Plant Equipment Center," established the Customer Depot Complaint System (CDCS).

One of the purposes of CDCS is to establish a record of the product quality deficiencies before the Product Quality Deficiency Reports are processed. DLAR 4155.24 allows a maximum time period of 66 days, without an actual nonconforming product exhibit, and 92 days, with the nonconforming product exhibit, for sending the final responses to Product Quality Deficiency Reports to the originator. The response confirms or refutes the alleged

quality deficiency and describes the corrective action to be taken by the contractor. The DLA Manual 4155.2 requires that an interim reply be made within 60 days of the date of the original Product Quality Deficiency Report. The DLA Manual further requires DLA Supply Centers to maintain contractor quality history information to ensure that contracts are not awarded to contractors with a history of providing nonconforming products.

DLA has a planned initiative that could improve processing times. Objective 24, "Improve the Customer Complaint System through Improvement of the Product Quality Deficiency Reporting System," is part of the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. This objective includes an initiative to provide Product Quality Deficiency Reports and other quality related information on electronic mail input screens which will be installed at Supply Centers and Defense Contract Management Command (DCMC). Electronic mail input screens would eliminate much of the time consumed in mailing hard copy Quality Deficiency Reports. This initiative, scheduled for completion during fiscal year 1990, should reduce the time taken by the DCMC office to initiate action on a product deficiency.

Contractor quality histories covering the past 5 years should be readily available to procurement contracting officers through the Quality Evaluation Program. These histories should provide a record of both quality deficiencies and conforming laboratory test results that indicate good quality controls.

Product Quality Deficiency Reports, as well as quality deficiencies reported on Reports of Discrepancies from Defense depots, are recorded in the CDCS. This system contains all of the contractor deficiency information that was recorded in the past 5 years. However, this information is not recorded in the Quality Evaluation Program until a manual entry is made into one of the Quality Evaluation Program categories. This manual entry establishes a data link to enable automated matches between the CDCS and the Quality Evaluation Program for each contractor who supplies a nonconforming National Stock Numbered item.

Destination Acceptance. The Supply Center did not report to the DCMC the nonconforming products that were accepted at destination because there was no specific requirement for such reporting. DLAR 4155.24 does not require the Supply Center to report nonconforming products accepted at destination to the DCMC Quality Assurance Representative. Instead, these deficiencies were recorded in the CDCS and then reported directly to contracting officers at the Supply Center for administrative action. Forty-five contracts with nonconforming products in our sample were accepted at destination. The Supply Center mistakenly prepared Product Quality Deficiency Reports for two nonconforming products accepted at destination and sent the

reports to the DCMC Office in Dallas, Texas. No reports were sent on the remaining 43 contracts with nonconforming products.

DLAR 4155.24 specifically requires reporting on all source inspected items but does not mention destination inspected products. Separation of nonconforming destination inspected products from the Program excludes these products from critical evaluations of the contractor's quality control process performed by DCMC Quality Assurance Representatives. In our opinion, the Government benefits when DCMC representatives can quickly verify the cause of the contractor's quality problem. We visited contractors who supplied nonconforming products but who were seemingly unaware that they had a quality control problem. In these instances, Supply Center contracting officers had not notified or were late in notifying contractors about their nonconforming products. In some cases, they were unaware of product nonconformances 90 days after the quality deficiencies were reported to the Supply Center's Quality Directorate. Therefore, the system did not accomplish the task for which it was designed: to report, correct, and provide the status and feedback on product quality deficiencies.

In our opinion, DCMC Quality Assurance Representatives should be involved in the investigation of all product quality problems with contractors. DCMC's involvement should ensure that product quality deficiencies will be investigated, that contractor quality control breakdowns will be identified, and that the contractor will make improvements and corrections before shipping more products to the Government.

Program Effectiveness. On May 26, 1989, we informed the Supply Center's Director of Quality Assurance that we intended to test the Product Quality Deficiency Reporting System. The test would include 1 nonconforming product on each of 124 contracts in our audit sample. We provided the test reports on the 124 products to the Director in June 1989. Also, in May and June, we sent complete test information on each nonconforming product to the four Defense depots where the nonconforming products were stored. We requested the Directors of Quality at the four Defense depots to report the nonconformances to the Supply Center. Our primary purpose for these actions was to ensure that there would be a Product Quality Deficiency Report in process when we visited DCMC offices and the contractors who supplied the nonconforming products. We found that the Product Quality Deficiency Reports from the audit generally were not in process at DCMC offices at the time of our reviews. For example, the Quality Assurance Representatives assigned to the DCMC office in Los Angeles, California, were not informed of 19 of 31 nonconforming products at the time of our visit on September 22, 1989. The Supply Center should have reported the nonconforming products to them no later than June 1989.

We analyzed the processing of Product Quality Deficiency Reports for the 124 potential nonconforming products identified by the audit. As of July 1, 1989, of the 124 nonconformances, the Supply Center had sent 39 Product Quality Deficiency Reports to the appropriate DCAS office. As of October 15, 1989, no additional deficiency reports were sent on the remaining 85 potential nonconformances. As of December 4, 1989, (over 160 days after the Reports were sent) the DCAS offices had sent 16 final replies and 17 interim replies to the Supply Center. No replies were sent in response to 6 of the 39 Product Quality Deficiency Reports. Of the 16 final replies, 14 satisfactorily analyzed the quality problems of the nonconformance and contained sufficient factual evidence to support a position. Of the remaining 85 potential nonconformances, 42 were source inspected contracts and 43 were destination inspected contracts. The Supply Center informed us that Product Quality Deficiency Reports were sent for all of the remaining source inspected contracts after we ended our audit test. In accordance with DLA policy, deficiency reports were not sent for the 43 destination inspected contracts.

Quality Evaluation Program. Of the 124 nonconformances in our audit test, 106 were not included in the quality history records in the Quality Evaluation Program. The records were not there because a manual entry had not been made to activate the automatic transfer of records from the Customer Depot Complaint System to the Quality Evaluation Program. Therefore, the contractors' quality histories were not available in the Quality Evaluation Program for 72 contractors who supplied nonconforming products.

Laboratory tests results which show that contractors have good quality controls should also be included in the Quality Evaluation Program. However, the Program had no records on the 43 sampled contracts that contained conforming products. Limited audit tests showed that laboratory test results of conforming products were recorded on the grade 8 bolts discussed in Finding A.

Conclusion. The mission of DLA Supply Center Quality Directorates is to support the efforts of the Supply Centers to procure quality products. However, by not preparing Product Quality Deficiency Reports and not establishing historical records of these deficiencies in the Quality Evaluation Program, the Supply Center's Quality Assurance Directorate did not completely support this effort. Incomplete support of the Program, coupled with the failure of the DCMC Quality Assurance Representative to respond promptly to Quality Deficiency Reports and to obtain adequate evidence to support conclusions regarding quality deficiencies, results in the program being ineffective. Consequently, improvements were needed in the Program that provides feedback on the procurement process for purchasing quality spare and repair parts.

## RECOMMENDATIONS, MANAGEMENT COMMENTS AND AUDIT RESPONSE

Draft report Recommendations C.1. and C.2.b. were deleted from this final report. The remaining recommendations were renumbered sequentially as they appeared in the draft report.

Recommendation C.1.a. We recommend that the Director, Defense Logistics Agency revise DLA Regulation 4155.24, "Product Quality Deficiency Report Program," and all related regulations to state that the regulation applies to all contracts administered by DLA Supply Centers and that the Program's reporting requirements apply equally to quality deficiencies found in products accepted at source and at destination.

Management Comments. DLA nonconcurred with the recommendation as stated in the draft report. DLA stated that DLAR 4155.24 is adequate as written for source and destination contracts because it does apply, regardless of where the product was inspected and accepted.

Audit Response. We disagree that DLAR 4155.24 applies to all contracts administered by DLA regardless of where the product was inspected and accepted. The regulation specifically states that, "It applies to products inspected and accepted at source or inspected at source and accepted at destination." There is no reference to items inspected at destination. However, we have reworded the recommendation to be more specific. The recommendation was revised from ". . . state that the regulation is mandatory for all products regardless of where the product was inspected and accepted" to ". . . state that the regulation applies to all contracts administered by DLA Supply Centers and that the Program's reporting requirements apply equally to quality deficiencies found in products accepted at source and at destination." Accordingly, we request that DLA address the revised recommendation and provide comments to the final report.

Recommendation C.1.b. We recommend that the Director, Defense Logistics Agency instruct the Defense Contract Administration Services to fully comply with DLA Regulation 4155.24 concerning adequate evidence and documentation to support conclusions regarding quality deficiencies and the need to do so in a timely and responsive manner.

Management Comments. DLA concurred with the recommendation and stated that Defense Contract Management Command elements are

presently implementing Defense Logistics Agency Regulation 4155.24, along with supplementary Appendix A, as the primary guidance for the deficiency reports program. This guidance will ensure adequate evidence and documentation to support conclusions regarding deficiencies as well as to ensure timely reporting. DLA estimated completion by June 30, 1990.

Audit Response. We consider DLA's comments to be responsive to the intent of the recommendation because DLA is ensuring implementation of DLAR 4155.24.

Recommendation C.2.a. We recommend that the Commander, Defense Industrial Supply Center fully comply with DLA Regulation 4155.24 requirements to timely process all future Product Quality Deficiency Reports by directing that the Director of Quality Assurance process a Quality Deficiency Report for all quality deficiencies entered into the Customer Depot Complaint System. Include this requirement as part of the Supply Center's Quality Assurance Directorate's mission and function.

Management Comments. DLA nonconcurred and stated that it is incorrect to prepare a Product Quality Deficiency Report for all quality deficiencies in the Customer Depot Complaint System. There are no demonstrated savings cited in the report to do this. However, there is a demonstrative consumption of resources to prepare a PQDR when such complaints already exist in the Customer Depot Complaint System database.

DISC Directorate of Quality will adhere to the processing timeframes. DLA stated that DLA Manual 4155.2 is the proper policy, and that no change to the Supply Center's Quality Assurance Directorate mission and function is required.

Audit Response. The purpose of the Product Quality Deficiency Report Program is to report confirmed quality deficiencies, to correct the causes of the deficiencies, and to provide feedback to the source of the deficiencies, as well as, to the user of the defective product. DLA should prepare Product Quality Deficiency Reports for all quality deficiencies. About 62 percent of the items procured by the Supply Center was nonconforming in the audit universe. The questionable quality of Supply Center sources of supply makes the Product Quality Deficiency Report Program a priority for the Supply Center. Considering how poorly the Supply Center's QA Directorate performed on the preannounced test conducted for the audit, the requirement to fully comply with DLAR 4155.24 needs to be included in the Supply Center's QA Directorate's mission and function. We request that DLA reconsider its response to this recommendation in its reply to the final report.

Recommendation C.2.b.(1) We recommend that the Commander, Defense Industrial Supply Center fully comply with DLA Manual 4155.2 requirements to maintain consolidated contractor quality history information that includes all quality deficiencies and positive laboratory test results by establishing procedures to ensure that manual entries are made to establish an automated data link between the Customer Depot Complaint System and the Quality Evaluation Program for all quality deficiencies. Direct that the manual entries be made to establish the automated data link for all quality deficiencies recorded since January 1, 1989.

Management Comments. DLA partially concurred. DLA stated that the implementation of the Modernization Post Award Management Requirement (dated February 19, 1989) in the Standard Automated Materiel Management System (SAMMS) will satisfy the recommendation. This requirement will automatically establish the data link when the active contract file is established. This change was approved to mechanize the system and conserve resources. DLA stated that manual entries to establish the data link are prohibitively resource intensive. This action is ongoing and is estimated to be completed June 30, 1992.

Audit Response. DLA's comments were partially responsive to the recommendation. However, simply recording a deficiency in a data base with no additional effort to make the information useful is not a productive use of resources. Each confirmed quality deficiency or a report substantiating good quality represents a significant investment of resources to DoD. Until the proposed modernization of SAMMS takes place, the small effort required to make quality information available in the consolidated quality history for each contractor must be made to make the system more useful for the contracting officer. Accordingly, we request DLA to address this part of the recommendation in response to the final report.

Recommendation C.2.b.(2) We recommend that the Commander, Defense Industrial Supply Center fully comply with DLA Manual 4155.2 requirements to maintain consolidated contractor quality history information. The history should include all confirmed laboratory test results and quality deficiencies. Procedures should be established to ensure that manual entries of are made to the Quality Evaluation Program.

Management Comments. DLA nonconcurred. DLA commented that the recommendation implies that the DLA has no policies and programs that effectively address recording test results in the



Quality Evaluation Program. Test results, regardless of the outcome, are recorded in the Quality Evaluation Program. Test results used to validate a Product Quality Deficiency Report are part of the Customer Depot Complaint System and should not be duplicated in the Quality Evaluation Program. The SAMMS change request to establish the automated link will preclude the need for manual entries.

Audit Response. The recommendation recognizes that the policy for recording information in the Quality Evaluation Program exists in DLA Manual 4155.2. There is a present need to make simple manual entries to copy existing information from the Customer Depot Complaint System to the Quality Evaluation Program. This information is needed for a readily available reference for the Supply Center's Contracting Officers. The Supply Center should not wait to provide this information to the Quality Evaluation Program. We request that DLA reconsider its response to this recommendation in its reply to the final report.

### Finding

Management Comments. DLA partially concurred. DLA stated that the Product Quality Deficiency Report Program was not as responsive as it otherwise would have been; however, the Program at DISC did not fail. The Product Quality Deficiency Report Program caused material to be suspended from issue; investigations were made of the cause(s) of the deficiency and corrective action was taken to prevent recurrence; quality histories were established; quality assurance provisions were adjusted, as necessary, for future acquisitions. DLA stated it was not accurate to say there was no requirement to report deficiencies that were accepted at destination. Nonconformances determined to be the contractor's responsibility were reported to the contract administrator. If the product was source inspected, the report went to the appropriate Defense Contract Management Command element. If the product was destination inspected, the report went to the Supply Center's Production Division, which notified the contractor and Defense Contract Management Command. Quality feedback was provided. Quality history was maintained in the Customer Depot Complaint System and was used to tailor contracting quality requirements. Manufacturers were alerted to quality problems whenever contract administrators had sufficient evidence of contractual noncompliance.

Audit Response. The DLA Office of the Executive Director of Quality directed to the Supply Center to initiate quality assurance actions for the nonconformances the audit identified on inventoried parts. There was no similar DLA headquarters

pressure to process a report on a normal deficiency identified by the Services. We noted DLA's comment on the accuracy of our cause statement regarding why the Program was incomplete. We revised the statement for the final report to read, "The Program's reporting requirements were incomplete because they did not apply to parts that had been inspected and accepted at destination." During visits to contractors, we noted that the contractors were often alerted of their quality problems by Supply Center contract administrators when they received letters from the Supply Center stating that there was a contractual noncompliance and the Supply Center wanted reimbursement. Contractors were not notified of quality deficiencies for products inspected at destination through the Program. We request that DLA reconsider its position on the finding and provide additional comments to the final report.



#### D. Product Quality Audit Program

##### FINDING

The Product Quality Audit Program of the Defense depots did not and could not accurately measure the effectiveness of the Defense Logistics Agency Quality Program for industrial products. Inspections at three Defense depots identified about 6 percent of the products tested as nonconforming. The more comprehensive commercial laboratory testing sponsored by the Supply Center for this audit identified about 62 percent of the audit sample as nonconforming products. Also, the depots only performed about 11 percent of the required followup testing. These conditions existed because the Defense depots did not have the capability to perform complete comprehensive tests to determine whether products totally conformed to critical contract quality specifications, and because commercial testing facilities were not used to perform complete comprehensive tests. Consequently, the rate of nonconformance used to measure the overall quality applied to the Supply Center inventory was understated. Further, followup testing was not done on the products from contractors identified as providing nonconforming products.

##### DISCUSSION OF DETAILS

Background. DLA Manual (DLAM) 4155.8, "Quality Assurance Program Manual for Defense Logistics Agency Depots," identifies the policies and procedures of DLA's Product Quality Audit Program. The goal of the depot Product Quality Audit Program was to "measure the quality effectiveness of DLA's acquisition operations." Depot product quality auditors measure the quality effectiveness through limited technical inspections of products randomly selected from recent receipts. The quality auditors attempt to determine whether products conform to contract quality requirements. The quality auditors must obtain relevant contractual and technical data (military or Federal specifications, industry standards, and manufacturers' drawings) to determine the particular technical characteristics (dimensional, physical, electrical, etc.) to evaluate conformance. The inspections are basic and practical but are limited by the quality auditor's technical expertise, available equipment, and available time. If the quality auditors are unable to inspect important characteristics of the selected products, the Supply Center may authorize the use of commercial testing facilities. Nonconformances found during technical inspections are reported to the Supply Center for appropriate action. Followup inspections of subsequent deliveries are required when a contractor has been identified as having provided nonconforming products.

Technical Inspections. We evaluated the random technical inspections performed by quality auditors at the Defense Depot

Mechanicsburg, Pennsylvania; Tracy, California; and Columbus, Ohio (the Depots). The Depots' technical inspections were limited to some tests of dimensional specifications and metal hardness. However, typical quality requirements, which were also included in the laboratory tests conducted for this audit, included conformance to dimensional specifications, chemical composition, metal hardness, yield and tensile strengths, breakage load, surface roughness, and endurance under varied temperature conditions.

From January 1988 to March 1989, the Depots randomly selected 3,085 industrial products for technical inspection. These tests identified only 194 products (about 6 percent) as nonconforming to contract quality requirements. On the basis of commercial laboratory tests of our audit sample of industrial products received from January 1986 through December 1987 at six Defense depots, about 62 percent of 1.28 billion products received did not conform to contract quality requirements.

We attribute the significant difference in the two nonconformance rates to the in-depth level of testing that the commercial laboratories performed on our audit samples. Products in our audit sample underwent comprehensive dimensional, chemical, physical and other relevant tests using state-of-the-art test equipment needed to test all critical characteristics of the product. However, the depots' quality auditors generally performed only dimensional and some hardness inspections. Consequently, only a few of the nonconforming products procured by the Supply Center were identified by the depot Product Quality Audit Program.

Test Equipment. The test equipment available at the Depots was not adequate to do comprehensive testing of the critical quality requirements of the parts. An engineer from the DoDIG evaluated the test equipment available to perform technical inspections at the Depots. The engineer concluded that the Depots' laboratory facilities were not adequate for complete comprehensive product testing and analysis. The three Depots owned primarily basic test equipment. The test equipment for industrial products was used primarily to measure linear dimensions. The engineer also concluded that the Depots were not adequately equipped to test difficult nonlinear dimensions or other characteristics specified in the contracts. The Depots did not have the test equipment needed to determine material composition, protective plating thickness on material, yield and tensile strengths, breakage loads, surface roughness on machined parts, and performance of parts under varied temperature conditions. Product tests are incomplete if any critical characteristics, as stated in the technical data, are not

tested. In our opinion, DLA correctly determined that the investment in the test equipment necessary to conduct these tests was not cost-effective compared to using commercial laboratories as needed.

Commercial Test Facilities. The Supply Center has developed a network of commercial laboratories that have demonstrated their capability to perform comprehensive, cost-effective testing of various industrial items. An engineer from the DoDIG evaluated some of the test facilities in this commercial laboratory network and determined that the capability existed in the established network to do complete state-of-the-art testing (Appendix G).

During the 15-month period in our audit, none of the three Depots used commercial laboratories to test the critical characteristics of products that the Depots were not capable of testing. On July 21, 1989, while our audit was in progress, the Director, DLA, signed a memorandum directing the implementation of a "Laboratory Testing Program, Spare and Repair Parts." This program emphasizes the need for laboratory testing to assist in verifying the quality of parts. The program calls for laboratory testing to be used for source and destination inspected parts as an integral part of the existing Product Quality Audit Program. Since then, depot quality auditors have requested that the Supply Center authorize the use of laboratories to complete the testing on specific products.

Depot Product Quality Sampling. DLAM 4155.8 states that each Depot will budget for technical inspections of not less than 2 percent of new procurements. The results of the technical inspections are used to determine the quality effectiveness of DLA's acquisition process. In determining the quality effectiveness, quality auditors randomly selected products for a technical inspection. The sample universe was not targeted to address any specific objective or known problem areas by product or by supply class.

The budgetary guidance was also used as a guide to the Depots' random sampling methodology. This methodology resulted in a very large sample but was not designed to evaluate specific Federal Supply Classes or subgroups. Results of technical inspections were reported to the Supply Center and to DLA Headquarters for review and the preparation of the quarterly Quality Audit Summary Report. These Reports provided summary results of the technical inspections, but did not identify specific problem areas or analyze specific Federal Supply Classes. Random sampling plans should be designed to provide the Supply Center with specific information about known or suspected problem areas rather than attempt to portray the quality of all of the items received into inventory.

Informal worksheets that did not include a plan for the comprehensive testing of the selected products were the basis for the inspections performed by the depots' quality auditors. Most of the critical quality requirements stated in the contracts were not included in the test worksheets. For example, chemical composition, plating thickness, surface roughness, X-ray checks for cracks, and complex dimensional measurements were usually not included in the test worksheets.

We reviewed the procedures used to develop test plans for products selected for technical inspection at the Depots. The characteristics selected for testing varied according to the capability of available testing equipment and the quality auditor performing the test. There was no assurance that similar types of products were always tested for the same characteristics. To optimize the value of random sampling, the same characteristics should be tested for similar products. In our opinion, formal test plans should be prepared and retained for the life of the National Stock Numbered item for all tests conducted as part of the Product Quality Audit Program.

Followup Inspections. Followup inspections should be performed to determine whether a contractor provides nonconforming products in subsequent shipments. DLAM 4155.8 requires two followup technical inspections after a contractor has been identified as having provided nonconforming products. None of the three Depots reviewed had effective procedures to ensure that followup inspections were performed.

During the 15-month period of our audit, the depots reported a total of 194 nonconformances. Because two followup inspections are required for each nonconformance, there was a potential for 388 followup inspections. However, subsequent shipments were not received from all of the contractors, so only 188 followup inspections were required. Of the 188, only 21 followup inspections (11 percent) were performed.

Followup inspections of contractors who provide nonconforming products are essential in the identification of contractors who routinely provide nonconforming material. Using existing automated systems, the Supply Centers can readily identify subsequent shipments for followup inspections, not only at the Depot where the original nonconformances were found, but also at other Depots.

Conclusions. The mission of the Depot Product Quality Audit Program should be changed. The Depots do not have the testing capability to measure the quality effectiveness of the Logistics Agency's acquisition operations. None of the three Depots had the resources to comprehensively test industrial products or to design formal test plans for statistically relevant random samples of the products the Supply Center procured. The depots'

testing equipment was limited, and the depots did not request the use of commercial testing facilities for more complete product testing. The sampling of products was not designed to address the Supply Center's quality problems. Furthermore, followup inspections of subsequent deliveries generally were not done after contractors had been identified as having provided nonconforming products. When these testing weaknesses are considered collectively, we concluded that changes were needed in DLA's depot Product Quality Audit Program for products procured by the Supply Center.

The Supply Center has the technical knowledge and skills to assist in the selection of products for technical inspections. The Supply Center should also prepare the test plans for all products selected for testing as part of the evaluation of the effectiveness of DLA's quality operations. Qualified laboratories should be used to test all critical characteristics identified by the Supply Center that the quality auditors are unable to test. Finally, test results should be analyzed by the Supply Center personnel, and when appropriate, the Supply Center's monitor should schedule followup tests. Implementation of these changes will result in more effective sampling, testing, followup, and technical data analyses for industrial products.

During our discussions with the DLA Executive Director of Quality Assurance, he stated that based on our finding of nonconforming products in the Supply Center inventory, he intended to change the policy for measuring the quality effectiveness at all of the Supply Centers. Accordingly, we applied our recommendations for changing the mission of the depot Product Quality Audit Program to all of DLA's Supply Centers.

#### RECOMMENDATIONS, MANAGEMENT COMMENTS AND AUDIT RESPONSE

Recommendation D.l.a. We recommend that the Director, Defense Logistics Agency revise the Defense Logistics Agency policies for quality assurance as stated in the Defense Logistics Agency Manual 4155.2, "Quality Assurance Program Manual for Defense Supply Center and Defense Industrial Plant Equipment Center," and Defense Logistics Agency Manual 4155.8, "Quality Assurance Program Manual for Defense Logistics Agency Depots," and any other related Defense Logistics Agency policies to require that each Defense Supply Center develop and manage a program for measuring the quality effectiveness of the acquisition operations to ensure conformance to contractual requirements. The program should use efficient, statistically valid, and cost-effective random sampling techniques. The measure of quality should be based on complete comprehensive testing to be either performed by or supplemented by commercial testing facilities.



Management Comments. DLA nonconcurred and stated that measuring operations by random sampling is only one way that DLA determines quality effectiveness of the acquisition process. Other methods include the analysis of actual problems, determination of key indicators, and selective use of inspection and testing. DLA is already using random sampling as a measure in the DLA Laboratory Testing Program and the Product Quality Audit Program. These programs provide data on product quality and the quality of the acquisition and logistics process.

Audit Response. The DLA Laboratory Testing Program was developed as we were staffing this finding with DLA Depot Commanders. The Laboratory Testing Program limits the Supply Center's testing to source inspected items, whereas the destination inspected items accepted at the depot are tested through the depot Product Quality Audit Program. The change we recommended to DLAM 4155.2 places the responsibility for measuring the quality effectiveness of the acquisition operation with the DLA Supply Centers who have the resources and expertise to perform such a mission effectively. The change would provide the Supply Centers with more pertinent and timely information about the quality of their inventories and about their suppliers. We request that DLA consider this additional explanation, reconsider its position on this recommendation, and provide additional comments to the final report.

Recommendation D.1.b. We recommend that the Director, Defense Logistics Agency redirect the mission for the Depot product quality auditors as stated in the Defense Logistics Agency Manual 4155.8, "Quality Assurance Program Manual for Defense Logistics Agency Depots." Change the goal of the Depot technical inspection program from one that measures the quality effectiveness of Defense Logistics Agency acquisition operations to one that enhances the Defense Logistics Agency's quality assurance system through more effective use of the Depot Product Quality Audit Program resources. Program resources should focus on inspecting critical parts and on followup inspections of parts provided by contractors who had previously provided nonconforming parts.

Management Comments. DLA nonconcurred, stating that current guidance discontinues audits of part numbered items and focuses random product quality audits on critical weapon systems coded items for which technical data are available. The results of recent product quality audits indicate that this policy was being followed: higher levels of materiel nonconformances were detected and increased levels of detection resulted from followup audits. No change to DLA Manual 4155.8 is required.

Audit Response. DLA's comments were partially responsive. The focus of current quality audits is responsive to our recommendation. The change to DLA Manual 4155.8 needs to be made

to give the Product Quality Audit Program a feasible mission within realistic resource investment. We agree with DLA's position in their management comments to the finding that the use of commercial laboratories to conduct tests is more cost-effective than investing in additional sophisticated test equipment and trained personnel at the depots. In our opinion, it is more efficient to assign the mission of measuring the quality effectiveness of Logistics Agency acquisition operations to the Supply Centers because the cost of conducting laboratory tests is paid for by the Supply Centers. We request that DLA reconsider its position on this recommendation and provide additional comments to the final report.

Recommendation D.2.a. We recommend that the Commander, Defense Industrial Supply Center develop a program to use valid technical data to periodically measure the quality effectiveness of the acquisition operations in relation to products procured by the Defense Logistics Agency. As part of this program, institute procedures for the following: (1) develop an effective, statistically valid random sampling plan that identifies National Stock Numbered items from the current year receipts for testing, (2) prepare and retain comprehensive test plans that include all of the specifications critical to the operation or use of each of the National Stock Numbered items selected in the periodic statistical sample developed for Recommendation 2.a.(1), (3) test each of the National Stock Numbered products identified in Recommendation 2.a.(1) at an appropriate commercial test facility and (4) from the formal analysis of the results generated from Recommendation 2.a.(3), prepare summary status reports that track the validation of all nonconformances noted through the Product Quality Deficiency Report Program. The summaries should provide an overall index of the quality of products procured by the Supply Center.

Management Comments. DLA stated that no response could be provided because the IG's recommendation needed clarification.

Audit Response. Our review of the Supply Center's Draft Test and Evaluation Master Plan showed us that the intent of the recommendation will be satisfactorily addressed when the Master Plan is officially sanctioned and implemented.

Recommendation D.2.b. We recommend that the Commander, Defense Industrial Supply Center develop procedures for a combination of comprehensive followup testing by either commercial testing facilities or technical inspections conducted by the Depot product quality auditors on products delivered by contractors who were previously identified as providing nonconforming products.

Management Comments. DLA nonconcurred and stated that the DLA Laboratory Test Program and the DISC Test and Evaluation Master Plan provide coverage for comprehensive followup

commercial testing on products from contractors who have delivered nonconforming materiel. Use of the depot quality auditor for limited technical inspections to supplement the Master Plan is under evaluation. The estimated completion date was June 30, 1990.

Audit Response. Although DLA nonconcurred, its planned action is responsive to the recommendation. DLA's Laboratory Testing Program and the Supply Center's Test and Evaluation Master Plan were developed in response to our audit findings. We believe that the recommendation will be adequately addressed when the Supply Center's Test and Evaluation Master Plan is officially sanctioned.

### Finding

Management Comments. DLA nonconcurred and stated that the finding incorrectly implied that the Depot should be a catch-all for all nonconforming material via the Product Quality Audit Program. The Product Quality Audit Program was designed only to screen incoming supplier material for conformance and to provide the sampled data to Headquarters DLA for performance analyses and action as may be indicated. DLA depots were provided the equipment with sufficient measurement capabilities to complete most product conformance screening requirements. Products that are difficult to test, and which exceed depot conformance screening capabilities, are deferred by the depot to the appropriate commercial laboratory as required.

Audit Response. During 1987 to 1989, and subsequent to the implementation of the DLA Laboratory Testing Program, the depot Product Quality Audit Program would attempt to test any parts to some extent. Furthermore, the mission of the Product Quality Audit Program indicated it was an activity that attempted to test everything. Our finding and recommendations show that the Product Quality Audit Program cannot and should not be an activity that attempts to evaluate the overall effectiveness of DLA's acquisition operations.

**DEFENSE LOGISTICS AGENCY INITIATIVES**  
**TO IMPROVE QUALITY**

Defense Logistics Agency (DLA) is a leader within the Department of Defense (DoD) in developing and instituting initiatives to improve the quality of spare and repair parts purchased. In 1989, in conjunction with ongoing initiatives, DLA developed the Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. The objectives of the Action Plan are to ensure that corrective actions are taken and to effect continuous improvement of the overall quality of materiel entering and being stored within the DoD logistics pipeline. The Action Plan's function is to ensure that DLA's acquisition process is assessed, flaws are identified, and fixes are applied. The Action Plan is divided into the following acquisition phases: Pre-Contract, Contract, Contract Administration, Depot, and Feedback Intelligence. A complete description of each phase is included in the addendum to this report.

**PRE-CONTRACT PHASE**

OBJECTIVE 1: Standardize the DoD definitions and terminology for a nonconformance.

OBJECTIVE 2: Ensure that technical data are available, adequate, and accurate for use in acquiring quality parts.

OBJECTIVE 3: Assign parts requiring intensive technical management oversight to the proper item manager and ensure that the assigned integrated managers have all the technical information required to perform their mission.

OBJECTIVE 4: Use quality factors in source selection and responsibility determination processes for spare and repair parts.

OBJECTIVE 5: Maximize "Family Grouping" and long-term procurement strategy when appropriate.

OBJECTIVE 6: Combat poor producers using debarment and suspension procedures.

OBJECTIVE 7: Encourage the use and control of standard parts of latest technology in system and equipment acquisition.

**CONTRACT PHASE**

OBJECTIVE 8: Hold nonmanufacturers and manufacturers to the same quality and technical requirements.

OBJECTIVE 9: Maximize use of warranties.

OBJECTIVE 10: Reward contractors who continuously improve production process variability.

**DEFENSE LOGISTICS AGENCY INITIATIVES**  
**TO IMPROVE QUALITY**  
(Continued)

OBJECTIVE 11: Obtain consideration for nonconforming parts.

OBJECTIVE 12: Require and encourage contractors to use analytical methods in controlling production processes.

**CONTRACT ADMINISTRATION PHASE**

OBJECTIVE 13: Update in-plant quality assurance procedures to provide Government QAR's with the flexibility to tailor oversight.

OBJECTIVE 14: Enforce prime contractor responsibility over subcontractors.

OBJECTIVE 15: Measure effectiveness of in-plant Government contract administration and contractor performance.

OBJECTIVE 16: Focus quality assurance on reducing production process nonconformances and Materiel Review Board actions.

OBJECTIVE 17: Reduce approvals of waivers and deviations and eliminate recurring waivers and deviations.

OBJECTIVE 18: Recognize quality contractors.

**DEPOT PHASE**

OBJECTIVE 19: Improve the effectiveness of receiving inspections at the depot.

OBJECTIVE 20: Identify and prevent nonconforming materiel from reentering the supply system through customer returns.

OBJECTIVE 21: Identify and purge nonconforming materiel from the supply system.

**FEEDBACK INTELLIGENCE PHASE**

OBJECTIVE 22: Centralize, automate, collect, and share contractor performance information.

OBJECTIVE 23: Use laboratory testing to assist in verifying quality of parts and share test results with industry and Government to aid in identifying and correcting shortcomings in the acquisition process.

OBJECTIVE 24: Improve the customer complaint system.

OBJECTIVE 25: Expand participation with industry associations and small contractors.

DEFENSE INDUSTRIAL SUPPLY CENTER  
SAMPLED UNIVERSE AND UNIVERSE

FSC <sup>1/</sup>	Nomenclature	Sampled Universe			Universe		
		Number of NSN's <sup>2/</sup>	Number of Parts	Value	Number of NSN's	Number of Parts	Value
1560	Airframe Structural Components	5	840	\$86,780.13	2,682	495,950	\$50,527,996
1680	Miscellaneous Aircraft Accessories, Components	5	518	\$27,961.26	1,999	526,918	\$41,801,572
2810	Gas Reciprocating Engine - Aircraft and Components	6	2,545	\$14,812.35	16	2,949	\$33,000
2840	Gas Turbines and Jet Engines Aircraft	5	430	\$24,151.92	620	1,481,093	\$36,579,999
3110	Bearings, Antifriction, Unmounted	16	53,231	\$1,013,337.45	5,310	9,034,126	\$116,646,341
3120	Bearings, Plain, Unmounted	5	5,108	\$6,985.82	5,641	6,781,408	\$45,032,894
4010	Chain and Wire Rope	5	3,226	\$9,669.12	980	6,829,879	\$26,329,598
4030	Fittings for Rope, Cable and Chain	6	627,915	\$37,596.29	736	7,645,025	\$12,485,227
5305	Screws	14	84,703	\$43,502.55	15,858	216,620,596	\$73,737,507
5306	Bolts	10	102,382	\$31,841.40	10,659	80,794,148	\$66,802,008
5307	Studs	5	76,725	\$89,883.00	1,374	4,864,660	\$7,178,314
5310	Nuts and Washers	10	130,450	\$37,910.45	12,331	206,331,738	\$98,743,349
5315	Nails, Keys and Pins	5	23,162	\$13,104.56	4,626	20,975,117	\$17,224,394
5320	Rivets	11	1,061,950	\$388,766.25	6,619	147,448,735	\$83,632,505
5325	Fastening Devices	5	106,100	\$243,141.93	1,351	14,184,802	\$17,420,952
5330	Packing and Gasket Materials	13	233,216	\$93,165.88	13,893	104,746,638	\$87,918,302
5340	Miscellaneous Hardware	12	424,941	\$50,648.26	9,276	84,464,508	\$100,873,259
6145	Wire and Cable, Electrical	10	5,460	\$4,254.58	4,213	360,241,091	\$122,201,616
9505	Wire, Nonelectrical Iron and Steel	7	27,265	\$648.89	262	3,074,279	\$3,457,344
9530	Bars and Rods, Nonferrous Base Metal	5	14,710	\$18,848.76	963	1,653,458	\$12,965,053
Totals		<u>160</u>	<u>2,984,877</u>	<u>\$2,237,010.85</u>	<u>99,409</u>	<u>1,278,197,118</u>	<u>\$1,021,591,230</u>

<sup>1/</sup> FSC -- Federal Supply Class

<sup>2/</sup> NSN -- National Stock Number



## STATISTICAL SAMPLING PLAN AND METHODOLOGY

### Sampling Plan

The audit universe of 20 Federal Supply Classes (FSC's) within 8 Federal Supply Groups (FSG's) was statistically selected and was the result of the first stage in this multi-stage sample. The statistical selection procedure at this first stage involved a stratification scheme. The FSC's were split into three strata by dollar amount of parts received. Based on precalculations of the sample number of FSC's required from the 2-year universe of 55 FSC's, we found that with 95-percent confidence and the strata split yielding a coefficient of variation of no more than .30, a sample size of 20 FSC's was required in order to provide a precision of  $\pm 10$  percent of the dollars. Based on the number of FSC's and dollar values in each stratum, the sample distribution was 8 of 8 FSC's for the first stratum, 9 of 15 for the second stratum, and 3 of 32 for the third stratum. These 20 FSC's comprised the audit universe.

The second stage involved selecting National Stock Numbers (NSN's) from the FSC's selected in the first stage. The audit universe of 20 FSC's contained 99,409 unique NSN's and was valued at \$1.02 billion. Based on a requirement for 95-percent confidence, an overall precision of  $\pm 15$  percent of the dollar amount and prior knowledge that the coefficient of variation for NSN's is not more than 0.95, the sample size requirement was 155 NSN's for the second stage. These were then allocated proportionally to the numbers and dollars within the various FSC's.

From this second stage where NSN's were randomly selected from the 20 FSC's, an actual sample of products for testing and evaluation was selected from the shelves of the storage facilities (Defense depots). This was the third stage of the selection process. At this stage, we selected a random sample of parts from the shelves in a way that was both random and representative of the contracts used to procure the parts. First, the contract numbers were identified for each NSN. For each contract, 10 parts were selected for possible testing. When parts in an NSN were procured from more than one contract, 10 parts were selected from each contract. Each testing process started with 5 randomly selected parts from each contract.

### Statistical Methodology

After testing was completed on each of the five parts within each contract within the NSN, the percent and dollar value of the parts with nonconformances were calculated. The results were projected into the numbers and values of the various NSN amounts received. Since the sample was selected in three stages, the estimates and projections were tracked from stage to stage with appropriate weights to ensure representative results.



STATISTICAL SAMPLING PLAN AND METHODOLOGY  
(Continued)

Measures of Variation and Conclusion

The projections made across the three stages were subject to sampling variability at each stage. Since relative precision of estimate at stage one was about .10 of the estimate and at stage two was about .15 of the estimate, those projected variability measures were used together with that from the third stage (.34) to estimate the overall precision of the final projection.

This indicated a relative precision of the estimate with 95-percent confidence of about  $\pm 38$  percent of the estimated value. In going through the dollar process for the \$1.02 billion of parts received in the 20 FSC's, our findings were as follows:

	<u>Percent of the Universe</u>	<u>Point Projection Value Estimate (in millions)</u>
Major Nonconformance	15.7	\$ 171.6
Minor Nonconformance	45.7	453.1
Conforming	32.9	338.8
Not Tested	<u>5.7</u>	<u>58.1</u>
Totals	<u>100.0</u>	<u>\$1,021.6</u>

Using similar methodology for estimating the proportion and number of parts in the various categories, we generated estimates within 95-percent confidence and precision of  $\pm 27$  percent of the estimate. Our findings were as follows:

	<u>Percent of the Universe</u>	<u>Point Projection Estimate (in millions)</u>
Major Nonconformance	27.1	346.3
Minor Nonconformance	35.2	449.4
Conforming	37.1	475.2
Not Tested	<u>.6</u>	<u>7.3</u>
Totals	<u>100.0</u>	<u>1,278.2</u>

STATISTICAL SAMPLING PLAN AND METHODOLOGY  
(Continued)

Projection of Statistical Sample

In the draft report, we projected the number of nonconformances without readjusting for any NSN's that might unduly affect the overall distribution of occurrences. A mathematical smoothing method was used to eliminate the heavy self-weighting effect of seven NSN's so that there was no undue bias in the results.

Details on the sampling plan and the mathematical smoothing method are in an addendum to this report and are available upon request.



SYNOPSIS OF THE PRIOR AUDIT REPORT AND A  
LIST OF PRIOR AUDIT REPORTS ON QUALITY ASSURANCE  
ISSUES AND DEFECTIVE PRODUCTS

Office of the Inspector General, DoD, Report No. 89-065,  
"Nonconforming Products in the Defense Supply System at Warner  
Robins Air Logistics Center," April 10, 1989. The objectives of the audit were to determine the extent of nonconforming products in the Defense supply system in terms of number and dollar value of items, potential harm to personnel, and degradation of equipment, and to determine how contracting and quality assurance practices led to nonconforming products. The audit was limited to three Federal Supply Classes because the Air Force would not agree to support the testing for additional Federal Supply Classes.

The audit showed that the DoD Quality Assurance Program did not work adequately for the acquisition of spare parts in two of three Federal Supply Classes and that the Air Force did not receive the quality parts it paid for because the parts did not meet contract specifications. It was estimated that \$12.9 million of parts in one Federal Supply Class were not usable. The report contained recommendations to improve policies regarding the quality of spare parts acquired by incorporating policies into draft DoD Directive 5000.XX, "Quality Programs," for a testing and follow-up program, standardizing definitions of various quality related terms, and providing additional quality assurance surveillance over contractors with quality problems. The report also recommended establishing a postproduction inspection and testing program in the Air Force, and improving the quality of data contained in systems that contracting officers use to judge contractors' prior quality performance. For the sample items identified with major nonconformances, the report recommended providing pertinent quality deficiency reports to contract administration offices, and requesting repairs or voluntary refunds from contractors. The Assistant Secretary of Defense (Production and Logistics) agreed with the recommendations, but did not provide an implementation schedule. The Navy, Air Force, and Defense Logistics Agency concurred with the recommendations to the final report.

In addition to the above report, the following reports address DoD quality assurance issues and defective products.

Office of the Inspector General, DoD, Report No. 88-183,  
"Reimbursements Due From Contractors for Discrepant Material  
Deliveries to the Defense Logistics Agency," July 15, 1988.

Office of the Inspector General, DoD, Report No. 87-083,  
"Follow-on Audit of Known But Unreported Defective Material,"  
February 11, 1987.

SYNOPSIS OF THE PRIOR AUDIT REPORT AND A  
LIST OF PRIOR AUDIT REPORTS ON QUALITY ASSURANCE  
ISSUES AND DEFECTIVE PRODUCTS  
(Continued)

Office of the Inspector General, DoD, Report No. 86-131,  
"Processing of Quality Deficiency Reports in the Defense Logistics  
Agency," August 28, 1986.

Office of the Inspector General, DoD, Report No. 85-054,  
"Defective Parts on the Navy's Light Airborne Multi-Purpose System  
MK III Program," December 17, 1984.

Office of the Inspector General, DoD, Report No. 84-018,  
"Procurement Quality Assurance of Material Receipts by Corpus  
Christi, Texas, Army Depot," December 7, 1983.

General Accounting Office Unnumbered Letter Report (OSD Case  
No. 7585), "Quality Assurance Procedures for Fiber Optic Cables  
Used by DoD," March 31, 1988.

General Accounting Office Report No. NSIAD-88-104 (OSD Case  
No. 7451), "Quality Assurance - Concerns About Four Navy Missile  
Systems," March 24, 1988.

General Accounting Office Report No. NSIAD-29-28FS (OSD Case  
No. 7767), "Procurement - Department of Defense Quality Assurance  
Efforts," November 2, 1988.

General Accounting Office Report No. NSIAD-87-33 (OSD Case  
No. 7180), "Quality Assurance Efforts to Strengthen DoD's  
Program," November 3, 1986.

RESULTS OF TESTING BY FEDERAL SUPPLY CLASS

BY NUMBER OF PARTS

<u>FSC</u> <sup>1/</sup>	<u>Nomenclature</u>	<u>Number Tested</u>	<u>Number Nonconforming</u>		<u>Number Conforming</u>
			<u>Major</u>	<u>Minor</u>	
1560	Airframe Structural Components	15	0	10	5
1680	Miscellaneous Aircraft Accessories, Components	18	6	6	6
2810	Gas Reciprocating Engine - Aircraft and Components	34	22	12	0
2840	Gas Turbines and Jet Engines Aircraft	30	0	18	12
3110	Bearings, Antifriction, Unmounted	115	13	39	63
3120	Bearings, Plain, Unmounted	30	0	10	20
4010	Chain and Wire Rope	93	0	18	75
4030	Fittings for Rope, Cable and Chain	78	6	12	60
5305	Screws	110	35	67	8
5306	Bolts	114	35	74	5
5307	Studs	27	17	5	5
5310	Nuts and Washers	74	5	57	12
5315	Nails, Keys and Pins	30	12	17	1
5320	Rivets	139	51	78	10
5325	Fastening Devices	54	26	28	0
5330	Packing and Gasket Materials	124	49	14	61
5340	Miscellaneous Hardware	137	0	72	65
6145	Wire and Cable, Electrical	344	30	29	285
9505	Wire, Nonelectrical Iron and Steel	5,453	0	258	5,195 <sup>2/</sup>
9530	Bars and Rods, Nonferrous Base Metal	35	20	0	15

<sup>1/</sup> FSC -- Federal Supply Class

<sup>2/</sup> The number of products tested and the number of products conforming do not have a significant impact on the projections to the audit universe because other Federal Supply Classes are weighted more heavily than Federal Supply Class 9505.



# STATISTICAL PROJECTIONS OF TEST RESULTS BY FEDERAL SUPPLY CLASS

## BY NUMBER OF PARTS

Federal Supply Class	Test Result Point Estimates									
	Universe		Major		Minor					
			Nonconformance		Nonconformance		Conforming		Not Tested	
	NSN's <sup>1/</sup>	Parts	Percent	Parts	Percent	Parts	Percent	Parts	Percent	Parts
1560	2,682	495,950	0	0	4.8	23,617	80.4	399,121	14.8	73,212
1680	1,999	526,918	17.4	91,549	47.9	252,270	9.6	50,861	25.1	132,238
2810	16	2,949	16.3	481	78.6	2,317	0	0	5.1	151
2840	620	1,481,093	0	0	20.9	309,996	79.1	1,171,097	0	0
3110	5,310	9,034,126	2.3	207,053	28.2	2,550,824	69.1	6,238,742	.4	37,507
3120	5,641	6,781,408	0	0	.4	26,552	99.6	6,754,856	0	0
4010	980	6,829,879	0	0	73.6	5,028,197	26.4	1,801,682	0	0
4030	736	7,645,025	56.3	4,306,224	35.5	2,711,326	8.2	627,475	0	0
5305	15,858	216,620,596	65.7	142,447,932	29.4	63,661,694	2.8	6,035,496	2.1	4,475,474
5306	10,659	80,794,148	13.4	10,775,763	54.4	43,976,631	32.2	26,041,754	0	0
5307	1,374	4,864,660	64.3	3,129,276	7.1	347,077	28.6	1,388,307	0	0
5310	12,331	206,331,738	1.0	2,056,200	71.0	146,385,606	26.8	55,359,225	1.2	2,530,707
5315	4,626	20,975,117	65.2	13,678,834	34.2	7,182,180	.6	114,103	0	0
5320	6,619	147,448,735	67.5	99,591,659	32.3	47,607,076	.2	250,000	0	0
5325	1,351	14,184,802	1.7	240,647	98.3	13,944,155	0	0	0	0
5330	13,893	104,746,638	34.8	36,470,618	7.8	8,162,671	57.3	60,041,936	.1	71,413
5340	9,276	84,464,508	0	0	87.8	74,138,148	12.2	10,326,360	0	0
6145	4,213	360,241,091	9.2	32,989,111	9.2	32,989,111	81.6	294,262,869	0	0
9505	262	3,074,279	0	0	4.7	145,455	95.3	2,928,824	0	0
9530	963	1,653,458	17.1	283,257	0	0	82.9	1,370,201	0	0
	<u>99,409</u>	<u>1,278,197,118</u>		<u>346,268,604</u>		<u>449,444,903</u>		<u>475,162,909</u>		<u>7,320,702</u>
		100%		27.1% <sup>2/</sup>		35.2% <sup>2/</sup>		37.1% <sup>2/</sup>		.6% <sup>2/</sup>

<sup>1/</sup> NSN -- National Stock Number

<sup>2/</sup> The point estimates were calculated at the 95-percent confidence level with a relative precision of  $\pm 27$  percent of the estimate.



**STATISTICAL PROJECTIONS OF TEST RESULTS BY FEDERAL SUPPLY CLASS (Continued)**

**BY DOLLAR VALUE**

Federal Supply Class	Test Result Point Estimates									
	Universe		Major		Minor		Conforming		Not Tested	
	NSN's	Value	Nonconformance Percent	Nonconformance Value	Nonconformance Percent	Nonconformance Value	Conforming Percent	Conforming Value	Not Tested Percent	Not Tested Value
1560	2,682	\$50,527,996	0	\$0	24.0	\$12,107,283	3.2	\$1,625,580	72.8	\$36,795,133
1680	1,999	\$41,801,572	29.7	\$12,430,922	6.9	\$2,880,770	29.0	\$12,097,392	34.4	\$14,392,488
2810	16	\$33,000	35.5	\$11,710	29.0	\$9,580	0	\$0	35.5	\$11,710
2840	620	\$36,579,999	0	\$0	73.2	\$26,767,645	26.8	\$9,812,354	0	\$0
3110	5,310	\$116,646,341	.4	\$455,310	84.4	\$98,436,066	14.5	\$16,873,485	.7	\$881,480
3120	5,641	\$45,032,894	0	\$0	10.0	\$4,512,432	90.0	\$40,520,462	0	\$0
4010	980	\$26,329,598	0	\$0	34.7	\$9,144,824	65.3	\$17,184,774	0	\$0
4030	736	\$12,485,227	.0	\$636,611	.0	\$9,530,557	.0	\$2,318,059	0	\$0
5305	15,858	\$73,737,507	66.8	\$49,239,642	24.4	\$18,014,674	5.0	\$3,665,260	3.8	\$2,817,931
5306	10,659	\$66,802,008	30.1	\$20,092,849	49.5	\$33,084,162	20.4	\$13,624,997	0	\$0
5307	1,374	\$7,178,314	56.2	\$4,036,925	26.6	\$1,911,427	17.2	\$1,229,962	0	\$0
5310	12,331	\$98,743,349	2.8	\$2,810,414	69.6	\$68,726,222	25.7	\$25,373,041	1.9	\$1,833,672
5315	4,626	\$17,224,394	42.5	\$7,312,168	47.3	\$8,146,801	10.2	\$1,765,425	0	\$0
5320	6,619	\$83,632,505	22.4	\$18,737,103	75.4	\$63,093,924	2.2	\$1,801,478	0	\$0
5325	1,351	\$17,420,952	.8	\$136,845	99.2	\$17,284,107	0	\$0	0	\$0
5330	13,893	\$87,918,302	12.5	\$11,045,385	5.8	\$5,079,308	80.1	\$70,407,200	1.6	\$1,386,409
5340	9,276	\$100,873,259	0	\$0	72.5	\$73,111,262	27.5	\$27,761,997	0	\$0
6145	4,213	\$122,201,616	35.0	\$42,744,617	.9	\$1,149,435	64.1	\$78,307,564	0	\$0
9505	262	\$3,457,344	0	\$0	4.5	\$154,508	95.5	\$3,302,836	0	\$0
9530	963	\$12,965,053	14.6	\$1,893,683	0	\$0	85.4	\$11,071,370	0	\$0
	<u>99,409</u>	<u>\$1,021,591,230</u>		<u>\$171,584,184</u>		<u>\$453,144,987</u>		<u>\$338,743,236</u>		<u>\$58,118,823</u>
		100%		16.8% <sup>3/</sup>		44.3% <sup>3/</sup>		33.2% <sup>3/</sup>		5.7% <sup>3/</sup>

<sup>3/</sup> The point estimates were calculated at the 95-percent confidence level with a relative precision of  $\pm 38$  percent on the total dollar value.

EVALUATION OF THE DEFENSE INDUSTRIAL  
SUPPLY CENTER'S COMMERCIAL LABORATORY  
TESTING PROGRAM

The Directorate of Engineering and Standardization of the Defense Industrial Supply Center (Supply Center) developed a program for identifying and evaluating independent testing laboratories. A network of approved testing facilities, which includes 275 laboratories, was formed for the program. Each of these laboratories was selected based on an evaluation to "... establish a degree of confidence in the test facility prior to its use and to identify specific areas of testing expertise to facilitate the laboratory selection process for test projects."

The evaluation addressed the suitability of test equipment, laboratory layout and operations, personnel, company organization, professed areas of expertise, standards and testing procedures, previous experience with Government contracts, quality assurance techniques, and equipment calibration schedules and procedures. In addition, the laboratory must be willing to meet specific project demands (e.g., 10-day turnaround time) and to develop affiliations with other laboratories by forming teams to extend their testing capabilities.

The laboratories selected for the program were those qualified to test industrial commodities, such as threaded fasteners, normally purchased by the Supply Center. Of particular interest to the Supply Center was the capability of the laboratories to test for chemical, physical, and mechanical properties of the industrial products.

Selection of Laboratories for the Audit. Laboratories were selected from the Supply Center laboratory network to test the National Stock Numbered items included in our audit sample. Ten of the laboratories selected to test the audit samples were visited and evaluated by an engineer from the Inspector General, DoD, during the audit period. Most of the samples selected for our audit were tested by these 10 laboratories and each laboratory is described in an addendum to this report. The addendum is available upon request.



# DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES

## Summary of Selected Parts With Major Nonconformances

<u>Audit Number</u>	<u>Sample Number</u>	<u>Nomenclature</u>	<u>Number Tested</u>	<u>Number Nonconforming</u>		<u>Appendix Page Number</u>
				<u>Major</u>	<u>Minor</u>	
36	TC13	Bearing, ball, annular	15	15	0	2 of 33
47	MT11	Shackle	21	21	0	3 of 33
51	MP15	Screw, machine	10	10	0	5 of 33
52	MP16	Screw, machine	20	20	0	6 of 33
65	MP21	Bolt, machine	10	10	0	8 of 33
67	CO27	Bolt, machine	16	16	0	10 of 33
69	CO30	Bolt, shear	6	6	0	11 of 33
74	MP23	Stud, shouldered	17	17	0	12 of 33
84	CO38	Washer, flat	5	5	0	14 of 33
87	TC17	Key, woodruff	15	12	3	16 of 33
94	CO42	Rivet, solid	5	5	0	18 of 33
96	CO45	Pin-rivet, threaded	15	15	0	19 of 33
97	MT14	Pin-rivet, threaded	6	6	0	21 of 33
98	CO46	Pin-rivet, threaded	10	10	0	22 of 33
104	CO50	Receptacle, assembly	16	16	0	24 of 33
108	MP34	Packing, preformed/O-ring	28	28	0	25 of 33
109	MP36	Packing, preformed/O-ring	20	20	0	27 of 33
139	MP46	Cable, power, electrical	100	100	0	28 of 33
150	TC33	Metal bar	18	18	0	30 of 33
151	MT28	Metal bar	10	10	0	31 of 33

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Sample Number: 36 (TC13)  
Nomenclature: Bearing, ball, annular.

Federal Supply Class: 3110, Bearings, antifriction, unmounted.

Description of Part: The annular ball bearing is used internally in the fuel valve section of the main fuel control on the TF-34 aircraft engine on the A-6E and B-1B aircrafts. The part was determined to be a critical item per the user, the Contract Technical Data File, and the Weapon System Support Program. The part was not critical per the contract.

National Stock Number: 3110-00-979-0020

Prime Contractor: S & G Industries (Fastech), Plano, Texas.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-W-3609	\$1,944.80	1,040 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 1,040 units during March 1986.

Initial Test Results: The 10 parts tested were purchased under the same contract. Dimensional nonconformances were found on all 10 parts. Chemical and physical tests conformed.

Retest Results: Five additional parts were tested dimensionally. All five parts contained dimensional nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that one of the dimensional deficiencies was a major nonconformance. The other deficiencies were considered minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed that all the parts contain dimensional deficiencies; however, all of the nonconformances were considered major.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Dallas, Texas.

Results of Visit to Contractor's Facility: The annular ball bearings were produced for S & G Industries (Fastech), a small

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

business, by a subcontractor. No enhancement of any items are made by Fastech. The subcontractor provided nonconforming material to Fastech, which did not adequately inspect or identify the nonconformances. The contractor's test equipment and fixtures and the contractor's test practices were determined to be inadequate. The independence of the quality control function was inadequate because the President of the company was the quality control inspector.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: DLA was unable to obtain a response from the Air Force or the Navy.

Defense Logistics Agency Position: Major nonconformances.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 47 (MT11)

Nomenclature: Shackle.

Federal Supply Class: 4030, Fittings for rope, cable and chain.

Description of Part: The shackle is one of the three elements used as a back-up system to support the anchor in its cradle on the 115-foot Landing Craft, Utility. The part was not a critical item per the user, the contract, or Contract Technical Data File. The Weapon System Support Program lists the part as least critical.

National Stock Number: 4030-00-279-4477

Prime Contractor: Broadway Marine, St. Louis, Missouri.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-P142	\$1,917.00	270 units

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 270 units during January 1986.

Initial Test Results: The six parts tested were purchased under the same contract. The parts contained dimensional, chemical, and physical nonconformances.

Retest Results: Fifteen additional parts were tested chemically and physically. The parts nonconformed physically, but conformed chemically.

Engineers' Conclusions: The Supply Center's engineers determined that the physical deficiencies were major nonconformances and dimensional deficiencies were minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, St. Louis, Missouri.

Results of Visit to Contractor's Facility: No visit was made to the contractor's facility because the contractor is no longer in business. The former President of the company was indicted and found guilty of short shipping on Government contracts. The former President was debarred and later declared bankruptcy.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report showed the contractor was no longer in business.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of physical deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of physical deficiencies.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Sample Number: 51 (MP15)  
Nomenclature: Screw, machine.

Federal Supply Class: 5305, Screws.

Description of Part: The machine screw is used on the Navy's Corsair II, A-7 aircraft to hold the electrical wiring assemblies in place on the cable assembly, which provides electricity to the electrical pylon weapons and on the Stratolifter C-135 aircraft. The part was determined to be a critical item per the user and its failure affects the safety of military personnel. The Weapon System Support Program codes the part as most critical. The part was not critical per the contract and the Contract Technical Data File. This item affects the safety of the user.

National Stock Number: 5305-00-206-3681

Prime Contractor: M-F Services Incorporated, Arlington, Texas.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-P-0609	\$3,710.00	140,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 140,000 during October 1985.

Initial Test Results: The 10 parts tested were purchased under the same contract. All 10 of the parts contained dimensional and chemical nonconformances.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined that the parts contained several dimensional deficiencies. It was determined that one of the dimensional deficiencies was major and the rest were minor. The engineer from the Office of the Inspector General, DoD, agreed with the determination of the dimensional deficiencies, but also determined that the parts contained chemical and physical deficiencies which were minor nonconformances.



DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Type of Government Quality Assurance: This is a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: The machine screws were produced for M-F Services Incorporated, a small business, by a subcontractor. No enhancement is made to the items by M-F Services Incorporated. The subcontractor provided nonconforming material to M-F Services, which did not adequately inspect or identify the nonconformances. Test equipment and the contractor's inspection practices were determined to be inadequate. The independence of the contractor's quality control function was also determined to be inadequate because the quality control inspection is not a separate function.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not made available to the auditors.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 52 (MP16)

Nomenclature: Screw, machine.

Federal Supply Class: 5305, Screws.

Description of Part: The machine screw is used by three of the Services. The Air Force and the Navy use the machine screw with fasteners to secure the wing center sections, rear spar, and the wing skin to the Corsair A-7D and the Corsair II A-7 aircraft. The Army uses it to attach the dial and the pointer to the tab bending tool, which decreases vibrations on the Apache Helicopter. The Navy also uses the machine screw to hold the casing together on the Tomahawk Missile. The part was determined to be a critical item by the users and its failure affects the safety of military personnel. The Weapon System Support Program codes the part as most critical. The part was not critical per the contract and the Contract Technical Data File.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

National Stock Number: 5305-00-802-8860

Prime Contractor: M-F Services Incorporated, Arlington, Texas.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-P-A439	\$1,720.00	43,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 43,000 units during February 1986.

Initial Test Results: The 10 parts tested were purchased under the same contract. The parts contained chemical and dimensional nonconformances.

Retest Results: Ten additional parts were tested for dimensions. All 10 parts contained nonconformances. The retest confirmed the dimensional nonconformances.

Engineers' Conclusions: The Supply Center's engineer determined two of the dimensional deficiencies as major nonconformances. The remaining dimensional deficiencies were considered minor. The engineer from the Office of the Inspector General, DoD, agreed with the determination on the dimensional deficiencies. However, he determined the chemical deficiency would also be a major nonconformance.

Type of Government Quality Assurance: This was a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: The machine screws were produced for M-F Services Incorporated, a small business, by a subcontractor. No enhancement is made to the items by M-F Services Incorporated. The subcontractor provided nonconforming material to M-F Services, which did not adequately inspect or identify the nonconformances. Test equipment and the contractor's inspection practices were determined to be inadequate. The independence of the contractor's quality control function was also determined to be inadequate because the quality control inspection is not a separate function.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional and chemical deficiencies.

Sample Number: 65 (MP21)

Nomenclature: Bolt, machine.

Federal Supply Class: 5306, Bolts.

Description of Part: The machine bolt attaches the trunnion caps to the M174 Gun Mount, and allows the gun to elevate and lower on the 20mm Heavy Howitzer. The part was determined to be a critical item by the user and its failure affects the safety of military personnel. The Weapon System Support Program codes the part as most critical. The part was not critical by the contract and the Contract Technical Data File.

National Stock Number: 5306-00-501-9762

Prime Contractor: Morris Hardware Company Incorporated, Philadelphia, Pennsylvania.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-A-0160-0210	\$4,258.50	510 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 860 units from March 1985 to November 1985.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Initial Test Results: The five parts tested were purchased under the same contract. All five of the parts contained several dimensional nonconformances and a chemical nonconformance. The test for physical properties passed, but there was a question about them.

Retest Results: Five additional parts were tested for dimensional and physical properties. All five of the parts contained dimensional and physical nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that the dimensional deficiencies and the physical deficiencies were major nonconformances. The engineer from the Office of the Inspector General, DoD, agreed that the dimensional and physical deficiencies were major nonconformances. In addition, he determined that the chemical deficiency was a minor nonconformance.

Type of Government Quality Assurance: This is a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: The contractor refused to discuss the nonconformances with the audit team. The contractor was on the debarred list for Federal Supply Classes 5305 and 5306 at the time of the audit.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional and physical deficiencies.

Engineering Support Activity Position: The Army responded that the dimensional nonconformances were acceptable, but neither the major physical nonconformances nor the major dimensional nonconformances were addressed in their evaluation.

Defense Logistics Agency Position: Minor nonconformance.

Auditor's Position: Major nonconformance because of dimensional and physical deficiencies.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Sample Number: 67 (C027)  
Nomenclature: Bolt, machine.

Federal Supply Class: 5306, Bolts.

Description of Part: The end item use and the criticality of the machine bolt was unknown to the user and was not coded as critical per the contract, the Contract Technical Data File, nor the Weapon System Support Program.

National Stock Number: 5306-00-582-8874

Prime Contractor: Morris Hardware Company Incorporated, Philadelphia, Pennsylvania.

Type of Contractor: Small business, distributor.

Type of Contract: Negotiated, noncompetitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-A-0160-0629	\$396.00	200 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 200 units during March 1986.

Initial Test Results: The six parts tested were purchased under the same contract. All six parts tested contained dimensional and chemical nonconformances.

Retest Results: Ten additional parts were tested. The parts retested contained dimensional and chemical nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that several of the dimensional and the chemical deficiencies were major nonconformances. The remaining dimensional deficiencies are minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the determination.

Type of Government Quality Assurance: This is a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: The contractor refused to discuss the nonconformances with the audit team. The contractor was on the debarred list for Federal Supply Classes 5305 and 5306 at the time of the audit.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional and chemical deficiencies.

Engineering Support Activity Position: DLA was unable to obtain a response from the Army.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional and chemical deficiencies.

Sample Number: 69 (CO30)  
Nomenclature: Bolt, shear.

Federal Supply Class: 5306, Bolts.

Description of Part: The shear bolt retains the fold hinge assembly to the main rotor head blades on the Lamps Mark III Helicopter. The shear bolt was determined to be a critical item per the user and its failure affects the safety of military personnel. The part was determined to be not critical by the contract and the Contract Technical Data File. The Weapon System Support Program codes the application of the part as most critical.

National Stock Number: 5306-01-170-5558

Prime Contractor: Lawrence Engineering and Supply Incorporated, Burbank, California.

Type of Contractor: Non small business, manufacturer.

Type of Contract: Negotiated, noncompetitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-84-A-0147-0125	\$675.00	300 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 1,835 units from July 1985 to June 1986.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Initial Test Results: The six parts tested were purchased under the same contract. All six parts contained dimensional nonconformances.

Retest Results: No test was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined the parts contained several dimensional deficiencies. Several of the deficiencies are major and the rest are minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed that the dimensional deficiencies were both major and minor nonconformances.

Type of Government Quality Assurance: This is a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: No visit was made to the contractor's facility because the contractor was under indictment for falsifying testing and inspection documents.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 74 (MP23)

Nomenclature: Stud, shouldered.

Federal Supply Class: 5307, Studs.

Description of Part: The shouldered stud secures the 5th stage compressor rotor blade to the support baffle tip on the compressor rotor assembly, which compresses air into the combustion section of the engine of the Phantom F-4 aircraft. The part was determined to be a critical item per the user, the contract, and the Contract Technical Data File. This item

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

affects the safety of military personnel. The Weapon System Support Program codes the part as critical.

National Stock Number: 5307-00-707-2058

Prime Contractor: Valley-Todeco Incorporated, Sylmar, California.

Type of Contractor: Small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-85-C-4895	\$87,750.00	75,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 75,000 units during October 1985.

Initial Test Results: The 12 parts tested were purchased under the same contract. The parts contained several dimensional nonconformances and a chemical nonconformance.

Retest Results: Five additional parts were tested for dimensional and chemical requirements. All five of the parts contained dimensional nonconformances. The chemical testing conformed.

Engineers' Conclusions: The Supply Center's engineers determined that the dimensional deficiencies are major nonconformances because of the sensitivity of the item. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Van Nuys, California.

Results of Visit to Contractor's Facility: The shouldered studs were produced by Valley-Todeco Incorporated, a small business. The contractor's inspection practices were determined to be inadequate. The contractor's inspection records showed that the nonconformance was recorded. Although the tests did not result in enough of the nonconformances being found in any one check to reject the lot, the continued pattern of the nonconformance being present should have alerted the contractor to the problem so it could have been rectified. The quantity for the contract was manufactured in four lots. Inspections on all four lots disclosed the nonconformance.



DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Contractor's Test: Valley-Todeco Incorporated made dimensional measurements on the four parts provided during the visit to the contractor's facility by the auditors. The inspection confirmed the nonconformance. However, the contractor believes the measurements could not be accurate because the coating had been stripped off of the parts.

Material Deficiency Investigation Report: A final material deficiency investigation report confirmed that a quality deficiency existed.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Air Force determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 84 (CO38)  
Nomenclature: Washer, flat.

Federal Supply Class: 5310, Nuts and washers.

Description of Part: The flat washer is part of a hinge assembly within the rotary wing head on the CH-53 helicopter. The item was determined to be critical per the user and its failure affects the safety of military personnel. The Weapon System Support Program codes the part as critical. The part was not critical per the contract and the Contract Technical Data File.

National Stock Number: 5310-01-125-4363

Prime Contractor: Phoenix Specialty Manufacturing Company Incorporated, Bamberg, South Carolina.

Type of Contractor: Small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-87-M-BK46	\$1,079.00	1,300 units

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 1,510 units from July 1982 to April 1987.

Initial Test Results: The five parts tested were purchased under the same contract. The parts tested contained dimensional, chemical, and physical nonconformances.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined the dimensional deficiency to be minor. The chemical and physical deficiencies were determined to be major nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Atlanta, Georgia.

Results of Visit to Contractor's Facility: No visit was made to the contractor's facility.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report confirmed the existence of chemical and physical nonconformances. The contractor agreed to replace nonconforming material at no additional cost to the Government.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of chemical and physical deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of chemical and physical deficiencies.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Sample Number: 87 (TC17)  
Nomenclature: Key, woodruff.

Federal Supply Class: 5315, Nails, keys, and pins.

Description of Part: The woodruff key is used by the Army to bevel the gears to the shaft on the right angle drive unit, which provides input to the fans for engine and transmission coolers to the cooling fan on the Abrams M-1 Tank; to retain a worm gear, the mechanical override gear train used to manually drive the gear box of the Patriot Missile; as part of the erect and retract D.C. motor, which is used to align the shaft and prevent damage to the shaft from the steering on the Chaparral and Vulcan missile launchers; and locks the clutch assembly to the traverse mechanism shaft in order to permit the manual traversing of the vehicle turret on the M109 NBC/RAM. The part was determined to be a critical item by the user, but does not affect safety. The Weapon System Support Program codes the part as most critical. The part was not critical per the contract and the Contract Technical Data File.

National Stock Number: 5315-00-616-5520

Prime Contractor: M-F Services Incorporated, Arlington, Texas.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-V-5630	\$1,140.00	19,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 19,000 units during November 1985.

Initial Test Results: The 10 parts tested were purchased under the same contract. The parts contained dimensional and chemical nonconformances.

Retest Results: Five additional parts were tested for dimensions. The five parts failed one of the dimensional requirements.

Engineers' Conclusions: The Supply Center's engineers determined that one of the dimensional deficiencies was a major nonconformance. Seven of the ten parts tested failed this dimensional requirement and are major nonconformances. The other

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

three parts nonconformed chemically and were determined to be minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: This is a fast pay contract administered by the Defense Industrial Supply Center.

Results of Visit to Contractor's Facility: The woodruff keys were produced for M-F Services Incorporated, a small business, by a subcontractor. No enhancement is made to the items by M-F Services Incorporated. The subcontractor provided nonconforming material to M-F Services, which did not adequately inspect or identify the nonconformances. Test equipment and the contractor's inspection practices were determined to be inadequate. The independence of the contractor's quality control function was also determined to be inadequate because the quality control inspection is not a separate function.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not prepared because the contract was administered by the Supply Center.

Supply Center's Position (as of January 26, 1990): Major nonconformance for 12 of the 15 parts because of dimensional deficiencies. All 15 parts contained minor nonconformances because of chemical deficiencies.

Engineering Support Activity Position: Unknown. DLA did not obtain a response from the Army, the appropriate ESA for keys and pins. The Army also is the project manager for the M-1 Tank, the Patriot Missile, and the M109 Personnel Carrier. DLA provided a response from the Navy that stated the parts were acceptable for Navy use without stating how the part was used.

Defense Logistics Agency Position: Minor nonconformance.

Auditor's Position: Major nonconformance for 12 of 15 parts because of dimensional deficiencies. All 15 parts contained minor nonconformances because of chemical deficiencies.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Sample Number: 94 (CO42)  
Nomenclature: Rivet, solid.

Federal Supply Class: 5320, Rivets.

Description of Part: The solid rivet was identified as a part for the EH-60A Helicopter. The part was determined to be a critical item by the user, but the user did not identify whether safety was affected. The Weapon System Support Program codes the part as most critical. The part was not critical per the contract nor the Contract Technical Data File.

National Stock Number: 5320-00-874-4314

Prime Contractor: Apollo Industries, Rancho Cucamonga, California.

Type of Contractor: Non small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-P-7943	\$1,100.00	100,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 100,000 units in December 1985.

Initial Test Results: The five parts tested were purchased under the same contract. The parts contained dimensional and chemical nonconformances.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined that a couple of the dimensional deficiencies were major nonconformances and the remaining dimensional and chemical deficiencies were minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Santa Ana, California.

Results of Visit to Contractor's Facility: Apollo Industries (Apollo) is a distributor for All-Pro Fastener and Rivet Manufacturing Company (All-Pro). The facilities,

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

management, and personnel are the same for both companies. Although Apollo is a distributor, we viewed Apollo/All-Pro as one unit and dealt with them as a manufacturer. Testing of material chemistry is not performed by the contractor. At the time of the contract, the test equipment and the contractor's inspection practices were inadequate.

Contractor's Test: Apollo/All-Pro ran dimensional tests on 40 units from this contract which were still in his stock. The contractor confirmed the results of the independent laboratory that the part was dimensionally nonconforming.

Material Deficiency Investigation Report: An incomplete material deficiency investigation report was provided to the Supply Center. The report failed to provide adequate consideration to the results of the independent laboratory tests. The quality assurance representative reported that although nonconformances were validated with the contractor in September 1989, the contractor changed his position with respect to retesting additional exhibits.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: DLA was unable to obtain responses from the Army or the Navy.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 96 (CO45)

Nomenclature: Pin-rivet, threaded.

Federal Supply Class: 5320, Rivets.

Description of Part: The threaded pin-rivet is used on the airframe structure to maintain a high degree of structural integrity on the F/A-18 and B1-B aircrafts. Air Force and Navy users determined the rivets were critical and affected the safety of military personnel. The Weapon System Support Program codes the part as critical. The item was critical per the contract and the Contract Technical Data File.

National Stock Number: 5320-01-136-2185

Prime Contractor: M-F Services Incorporated, Arlington, Texas.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Type of Contractor: Small business, distributor.

Type of Contract: Negotiated, noncompetitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-K393	\$2,400.00	1,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 1,000 units during December 1985.

Initial Test Results: The 10 parts tested were purchased under the same contract. The parts contained several dimensional nonconformances.

Retest Results: Five additional parts were tested for dimensions. The parts conformed to the dimensions tested.

Engineers' Conclusions: The Supply Center's engineers determined that several of the dimensional deficiencies were major nonconformances. The remaining deficiencies were minor. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Dallas, Texas.

Results of Visit to Contractor's Facility: The threaded pin-rivets were produced for M-F Services Incorporated, a small business, by a subcontractor. No enhancement is made to the items by M-F Services Incorporated. The subcontractor provided nonconforming products to M-F Services, which did not adequately inspect or identify the nonconformances. Test equipment and the contractor's inspection practices were determined to be inadequate. The independence of the contractor's quality control function was also determined to be inadequate because the quality control inspection is not a separate function.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: An inaccurate final material deficiency report was provided to the Supply Center. The quality assurance representative reported that the exhibit does not show any defects and the laboratory reports are contradictory. This is inaccurate. The retest by a second laboratory confirms the results of the first laboratory. The quality assurance representative is not giving adequate consideration to the evidence provided by the independent laboratories.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Air Force determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 97 (MT14)  
Nomenclature: Pin-rivet, threaded.

Federal Supply Class: 5320, Rivets.

Description of Part: The threaded pin-rivet is used in the structural repair of the F/A-18 aircraft frame. The part was critical per the contract and the Weapon System Support Program. The part was not critical per the user and the Contract Technical Data File.

National Stock Number: 5320-01-143-9232

Prime Contractor: Voi-Shan, Screwcorp, City of Industry, California.

Type of Contractor: Non small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-W-1013	\$2,512.30	1,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 2,000 units from June 1983 to October 1985.

Initial Test Results: The six parts tested were purchased under the same contract. The parts contained several dimensional nonconformances.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined that several of the dimensional deficiencies were major nonconformances and the remainder were minor. The engineer



DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Itinerant quality assurance representative from the Defense Contract Management Command, El Segundo, California.

Results of Visit to Contractor's Facility: The threaded pin-rivets were manufactured by Voi-Shan, Screwcorp. Voi-Shan, Screwcorp is completely integrated for fastener manufacturing. The heat treating and plating are performed under one roof along with the manufacture of the fastener. The contractor's inspection practices were inadequate for the production of this part at the time of the contract.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: An inaccurate final material deficiency investigation report was provided to the Supply Center. The report stated that during the DoD IG's visit in September 1989, the reported deficiencies were proved invalid. This statement is inaccurate. The audit team was not shown any convincing evidence that invalidated the results of the independent laboratory tests. In addition, subsequent retests by a second independent laboratory confirmed the findings of the first tests.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: Both the Navy and the Air Force responded that the parts were useable.

Defense Logistics Agency Position: Major nonconformances.

Auditor's Position: Major nonconformance because of dimensional deficiency.

Sample Number: 98 (CO46)

Nomenclature: Pin-rivet, threaded.

Federal Supply Class: 5320, Rivets.

Description of Part: The threaded pin-rivet is used in general structural repair of the F/A-18 Aircraft frame. The part was critical per the contract and the Contract Technical Data File. The Weapon System Support Program coded the part as least critical. The user stated the part was not critical.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

National Stock Number: 5320-01-145-1634

Prime Contractor: Voi-Shan, Screwcorp, City of Industry, California.

Type of Contractor: Non small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-85-W-V755	\$1,381.80	1,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 3,438 units from July 1983 to July 1987.

Initial Test Results: The five parts tested were purchased under the same contract. The parts contained several dimensional and chemical nonconformances.

Retest Results: Five additional parts were tested for dimensions. All five parts contained dimensional nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that several of the dimensional deficiencies were major nonconformances. The remaining dimensional and chemical deficiencies were minor nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, El Segundo, California.

Results of Visit to Contractor's Facility: The threaded pin-rivets were manufactured by Voi-Shan, Screwcorp. Voi-Shan, Screwcorp is completely integrated for fastener manufacturing. The heat treating and plating are performed under one roof along with the manufacture of the fastener. The contractor's inspection practices were inadequate for the production of this part at the time of the contract.

Contractor's Test: The contractor measured one part using a micrometer before removing any lubricant and after lubricant was removed. Both times the measurements were smaller than the commercial laboratory's test results. The contractor also tested the space at the end of the bolt and the results showed that the dimension was not undersized.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Material Deficiency Investigation Report: An incomplete and inaccurate final material deficiency report was provided to the Supply Center. The report inaccurately verifies that the parts met contract dimensional requirements and rendered the dimensional deficiencies invalid. This was not true. In addition, the report states that the retest results showed that the dimensions conformed. This was not true. The retests confirmed the existence of dimensional nonconformances as reported by the initial independent laboratory. Also, the equipment and methodology used by the laboratories was more accurate than the contractors.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: Both the Navy and the Air Force determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 104 (CO50)  
Nomenclature: Receptacle, assembly.

Federal Supply Class: 5325, Fastening devices.

Description of Part: The assembly receptacle is attached to the upper-side of the aft portion of the fuselage to retain two small panels on the F-111 Aircraft. The user stated that the part was not critical, but then stated that failure of the part affects the safety of military personnel. The part was critical per the contract and the Contract Technical Data File. The Weapon System Support Program codes the part as most critical.

National Stock Number: 5325-00-869-9396

Prime Contractor: SPS Technologies Incorporated, Santa Ana, California.

Type of Contractor: Non small business, manufacturer.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-A315	\$1,525.00	500 units

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 500 units during April 1986.

Initial Test Results: The six parts tested were purchased under the same contract. The parts contained dimensional and chemical nonconformances.

Retest Results: Ten additional parts were tested for dimensional and chemical requirements. The dimensional requirements conformed. The parts contained chemical nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined the chemical deficiencies are a major nonconformance. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Santa Ana, California.

Results of Visit to Contractor's Facility: No visit was made to the contractor's facility.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not made available to the auditors.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of chemical deficiencies.

Engineering Support Activity Position: The Air Force determined that the parts were useable if the hole for the rivet was enlarged, but the lack of cadmium coating reduces corrosion resistance. The item is installable but of very poor quality.

Defense Logistics Agency Position: Minor nonconformance.

Auditor's Position: Major nonconformance because of chemical deficiencies.

Sample Number: 108 (MP34)

Nomenclature: Packing, preformed/O-ring.

Federal Supply Class: 5330, Packing and gasket materials.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Description of Part: The preformed/O-ring packing is used to seal fuel lines and fittings to prevent leakage of fuel on the TF-30 aircraft engine on the F-111 and C-141 A/B aircrafts. The part was determined to be a critical item per the user, the contract, and the Contract Technical Data File. This item affects the safety of military personnel. The Weapon System Support Program codes the part as most critical.

National Stock Number: 5330-00-243-4841

Prime Contractor: Moody Precision Supply Incorporated, Arlington, Texas.

Type of Contractor: Small business, distributor.

Type of Contract: Firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-JX19	\$7,089.20	14,800 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 14,800 units during June 1986.

Initial Test Results: The 18 parts tested were purchased under the same contract. The parts contained dimensional and physical nonconformances.

Retest Results: Ten additional parts were tested for dimensional, chemical, and physical requirements. The parts contained dimensional and physical nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that some of the physical and dimensional deficiencies were major nonconformances and the rest were minor. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Dallas, Texas.

Results of Visit to Contractor's Facility: No visit was made to the contractor's facility because the contract was suspended based on an indictment for kickbacks.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: A final material deficiency investigation report was not completed because the

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

quality assurance representative stated that the cause could not be determined without an exhibit to examine. The quality assurance representative did not give adequate consideration to the test and retest information.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of physical and dimensional deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of physical and dimensional deficiencies.

Sample Number: 109 (MP36)

Nomenclature: Packing, preformed/O-ring.

Federal Supply Class: 5330, Packing and gasket materials.

Description of Part: The preformed/O-ring packing prevents leakage of aircraft fuel at the connection between the fuel pump and the shut-off valve on the J85 engine of the T-38 aircraft and serves as a protective seal for the wing fuel valve assembly on the F-15 aircraft. The part was critical per the user and its failure affects the safety of military personnel. The Weapon System Support Program codes the part as most critical. The part was not critical per the contract and the Contract Technical Data File.

National Stock Number: 5330-00-250-0227

Prime Contractor: Russell Aircraft, Huntington Beach, California.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-85-V-N002	\$2,328.00	60,000 units

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 60,000 units during April 1985.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Initial Test Results: The 20 parts tested were purchased under the same contract. The parts contained dimensional nonconformances.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined that the dimensional deficiency was a major nonconformance. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Santa Ana, California.

Results of Visit to Contractor's Facility: The preformed/O-ring packings were produced for Russell Aircraft, a small business, by a subcontractor. The subcontractor provided nonconforming material to Russell Aircraft, which did not adequately inspect or identify the nonconformances. The contractor's test equipment and inspection practices were inadequate. The independence of the contractor's quality control function was also inadequate because the Vice President of the company is the quality control manager and the sales manager.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: An incomplete final material deficiency investigation report was provided to the Supply Center. The quality assurance representative did not adequately consider the test results provided by the Supply Center from independent test laboratories.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of dimensional deficiencies.

Engineering Support Activity Position: The Air Force determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of dimensional deficiencies.

Sample Number: 139 (MP46)  
Nomenclature: Cable, power, electrical.

Federal Supply Class: 6145, Wire and cable, electrical.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Description of Part: The electric power cable was used on the Ground Launch Cruise Missile (GLCMBGM-109G) as an interconnection between the power distribution rack and the overhead interrack cable connector. The part was critical per the user and the Weapon System Support Program. The part was not critical per the contract and the Contract Technical Data File.

National Stock Number: 6145-01-157-3486

Prime Contractor: Veteran Wire and Cable Corporation, Doylestown, Pennsylvania.

Type of Contractor: Small business, distributor.

Type of Contract: Negotiated, sole source, firm-fixed price

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-RK30	\$1,487.50	500 feet

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 2,500 feet during July 1986.

Initial Test Results: The 100 feet of cable tested was from 1 spool purchased under the same contract. The cable failed to meet the physical requirements of performance.

Retest Results: No retest was conducted for the Supply Center.

Engineers' Conclusions: The Supply Center's engineers determined that the physical deficiencies were major nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Philadelphia, Pennsylvania.

Results of Visit to Contractor's Facility: The electrical power cable was produced for Veteran Wire and Cable Corporation, a small business, by a subcontractor. No enhancement is made to the cable by Veteran Wire and Cable Corporation, which did not adequately inspect or identify the nonconformance. The contractor's test equipment and inspection practices were inadequate. Independence of the contractor's quality control function was inadequate because there was no quality control function established.

Contractor's Test: The contractor did not conduct a test.



DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Material Deficiency Investigation Report: An incomplete and inaccurate final material deficiency investigation report was provided to the Supply Center. The report describes a machine screw, not an electrical cable.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of physical deficiencies.

Engineering Support Activity Position: The Army determined that the part was unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of physical deficiencies.

Sample Number: 150 (TC33)  
Nomenclature: Metal bar.

Federal Supply Class: 9530, Bars and rods, nonferrous base metal.

Description of Part: The end item use and the criticality of the metal bar were unknown. The part was not critical per the contract, Contract Technical Data File, nor the Weapon System Support Program.

National Stock Number: 9530-00-294-9726

Prime Contractor: Nu-Met Incorporated, Huntington Beach, California.

Type of Contractor: Small business, distributor.

Type of Contract: Advertised, competitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-87-M-CE39	\$1,370.88	720 feet

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 720 feet during April 1987.

Initial Test Results: The 12 feet of metal bar were purchased under the same contract. There were chemical and physical nonconformances.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Retest Results: Six additional feet were tested for chemical composition. There were chemical discrepancies.

Engineers' Conclusions: The Supply Center's engineers determined that the chemical deficiency was a major nonconformance. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Santa Ana, California.

Results of Visit to Contractor's Facility: The metal bars were produced for Nu-Met Incorporated, a small business, by a subcontractor. Nu-Met does not have the test equipment to perform chemical testing. The contractor's quality control manual does establish procedures for using outside laboratories to periodically verify material from suppliers. The contractor's inspection procedures were inadequate for this contract because this supplier's material was never tested. Independence of the quality control function was inadequate because the quality control manager was also a corporate director and in charge of Government contracts, commercial accounts, and in-process floor inspection.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: An incomplete final material deficiency investigation report was provided to the Supply Center. The quality assurance representative was not provided a copy of the retest results from a second laboratory.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of chemical deficiencies.

Engineering Support Activity Position: The General Services Administration advised that the metal bars should not be accepted.

Defense Logistics Agency Position: The part was conforming.

Auditor's Position: Major nonconformance because of chemical deficiencies.

Sample Number: 151 (MT28)  
Nomenclature: Metal bar.

Federal Supply Class: 9530, Bars and rods, nonferrous base metal.

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

Description of Part: The end item use and the criticality of the metal bar were unknown to the Supply Center. The part was not critical per the contract, the Contract Technical Data File, nor the Weapon System Support Program.

National Stock Number: 9530-00-494-0612

Prime Contractor: Millard Controlled Metals, Warminster, Pennsylvania.

Type of Contractor: Non small business, distributor.

Type of Contract: Negotiated, noncompetitive, firm-fixed price.

<u>Contract Number</u>	<u>Price</u>	<u>Quantity</u>
DLA500-86-M-QM54	\$1,382.04	1,800 feet

Total Quantity of this Part Supplied to the Defense Industrial Supply Center (the Supply Center): 1,800 feet during August 1986.

Initial Test Results: The eight feet of metal bar was purchased under the same contract. There were physical nonconformances.

Retest Results: Two additional feet were tested for physical properties. There were physical nonconformances.

Engineers' Conclusions: The Supply Center's engineers determined that the physical deficiencies were major nonconformances. The engineer from the Office of the Inspector General, DoD, agreed with the Supply Center's determination.

Type of Government Quality Assurance: Nonresident quality assurance representative from the Defense Contract Management Command, Philadelphia, Pennsylvania.

Results of Visit to Contractor's Facility: The metal bar was produced for Millard Controlled Metals by a subcontractor. No enhancement is made to the items by Millard, which did not adequately inspect or identify the nonconformance. The contractor's test equipment and inspection practices were inadequate. The subcontractor informed Millard that it was providing a substitute material that would meet the requirements. The content of the substitute material was clearly stated on the subcontractor's specification narrative and the customer delivery receipt. Millard did not verify that the substitute was acceptable. The Government's quality assurance

DETAILS ON SELECTED PARTS WITH MAJOR NONCONFORMANCES  
(Continued)

representative failed to verify that the correct material was provided.

Contractor's Test: The contractor did not conduct a test.

Material Deficiency Investigation Report: The nonconformance was confirmed. The contractor's inspection procedures were inadequate. The contractor revised those procedures to preclude future mistakes.

Supply Center's Position (as of January 26, 1990): Major nonconformance because of physical deficiencies.

Engineering Support Activity Position: The Navy determined that the parts were unuseable.

Defense Logistics Agency Position: Major nonconformance.

Auditor's Position: Major nonconformance because of physical deficiencies.



## RESULTS OF TESTING FOR 172 CONTRACTS

<u>Basis of Comparison</u>	<u>Major</u> <u>1/</u>	<u>Minor</u> <u>2/</u>	<u>Conform</u> <u>3/</u>	<u>Total</u>
<u>Size of Business</u>				
Small Business	25	50	34	109
Other Than Small Business	12	33	18	63
Total	37	83	52	172
<u>Type of Supplier</u>				
Distributor	22	46	27	95
Manufacturer	15	37	25	77
Total	37	83	52	172
<u>Site of Inspection</u>				
Source	24	53	37	114
Destination	13	30	15	58
Total	37	83	52	172
<u>Level of Quality Requirement</u>				
Standard Inspection	35	65	45	145
Higher Level Inspection	2	18	7	27
Total	37	83	52	172

- 1/ Number of contracts with major nonconforming products.
- 2/ Number of contracts with minor nonconforming products.
- 3/ Number of contracts with completely conforming products.



# RESULTS OF CONFORMANCE TESTING

## SIZE OF BUSINESS

### STATISTICAL PROJECTIONS BY PARTS

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	
Small Business	254,134,730	26.6 <sup>2/</sup>	339,008,655	35.5	361,651,425	37.9	954,794,810	75.1	
Other than Small Business	<u>92,133,874</u>	29.1 <sup>3/</sup>	<u>110,436,248</u>	35.0	<u>113,511,484</u>	35.9	<u>316,081,606</u>	<u>24.9</u>	
Total	<u>346,268,604</u>	27.2 <sup>1/</sup>	<u>449,444,903</u>	35.4	<u>475,162,909</u>	37.4	<u>1,270,876,416</u>	<u>100.0</u>	

### STATISTICAL PROJECTIONS BY DOLLAR VALUE

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	
Small Business	\$107,438,791	19.7 <sup>2/</sup>	\$199,678,724	36.5	\$238,887,008	43.8	\$546,004,523	56.7	
Other Than Small Business	<u>\$64,145,393</u>	15.4 <sup>3/</sup>	<u>\$253,466,263</u>	60.7	<u>\$99,856,228</u>	23.9	<u>\$417,467,884</u>	<u>43.3</u>	
Total	<u>\$171,584,184</u>	17.8 <sup>1/</sup>	<u>\$453,144,987</u>	47.0	<u>\$338,743,236</u>	35.2	<u>\$963,472,407</u>	<u>100.0</u>	

<sup>1/</sup> Percent of Universe

<sup>2/</sup> Percent of Small Business

<sup>3/</sup> Percent of Other Than Small Business



RESULTS OF CONFORMANCE TESTING  
(Continued)

TYPE OF SUPPLIER

STATISTICAL PROJECTIONS BY PARTS

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	
Distributor	239,740,657	30.2 <sup>2/</sup>	297,289,763	37.4	257,671,148	32.4	794,701,568	62.5	
Manufacturer	<u>106,527,947</u>	22.4 <sup>3/</sup>	<u>152,155,140</u>	31.9	<u>217,491,761</u>	45.7	<u>476,174,848</u>	<u>37.5</u>	
Total	<u>346,268,604</u>	27.2 <sup>1/</sup>	<u>449,444,903</u>	35.4	<u>475,162,909</u>	37.4	<u>1,270,876,416</u>	<u>100.0</u>	

STATISTICAL PROJECTIONS BY DOLLAR VALUE

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	
Distributor	\$97,247,913	22.1 <sup>2/</sup>	\$164,040,547	37.4	\$177,955,782	40.5	\$439,244,242	45.6	
Manufacturer	<u>\$74,336,271</u>	14.2 <sup>3/</sup>	<u>\$289,104,440</u>	55.1	<u>\$160,787,454</u>	30.7	<u>\$524,228,165</u>	<u>54.4</u>	
Total	<u>\$171,584,184</u>	17.8 <sup>1/</sup>	<u>\$453,144,987</u>	47.0	<u>\$338,743,236</u>	35.2	<u>\$963,472,407</u>	<u>100.0</u>	

<sup>1/</sup> Percent of Universe  
<sup>2/</sup> Percent of Distributor  
<sup>3/</sup> Percent of Manufacturer

# RESULTS OF CONFORMANCE TESTING

(Continued)

## SITE OF INSPECTION

### STATISTICAL PROJECTIONS BY PARTS

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	
Source	203,810,952	23.7 <sup>2/</sup>	236,784,007	27.5	419,593,894	48.8	860,188,853	67.7	
Destination	<u>142,457,652</u>	34.7 <sup>3/</sup>	<u>212,660,896</u>	51.8	<u>55,569,015</u>	13.5	<u>410,687,563</u>	<u>32.3</u>	
Total	<u>346,268,604</u>	27.2 <sup>1/</sup>	<u>449,444,903</u>	35.4	<u>475,162,909</u>	37.4	<u>1,270,876,416</u>	<u>100.0</u>	

### STATISTICAL PROJECTIONS BY DOLLAR VALUE

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	
Source	\$135,730,673	19.3 <sup>2/</sup>	\$335,080,989	47.8	\$230,762,361	32.9	\$701,574,023	72.8	
Destination	<u>\$35,853,511</u>	13.7 <sup>3/</sup>	<u>\$118,063,998</u>	45.1	<u>\$107,980,875</u>	41.2	<u>\$261,898,384</u>	<u>27.2</u>	
Total	<u>\$171,584,184</u>	17.8 <sup>1/</sup>	<u>\$453,144,987</u>	47.0	<u>\$338,743,236</u>	35.2	<u>\$963,472,407</u>	<u>100.0</u>	

- <sup>1/</sup> Percent of Universe  
<sup>2/</sup> Percent of Source  
<sup>3/</sup> Percent of Destination

RESULTS OF CONFORMANCE TESTING

(Continued)

LEVEL OF QUALITY REQUIREMENT

STATISTICAL PROJECTIONS BY PARTS

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	<u>Parts</u>	<u>Percent</u>	
Standard	346,091,984	29.9 <sup>2/</sup>	376,706,366	32.5	435,953,450	37.6	1,158,751,800	91.2	
Higher Level	<u>176,620</u>	.2 <sup>3/</sup>	<u>72,738,537</u>	64.8	<u>39,209,459</u>	35.0	<u>112,124,616</u>	8.8	
Total	<u>346,268,604</u>	27.2 <sup>1/</sup>	<u>449,444,903</u>	35.4	<u>475,162,909</u>	37.4	<u>1,270,876,416</u>	100.0	

STATISTICAL PROJECTIONS BY DOLLAR VALUE

	<u>Major Nonconformance</u>		<u>Minor Nonconformance</u>		<u>Conforming</u>		<u>Universe</u>		<sup>1/</sup>
	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	<u>Value</u>	<u>Percent</u>	
Standard	\$171,358,333	22.2 <sup>2/</sup>	\$288,977,018	37.4	\$312,761,373	40.4	773,096,724	80.2	
Higher Level	<u>\$225,851</u>	.1 <sup>3/</sup>	<u>\$164,167,969</u>	86.3	<u>\$25,981,863</u>	13.6	<u>190,375,683</u>	19.8	
Total	<u>\$171,584,184</u>	17.8 <sup>1/</sup>	<u>\$453,144,987</u>	47.0	<u>\$338,743,236</u>	35.2	<u>963,472,407</u>	100.0	

<sup>1/</sup> Percent of Universe

<sup>2/</sup> Percent of Standard

<sup>3/</sup> Percent of Higher Level

**GUIDANCE AND DEFINITIONS FOR NONCONFORMANCES  
AND OTHER RELATED QUALITY ASSURANCE TERMS**

**Nonconforming Supplies:** the Federal Acquisition Regulation 46.407, "Government Contract Quality Assurance - Nonconforming Supplies or Services," provides the following guidance and definitions on nonconforming supplies.

(a) Contracting officers should reject supplies or services not conforming in all respects to contract requirements.

(b) Contractors ordinarily shall be given an opportunity to correct or replace nonconforming supplies or services when this can be accomplished within the required delivery schedule.

(c) The contracting officer shall ordinarily reject supplies or services when the nonconformance adversely affects safety, health, reliability, durability, performance, interchangeability of parts or assemblies, or any other basic objective of the specification.

(d) If the nonconformance is minor, in that it does not affect any of the factors referred to in (c) above, the cognizant contract administration office may make the determination to accept or reject . . . .

**Nonconformance:** the failure of a characteristic to conform to the requirements specified in the contract, drawings, specifications, or other approved product description (Military Standard 1520C, "Corrective Action and Disposition System for Nonconforming Material").

**Minor Nonconformance:** a discrepancy that does not adversely affect health or safety; performance; interchangeability, reliability, or maintainability; effective use or operation; or weight and appearance. Multiple minor nonconformances, when considered collectively, may raise the category to a major/critical nonconformance (Military Standard 1520C).

**Major Nonconformance:** a nonconformance other than minor that cannot be completely eliminated by rework or reduced to a minor nonconformance by repair. When a classification of defects exists, minor defects are minor nonconformances. Major and critical defects that cannot be completely eliminated by rework

**GUIDANCE AND DEFINITIONS FOR NONCONFORMANCES  
AND OTHER RELATED QUALITY ASSURANCE TERMS**  
(Continued)

or reduced to a minor nonconformance by repair are major/critical nonconformances (Military Standard 1520C).

Type I Nonconformance: ordinarily rejected by the contracting officer because it adversely affects safety, health, durability, performance, interchangeability of parts, or effective use or operation (Defense Logistics Agency Regulation 8200.10, "Control of Nonconforming Material").

Type II Nonconformance: minor because it does not affect any of the reasons in Type I for ordinary rejection (Defense Logistics Agency Regulation 8200.10).

Defect: any nonconformance of a characteristic with specified requirements (Military Standard 109B, "Quality Assurance Terms and Definitions").

Minor Defect: a defect that is not likely to reduce materially the usability of the unit or product for its intended purpose, or is a departure from established standards having little bearing on the effective use or operation of the unit (Military Standard 109B).

Major Defect: a defect other than critical that is likely to result in failure or to reduce materially the usability of the unit or product for its intended purpose (Military Standard 109B).

Material Deficiency: any unsatisfactory condition (for example, physical, chemical, software, firmware, electrical, functional) noted in material that is attributable to nonconformance to contractual or specification requirements. Substandard workmanship and manufacturing defects fall within this definition provided the standard against which the work has been judged is identified (Defense Logistics Agency Regulation 4155.24, "Reporting of Product Quality Deficiencies Across Component Lines").

Category I Deficiency: a product quality deficiency that may cause death, injury, or severe occupational illness; that would cause loss of or major damage to a weapon system; that directly restricts the combat readiness capabilities of the using organization; or that would result in a production line stoppage (Defense Logistics Agency Regulation 4155.24).

Category II Deficiency: a product quality deficiency that does not meet the criteria set forth in category I (Defense Logistics Agency Regulation 4155.24).

SCOPE OF CONTRACTOR VISITS --  
NUMBER OF CONTRACTS AND CONTRACTORS IN AUDIT SAMPLE

Federal Supply Class	Nomenclature	NSNs <sup>1/</sup> in Sample	Number of Contracts In Sample	Number of Contractors In Sample	DoDIG Audit Visits		
					Number of NSNs	Number of Contracts	Number of Contractors
1560	Airframe Structural Components	3	3	3	1	1	1
1680	Miscellaneous Aircraft Accessories, Components	3	3	3	2	2	2
2810	Gas Reciprocating Engine - Aircraft and Components	4	4	4	0	0	0
2840	Gas Turbines and Jet Engines Aircraft	5	5	5	2	2	2
3110	Bearings, Antifriction, Unmounted	15	17	11	3	3	2
3120	Bearings, Plain, Unmounted	4	4	4	0	0	0
4010	Chain and Wire Rope	5	6	6	2	2	2
4030	Fittings for Rope, Cable and Chain	5	6	5	1	1	1
5305	Screws	13	14	9	4	4	2
5306	Bolts	10	14	7	4	5	3
5307	Studs	4	4	4	2	2	2
5310	Nuts and Washers	9	11	9	0	0	0
5315	Nails, Keys, and Pins	4	4	4	3	3	3
5320	Rivets	11	17	11	9	11	6
5325	Fastening Devices	4	7	5	1	2	1
5330	Packing and Gasket Materials	12	14	10	7	8	4
5340	Miscellaneous Hardware	12	16	12	3	4	3
6145	Wire and Cable, Electrical	10	10	9	1	1	1
9505	Wire, Nonelectrical Iron and Steel	7	8	7	0	0	0
9530	Bars and Rods, Nonferrous Base Metal	5	5	4	2	2	2
Totals		<u>145</u>	<u>172</u>	<u>132</u> <sup>2/</sup>	<u>47</u>	<u>53</u>	<u>37</u> <sup>2/</sup>

<sup>1/</sup> NSN -- National Stock Number

<sup>2/</sup> Some contractors produce in more than 1 Federal Supply Class resulting in these contractors being counted more than once.  
 -- There were only 110 contractors in the audit sample although, by Federal Supply Class, the number of contractors in the sample was 132 due to the repetition.  
 -- Only 29 contractors were actually visited although, by Federal Supply Class, the number of contractors visited was 37 due to the repetition.



RESULTS OF CONTRACTOR VISITS -- QUALITY CONTROL INADEQUACIES

Sample Number	Contractor	Number of Contracts with Quality Control Inadequacies				Place of Inspection	Level of Inspection	Quality Assurance Representatives
		1/	2/	3/	4/			
5	Torque Industries Incorporated	0	0	0	0	Source	Standard	DCASMA Dallas, Texas <sup>5/</sup> ..... Itinerant
6	Fenwal Incorporated	0	0	0	0	Source	Standard	DCASMA Boston, Massachusetts ..... Itinerant
8	Bell Helicopter Textron Incorporated	1	1	0	0	Source	Standard	USA Plant Rep. Office, Fort Worth, Texas . In-Plant
19	General Electric Company, Lynn	0	0	0	0	Source	MIL-Q-9858	NAVPRO General Electric, Massachusetts <sup>6/</sup> . In-Plant
20	Metro Machine Works Incorporated	1	1	0	0	Source	Standard	DCASMA Detroit, Michigan ..... Itinerant
34	S & G Industries (Fastech)	0	0	0	0	Destination	Standard	Defense Industrial Supply Center ..... DISC <sup>7/</sup>
35	Chrysler Corporation / Part Division	0	0	0	0	Source	Standard	DCASMA Detroit, Michigan ..... Itinerant
36	S & G Industries (Fastech)	1	1	1	0	Source	MIL-I-45208	DCASMA Dallas, Texas ..... Itinerant
42	Indian Aerospace Incorporated	1	0	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
44	California Swaging & Cable Products CO	1	0	0	1	Source	Standard	DCASMA El Segundo, California ..... Itinerant
46	R & R Military Products Company	0	0	0	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
51	M-F Services Incorporated	1	1	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
52	M-F Services Incorporated	1	1	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
56	Misco Incorporated	1	1	1	1	Destination	Standard	Defense Industrial Supply Center ..... DISC
59	Misco Incorporated	1	1	1	1	Destination	Standard	Defense Industrial Supply Center ..... DISC
61	Butler Incorporated	1	1	0	1	Destination	Standard	Defense Industrial Supply Center ..... DISC
64	Torque Industries Incorporated	1	0	0	1	Destination	Standard	Defense Industrial Supply Center ..... DISC
66	M-F Services Incorporated	1	1	1	0	Source	MIL-I-45208	DCASMA Dallas, Texas ..... Itinerant
68	Torque Industries Incorporated	2	0	0	2	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
70	Aircraft Fasteners Incorporated	1	0	0	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
74	Valley-Todeco Incorporated	1	0	0	1	Source	Standard	DCASMA Van Nuys, California ..... Itinerant
86	Misco Incorporated	1	1	1	1	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
87	M-F Services Incorporated	1	1	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
89	Torque Industries Incorporated	1	0	0	1	Source	MIL-I-45208	DCASMA Dallas, Texas ..... Itinerant
91	Monogram Aerospace Fasteners	1	1	0	0	Source	Standard	DCASMA El Segundo, California ..... Itinerant
92	Flightcraft Incorporated	1	1	1	0	Source	Standard	DCASMA El Segundo, California ..... Itinerant
92	Voi-Shan, Screwcorp	1	0	0	1	Source	Standard	DCASMA El Segundo, California ..... Itinerant
93	Monogram Aerospace Fasteners	1	1	0	0	Source	Standard	DCASMA El Segundo, California ..... Itinerant
94	Apollo Industries	1	1	0	1	Source	Standard	DCASMA Santa Ana, California ..... Itinerant
96	M-F Services Incorporated	1	1	1	0	Source	Standard	DCASMA Dallas, Texas ..... Itinerant



RESULTS OF CONTRACTOR VISITS -- QUALITY CONTROL INADEQUACIES

(continued)

Sample Number	Contractor	Number of Contracts with Quality Control				Place of Inspection	Level of Inspection	Quality Assurance Representatives
		<u>1/</u>	<u>2/</u>	<u>3/</u>	<u>4/</u>			
97	Voi-Shan, Screwcorp	1	0	0	1	Source	Standard	DCASMA El Segundo, California ..... Itinerant
98	Voi-Shan, Screwcorp	2	0	0	2	Source	Standard	DCASMA El Segundo, California ..... Itinerant
99	Voi-Shan, Chatsworth	1	0	0	1	Source	Standard	DCASMA El Segundo, California ..... Itinerant
100	Monogram Aerospace Fasteners	1	1	0	0	Source	Standard	DCASMA El Segundo, California ..... Itinerant
103	M-F Services Incorporated	1	1	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
103	M-F Services Incorporated	1	1	1	0	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
106	Misco Incorporated	1	1	1	1	Source	MIL-I-45208	DCASMA Dallas, Texas ..... Itinerant
107	Tetrafluor Incorporated	1	1	0	1	Destination	Standard	Defense Industrial Supply Center ..... DISC
109	Russell Aircraft	1	1	1	0	Source	Standard	DCASMA Santa Ana, California ..... Itinerant
110	Misco Incorporated	1	1	1	1	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
113	Misco Incorporated	1	1	1	1	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
115	Misco Incorporated	1	1	1	1	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
117	Trico Manufacturing Incorporated <sup>8/</sup>	0	0	0	0	Source	Standard	DCASMA Saint Louis, Missouri ..... Itinerant
123	Avibank Incorporated	0	0	0	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
125	Fabrication Speciality Incorporated	1	1	1	0	Source	Standard	DCASMA Dallas, Texas ..... Itinerant
126	General Electric Supply Company	2	2	1	0	Destination	Standard	Defense Industrial Supply Center ..... DISC
139	Veteran Wire and Cable Corporation	1	1	1	0	Source	Standard	DCASMA Philadelphia, Pennsylvania ..... Itinerant
150	Mu-Met Incorporated	1	0	1	0	Source	Standard	DCASMA Santa Ana, California ..... Itinerant
151	Millard Controlled Metals	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	Source	Standard	DCASMA Philadelphia, Pennsylvania ..... Itinerant
Total Contracts		<u>44</u>	<u>30</u>	<u>22</u>	<u>21</u>			

1/ Contractor Inspections

2/ Independence of the Quality Control Function

3/ Test Equipment

4/ Contractor has improved his quality controls since the contract delivery date.

5/ DCASMA -- Defense Contract Administration Services Management Area

6/ NAVPRO -- Naval Plant Representative Office

7/ DISC -- Defense Industrial Supply Center

8/ Sample number includes 2 contracts.



CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE

Sample Number	National Stock Number	End Item Use	Critical To User	Recorded As Critical			Site of Inspection	Level of Inspection
				CTDF <sup>1/</sup>	Essentiality Of Part To End Item <sup>2/</sup>	Weapon System Criticality <sup>2/</sup>	Safety <sup>2/</sup>	
2	1560-00-066-6305	<sup>3/</sup> Aircraft, GREYHOUND C-2	No	Yes	Not coded	Not coded	No	MIL-I-45208
3	1560-00-111-8039	Aircraft, STRATOFORTRESS B-52	No	Yes	Not coded	Not coded	No	MIL-I-45208
5	1560-01-061-1045	Aircraft, THUNDERBOLT II A-10	Unknown	Yes	Most	Critical	No	Standard
6	1680-00-284-1289	Aircraft, VIKING S-3A	Unknown	Yes	Not coded	Not coded	Unknown	Standard
8	1680-00-902-5314	Helicopter, COBRA/TOW, AH series	No	Yes	Most	Most	No	Standard
9	1680-00-944-5578	Aircraft, SEASTALLION H-53	Yes	Yes	Not coded	Not coded	No	Standard
153	2810-00-210-5598	Aircraft, HORNET F/A-18	Unknown	No	Not coded	Not coded	Unknown	Standard
11	2810-00-336-6521	<sup>4/</sup> Aircraft, LISTMASTER C-118	Unknown	Yes	Not coded	Not coded	Unknown	MIL-I-45208
14	2810-01-187-4705	Aircraft, F-16	No	Yes	Least	Most	No	Standard
15	2810-01-187-8910	<sup>5/</sup> Aircraft FREEDOM FIGHTER F-5	No	Yes	Most	Critical	No	Standard
16	2840-00-674-3098	<sup>6/</sup> Aircraft, INTRUDER A-6	Yes	Yes	Critical	Most	Yes	MIL-I-45208
17	2840-00-863-1902	<sup>6/</sup> Aircraft, INTRUDER A-6	Yes	Yes	Critical	Most	Yes	Standard
18	2840-00-909-1227	Helicopter, SEASTALLION H-53	Yes	Yes	Least	Most	Yes	MIL-I-45208
19	2840-00-914-8505	Helicopter, SEASTALLION H-53	Yes	Yes	Least	Most	Yes	MIL-Q-9858
20	2840-00-918-0015	Helicopter, SEASTALLION H-53	Yes	Yes	Least	Most	Yes	Standard
26	3110-00-042-4823	<sup>7/</sup> Aircraft, STARLIFTER C-141	Yes	No	Most	Most	Yes	Standard
27	3110-00-078-5670	Aircraft, HERCULES C-130	Yes	Yes	Not coded	Not coded	Yes	MIL-I-45208
28	3110-00-082-9544	<sup>8/</sup> Submarine, POSEIDON	No	Yes	Most	Most	No	MIL-I-45208
155	3110-00-158-8259	<sup>9/</sup> Submarine, POSEIDON	Yes	No	Critical	Most	Yes	MIL-I-45208
29	3110-00-227-3620	<sup>10/</sup> Aircraft, THUNDERBOLT II A-10	No	No	Most	Most	No	MIL-I-45208
154	3110-00-232-3320	<sup>11/</sup> Aircraft, DELTA DART F-106	Unknown	Yes	Most	Most	Unknown	MIL-I-45208
30	3110-00-293-9022	Unknown	Unknown	No	Not coded	Not coded	Unknown	Standard
31	3110-00-427-0603	<sup>12/</sup> Submarine, POSEIDON	Yes	Yes	Critical	Most	No	MIL-I-45208
32	3110-00-484-2738	<sup>13/</sup> Aircraft, VIKING S-3A	Yes	Yes	Most	Critical	Yes	MIL-I-45208
34	3110-00-785-1109	Unknown	Unknown	No	Not coded	Not coded	Unknown	Standard
35	3110-00-902-1690	Truck, Cargo, TACT 1 1/4 TON 4X4	Yes	No	Least	Least	No	Standard
36	3110-00-979-0020	<sup>14/</sup> Aircraft, INTRUDER A-6E	Yes	Yes	Critical	Most	Yes	MIL-I-45208
37	3110-01-015-8829	Unknown	No	No	Not coded	Not coded	Unknown	MIL-I-45208
38	3110-01-034-7002	Aircraft, AWACS E-3A	Unknown	No	Not coded	Not coded	Unknown	MIL-I-45208
39	3110-01-053-2939	<sup>15/</sup> Aircraft, CORSAIR A-7D	No	No	Most	Most	No	MIL-I-45208

See footnotes at end of table.

CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE

(continued)

Sample Number	National Stock Number	End Item Use	Critical To User	Recorded As Critical			Site of Inspection	Level of Inspection
				CTDF <sup>1/</sup>	Essentiality Of Part To End Item <sup>2/</sup>	Weapon System Criticality <sup>2/</sup>	Safety <sup>2/</sup>	
158	3120-00-228-6327	Aircraft, CORSAIR II Trainer	Yes	No	Not coded	Not coded	Yes	Destination
156	3120-00-516-1865	Aircraft, LISTMASTER C-118-B	No	No	Most	Most	No	Destination
157	3120-01-040-3438 <sup>16/</sup>	Helicopter, SEA-AIR RESCUE HH-46	Yes	No	Not coded	Not coded	Yes	Destination
159	3120-01-256-9773	Aircraft, HARRIER AV-8B	Yes	No	Most	Most	Yes	Destination
40	4010-00-129-6049 <sup>17/</sup>	Aircraft, PHANTOM F-4	Yes	No	Critical	Critical	Yes	Source
41	4010-00-274-6817	Unknown	Unknown	No	Not coded	Not coded	Unknown	Source
42	4010-00-330-3293	Helicopter, IROQUOIS UH-1	Yes	No	Critical	Most	No	Destination
43	4010-00-716-3575	Aircraft, HERCULES C-130	Yes	No	Most	Critical	Yes	Source
44	4010-01-174-6040	Close-in-weapon system, PHALLANX	Yes	No	Critical	Most	Yes	Source
45	4030-00-266-7414	Submarine, POSEIDON	Unknown	No	Critical	Most	Unknown	Source
46	4030-00-272-9002	VAN EXPANS, 5T6X6 W/HYL Liftgate	No	No	Least	Critical	No	Destination
47	4030-00-279-4477	Landing Craft, UTILITY 115 FT	No	No	Least	Least	No	Source
48	4030-00-369-3913	Submarine, POSEIDON	Unknown	No	Critical	Most	Unknown	Source
49	4030-00-632-2052 <sup>18/</sup>	Aircraft, STRATOLIFTER C-135	Unknown	No	Most	Most	Unknown	Destination
51	5305-00-206-3681 <sup>19/</sup>	Aircraft, STRATOLIFTER C-135	Yes	No	Most	Most	Yes	Destination <sup>20/</sup>
163	5305-00-292-8856 <sup>6/</sup>	Aircraft, INTRUDER A-6	Yes	Yes	Most	Most	Yes	Source
52	5305-00-802-8860 <sup>21/</sup>	Aircraft, CORSAIR II A-7	Yes	No	Most	Most	Yes	Destination
161	5305-00-919-5109	Aircraft, F-111	Yes	No	Critical	Most	Yes	Destination
53	5305-00-954-0946 <sup>22/</sup>	Helicopter, ATTACK WOLF SH-2F	Yes	No	Most	Critical	No	Destination
164	5305-01-031-0213	Torpedo, MK-46	Yes	No	Least	Least	No	Source
165	5305-01-105-1809	Aircraft, EAGLE F-15	No	Yes	Least	Most	No	Source
54	5305-01-112-1226	Gun Mount, MK-75	No	Yes	Critical	Least	No	Source
162	5305-01-131-2209	Aircraft, HORNET F/A-18	No	Yes	Least	Most	No	Source
55	5305-01-132-4791	Helicopter, COBRA/ATTACK AH-1J	No	No	Not coded	Not coded	Unknown	Destination
56	5305-01-176-0884	Missile, Ground Launch Cruise	Unknown	No	Least	Most	Unknown	Destination
57	5305-01-203-9334	Radio System, Single Channel Ground	No	No	Least	Least	No	Source
59	5305-01-212-0056	Tank, SHERIDAN M-551	No	No	Least	Least	Unknown	Destination
60	5306-00-078-0166	Aircraft, CORSAIR II A-7	Yes	No	Not coded	Not coded	Yes	Destination
61	5306-00-151-2018 <sup>23/</sup>	Aircraft, F-17	Yes	No	Critical	Most	Yes	Destination
62	5306-00-174-9479	Unknown	Unknown	No	Not coded	Not coded	Unknown	Destination
63	5306-00-443-6810	Aircraft, F-18	No	No	Not coded	Not coded	Unknown	Destination

See footnotes at end of table.

CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE

(continued)

Sample Number	National Stock Number	End Item Use	Critical To User	Recorded As Critical			Site of Inspection	Level of Inspection
				Essentiality Of Part To End Item <sup>1/</sup>	Weapon System Criticality <sup>2/</sup>	Safety		
64	5306-00-490-2785	Aircraft, GALAXY C-5	Yes	No	Least	Most	Yes	Destination
65	5306-00-501-9762	Howitzer, HEAVY 20MM, M10/A2 8"SP..	Yes	No	Most	Most	Yes	Destination
66	5306-00-576-1494 <sup>24/</sup>	Aircraft, STRATOLIFTER C-135	Yes	No	Most	Most	Yes	Source
67	5306-00-582-8874	Unknown	Unknown	No	Not coded	Not coded	Unknown	Destination
68	5306-01-126-1619	Missile, AIR LAUNCH CRUISE AGM86B	Yes	Yes	Most	Most	No	Source
69	5306-01-170-5558	Helicopter, LAMPS MARK III SH60B	Yes	No	Least	Most	Yes	Destination
70	5307-00-095-7263 <sup>25/</sup>	Missile, HAWK	No	No	Most	Critical	Unknown	Destination
72	5307-00-354-3173	Communication System, TYC-39V & TTC-39	No	No	Not coded	Not coded	Unknown	Destination
73	5307-00-443-6889	Aircraft, F-105	No	No	Not coded	Not coded	No	Destination
74	5307-00-707-2058	Aircraft, PHANTOM F-4	Yes	Yes	Critical	Critical	Yes	Source
75	5310-00-022-3305 <sup>26/</sup>	Truck, Tractor 5T 6X6	Yes	No	Most	Least	No	Source
76	5310-00-167-0751 <sup>27/</sup>	Aircraft, HERCULES C-130	No	No	Most	Most	No	Destination
77	5310-00-476-7366 <sup>28/</sup>	Aircraft, HARRIER AV-8B	Yes	No	Most	Most	Yes	Destination
79	5310-00-661-3274 <sup>29/</sup>	General applications	No	No	Most	Most	No	Destination
80	5310-00-728-7718 <sup>30/</sup>	Aircraft, VIKING S-3A	Yes	No	Most	Most	Yes	Source
81	5310-00-880-9095 <sup>31/</sup>	Aircraft, VIKING S-3A	Yes	Yes	Most	Most	No	Source
82	5310-00-910-8118 <sup>32/</sup>	Aircraft, GALAXY C-5	No	No	Most	Critical	No	Destination
83	5310-00-946-8316	Aircraft, PHANTOM F-4	No	No	Critical	Most	No	Destination <sup>20/</sup>
84	5310-01-125-4363	Helicopter, SEASTALLION H 53A/D/E	Yes	No	Critical	Most	Yes	Source
85	5315-00-017-8879 <sup>33/</sup>	Submarine, POLARIS	No	No	Critical	Critical	Unknown	Destination
86	5315-00-221-6357	Unknown	No	Yes	Not coded	Not coded	Unknown	Source
87	5315-00-616-5520 <sup>34/</sup>	Tank, ABRAMS M-1	Yes	No	Most	Most	No	Destination
89	5315-01-191-3399	Aircraft, HARRIER AV-8B	Yes	Yes	Least	Most	Yes	Source
90	5320-00-238-7861	Aircraft, EAGLE F-15	Yes	No	Most	Most	Yes	Destination
91	5320-00-550-2215 <sup>35/</sup>	Aircraft, PHANTOM F-4	Yes	No	Most	Most	No	Source
92	5320-00-613-8473 <sup>36/</sup>	Aircraft, PHANTOM F-4	Yes	Yes	Most	Most	No	Source
93	5320-00-781-8609 <sup>37/</sup>	Aircraft, F-16	No	No	Most	Most	No	Source
94	5320-00-874-4314	Helicopter, ELECTRO COUNTERMEASURE EH-60A	Yes	No	Most	Most	Unknown	Source
95	5320-01-132-8627	Aircraft, HORNET F/A-18	Yes	Yes	Least	Most	Yes	Source
96	5320-01-136-2185 <sup>39/</sup>	Aircraft, HORNET F/A-18	Yes	Yes	Critical	Most	Yes	Source
97	5320-01-143-9232	Aircraft, HORNET F/A-18	No	No	Critical	Most	No	Source

See footnotes at end of table.

CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE  
(continued)

Sample Number	National Stock Number	End Item Use	Critical To User	Critical				Site of Inspection	Level of Inspection
				CTDF <sup>1/</sup>	Essentiality Of Part To End Item <sup>2/</sup>	Weapon System Criticality <sup>2/</sup>	Safety		
98	5320-01-145-1634	Aircraft, HORNET F/A-18	No	Yes	Least	Most	No	Source	Standard
99	5320-01-148-2710	Aircraft, HORNET F/A-18	Yes	Yes	Critical	Most	Yes	Source	Standard
100	5320-01-168-4498	Aircraft, HORNET F/A-18	Yes	Yes	Critical	Most	Yes	Source	Standard
102	5325-00-497-0770	Aircraft, STRATOFORTRESS B-52	Unknown	Yes	Most	Most	Unknown	Source	MIL-I-45208
103	5325-00-761-7540 <sup>40/</sup>	Ballistic Missile Early Warning System	No	No	Most	Most	No	Destination <sup>20/</sup>	Standard
104	5325-00-869-9396	Aircraft, F-111	No	Yes	Most	Most	Yes	Source	Standard
105	5325-01-199-3461	Truck, Cargo, 4X4, Diesel	No	No	Least	Least	No	Destination	Standard
106	5330-00-072-4469	Torpedo, MK-46	Yes	Yes	Not coded	Not coded	Yes	Source	MIL-I-45208
107	5330-00-171-6764	Missile, Air to Air, SPARROW	No	No	Most	Most	No	Destination	Standard
108	5330-00-243-4841 <sup>41/</sup>	Aircraft, F-111	Yes	Yes	Most	Most	Yes	Source	Standard
109	5330-00-250-0227 <sup>42/</sup>	Aircraft, EAGLE F-15	Yes	No	Most	Most	Yes	Source	Standard
110	5330-00-250-5865	Combat Support Equipment	No	Yes	Critical	Most	No	Source	Standard
111	5330-00-470-5540	Aircraft, AWACS E-3A	Unknown	Yes	Most	Critical	Unknown	Source	Standard
112	5330-00-724-5541 <sup>43/</sup>	Aircraft, EAGLE F-15	Yes	No	Most	Most	No	Destination	Standard
113	5330-00-727-1741	Fire pumps	Yes	No	Not coded	Least	No	Source	Standard
114	5330-00-752-1648	Truck, Tank Water 1KGAL2 1/2T 6X6	Yes	No	Most	Least	No	Source	Standard
115	5330-00-951-1890	SEAL Delivery Vehicle	Yes	Yes	Critical	Most	Yes	Source	Standard
117	5330-01-181-2523	Aircraft, HORNET F/A-18	No	No	Critical	Most	No	Source	Standard
118	5330-01-192-8639 <sup>44/</sup>	Aircraft, GALAXY C-5	Yes	Yes	Most	Most	Yes	Source	Standard
119	5340-00-173-2668 <sup>45/</sup>	Fire pumps	Yes	No	Critical	Most	No	Destination	Standard
120	5340-00-240-9228 <sup>46/</sup>	Truck, 5 TON M939 Series	No	No	Least	Least	No	Destination	Standard
121	5340-00-449-0121	Aircraft, STRATOLIFTER C-135	Unknown	No	Least	Most	Unknown	Source	Standard
122	5340-00-597-5184	Aircraft, HERCULES C-130	Yes	No	Not coded	Not coded	Yes	Destination	Standard
123	5340-00-649-7024	Unknown	Unknown	No	Not coded	Not coded	Unknown	Destination	Standard
124	5340-00-877-8109	Aircraft, EAGLE F-15	No	No	Most	Most	No	Source	Standard
125	5340-00-934-0534	Submarine, POSEIDON	No	No	Critical	Most	No	Source	Standard
126	5340-01-020-6326	Missile, Ground Launch Cruise	Yes	No	Most	Most	Yes	Destination	Standard
127	5340-01-047-1900	Generator set, Gas engine 3KW, MEP021A	Yes	No	Least	Least	Yes	Destination	Standard
128	5340-01-055-4943	Unknown	No	No	Not coded	Not coded	No	Destination	Standard
129	5340-01-195-6061	Helicopter, APACHE AH-64	Yes	No	Critical	Most	No	Destination	Standard
130	5340-01-205-9569	Aircraft, F-16	Yes	No	Most	Critical	Yes	Destination	Standard

See footnotes at end of table.

CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE

(Continued)

Sample Number	National Stock Number	End Item Use	Critical To User	Recorded As Critical				Site of Inspection	Level of Inspection
				CTDF <sup>1/</sup>	Essentiality Of Part To End Item <sup>2/</sup>	Weapon System Criticality <sup>2/</sup>	Safety		
131	6145-00-170-3567	Unknown	No	No	Not coded	Not coded	Unknown	Source	Standard
132	6145-00-177-4662	General applications	No	No	Not coded	Not coded	Yes	Source	Standard
133	6145-00-192-0691	General applications	No	No	Not coded	Not coded	No	Source	Standard
134	6145-00-264-8359	Unknown	No	No	Not coded	Not coded	Unknown	Source	Standard
135	6145-00-312-6111	General applications	No	No	Not coded	Not coded	No	Source	Standard
136	6145-00-548-2925 <sup>47/</sup>	Missile, AIR-GROUND HARM	Yes	No	Most	Most	No	Source	Standard
137	6145-00-669-5684	Aerospace Applications	No	No	Not coded	Not coded	No	Source	Standard
138	6145-01-047-0530 <sup>48/</sup>	Missile, PATRIOT	Unknown	No	Least	Critical	Unknown	Source	Standard
139	6145-01-157-3486	Missile, Ground Launch Cruise	Yes	No	Critical	Least	No	Source	Standard
140	6145-01-201-9530	General applications	No	No	Not coded	Not coded	Yes	Source	MIL-I-45208
141	9505-00-186-9156	Unknown	No	No	Not coded	Not coded	Unknown	Source	Standard
142	9505-00-188-1713	Submarine, POSEIDON	No	No	Not coded	Not coded	No	Source	Standard
143	9505-00-242-1228	Unknown	No	No	Not coded	Not coded	Unknown	Source	Standard
144	9505-00-535-8490	Unknown	No	No	Not coded	Not coded	Unknown	Source	Standard
145	9505-00-596-1633	Air compressors, high pressure	Yes	No	Critical	Least	Yes	Source	Standard
146	9505-00-596-9649	Unknown	Unknown	No	Not coded	Not coded	Unknown	Source	Standard
147	9505-00-845-6527	Aircraft, STARLIFTER C-141	No	No	Not coded	Not coded	No	Source	Standard
148	9530-00-236-8430	Aircraft, AWACS E-3A	Unknown	No	Least	Critical	Unknown	Source	Standard
149	9530-00-244-9027	Aircraft, EAGLE F-15	No	No	Not coded	Not coded	No	Source	Standard
150	9530-00-294-9726	Unknown	Unknown	No	Not coded	Not coded	Unknown	Source	Standard
151	9530-00-494-0612	Unknown	Unknown	No	Not coded	Not coded	Unknown	Source	Standard
152	9530-00-610-7018	General applications	No	No	Not coded	Not coded	Yes	Source	Standard

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See footnotes at end of table.

CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE  
(continued)

Footnotes

- 1/ CTFD -- Contract Technical Data File
- 2/ As recorded in the National Inventory Record.
- 3/ This part is also used on the Aircraft, HAWKEYE E-2.
- 4/ This part is also used on the Aircraft, SAMARITAN C-131 and FLYING CLASSROOM T-29
- 5/ This part is also used on the Aircraft support equipment.
- 6/ This part is also used on the Aircraft, SKYHAWK A-4.
- 7/ This part is also used on the Helicopter, FLYING CRANE CH-54 and the Trainer B-1B.
- 8/ This part is also used on the Aircraft, INTRUDER A-6E and the Helicopter, ELECTRO COUNTERMEASURE EH60A.
- 9/ This part is also used on the Aircraft, HERCULES C-130.
- 10/ This part is also used on the Tank, M-60A.
- 11/ This part is also used on the Aircraft, AIRBORNE WARNING AND CONTROL SYSTEM E-3A.
- 12/ This part is also used on the JP-5 Aviation fuel pump.
- 13/ This part is also used on the Aerospace Guidance and Metrology Center/F-4.
- 14/ This part is also used on the Aircraft, B-1B.
- 15/ This part is also used on the Aircraft, HORNET F/A-18.
- 16/ This part is also used on the Helicopter, UTILITY UH46, CARGO CH46.
- 17/ This part is also used on the Aircraft, T-38 and the Ammunition Support Vehicles, FAASV and M992.
- 18/ This part is also used on the Aircraft, F-16 and the Helicopter, BLACK HAWK UH-60.
- 19/ This part is also used on the Aircraft, CORSAIR II A7.
- 20/ Both destination and source inspection contracts were awarded on this National Stock Number.
- 21/ This part is also used on the Aircraft, CORSAIR A-7D; the Helicopter, APACHE AH-64; and the Missile, TOMAHAWK.
- 22/ This part is also used on the Aircraft, PHANTOM F-4 support equipment.
- 23/ This part is also used on the Aircraft, EAGLE F-15, support equipment and the Helicopter, COBRA/TOW, AH series.
- 24/ This part is also used on the Aircrafts, T-37 and T-38.
- 25/ This part is also used on the Helicopter, LAMPS MARK III SH60B.
- 26/ This part is also used on the Truck, Cargo, 2 1/2 T 6X6.
- 27/ This part is also used on the GUN 5" .54 CAL, MK-42 and 45; Helicopter, RH-53; and the Missile, HAWK MIM-23.
- 28/ This part is also used on the Aircraft, EAGLE F-15.
- 29/ This part is also used on the Aircrafts, B-1B and STARLIFTER C-141A/B and the Missile, Hawk MIM-23.
- 30/ This part is also used on the Helicopter, COBRA ATTACK AH-1T.
- 31/ This part is also used on the Aircraft, T-37.
- 32/ This part is also used on the Helicopters, FLYING CRANE CH-54 and COBRA/TOW.



CRITICAL APPLICATIONS OF PARTS IN AUDIT SAMPLE

(continued)

Footnotes

- 33/ This part is also used on the Helicopter, SEASTALLION CH-53.
- 34/ This part is also used on the Missiles, CHAPARRAL/VULCAN and PATRIOT and the M109 NBC/RAM.
- 35/ This part is also used on the Aircrafts, DELTA DART F-106, INTRUDER A-6E and the Missile All-Weather Anti-Ship, AGM-84.
- 36/ This part is also used on the Aircraft, THUNDERBOLT II A-10.
- 37/ This part is also used on the Aircraft, PHANTOM F-4.
- 38/ Both standard and higher level quality requirements contracts were awarded on this National Stock Number.
- 39/ This part is also used on the Aircraft, B-1B.
- 40/ This part is also used on the Helicopter, IROQUOIS UH-1.
- 41/ This part is also used on the Aircraft, STARLIFTER C-141 A/B.
- 42/ This part is also used on the Aircraft, T-38.
- 43/ This part is also used on the BRADLEY Fighting Vehicle System and the Submarine, TRIDENT material.
- 44/ This part is also used on the Close in Weapon System, PHALANX.
- 45/ This part is also used on the Landing Craft, UTILITY 115 FT.
- 46/ This part is also used on the Truck, Utility, 1/4 TON 4X4 carrier.
- 47/ This part is also used for general applications.
- 48/ This part is also used on the Aircraft, OV-10A, support equipment.



REPORT OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT

<u>Recommendation Reference</u>	<u>Description of Benefit</u>	<u>Amount and/or Type of Benefit</u>
Finding A.		
1.a.	The quality of spare and repair parts will improve.	Monetary benefits cannot be calculated.
1.b.	The guidance for managing quality programs will be improved.	The benefits are related to improved management.
1.c.	The quality of products provided by all contractors will improve.	Monetary benefits cannot be calculated.
2.a., 2.b.	The number of nonconforming products accepted into the inventory will be reduced.	Future monetary benefits which cannot be calculated at this time.
2.c., 2.d.	The quality of spare and repair parts will improve.	Monetary benefits cannot be calculated.

REPORT OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT  
(Continued)

<u>Recommendation Reference</u>	<u>Description of Benefit</u>	<u>Amount and/or Type of Benefit</u>
Finding A. (continued)		
2.e.(1)	Implementation of an adequate testing program will result in a substantial reduction of nonconforming spare and repair parts included in 10 Federal Supply Classes managed by the Defense Industrial Supply Center. Cost avoidances will occur through reductions of spare and repair parts procurements and reduction of waste from the reduction of the number of nonissuable spare and repair parts.	We project a cost avoidance of about \$250 million over a 5-year period, commencing in FY 1990.
2.e.(2), 2.e.(3), 2.f.	These recommendations all contribute to the reduction in the number of nonconforming spare and repair parts included in 10 Federal Supply Classes and the cost avoidances described for Recommendation A.3.e.(1).	These recommendations all contribute to the cost avoidance of about \$250 million claimed for recommendation A.3.e.(1).

REPORT OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM AUDIT  
(Continued)

<u>Recommendation Reference</u>	<u>Description of Benefit</u>	<u>Amount and/or Type of Benefit</u>
Finding B.		
1., 2., 3.a., 3.b., 3.c.	The quality of spare and repair parts will improve.	Monetary benefits cannot be calculated.
Finding C.		
1.a., 1.b., 2.a., 2.B.(1), 2.b.(2)	The quality of spare and repair parts will improve.	Monetary benefits cannot be calculated
Finding D.		
1.a., 1.b., 2.a.(1), 2.a.(2), 2.a.(3), 2.a.(4), 2.b.	The number of nonconforming products accepted into the inventory will be reduced.	Future monetary benefits cannot be calculated at this time.



## ACTIVITIES VISITED OR CONTACTED

### Office of the Secretary of Defense

Office of the Under Secretary of Defense for Acquisition,  
Washington, DC  
Office of the Deputy Under Secretary of Defense for Total Quality  
Management, Washington, DC  
Office of the Assistant Secretary of Defense (Production and  
Logistics), Washington, DC

### Department of the Army

Headquarters, Aviation Systems Command, St. Louis, MO  
Communications-Electronics Command, Ft. Monmouth, NJ  
Missile Command, Redstone Arsenal, AL  
Tank-Automotive Command, Warren, MI  
Troop Support Command, St. Louis, MO  
U. S. Army Plant Representative Office, Ft. Worth, TX  
Army Depot, New Cumberland, PA

### Department of the Navy

Aviation Supply Office, Philadelphia, PA  
Marine Corps Logistics Base, Albany, GA  
Ships Parts Control Center, Mechanicsburg, PA  
Naval Plant Representative Office, Lynn, MA

### Department of the Air Force

Ogden Air Logistics Center, Hill Air Force Base, Ogden, UT  
Oklahoma City Air Logistics Center, Tinker Air Force Base,  
Oklahoma City, OK  
Sacramento Air Logistics Center, McClellan Air Force Base,  
Sacramento, CA  
San Antonio Air Logistics Center, Kelly Air Force Base,  
San Antonio, TX  
Warner Robins Air Logistics Center, Warner Robins, GA

### Defense Agencies

Defense Logistics Agency, Alexandria, VA  
Defense General Supply Center, Richmond, VA  
Defense Industrial Supply Center, Philadelphia, PA  
Defense Depot, Columbus, OH  
Defense Depot, Mechanicsburg, PA  
Defense Depot, Memphis, TN  
Defense Depot, Ogden, UT  
Defense Depot, Tracy, CA  
Defense Contract Administration Services Region, Boston, MA  
Defense Contract Administration Services Management Area,  
Boston, MA  
Defense Contract Administration Services Region, Cleveland, OH

ACTIVITIES VISITED OR CONTACTED  
(Continued)

Defense Contract Administration Services Management Area,  
Detroit, MI  
Defense Contract Administration Services Management Area,  
Ottawa, Canada  
Defense Contract Administration Services Region, Dallas, TX  
Defense Contract Administration Services Management Area,  
Dallas, TX  
Defense Contract Administration Services Region, Los Angeles,  
CA  
Defense Contract Administration Services Management Area,  
El Segundo, CA  
Defense Contract Administration Services Management Area,  
Santa Ana, CA  
Defense Contract Administration Services Management Area,  
Van Nuys, CA  
Defense Contract Administration Services Region, New York, NY  
Defense Contract Administration Services Region, Philadelphia,  
PA  
Defense Contract Administration Services Management Area,  
Philadelphia, PA  
Defense Contract Administration Services Region, St. Louis, MO  
Defense Contract Administration Services Management Area,  
St. Louis, MO

Defense Criminal Investigative Service, Dallas, TX  
Defense Criminal Investigative Service, Los Angeles, CA  
Defense Criminal Investigative Service, Philadelphia, PA  
Defense Criminal Investigative Service, San Francisco, CA

Non-DoD

Adhesive Consultants, Akron, OH  
Aircraft Fasteners, Inc., Los Angeles, CA  
Apollo Industries, Rancho Cucamonga, CA  
Avibank, Inc., Burbank, CA  
Bell Helicopter Textron, Inc., Fort Worth, TX  
Butler, Inc., Gardena, CA  
California Swaging & Cable Products Co., Long Beach, CA  
Chrysler Corp. Parts Division, Centerline, MI  
CTL Engineering Inc., Columbus, OH  
Fabrication Speciality, Inc., Dallas, TX  
Fenwal, Inc., Ashland, MA  
Flightcraft, Inc., Harbor City, CA  
G.K.S. Inspection Services Inc., Sterling Heights, MI  
General Electric Co., Lynn, MA  
General Electric Supply Co., Mt. Laurel, NJ  
Hale Fire Pump Company, Conshohocken, PA  
Indian Aerospace, Inc., Arlington, TX  
J. Dirats and Co., Westfield, MA  
M-F Services, Inc., Arlington, TX  
Met Electrical Testing Co., Inc., Baltimore, MD



ACTIVITIES VISITED OR CONTACTED  
(Continued)

Metro Machine Works, Inc., Romulus, MI  
Millard Controlled Metals, Warminster, PA  
Misco, Inc., Fort Worth, TX  
Mobile Metal Analysis, Huntington Beach, CA  
Monogram Aerospace Fasteners, Los Angeles, CA  
National Spectrographic Laboratories Division, Cleveland, OH  
Nu-Met, Inc., Huntington Beach, CA  
Quality Metal Analysis, Chicago, IL  
R & R Military Products Co., Keller, TX  
Russell Aircraft, Huntington Beach, CA  
S & G Industries (FASTECH), Plano, TX  
Standard Pressed Steel Technologies, Jenkintown, PA  
Tetrafluor, Inc., El Segundo, CA  
Torque Industries, Inc., Burleson, TX  
Trico Manufacturing, Inc., Richmond, MO  
Valley-Todeco, Inc., Sylmar, CA  
Veteran Wire & Cable Corp., Doylestown, PA  
Voi-Shan Chatsworth, Culver City, CA  
Voi-Shan Screwcorp, City of Industry, CA  
Wilsey Tool Company, Inc., Quakertown, PA





ASSISTANT SECRETARY OF DEFENSE  
WASHINGTON, D C 20301-8000

June 4, 1990

PRODUCTION AND  
LOGISTICS

(L/SD)

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING

SUBJECT: Draft Report on the Audit of Nonconforming Products  
Procured by the Defense Industrial Supply Center (Project  
No. 8AC-0038

This memorandum and its attachments responds to your request for comments on subject draft audit report dated March 8, 1990. The efforts to identify deficiencies in the process of DoD quality assurance as exemplified by this audit are important to the Department's overall program of ensuring total quality parts for our fighting forces. The DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts was formulated in response to a similar audit on nonconforming parts, and was published on March 2, 1990. Most of the actions listed in the DoD Plan are included in the Defense Logistics Agency (DLA) Plan, and are in compliance with the Department's efforts to make fundamental improvements in the areas of contract compliance and quality assurance.

While we generally endorse the recommendations contained in the report, it is understood that the DLA has concern about a number of the specific conclusions and methodology as reported in the draft. These observations should be examined in detail and included in your final report. The attached responses to recommendations address only those issues directed to the Assistant Secretary of Defense (Production and Logistics). Where recommendations are impacted by changes to the report as prompted by DLA input, our response may be modified.

David J. Berteau  
Principal Deputy

Attachment

The ASD(P&L) response to individual findings follows:

**"Recommendation A1.** We recommend that the Assistant Secretary of Defense (Production and Logistics):

"a. Incorporate provisions in draft DoD Directive 5000.XX, "Total Quality Management," and as a part of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System for: a policy that employs laboratory testing as a principal quality assurance tool for verifying that spare and repair parts, procured for tactical end items, conform with certain pre-identified technical specifications before the spare parts are accepted. The testing program should emphasize "critical" designated parts and should include provisions for the Military Departments and the Defense Logistics Agency to periodically test the products of any contractor. The policy should include provisions for reporting the test results for major nonconformances to all DoD buying activities as part of a DoD-wide product deficiency reporting and feedback system."

**Concur:** Objective #22 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System, published on March 4, 1990, is directed to expanding and enhancing DoD's capability to perform laboratory testing and evaluation of parts. While this recommendation specifically advocates that laboratory testing be used as a principal quality assurance tool for verifying that spare and repair parts, procured for tactical end items, conform with specifications, implementation of the Action Plan, with its total approach to solving potential nonconformances, is deemed adequate to fulfill the intent of this recommendation.

"b. Standardize the terminology and definition for a nonconformance in DoD Guidance. Standardization should occur through the use of one set of terms and definitions for a nonconformance. Eliminate nonstandard terms or provide definition to such words as 'Nonconformance,' 'Minor Nonconformance,' 'Major Nonconformance,' 'Type I Nonconformance,' 'Type II Nonconformance,' 'Defect,' 'Major Defect,' and 'Minor Defect' in the Military Standards and bring the terms into agreement with the Federal Acquisition Regulation guidance."

**Concur:** Actions to establish definitions are underway. Specifically, a similar finding in DoDIG Report No. 89-065,

"Nonconforming Products in the Defense Supply System at Warner Robins Air Logistics Center," April 10, 1989, was resolved through arbitration, setting a time table for convening a study group to address this issue. In addition, the FAR/DFARS Quality Assurance Committee agreed to recommend a DFARS definition change which would incorporate the MIL-STD-105D as the standard definition for use. This issue is expected to be resolved by October 30, 1990.

"c. Use the statistics cited in this report as a basis for requesting a statutory change to the current small business law, so that DoD contracting officers can reject small business contractors who have a history of poor product quality without the need to pursue a Certificate of Competency from the Small Business Administration. This change would only affect award determinations between two or more small businesses."

**Nonconcur:** Changing the current small business law based on the statistics cited in this report appears premature in that the evidence presented in the report does not overwhelmingly place small business quality performance inferior to other than small businesses. In light of the DLA responses questioning sampling techniques and some differences in the assessment of the severity of the problems, more study of the issue of small business performance in conforming to contract specification is needed. The Department is firm in its commitment to small and disadvantaged business opportunities, and supports contracting officer efforts to expand this important industrial base. Decisions to disqualify small businesses based on a Service or DLA-managed data base of product quality performance are potentially discriminatory. Objective #24 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts stresses the expansion of participation with industry associations and small contractors. This initiative appears to be a suitable vehicle for solving the root causes of potential small business related quality deficiencies.

#### **Recommendation B1.**

"1. We recommend that the Assistant Secretary of Defense (Production and Logistics) establish a priority action for Military Departments to identify critical application products managed by the Defense Logistics Agency's Supply Centers."

**Concur:** Action to establish an initiative to create a Military Service critical item listing for DLA Supply Centers will be completed by October 1, 1990.

**Recommendation C1.**

"1. We recommend that the Assistant Secretary of Defense (Production and Logistics) incorporate in draft DoD Directive 5000.XX "Total Quality Management," a policy that requires contract administration offices to promptly follow up on the results of all laboratory tests that identify nonconforming products to determine if the nonconformances can be validated, to determine if superior objective evidence exists to invalidate the laboratory tests, and to identify the inadequate quality controls in the manufacturing process that produced the nonconforming parts."

**Nonconcur:** Clauses contained in spare parts contracts concerning compliance with the contract invalidate the need for a specific policy requiring prompt follow-up on laboratory tests. As the Services and DLA are implementing Objective #22 of the DoD Action Plan for Continuously Improving the Quality of Spare and Repair Parts, dealing with enhancing the use of DoD and independent laboratory test capabilities, as well as the other Objectives contained in the plan, sufficient actions are underway to achieve the intent of this recommendation.



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



25 MAY 1990

REPLY DLA-CI  
REFER TO

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING,  
DEPARTMENT OF DEFENSE

SUBJECT: Draft Report on the Audit of Nonconforming Products  
Procured by the Defense Industrial Supply Center  
(Project No. 8AC-0038)

In response to your memorandum dated 8 March 1990, enclosed are  
our comments to the draft report. Also attached is a copy of  
the executive summary.

32 Encls

REATHEA E. HOLMES  
Chief, Internal Review Division  
Office of Comptroller

## EXECUTIVE SUMMARY

### DRAFT REPORT ON THE AUDIT OF NONCONFORMING PRODUCTS PROCURED BY THE DEFENSE INDUSTRIAL SUPPLY CENTER

The audit, the second in a series scheduled to review DoD National Inventory Control Points, was conducted at the Defense Industrial Supply Center (DISC) to determine: the level of inventory materiel conformance; the effectiveness of procedures, policies, and practices in deterring materiel nonconformance; the causes for acceptance of nonconforming materiel into inventory; and recommendations to improve the level of conforming materiel received.

The measured levels of nonconforming DISC materiel in DLA depot inventories are inherently intolerable, but more importantly are symptomatic of a larger national crisis which indicts the business and manufacturing practices of the United States Industrial Base. Efforts at the DLA and DISC to overcome the complacent industrial base attitudes and practices have, and continue, to effect an improving product quality level of government procured materiel. The DLA has given priority attention at all management levels to reduce nonconforming parts in the DoD inventory. Agency efforts encompass every facet of the acquisition process. Progress suggests that positive quality trends will continue.

- o Based on the audit data, we projected that 80% of the parts, in a universe of 1.23 billion parts were fully usable; 20% therefore remain as nonissuable until a final usability determination is rendered by the tri-Service Engineering Source Authority (ESA).

- o A significant improving trend in the level of conforming materiel in DLA depot stock was observed over the audit universe years 1984, 1985, 1986, and 1987. Fully usable materiel climbed from 68% in 1984/85 to 86% in 1987. This matches the November 1985 establishment of Supply Center Quality Assurance Directorates, and the many QA programs that have been initiated since that time. DLA has established an aggressive goal to achieve 95% or greater fully usable materiel by the close of 1995.

- o Programs initiated by DISC and DLA have resulted in the improvements measured during the audit. We estimate, as more recent DLA Quality Assurance Programs and Initiatives take effect, that the Defense Industrial Supply Center alone, will avoid government receipt of nonusable contractor products valued at \$250 million over the next 5 years.

The Defense Logistics Agency developed and implemented an Action Plan for Continuously Improving the Quality of Spare and Repair Parts. The plan established the benchmark which the Assistant Secretary of Defense (Production and Logistics) used to model DoD's Action Plan and was approved by The Under Secretary of Defense for Acquisition on 2 March 1990. DLA's application of Total Quality Management concepts charted a course away from complacent inspect-quality-in approaches, and is helping instill a quality manufacturing environment in the U.S. industrial base.

DoD's ability to maintain an effective spare and repair parts pipeline depends on industry's commitment to produce quality products. DoD's influence over the enormous national industrial sector is diminished by short term procurement practices, and the relative dollar size of buys when compared to the total business base. Focused congressional efforts are necessary to motivate the industrial sector toward manufacturing excellence. DLA's success is indicative that they are doing their part to effect a lasting improvement in the level of product quality.



INTERNAL CONTROLS: Concur with the internal control weakness cited. It is noted that the DLA (DLA-Q) identified nonconforming materiel in the DoD Supply System as a material weakness in our FY 1989 Annual Statement of Assurance. This quality shortcoming, and the recognized commensurate need for continued senior management attention/visibility in all materiel acquisition and logistics support functional areas, is precisely why the Agency promulgated comprehensive plans:

- o For Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System; and
  - oo Integrated the continuous improvement plan objectives and activities into our Strategic Plan and strategic planning process.
- o For Laboratory Testing and Product Quality Audits.

The DLA has been working vigorously to effect quality improvements of materiel in the DoD pipeline, with some successes to date, evidenced by the positive quality trends in the three successive contract years for the items sampled by the DoD IG Audit Team.

It is important to recognize, however, that this issue is not, repeat not, solely a DLA or a Quality Assurance issue to resolve. It is more accurately a logistics issue. It is an indictment of how the DoD agencies have historically performed materiel acquisitions and logistics support functions -- from source selections, to criteria applied for responsibility and source selection determinations, to adequacy of technical data, the application and enforcement of quality assurance contract provisions, the conduct of quality assurance oversight, the performance of depot administration, et al.

DLA also took the lead to promulgate a DoD-wide initiative, which parallels the DLA materiel quality improvement program. The DoD Action Plan For Continuously Improving the Quality of Spare and Repair Parts was published for DoD Agency implementation on 8 March 1990.

ACTION OFFICER: MAJ Chris D. Burton, USA, DLA-QLA, x46456

DLA APPROVAL: Mr. R. Connelly, DLA-C

AUDIT TITLE AND NO.: Draft Report on the Audit of Nonconforming  
Products Procured by the Defense  
Industrial Supply Center (Project No.  
SAC-0038)

FINDING A: Nonconforming Products. A statistical sample of 1.28 billion parts procured by the Defense Industrial Supply Center (the Supply Center) showed that 42 percent of the parts were nonconforming, of which 25 percent were potentially nonissuable. The estimated value of major nonconforming products was \$153.8 million, and the estimated value of minor nonconforming products was \$443.0 million. The poor quality of the products procured reflected the poor performance of the contractors who supplied the products. These parts were accepted by the Government because the DoD Quality Assurance Program (the Program) did not work adequately. The Program lacks the support of DoD policy in some areas, including the use of laboratory testing as a principal quality assurance tool. The Supply Center did not have effective testing procedures for identifying poor performing contractors or for barring them from future procurement competitions. As a result, the Supply Center did not receive the quality products it paid for from many contractors during 1986 and 1987. We estimated that the Supply Center can avoid the cost of accepting about \$150 million of nonissuable material during the next five years.

DLA COMMENT: Nonconcur. It is agreed that nonconforming materiel is in the DoD inventory. However, we do not concur with the magnitude or scope of the problem as outlined in the draft report, nor the DoD IG projections, conclusions, and the DoD IG recommendations.

For example, of the 1.28 billion parts included in the sample universe at the Defense Industrial Supply Center (DISC), 1284 items vice 11,426 items as stated by the DoD IG were selected for laboratory examination and testing. Further, included in the items selected by the DoD IG for lab evaluation were Class 3 fasteners which were subjected to extensive nonconformance analyses. The Government's solution purged all nonconforming safety Class 3 critical items from inventory and allowed the remaining nonsafety Class 3 critical items, with suspected nonconformances, to be purged from inventory by normal consumption. The small degradation (>3 percent) in functional performance which resulted by leaving nonconforming nonsafety critical Class 3 items in inventory was considered inconsequential and accepted as a prudent solution by the Military Services and DoD. Consequently, these items should be excluded from the DoD IG sample.

Individual item test results were used to characterize the 145 National Stock Numbers (NSNs), 19 Federal Supply Classes (FSCs), and the entire DISC inventory. Characterizing the entire population condition to that of the worst part distorts the results, and can not be considered representative. Our analysis of the raw data concludes that 81 percent of the materiel is

fully usable, and 33 percent may contain minor nonconformances which by MIL-STD 109 definition are transparent to users. More specifically, a minor nonconformance is a flaw whose characteristic does not materially effect form, fit, function, reliability, durability, maintainability, and has no effect on safety. A maximum of 19 percent can have potential major nonconformances. Only items considered to have potential major nonconformances have been retained in condition code 'L' (not issuable pending disposition by the DISC/ESAs). Materiel with potential minor nonconformances is fully usable and issuable without restrictions. Based on DISC/ESA decisions to date, potential major nonconformances are less than 19 percent and can be expected to drop to below 15 percent if the current trends continues.

The quality of parts accepted show marked improvement over the materiel acquisition time span covered by the audit: 1984/1985, 1986, and 1987. Fully usable materiel increased from 68 percent in the contract years 1984/85, to 86 percent in the 1987 contract year. Similarly fully conforming materiel shows the same dramatic upward trend. Materiel with potential major nonconformances show a significant downward trend. These positive indicators are the result of concerted DLA and DISC efforts to improve the quality of products procured. It is believed these positive trends will continue as DLA initiatives fully mature, and with the added emphasis/visibility pursuant to the DLA and DoD Plans for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. We project 75 percent fully conforming and 95 percent or greater fully usable materiel will be accessed in the DoD inventory by contract year 1993. These results and projections are summarized in chart A-1.

DLA COMMENT ON SUMMARY OF TEST RESULTS: Nonconcur with the characterization of the materiel nonconformances in the DLA Depot inventory. While 61 NSNs had items with minor nonconformances, and 33 NSNs had items with major nonconformances, it is misleading to portray an entire inventory of specific NSNs, and subsequently whole FSC populations to which the NSNs belong, as being defective. In most cases several contractors are suppliers to each specific NSN, and most manufacturers work arduously to provide conforming materiel. Additionally, in no case did we note an item, found as nonconforming to contract specifications, which affected safety. Defense Logistics Agency projections, utilizing the same raw data, conclude that 81 percent of the DISC managed inventory as fully usable. A maximum of 19 percent contain potential major nonconformances, and are not issuable until reviewed, and released by tri-Service Engineering Support Activity (ESA) through the DISC. Based upon final ESA determinations received to date, materiel with major nonconformances accounts for less than 19 percent, and if the positive response trend continues will drop to less than 15 percent. Analysis of the audit data, by contract year that the materiel was acquired, substantiates

that DLA and DISC initiatives have effectively netted improvement in the quality of materiel entering the DoD inventory (see chart A-1).

DLA COMMENT ON TESTING METHODOLOGY: Nonconcur. The sampling plan outlined in the addendum to the draft report is considered valid for its intended purpose. However, serious flaws are evident in the DoD IG execution of the plan. The specifics were discussed in detail with the DoD IG Project Manager. They are classified into four groups: unit of issue/unit of measurement discrepancies; retesting bias; classification bias; and confidence interval calculation errors.

Unit of issue discrepancies occurred in the execution of the audit. The type of discrepancy occurred for certain NSNs within an FSC, causing those NSNs to receive orders of magnitude more weight than is justified. This resulted in biasing the projections for the number, and percent of, parts defective.

Test units that were found to be nonconforming were often retested to verify defects and to arbitrate close judgement calls. The retest usually focused on the defective characteristics only, and therefore was not as comprehensive as the original test. The DoD IG retested about 30 percent of the sampled materiel. When compiling test results, the results of the retests were added to the original test results. The net effect is to increase the number and percentage of defective items in the sample (and projected to the universe). Because conforming items were not retested, this procedure constitutes bias in favor of defective units.

Classification bias in the March 1990 IG report has resulted in an over-classification of audit nonconformances. DoD IG classified nonconformances as major that are minor. From the January IG report to the March IG report 48 percent of the results were changed. More than half of the changes involved upgrading and downgrading the classification of nonconformances. For every down grade, there were approximately six instances of upgrade. Twenty-four contracts were upgraded from conforming/minor nonconformances to major nonconformances. Some of these changes were negotiated with DISC engineers; However, feed back from the Engineering Support Activities (ESA), has indicated that some of the NSNs, classified as having major nonconformances are indeed usable without restriction, and therefore should be classified as minor nonconformances.

Confidence intervals claimed by the DoD IG of  $\pm 5$  percent on percentage of nonconforming parts, and  $\pm 27$  percent relative precision on dollar projection, are based on retrospectively invalid assumptions and original plans that were not fulfilled. Confidence intervals are extremely underestimated, and either the width should be expanded or the level of confidence reduced. The real precision is significantly less precise than claimed because:

(1) The actual sample size was less than the planned sample size (145 versus 155).

(2) The actual variation was greater than the assumed variation. DoD IG assumed FSC variation of 30 percent and NSN variation within FSCs of 95 percent. Sample results indicate that FSC variation, for the high dollar stratification, ranged from 71 percent to 113 percent, and that NSN variation was approximately 114 percent.

(3) Based on the above, DLA'S Defense Operations Research Organization (DORO), feels that the projected dollar value precision is  $\pm 39$  percent relative, and approximately  $\pm 42$  percent for parts count relative precision.

DLA COMMENT ON ANALYSIS OF CONTRACTOR & QUALITY ASSURANCE FACTORS: Nonconcur. DLA analyses of the raw audit data was developed as follows: by site of inspection (source and destination); by type & size of contractor (distributor, small manufacturer, and large manufacturer); by nonconformance characteristic for source and destination accepted items; and by contract year. Analysis by contract level of quality assurance requirement has no significance; quality assurance requirements are selected based on item complexity, cost, weapon system performance criticality (if applicable), and end use.

Analysis by site of inspection revealed that the level of fully conforming products supplied by source inspection was significantly greater than the level of conformance achieved from destination inspection. The level of fully usable products supplied through both methods of inspection and acceptance was the same, 82 percent. Chart A-2 summarizes these results.

Analysis by type & size of contractor indicates that products are procured by DISC in the following distribution: Distributors 50 percent, Small Manufacturers 28 percent and Large Manufacturers 22 percent. Distributors provide materiel with the largest level of nonconformance, followed next by Small Manufacturers, with Large Manufacturers providing materiel with the smallest level of major nonconformance. This stratification of suppliers is consistent with the level of quality assurance system sophistication and supplier ability to manufacture. Chart A-3 summarizes these results. Analysis of the materiel nonconformance characteristics from the audit shows the nonconformances contained combinations of dimensional, chemical, physical, plating, and electrical flaws. The predominant characteristic for 80 percent of these nonconformances were related to dimensional manufacturing errors. DLA has alerted all field elements to place increased attention to inspection of dimensional characteristics for hardware items since the majority of manufacturing errors are indicated by the presence of dimensional flaws. Additional testing for further materiel nonconformance can be performed after initial dimensional nonconformances are detected.

Analyses of the audit data by contract year shows the sample distribution to be: contract year 1985, 16 percent (1 percent from contract year 1984 included); contract year 1986, 55 percent; contract year 1987, 29 percent. This aged information has been analyzed as if it were from a single year and used to

characterize 'today's' Defense Logistics Agency Quality Assurance policies, programs, and practices as ineffective in detection and prevention of government receipt of nonconforming materiel. However, when the data from each year is analyzed for conformance levels (conforming; minor nonconforming; and major nonconforming), the yearly distribution results, on chart A-4, show a significant change. A Reduction trend for materiel with major nonconformances, and an increasing trend for materiel which is fully usable is very apparent. In fact, this trend is a direct result of concerted long term DLA and DISC efforts to improve the level of materiel conformance manufactured for government use. Several initiatives have been implemented over the past seven years which can be credited for this improvement: Industry conferences; Counterfeit Materiel/Unauthorized Product Substitution Program; Depot Receiving/Inspection Modernization; Quality Vendor/'Blue Chip' Program; Continuous Improvement Program; Laboratory Testing Program; Family Buy Program; IQUE program; etc. The DISC has also developed their own unique programs which have also contributed to this long term improvement: Lab Testing of Grade 8 and Class 3 Fasteners; Contract Clauses for COQC (certificate of Quality conformance), SPC (Statistical Process Control), PVI (Product Verification Inspection), Headmark; and supplier profiles.

DEFINITIONS AND TERMINOLOGY: Concur. The numerous definitions for a nonconformance contained in numerous regulations, and military standards have caused confusion for defense managers, and contractors involved in the manufacture of government materiel. The FAR/DFARS Quality Assurance committee approved, on 17 April 1990, changes to the definitions for Critical, Major, and Minor nonconformances. The new definitions were formally recommended by DLA on 22 February 1990.

MONETARY BENEFITS: None.

DLA COMMENTS:

ESTIMATED REALIZATION DATE:

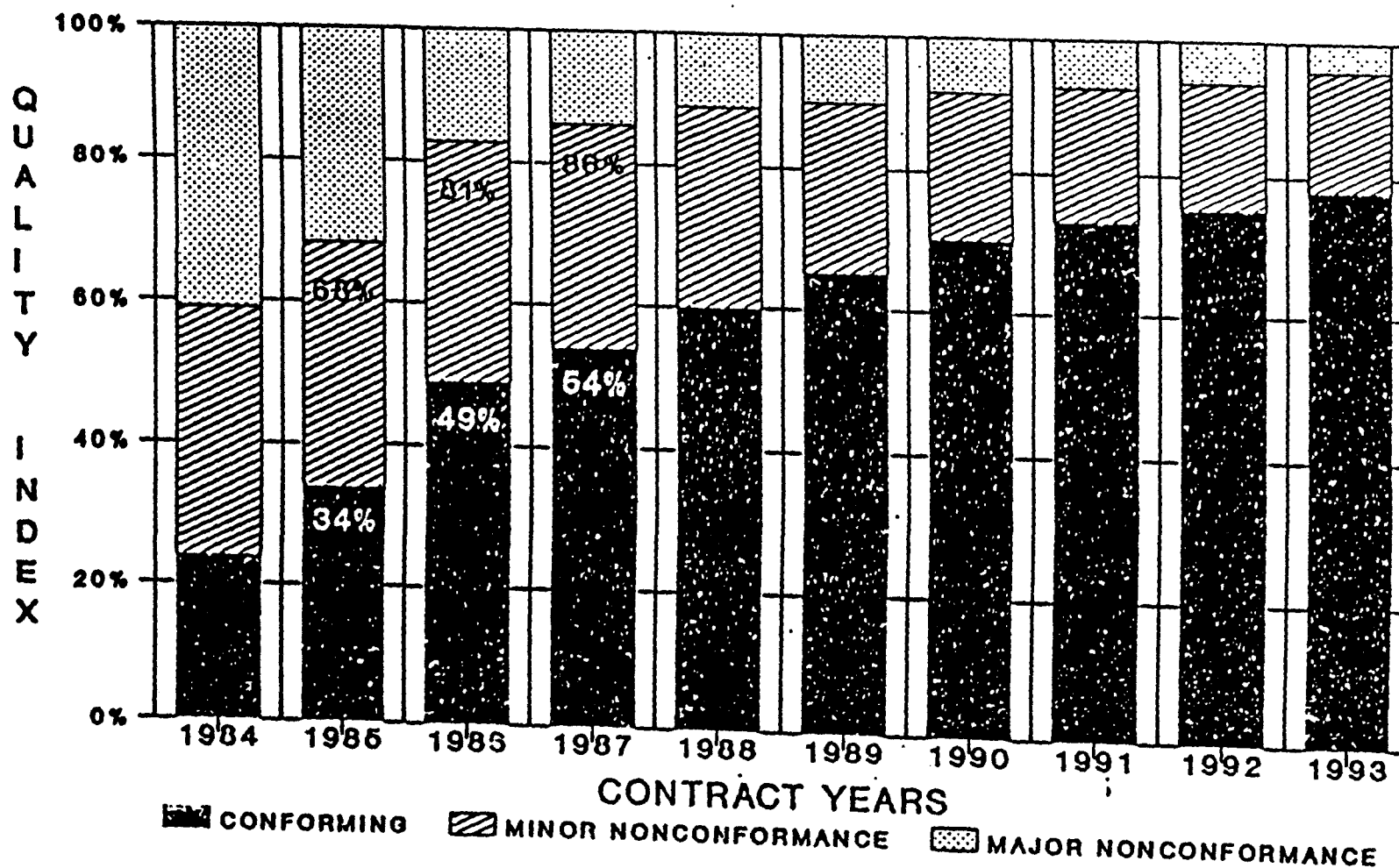
AMOUNT REALIZED:

DATE BENEFITS REALIZED:

ACTION OFFICER: MAJ Chris D. Burton, DLA-QLA, 46456

DLA APPROVAL: Mr. R. Connelly, DLA-C

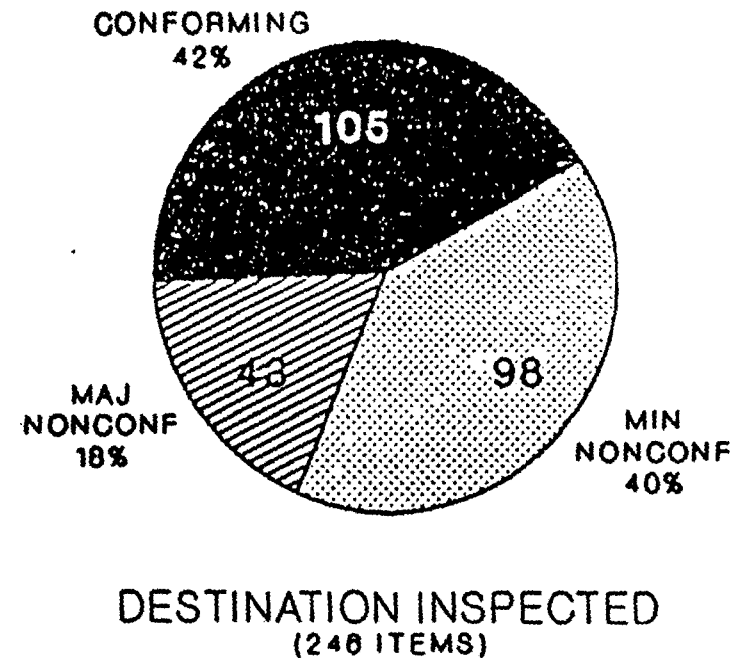
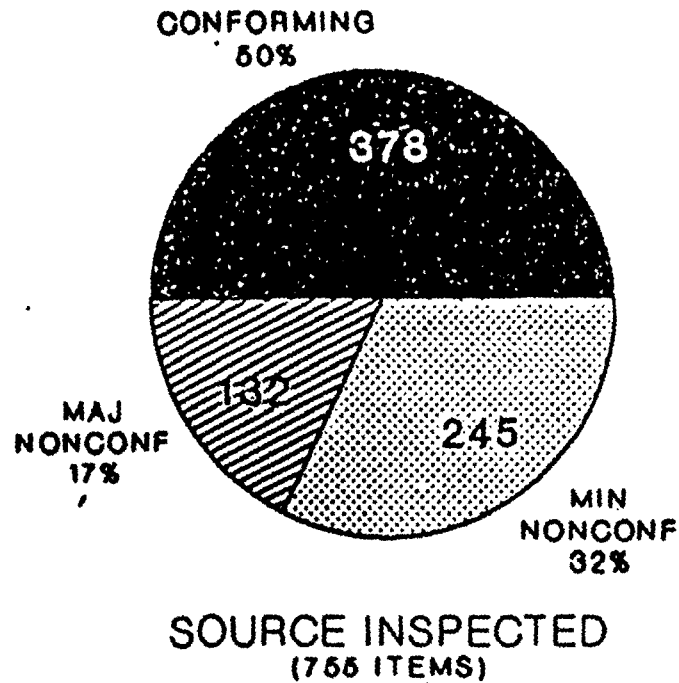
# DOD IG AUDIT OF DISC MANAGED MATERIEL CONFORMANCE TREND BY CONTRACT YEAR



# DOD IG AUDIT OF DISC MANAGED MATERIEL CONFORMANCE COMPARISON BY POINT OF INSPECTION

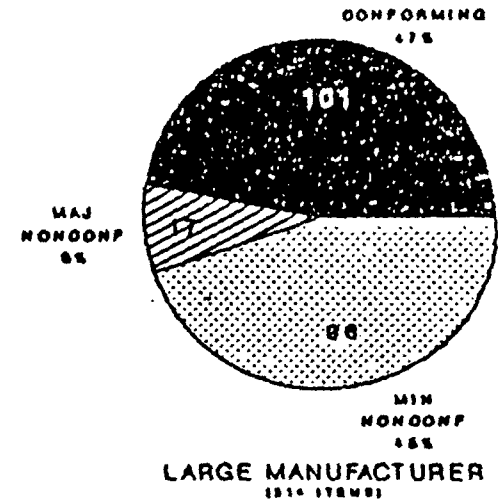
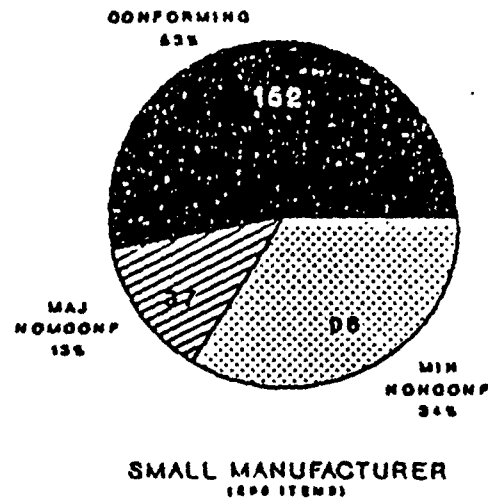
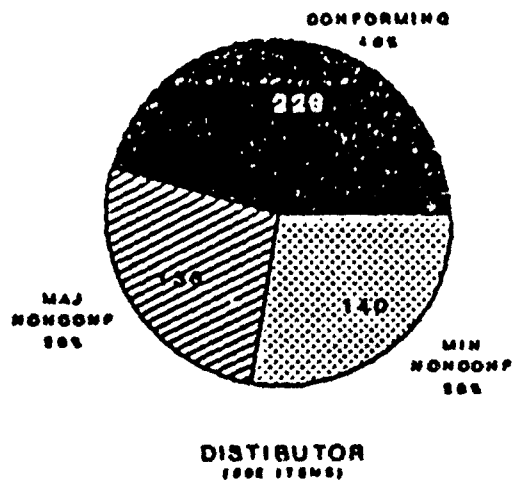
PENDIX R  
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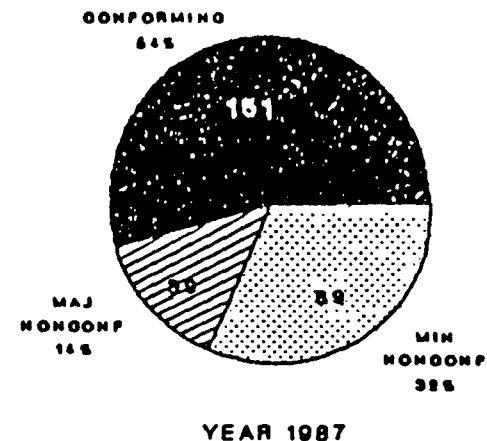
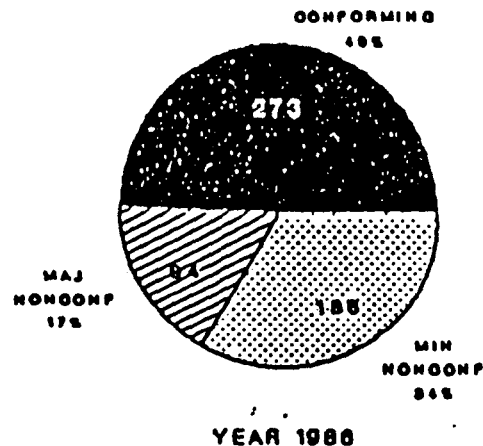
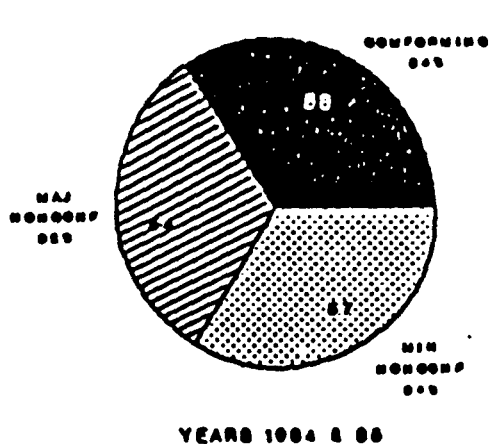




# DOD IG AUDIT OF DISC MANAGED MATERIEL SUPPLIER CONFORMANCE ANALYSIS



# DOD IG AUDIT OF DISC MANAGED MATERIEL CONTRACT YEAR CONFORMANCE DISTRIBUTION



**AUDIT TITLE AND NO.: Draft Report on the Audit of Nonconforming  
Products Procured by the Defense  
Industrial Supply Center (Project No.  
8AC-0038)**

**RECOMMENDATION A.2.a.: We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for expanding the targeted applications of product verification inspections and certificates of quality conformance to reduce the acceptance of nonconforming products in specific areas of risk.**

**DLA COMMENTS: Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC (or other Supply Center) as lead to test or recommend policy based on specific circumstances. This is done on a case-by-case basis as needs arise.**

**With regard to program development, it is entirely within the scope of DISC responsibilities to develop and test programs peculiar to its item management missions. It is the policy of DLA not to stymie PLFA initiative, but to encourage same. Headquarters DLA reviews PLFA documentation, assesses impact from a DLA-wide perspective, and makes reasoned/informed decision regarding full and limited proliferation, with or without modification.**

**The DoD IG recommendation incorrectly seemingly implies that the DLA has not been aggressively analyzing customer intelligence/feedback and satisfaction, and pursuing policy and procedural changes as warranted. On the contrary, the DLA has been very active in implementing policy and programs to enhance the effectiveness of Government QA oversight, and to improve the Quality of repair and spare parts accessed into the DoD inventory.**

**With regard to the thrust of the DoD IG specific recommendation, the DLA developed and published an Independent Laboratory Test Program in July 1989 which identified specific parameters for random selection of material for lab testing, and establish quantitative objectives for our Centers and Depots. In July 1989 policy and procedural guidance was also modified to improve the effectiveness of our Product Quality Audit program. The DLA also chartered a cross-functional TQM Process Action Team to**

review and modify procedures and policies at our six Depots to provide more effective Quality oversight of materiel received, stocked, stored, and issued.

Based on the recognized need, the DLA also published a plan in August 1989 for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System. The DLA Plan was the benchmark for the DoD program with parallel objectives which was published on 8 March 1990 for Defense Agency implementation. The genesis for these DLA initiatives was an assessment of field data, our recognition that the problems were systemic throughout the DoD logistics system, and the fact that each of the DoD Agencies needs to participate actively and aggressively to effect resolution of the nonconforming parts problem plaguing the DoD.

As a point of information and fact, the DLA policy for assignment of Quality requirements is in accord with generally accepted and proven management practices, and organizational hierarchical responsibility/ authority precepts and philosophy. It complies fully with the spirit and intent of requirements contained in DoDD 4155.1, Quality Program.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:**

**RECOMMENDATION A.2.b.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for developing a five year program to comprehensively test, in a qualified laboratory facility, some product from every supplier of critical application products or spare and repair parts for use on tactical end items, in accordance with the major preidentified technical specifications listed in a contract.

**DLA COMMENTS:** Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of Customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC (or other Supply Centers) as lead to test or recommend policy based on specific circumstances. This is done on a case-by-case basis as needs arise.

The DoD IG recommendation incorrectly implies that the DLA has not considered laboratory testing as a viable method to help counter the nonconforming parts problem. DLA recognizes the effectiveness of using laboratories to assess the quality of spare and repair parts. In fact, DLA developed and implemented an aggressive and comprehensive Laboratory Testing Program in July 1989, which employs in-house and independent commercial laboratories to inspect and test critical spare parts against the requirements imposed by contract specifications, standards and drawings. Use of an in-house laboratory for testing hardware was initiated at the Defense Electronics Supply Center (DESC) in 1978. Use of commercial laboratories was adopted by the Defense Industrial Supply Center (DISC) and exported to the other Defense Supply Centers (DSCs) in 1986.

In July 1989 policy was published emphasizing the capability of laboratories to inspect and test technical characteristics. The DLA Laboratory Testing Program requires the four Hardware Defense Supply Centers and six Defense Depots to randomly select samples for testing. Items nominated as candidates for testing must be weapon system coded critical, with available technical data.

The DLA Laboratory Testing Program is one of the key elements in the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts published in August 1989. Some other initiatives include emphasizing use of Statistical Process Control techniques, In-Plant Quality oversight methodology, improved depot receipt inspections, and purging of nonconforming parts from DLA inventory.

While laboratory testing will support many of the initiatives, it should not be overemphasized at the expense of another equally effective but less costly initiatives. Consequently, the Laboratory Testing Program is integrated with other DLA initiatives. Given that the source of the nonconforming parts problem resides in every facet of the acquisition system, this balanced approach is the most prudent and resource (cost/time/people) effective means to improve materiel quality.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.2.c.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for ensuring that contracting officers consult and evaluate the consolidated history, contained in the Quality Evaluation Program, of the apparent winner of any award to determine if a poor quality history exists.

DLA COMMENTS: Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of Customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC (or other Supply Centers) as lead to test or recommend policy based on specific circumstances.

At DISC, Contracting Officers have on-line computer access to certain quality information, such as the DISC Contractor Review List, and relatively easy access to the Customer Depot Complaint System and the Quality Evaluation Program. Contracting Officers are advised to consult and evaluate all available information to determine if poor quality history exists, prior to making award.

As a point of information, DLA has the lead under OSD to develop, with the DoD Agencies, a common Contractor Quality History Profile automated data base, accessible at buyer work stations. The data base, identified as Contractor Profile, is milestone for implementation in FY 1991 (1st increment).

**DISPOSITION:**

(X) Action is ongoing; Final ECD: 31 Jan 91

( ) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.2.d.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for improving current programs for identifying suppliers who should be recommended for debarment based on a history of providing poor quality products. For contractors who are found to represent a risk, direct that sufficient additional product testing be performed to determine if those contractors should be debarred. The program should be designed to assess the quality history for any contractor whose product is determined to be defective and nonissuable to determine if the contractor represents a risk to the quality of the Defense Logistics Agency's inventory.

DLA COMMENTS: Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or

any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of Customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate for to designate DISC or other Supply Centers as lead to test or recommend policy based on specific circumstances.

DLA currently has in place an effective system to identify and debar contractors that have a history of providing poor quality (nonconforming) products. In 1989, DLA debarred numerous contractors based on criminal convictions for quality violations. Many of those convictions resulted from reports of DLA personnel to criminal investigative organizations. More importantly, DLA frequently takes action to protect the procurement process even in the absence of criminal charges. In 1989, DLA debarred 45 contractors that had not been criminally charged but were determined to be poor performers that failed to meet quality requirements.

At DISC, Contracting Officers have on-line computer access to certain quality information, such as the DISC Contractor Review List, and relatively easy access to the Customer Depot Complaint System and the Quality Evaluation Program. Contracting Officers are advised to consult and evaluate all available information to determine if poor quality history exists, prior to making award.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.2.e.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for developing a program to test the products of suppliers who represent a substantial risk to the quality of the Defense Industrial Supply Center's inventory. The program should include some testing of products from: (1) suppliers who have long-term contracts and/or who have contracts for large procurements of related types of products, (2) suppliers who provide critical application (especially safety critical) products, and (3) suppliers who have histories of performing poorly or who have violated the integrity principles of contracting.

**DLA COMMENTS:** Nonconcur. The Laboratory Test Program provides sufficient flexibility to tailor laboratory testing to individual circumstances and unique perceived requirements. It is also sufficiently flexible to embrace the specifics contained in the recommendation.

However, laboratory testing is just one of the key elements of the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts. While laboratory testing complements many of the DLA initiatives, it cannot be overemphasized or viewed as a panacea, at the expense of other equally effective but less costly initiatives. The size or type of the procurement should not be a criterion for testing: only item criticality, previous unsatisfactory performance and other specific criteria should be determinative of increased levels of testing. Consequently, lab testing is best integrated with other initiatives as part of a total programmatic approach to materiel quality improvements.

Given the consequence of the nonconforming parts problem which permeates every facet of the acquisition process, this balanced approach is the most prudent resource (cost/time/people) effective means to improve materiel quality.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.2.f.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop Defense Logistics Agency policies and programs for including additional quality related criteria for the 'Blue Chip' preferred vendor program.

**DLA COMMENTS:** Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of Customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC (or other Supply Centers) as lead to test or recommend policy based on specific circumstances.

The Blue Chip Program at DISC is that Center's version of Competition for Performance. Although slight variations in membership criteria exist among the centers, Competition for Performance everywhere is currently based on timeliness of delivery and conformance of items and conditions of shipment to contractual terms.

Additional categories of Competition for Performance membership criteria, including the establishment by the contractor of a viable statistical process control system, are being considered for the overall Competition of Performance Program. DLA is also



exploring additional benefits accruing to a listed contractor ('Quality Vendor'), including long-term contractual relationships.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.3.a.:** We recommend that the Commander, Defense Industrial Supply Center expand the use of product verification inspections and certificates of quality conformance in order to reduce the acceptance of nonconforming products. \*

**DLA COMMENTS:** Nonconcur. The DoD IG recommendation seemingly implies that the Defense Logistics Agency (DLA) and the Defense Industrial Supply Center (DISC) have no policies or programs which effectively embrace this issue. The DISC has already expanded the use of Product Verification Testing (PVT) and Certificates of Quality Conformance (COQC) in conjunction with the DISC Test and Evaluation Master Plan. PVT and COQC are only a part of the network of programs at DLA which have produced the positive material conformance improvement trend identified in chart A-1. To simply expand the use of PVT and COQC application, without meaningful cost benefit analysis, would be counter productive. Product Verification Inspection, as suggested by the IG, is an antiquated inspect-quality-in approach, with limited application. It is contrary to good management and sound business practices. DLA initiatives are oriented to defect prevention. For additional detail refer to the DLA Action Plan for Continuously Improving the Quality of Spare and Repair Parts in the DoD Logistics System.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION A.3.b.:** We recommend that the Commander, Defense Industrial Supply Center, develop a program to ensure that qualified laboratories are used to comprehensively test some product from every supplier of critical products or who provides spare or repair parts for use on tactical end items in accordance with certain preidentified technical specifications. \*

**DLA COMMENTS:** Nonconcur. See response to A.2.b.

It is not practical, economical, or necessary to test every supplier. Comprehensive selective testing in critical product categories is conducted at DISC, in accordance with the DISC Master Plan, which is aligned with the DLA Laboratory Testing Program.

\* This recommendation deleted from the final report

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

**MONETARY BENEFITS:** None.

\*

**RECOMMENDATION A.3.c.:** We recommend that the Commander, Defense Industrial Supply Center, ensure that contracting officers consult and evaluate the consolidated history, contained in the Quality Evaluation Program, of the apparent winner of any award to determine if a poor quality history exists.

**DLA COMMENTS:** Concur. QEP information will be used along with all the other tools available and already in use by the contracting officers such as the master database of the Customer Depot Complaint System. Contracting officers will also avail themselves of the DLA Preaward Contracting System (DPACS), currently being deployed, and the eventual development of the Contractor Profile System.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

**MONETARY BENEFITS:** None.

\*

**RECOMMENDATION A.3.d.:** We recommend that the Commander, Defense Industrial Supply Center, improve the program for identifying suppliers who should be recommended for debarment based on a history of providing poor quality products by directing that sufficient additional product testing be performed to determine specifically whether or not contractors should be debarred. The program should be designed to assess the quality history for any contractor whose product is determined to be defective and nonissuable.

**DLA COMMENTS:** Nonconcur. The Lab Testing Program promulgated on July 1989, recognizes the value added of verification testing with independent laboratories of suppliers who provide nonconforming materiel. The data provides a foundation for legal pursuit and debarment of poor performers. DISC's Performance Improvement Program, which is being developed, will enhance the process of debarring contractors who provide poor quality products.

**DISPOSITION:**

- (X) Action is ongoing; Final Estimated Completion Date: 31 Jan 1991  
( ) Action is considered complete.

**MONETARY BENEFITS:** None.

\* This recommendation deleted from the final report

RECOMMENDATION A.3.e.: We recommend that the Commander, Defense \* Industrial Supply Center, develop a program to test the products of suppliers who represent a substantial risk to the quality of the Defense Industrial Supply Center's inventory. The program should include some testing of products from: (1) suppliers who have long-term contracts and/or who have contracts for large procurements of related types of products. During fiscal years 1991 and 1992, large dollar procurements for National Stock Numbers in Federal Supply Classes 1680, 5305, 5306, 5307, 5210, 5315, 5320, 5330, 6145, and 9530 should be targeted for product testing prior to acceptance. Testing in these Federal Supply Classes should be continued until the rate of nonconformances and the amount of major nonconforming material detected during acceptance testing drops to insignificant levels; (2) suppliers who provide critical (especially safety critical) products; and (3) suppliers who have histories of performing poorly or who have violated the integrity principles of contracting.

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, nor pursued policy and procedural change as necessary and appropriate. On the contrary, established HQ DLA policy for the Laboratory Testing Program is implemented at DISC via the DISC Test and Evaluation Master Plan. Long term and large dollar procurements are adequately covered. To focus on the specific FSCs suggested by the IG is inappropriate and unnecessarily restrictive because a more balanced effort, based on current nonconformance data, is required to effectively manage contractor performance at DISC. Critical items and suppliers who have histories of poorly manufactured products are also adequately covered by the Plan.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

MONETARY BENEFITS: None.

RECOMMENDATION A.3.f.: We recommend that the Commander, Defense \* Industrial Supply Center, include specific quality related criteria in the 'Blue Chip' preferred vendor program to (1) eliminate from consideration for the 'Blue Chip' vendor program for at least 2 years contractors who provide unusable products in any Federal Supply Class; (2) require positive results on comprehensive laboratory tests on products from at least two contracts for each National Stock Number item or group of National Stock Number items for a contractor to qualify for the 'Blue Chip' vendor program; (3) Consider the results of any product inspection conducted during the previous 2 years regardless of when the contract was completed or when the products were received.

\* This recommendation deleted from the final report

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, nor pursued policy and procedural remedies as warranted. On the contrary, the Blue Chip vendor program has been established at DISC to incentivize contractors to improve performance. To eliminate a vendor for Blue Chip consideration for a period of two years may be too restrictive and counter productive. The time-frame for consideration for membership (or elimination from such consideration) is a program control established at the Supply Center level based on the overall quality history of the affected FSC. The results of any product inspection will be considered; again, though, such information must be viewed in light of the total information available on the Blue Chip vendor. DLA does not concur in an all-inclusive testing requirement for Blue Chip admission.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

MONETARY BENEFITS: None.

**FINDING B: Critical Application Products.** About 41,000 National Stock Numbered critical application spare and repair part items were not identified and coded as critical for reference by the Supply Center's contracting officer, although such identification was required by law and by DLA regulations. The parts were not correctly coded because the Services did not always identify the products as critical and the Supply Center did not obtain engineering support to determine whether the criticality codes in the National Inventory Record should also apply to the Contract Technical Data File. The lack of critical coding information resulted in the use of lower level quality assurance inspection requirements and a lack of targeting for quality assurance initiatives for a projected 38,000 National Stock Numbers of which an estimated 17,000 affected the safety of military personnel, many of whom serve on ships and aircraft. The high levels of nonconformance in standard inspection items increased the exposure of military personnel to safety risks.

**DLA COMMENTS:** Nonconcur. The DISC has not overlooked or failed to determine as critical, 41,000 NSNs for safety and/or mission requirements. Simply because an item is installed on a ship, aircraft, or tank does not render it as a mission, and or a safety critical part. The projected quantity of NSNs 'not identified or coded as critical for reference by the Supply Center's contracting officer' is fallacious, and founded on incomplete research and understanding of the methods used to determine criticality. DSCs could use the Weapon System Indicator Code (WSIC), in the National Inventory record (NIR), as a means of prioritizing the review and request for engineering support. However, the WSIC was not intended to equate to item criticality as defined in DLAR 3200.1, et al. The WSIC is a one position character indicating the degree to which a failure to supply the item will affect the ability of the weapon system to perform its intended operation. The code for Weapon Systems as recorded in the National Inventory Record indicates supply system criticality. The code in the Contract Technical Data File indicates item criticality. Item criticality is what establishes the quality assurance level. Data calls initiated by Contracting Officers always address the need for Product Verification Testing and higher level Quality assurance requirements. Regardless, both codes are provided to the contracting officer, in the purchase request package, for use in determining the proper level of contract quality assurance requirements.

**MONEYARY BENEFITS:** None.

**RECOMMENDATION B.2.:** We recommend that the Director, Defense Logistics Agency, use the Defense Industrial Supply Center as the lead Supply Center to develop policies and programs for identifying National Stock Numbered items with critical applications and determining whether they are safety critical. This should be accomplished by requesting the Military Departments to make an affirmative determination on all future transfers.

**DLA COMMENTS:** Nonconcur. It is agreed that the DISC (and each of the DLA Supply Centers) has both authority and responsibility commensurate with its mission responsibilities to recommend policy and implement programs unique to its product line management. However, it is inappropriate to designate DISC (or any Supply Center) as the lead for DLA. Policy development is the responsibility of Headquarters DLA in consideration of Customer needs and expectations, unique requirements of individual product lines managed, and synergism with other DLA/Military Service/DoD policy/procedures and programs. From time-to-time, however, it may be appropriate to designate DISC or other Supply Centers as lead to test or recommend policy based on specific circumstances.

The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, and pursuing policy and procedural change as appropriate. On the contrary, DLA Manual 4155.2 specified procedures for DLA Quality Assurance personnel to request and question determinations of criticality by the Military Departments from the Military Service Engineering Support Activity via the Center technical element. Regarding future item transfers, DLA recognized the need for a change to DoD 4140.26-M, Defense Integrated Materiel Management Manual for consumable items, and, a change to require Military Services to identify whether an item is used in a critical application, or is safety critical. Identification for criticality in application should be determined by the Military Departments prior to the transfer of the item to DLA for item management. This change is being coordinated with the Military Services.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete. Not within DLA Authority.

**MONETARY BENEFITS:** None.

**RECOMMENDATION B.3.a.:** We recommend that the Commander, Defense Industrial Supply Center institute a continuous program to have the Military Departments make an affirmative determination of whether or not critical National Inventory Records Weapon Systems Indicator Code apply to the National Stock Numbered items managed by the Defense Industrial Supply Center and should be included in the Contract Technical Data File.

DLA COMMENTS: Nonconcur. The codes, the use of the codes, and the definition of the codes are being confused. The weapons system indicator code does not determine or designate item criticality from the manufacturing perspective where additional quality assurance is required. Whether or not a part is used on a weapon system is not in itself reason to designate the part as critical. The application, criticality to system function, complexity, and critical characteristics all play a role in determining criticality.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

RECOMMENDATION B.3.b.: We recommend that the Commander, Defense Industrial Supply Center ensure that higher level quality requirements or product acceptance testing requirements are included in all contracts that contain National Stock Numbered items that have critical applications.

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, nor pursued policy and procedural change as required. On the contrary, all critical items are reviewed and higher level quality requirements (MIL-I or MIL-Q) are applied where appropriate. Inspection of Supplies, Fixed Price (FAR 52246.2), is always included in the purchase of critical application items.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

RECOMMENDATION B.3.c.: We recommend that the Commander, Defense Industrial Supply Center identify the use of all critical application products on the National Inventory Record or the Contract Technical Data File.

DLA COMMENTS: Nonconcur. The identification of parts which have critical application is an ESA responsibility. Reviews for criticality are performed by the services at the time of transfer to new item managers.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

**AUDIT TITLE AND NO.: Draft Report on the Audit of Nonconforming Products Procured by the Defense Industrial Supply Center (Project No. SAC-0038)**

**FINDING C: Product Quality Deficiency Report Program.** The Product Quality Deficiency Report Program was ineffective, inefficient, and incomplete. Quality Deficiency Reports were prepared for only 39 of the 124 nonconforming products, and only 14 Quality Deficiency Reports were satisfactorily finalized within a reasonable period of time. The program failed because the action point, the Defense Industrial Supply Center, failed to process Quality Deficiency Reports, and the support activities, the Defense Contract Administration Services Management Area Offices, failed to followup on the deficiencies. The program was incomplete because there was no requirement to report the deficiencies that were accepted at destination. As a result, the Product Quality Deficiency Report program did not provide product quality feedback needed to improve the procurements process for spare and repair parts. Consequently, nonconformances were not thoroughly investigated, and manufacturers were not alerted about quality problems in their plants.

**DLA COMMENTS:** Partially concur. The Product Quality Deficiency Report Program was not as responsive as it otherwise would have been, however the program at DISC did not fail. The PQDR program caused material to be suspended from issue; investigations were made of the cause(s) of the deficiency and corrective action taken to prevent reoccurrence; quality histories were established; quality assurance provisions were adjusted, as necessary, for future acquisitions. It is not accurate to say 'there was no requirement to report deficiencies that were accepted at destination.' Nonconformances determined to be the contractor's responsibility are reported to the contract administrator. If it is source inspected, the report goes to the appropriate DCMC element. If it is destination inspected, the report goes to DISC's Production Division who notify the contractor and DCMC. Quality feedback was provided. Quality history is maintained in the Customer Depot Complaint System (CDCS) and is used to tailor contracting quality requirements. Manufacturers are alerted to quality problems whenever Contract Administrators have sufficient evidence of contractual noncompliance.

**MONETARY BENEFITS:** None.

\* C.1.a. **RECOMMENDATION C.2.a.:** We recommend that the Director, Defense Logistics Agency, revise DLA Regulation 4155.24, Product Quality Deficiency Report Program, and all related regulations to state that the regulation is mandatory for all products regardless of where the product was inspected and accepted.

**DLA COMMENTS:** Nonconcur. DLAR 4155.24 is adequate as written for source and destination contracts because it does apply, regardless of where the product was inspected and accepted.

**DISPOSITION:**

( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

**MONETARY BENEFITS:** None.

\* Final report recommendation reference



RECOMMENDATION C.2.b.: We recommend that the Director, Defense \*\* Logistics Agency, use the Product Quality Deficiency Report as the standard form for communicating the existence of all nonconforming products to the Defense Contract Administration Services.

DLA COMMENTS: Nonconcur. The existing report formats provide for a variety of different deficiencies to be processed which accommodate specific problem types, i.e., SF 368 (Product Quality Deficiency Report), SF 364 (Report of Discrepancy), SF 361 (Transportation Deficiency Report). All of these reports are currently understood, accepted by DCMC elements, and facilitate processing of material deficiencies.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

MONETARY BENEFITS: None.

RECOMMENDATION C.2.c.: We recommend that the Director, Defense \* C.1.b Logistics Agency, instruct the Defense Contract Administration Services to fully comply with DLA Regulation 4155.24 concerning adequate evidence and documentation to support conclusions regarding quality deficiencies and the need to do so in a timely and responsive manner.

DLA COMMENTS: Concur. DCMC elements are presently implementing DLAR 4155.24 along with supplementary appendix A as the primary guidance for the deficiency reports program. This guidance will assure adequate evidence and documentation to support conclusions regarding deficiencies as well as insuring timely reporting.

DISPOSITION:

- (X) Action is ongoing; Final Estimated Completion Date: 30 June 90
- ( ) Action is considered complete.

MONETARY BENEFITS: None.

RECOMMENDATION C.3.a.: We recommend that the Commander, Defense \* C.2.a. Industrial Supply Center, fully comply with DLA Regulation 4155.24 requirements to timely process all future product Quality Deficiency Reports by directing that the Director of Quality Assurance process a Quality Deficiency Report for all quality deficiencies entered into the Customer Depot Complaint System. Include this requirement as part of the Supply Center's Quality Assurance Directorate's mission and function.

DLA COMMENTS: Nonconcur. It is incorrect to prepare a PQDR (SF 368) for all quality deficiencies in the CDCS. There is no demonstrated savings cited in the report to do this. However, there is a demonstrative consumption of resources to prepare a PDQR when such complaints already exist in the CDCS database.

\* Final report recommendation reference

\*\* Draft recommendation C.2.b. deleted from final report

DISC Directorate of Quality will adhere to the processing timeframes. DLA Manual 4155.2 is the proper policy; no change to the Supply Center's QA Directorate mission and function is required.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

\*C.2.b.(1) **RECOMMENDATION C.3.b.(1):** We recommend that the Commander, Defense Industrial Supply Center, fully comply with DLA Manual 4155.2 requirements to maintain consolidated contractor quality history information that includes deficiencies and positive laboratory test results to establish procedures to ensure that manual entries are made to establish an automated data link between the Customer Depot Complaint System and the Quality Evaluation Program for all quality deficiencies. Direct that the manual entries be made to establish the automated data link for all quality deficiencies recorded since 1 January 1989.

**DLA COMMENTS:** Partially concur. The implementation of the SAMMS Modernization Post Award Management Requirement (dated 19 February 1989) to automatically establish the data link when the active contract file is established will satisfy the recommendation. This change was approved to mechanize the system and conserve resources. Manual entries to establish the data link are prohibitively resource intensive.

**DISPOSITION:**

- (X) Action is ongoing; Final Estimated Completion Date: 30 June 92
- ( ) Action is considered complete.

**MONETARY BENEFITS:** None.

\*C.2.b.(2) **RECOMMENDATION C.3.b.(2):** We recommend that the Commander, Defense Industrial Supply Center, fully comply with DLA Manual 4155.2 requirements to maintain consolidated contractor quality history information that includes deficiencies and positive laboratory test results to establish procedures to ensure that manual entries to all positive laboratory test results are made to the Quality Evaluation Program.

**DLA COMMENTS:** Nonconcur. The DoD IG recommendation seemingly incorrectly implies that the DLA has no policies and programs which effectively embrace this issue. Test results, regardless of the outcome, are recorded in the QEP. Test results used to validate a PDQR are part of the CDCS and should not be duplicated in the QEP. The SAMMS change request to establish the automated link will preclude the need for manual entries.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:
- (X) Action is considered complete.

**MONETARY BENEFITS:** None.

\* Final report recommendation reference

**AUDIT TITLE AND NO.: Draft Report on the Audit of Nonconforming Products Procured by the Defense Industrial Supply Center (Project No. 8AC-0038)**

**FINDING D: Defense Product Quality Audit Program.** The Product Quality Audit Program of the Defense Depots did not and cannot accurately measure the effectiveness of the Defense Logistics Agency Quality Program for industrial products. Limited inspections at three Defense depots identified only about 6 percent of nonconforming products, while more comprehensive commercial laboratory testing sponsored by the Defense Industrial Supply Center (Supply Center) identified about 42 percent of nonconforming products. Also, required followup testing generally was not performed by the depots. These conditions existed because the Defense depots did not have the capability to perform complete comprehensive tests to determine whether products totally conformed to critical contract quality specifications, and commercial testing facilities were not used to perform complete comprehensive tests. Consequently, the nonconformances used to measure the overall quality effectiveness applied to the Defense Industrial Supply Center inventory were understated, and the products from poor performing contractors were not tested.

**DLA COMMENTS:** Nonconcur. The DoD IG finding incorrectly implies that the Depot should be a catch-all for all nonconforming materiel via the Product Quality Audit program. The PQA Program was designed only to screen incoming supplier material for conformance and to provide the sampled data to Headquarters DLA for performance analyses, and action as may be indicated. Equipment investments have been made which provided DLA depots with sufficient measurement capabilities to complete most product conformance screening requirements. Product complexity which exceeds depot conformance screening capabilities are deferred by the depot to the appropriate commercial laboratory for measurement support as required.

**MONETARY BENEFITS:** None.

**RECOMMENDATION D.1.a.:** We recommend that the Director, Defense Logistics Agency, revise the Defense Logistics Agency policies for quality assurance as stated in the Defense Logistics Agency Manual 4155.2, Quality Assurance Program Manual for Defense Supply Center and Defense Industrial Plant Equipment Center, and Defense Logistics Agency Manual 4155.8, Quality Assurance Program Manual for Defense Logistics Agency Depots, and any other related Defense Logistics Agency policies to require that each Defense supply Center develop and manage a program for measuring the quality effectiveness of the acquisition operations for the procurement of products to ensure conformance to contractual requirements. The program should be designed to employ efficient, statistically valid, and cost-effective random sampling techniques. The measure of quality should be based on complete comprehensive testing to be either performed by or supplemented by commercial testing facilities.

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, nor pursuing policy and procedural change as appropriate. On the contrary, the DLAM 4155.2 currently specifies sufficient measures of the quality effectiveness of DLA's acquisition. Measuring operations by random sampling is only one way that DLA determines quality effectiveness of the acquisition process. Quality employs many methods including the analysis of actual problems, determination of key indicators, and selective informed use of inspection and testing. DLA is already using random sampling as a measure, through the establishment and use of the DLA Laboratory Testing Program, and a Product Quality Audit program. These programs provide data on both product quality and the quality of our acquisition and logistics process. The Laboratory Testing program evaluates products throughout the acquisition process. The Product Quality Audit program evaluates products after they have been received and stored at DLA Depots.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

**MONETARY BENEFITS:** None.

**RECOMMENDATION D.l.b.:** We recommend that the Director, Defense Logistics Agency, redirect the mission for the Depot product quality auditors as stated in the Defense Logistics Agency Manual 4155.8, Quality Assurance Program Manual for Defense Logistics Agency Depots. Change the goal of the Depot technical inspection program from one that measures the quality effectiveness of Logistics Agency acquisition operations to one that enhances the Logistics Agency's quality assurance system through more effective use of the Depot Product Quality Audit Program resources. Program resources should focus on inspecting critical parts and on followup inspections of parts provided by contractors who had previously provided nonconforming parts.

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA has not aggressively analyzed customer intelligence feedback and satisfaction, and pursuing policy and procedure change as appropriate. On the contrary, current guidance discontinues audits of part numbered items and focuses random product quality audits on critical weapons systems coded items for which technical data is available. The results of recent product quality audits indicate that this policy is being followed; higher levels of materiel nonconformances are being detected and increased levels of detection are resulting from followup audits. No change to DLA Manual 4155.8 is required.

**DISPOSITION:**

- ( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

**MONETARY BENEFITS:** None.

RECOMMENDATION D.2.a.: We recommend that the Commander, Defense Industrial Supply Center, develop a program to periodically measure the quality effectiveness of the acquisition operations in relation to products procured by the Defense Logistics Agency with valid technical data. As part of this program institute procedures for the following:

(1) Develop an effective, statistically valid random sampling plan that identifies National Stock Numbered items from the current year receipts for testing.

(2) Prepare comprehensive test plans that include all of the specifications critical to the operation or use of each of the National Stock Numbered items selected in the periodic statistical sample developed for Recommendation 2.a.(1).

(3) Test each of the National Stock Numbered products identified in Recommendation 2.a.(1). at an appropriate commercial test facility.

(4) From the formal analysis of the results generated from Recommendation 2.a.(3). prepare summary status Reports that track the validation of all nonconformances noted through the Product Quality Deficiency Report Program. The summaries should provide an overall index of the quality level of products with valid technical data procured by the Supply Center.

DLA COMMENTS: No response can be provided.

The IG recommendation is not understood as stated. Further clarification is necessary.

DISPOSITION:

- ( ) Action is ongoing; Final Estimated Completion Date:  
(X) Action is considered complete.

MONETARY BENEFITS: None.

RECOMMENDATION D.2.b.: We recommend that the Commander, Defense Industrial Supply Center, develop procedures for a combination of comprehensive followup testing by commercial testing facilities and technical inspections conducted at the Depots by the Depot product quality auditors on products delivered by contractors who were previously identified as providing nonconforming products.

DLA COMMENTS: Nonconcur. The DoD IG recommendation incorrectly seemingly implies that the DLA and the DISC have no policies or programs which effectively address this issue. On the contrary, the flexibility of the DLA Laboratory Test Program and the DISC Test and Evaluation Master Plan provides ample coverage for comprehensive followup commercial testing on products from contractors who have delivered nonconforming materiel. Use of the depot quality auditor for limited technical inspections to supplement the plan, is under evaluation.

DISPOSITION:

- (X) Action is ongoing; Final Estimated Completion Date: 30 Jun 90  
( ) Action is considered complete.

MONETARY BENEFITS: None.



RECOMMENDATIONS REQUIRING ADDITIONAL COMMENTS AND  
FINDINGS AND RECOMMENDATIONS THAT WERE REVISED  
IN THE FINAL REPORT

RECOMMENDATIONS REQUIRING ADDITIONAL COMMENTS

Assistant Secretary of Defense (Production and Logistics)

Recommendations A.1.a., A.1.b., and A.1.c.

Director, Defense Logistics Agency

Recommendations A.2.a., A.2.b., A.2.c., A.2.d., A.2.e., A.2.f.,  
B.2., B.3.b., B.3.c., C.1.a., C.2.a., C.2.b.(1), C.2.b.(2),  
D.1.a., and D.1.b.

FINDINGS AND RECOMMENDATIONS THAT WERE  
REVISED IN THE FINAL REPORT

Findings

Findings A, B, and C.

Recommendations

A.1.a., A.1.b., A.1.c., A.2.a., A.2.b., A.2.c., A.2.d., A.2.e.,  
A.2.f., B.3.a., C.2.a.

RECOMMENDATIONS IN THE DRAFT REPORT  
THAT WERE DELETED FROM THE FINAL REPORT

Recommendation

A.3.a., A.3.b., A.3.c., A.3.d., A.3.e., A.3.f., C.1., C.2.b.

### AUDIT TEAM MEMBERS

David K. Steensma, Director, Contract Management Directorate  
Salvatore D. Guli, Program Director  
C. J. Richardson, Project Manager  
Sandra L. Fissel, Assistant Project Manager  
Ernest L. Eigenbrode, Team Leader  
Lois A. Therrien, Team Leader  
Herbert L. Braun, Auditor  
Adrienne B. Brown, Auditor  
Walter J. Carney, Auditor  
Steven I. Case, Auditor  
Arthur M. Hainer, Auditor  
Henry P. Hoffman, Auditor  
LaNita C. Matthews, Auditor  
John B. Munns, Auditor  
Phyllis B. Shepphard, Auditor  
Carolyn A. Swift, Auditor

Frank Ponti, Statistician  
Dharam Jain, Statistician

Joe Mislán, Engineer  
Milton Kaufman, Engineer

William Fox, Industrial Specialist





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