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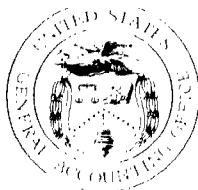
United States General Accounting Office

Report to the Chairman, Subcommittee  
on Investigations, Committee on Armed  
Services, House of Representatives

December 1990

# DOD PROCUREMENT

## Changes to Military Specifications for Testing Industrial Fasteners



142995

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**National Security and  
International Affairs Division**

B-242113

December 21, 1990

The Honorable Nicholas Mavroules  
Chairman, Subcommittee on Investigations  
Committee on Armed Services  
House of Representatives

Dear Mr. Chairman:

This report responds to your June 21, 1990, request that we review certain aspects of proposed changes to the military specifications for testing the quality of class 3 threaded fasteners.<sup>1</sup> Specifically, we reviewed (1) whether the Air Force followed proper procedures for implementing changes to the military specifications and (2) whether the military services followed appropriate competitive procedures for purchasing the gages<sup>2</sup> required to implement the proposed changes.

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**Results in Brief**

The Air Force, which has the responsibility for class 3 fastener specifications, followed applicable Department of Defense (DOD) regulations when it initiated changes to the fasteners' testing specifications. The purpose of the changes was to make fastener testing more stringent. The Air Force justified the changes because they believed some military aircraft accidents were caused by poor quality fasteners. To implement these more stringent testing specifications, the Air Force and the Navy have procured a specific gage—called an indicating type gage—which analyzes deviations in fastener threads. When procuring these gages, the Air Force and Navy have followed competitive procurement practices as specified in DOD regulations and the Competition in Contracting Act.

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**Background**

Standards for procuring class 3 fasteners include requirements for testing to determine the degree of fit between the threaded shaft and the mated bolt, or other parameters of the fastener, and the precision with which the specific requirement is met. Such tests usually involve the use of gages to make the specific measurements involved.

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<sup>1</sup>Class 3 fasteners are mainly nuts and bolts used in submarine and aircraft construction, but may also refer to any item that is threaded to mate with another, such as a turbine engine shaft.

<sup>2</sup>Gage can also be spelled "gauge"; however, the common spelling in the fastener industry is gage.

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In 1987, the Air Force proposed to change the specifications for class 3 fasteners to change the method of testing the quality of these fasteners. The Air Force justified these changes based on reported accidents to military aircraft, which were attributed to poor quality threads on class 3 fasteners.

The process for making changes to military specifications is prescribed by applicable DOD regulations. These specifications—MIL-S-7742 and MIL-S-8879—cover fasteners currently in the inventory and fasteners developed and procured as a part of new defense systems, respectively. Both standards describe the physical characteristics of the threaded portions of the fasteners, and the inspection and verification requirements for delivery and acceptance of the fasteners by the ordering services.

Testing is usually done by one of three methods—A, B, or C. Testing under method A provides the least amount of thread quality information, method B provides more thread information, while method C, the most rigorous testing method, provides the most information on thread quality. Prior to the proposed changes, methods A and B were used. The proposed changes will call for use of methods B and C. The proposed changes will also result in the need to use a type of gage—called an indicating type gage (which analyzes the deviations that exist in various fastener thread elements)—to make the measurements necessary to meet the proposed testing requirements.

The fastener industry (manufacturers, retailers, and contractors) has expressed concern that the proposed specifications will be more rigorous than is necessary to achieve an appropriate level of quality in class 3 fasteners, and that the adoption of the new specifications will result in excessive costs to buy the necessary gages and re-inspect existing fastener inventories.

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## Air Force Followed Specification Change Procedures

The Air Force followed applicable DOD regulations for changing the testing specifications of class 3 fasteners. The regulation, Defense Standardization and Specification Program Policies, Procedures and Instructions; DOD 4120.3-M, involves certain considerations, including (1) an initial justification for the change, (2) an evaluation of the cost impact of the proposed change, (3) solicitation of industry comment, and (4) the assignment of a project number prior to initiating the change.

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The Air Force prepared a justification for the proposed changes, solicited industry comments, and obtained project numbers to initiate specification change procedures. An Air Force official informed us that, based on their past experience with previous specification changes, they did not perceive a need to evaluate the cost impact of these proposed changes.

Representatives from the fastener industry stated that cost increases will result from the proposed changes because of the need to acquire gaging equipment, increased inspection time, calibration and maintenance costs, and costs for training inspection, planning, and design personnel. Because of these concerns, the House Subcommittee on Investigations has requested that the Air Force conduct a cost impact analysis. That study is currently ongoing and is expected to be completed in mid-December 1990.

One major retailer has also argued that the process followed for changing the standards was not proper, because industry comments were not adopted in the final standard. Throughout the process, DOD solicited and received many industry comments. A DOD regulation provides that industry comments be considered, but they are not required to be adopted in the final standard. DOD considered and adopted several industry comments. However, they also rejected some.

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## Services Followed Competitive Procurement Procedures

The Air Force and Navy followed appropriate competitive procurement procedures when purchasing indicating type gages and the contracting records were complete. These procedures generally included announcement of the procurement in the Commerce Business Daily, issuance of a competitive request for proposal (RFP), and technical and cost evaluation of contractor proposals.

We examined six contracts, which totaled more than \$818,000 of the \$1.2 million the Air Force and the Navy spent for these gages from October 1, 1987, to May 16, 1990. (The Army did not purchase any gages). For each of these procurement actions, many vendors requested copies of the RFP, but only one to three bids were received for each action. One company was awarded all six contracts.

Some manufacturers of indicating type gages believe that the procurement process for government purchase of indicating type gages has been biased by including unnecessary specifications that favor a single manufacturer.

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In examining the RFP specifications, we found that the RFPs specified that the gages be capable of the middle category of fastener testing (method B), but included additional specifications which, in effect, established a requirement for the most rigorous fastener testing standard (method C). We also found that certain requirements in the RFP specifications we reviewed were not contained in the documents cited in the original Commerce Business Daily announcement, and that they were very similar to literature provided to the contracting office by the winning gage manufacturer.

Under the Federal Acquisition Regulation, an agency is required to prepare specifications and purchase descriptions that promote full and open competition and reflect the agency's minimum needs and the market available to satisfy such needs. In addition, purchase descriptions may not be written to specify a particular feature of a product of one manufacturer unless the agency determines that the particular feature is essential to the government's requirements. Specifications and purchase descriptions that do not comply with the provisions of the Federal Acquisition Regulation may be challenged by filing a bid protest.

Concerning the RFPs we reviewed, service engineers told us that the listed requirements for the gages, including the more rigorous testing procedures specified, were necessary to ensure the quality of the fasteners. Because we were asked not to review the technical basis for the proposed changes to the fastener standards, we did not obtain information on whether the more rigorous test procedures are in fact necessary, or whether the specifications identified in the RFPs for the gages were appropriate.

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## Scope and Methodology

We discussed DOD procedures and regulations, and reviewed documentation, for changing the military specifications with the Defense Quality and Standardization Office in Falls Church, Virginia, the Air Force Logistics Command, and the Aeronautical Systems Division at Wright-Patterson Air Force Base, Ohio. Documents reviewed included DOD Manual 4120.3-M, Defense Standardization and Specification Program Policies, Procedures and Instructions, and DOD Directive 5000.43, Acquisition Streamlining. As you requested, we did not review the basis for the proposed change in the testing requirements, but we did review certain concerns raised by fastener industry representatives.

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We reviewed the Competition in Contracting Act of 1984 (10 U.S.C. 2304 et seq.) and DOD procedures for competitive procurements. Our examination of the Air Force and the Navy's procurement of indicating type gages for class 3 fasteners involved reviewing (1) the acquisition procedures used by the procurement activity's contracting branch, and (2) the equipment specifications contained in the RFPs provided to interested vendors. We examined the last 2 to 3 years procurement of these gages at the Air Logistics Center at Kelly Air Force Base, Texas; the Portsmouth Naval Shipyard, Maine; and the Norfolk Naval Shipyard, Virginia.

We also met with two commercial gage vendors to discuss their concerns about the change in military specifications and the military services procurement of indicating type testing gages. In addition, we conducted telephone discussions with other gage manufacturers, fastener industry and other military service procurement representatives.

We conducted our review from July through October 1990 in accordance with generally accepted government auditing standards.

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As agreed with your office, we did not obtain written agency comments on this report. However, we discussed the report with appropriate DOD officials and have incorporated their comments as appropriate.

Unless you publicly announce its contents earlier, we plan no further distribution of the report until 30 days from the date of this letter. At that time, we will send copies to the Chairmen, House and Senate Committees on Armed Services, the Secretaries of Defense, Army, Navy, and the Air Force; the Director, Office of Management and Budget; and other interested parties. We will also make copies available to others upon request.

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Please contact me at (202) 275-4268 if you have any further questions.  
Major contributors to this report are listed in appendix I.

Sincerely yours,

A handwritten signature in black ink that reads "Nancy R. Kingsbury". The signature is written in a cursive style with a large, looping "y" at the end.

Nancy R. Kingsbury  
Director  
Air Force Issues





# Major Contributors to This Report

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