United States General Accounting Office

GAO

Report to the Chairman, Committee on Armed Services, U.S. Senate

July 1987

DOD WARRANTIES

Improvements Needed in Implementation of Warranty Legislation

GAO/NSIAD-87-122

GAO

United States
General Accounting Office
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National Security and
International Affairs Division

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The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

Dear Mr. Chairman:

As requested by the Committee we have reviewed the Department of Defense's (DOD's) implementation of the warranty laws. This report focuses on DOD's compliance with the warranty laws and its implementation efforts, including the nature of warranties being obtained. It also identifies improvements DOD could make in its implementation efforts.

We are sending copies of this report to the Chairman, House Committee on Armed Services, House and Senate Committees on Appropriations, and Senate Committee on Governmental Affairs; the Secretary of Defense; the Secretaries of the Army, Navy, and Air Force; Representative Mel Levine; and the Director, Office of Management and Budget. Copies will be made available to other interested parties upon request.

Sincerely yours,

for Bill W. Thurman
Frank C. Conahan
Assistant Comptroller General

- The services obtained many warranties without performing appropriate cost-effectiveness analyses.
- Most warranties did not clearly identify the performance requirements that would be assessed during the warranty period or identify how and when performance would be assessed.
- Many warranties did not explicitly state whether the contractor was responsible for redesign if performance requirements were not met.

GAO believes the administration of many current warranties may prove to be difficult because the warranties are not as clear as they could be regarding the assessment of warranted performance and whether redesign is intended to be a remedy.

Principal Findings

Compliance

The procurement activities GAO reviewed had obtained warranties in their weapon system contracts as required by the warranty laws and with one exception, these warranties complied with provisions of the laws.

Use of Warranties

The use of warranties has increased greatly as a result of the warranty laws. GAO reviewed 97 contracts that contained warranties in response to this legislation and 97 contracts for identical or closely similar items that were entered into immediately before the legislation.

GAO found that only 36 of the 97 earlier contracts contained warranties. GAO believes that as many as 87 of the earlier contracts would have required a warranty if the warranty legislation had been in effect.

Waivers

At the procurement activities GAO visited, only five waiver requests had been submitted to higher authorities for approval. DOD has approved only two waivers on specific weapon system contracts since the legislation was enacted. Instead of approving waivers, the services encourage procurement officials to renegotiate warranty prices and/or terms to obtain warranties acceptable to the procurement activities.

Cost and Cost Effectiveness

The procurement activities performed analyses that addressed basic cost-effectiveness criteria for only 9 of the 97 contracts GAO reviewed. these cases the activities concluded that the warranties were worth th price ($64 million) paid for them. No such analyses were made for 52 other contracts that had identifiable warranty prices totaling $180 mi lion. As a result, there was no formal analysis which showed the bene- fits to be derived under the warranty were worth the cost. This was al true for the remaining 36 warranties that did not have separately stat prices or for which prices had not yet been determined.

Performance Warranties

Performance warranties should (1) clearly define the performance bei warranted, (2) specify how and when performance will be assessed d ing the warranty period, and (3) clearly define contractors' responsibi ties when warranted performance is not achieved. For most of the warranties GAO reviewed, the essential performance requirements bei warranted were referenced to voluminous specifications and technica data packages without specifying how and when performance would assessed against performance requirements.

Redesign

Redesign may sometimes be an appropriate and important remedy wh essential performance requirements are not met. GAO found that 72 pe cent of the warranties it reviewed did not specify whether redesign w a possible remedy. Also, procurement activity officials had varied opi ions about contractors' redesign responsibility when warranties do no specifically address redesign.

New or Revised Policy Guidance

After the period in which the warranties GAO reviewed were obtained, DOD issued numerous new or revised policy guidance documents. (See app. XIV.) GAO found that this guidance generally addressed the prob- lems it identified. However, GAO did not review any warranties obtain after this guidance was issued. In view of the implementation problen encountered in the older warranties GAO reviewed, the complexity of some of the issues it identified, and the possibility that some of the gu ance could be ignored under the "flexibility" inherent in the 1985 act, GAO believes DOD should review a representative number of recent wa ranties to ensure that the policy and other guidance is being properly followed.

Recommendations

GAO recommends that the Secretary of Defense direct the military services to review a representative number of recent and future warranties to assure that procuring activities are routinely conducting cost-effectiveness analyses for proposed warranties and are delineating essential performance requirements and identifying when and how they will be validated.

GAO also recommends that the Secretary of Defense require that future warranties specifically state whether redesign is or is not a possible remedy.

Agency Comments

DOD reviewed a draft of GAO's report and agreed with GAO's findings. The draft report contained recommendations that the Secretary of Defense provide guidance and direction to deal with the implementation problems observed by GAO.

DOD concurred with these recommendations but pointed out that policy and other guidance issued subsequent to the period covered in GAO's review had effectively accomplished all of GAO's recommendations, except that part dealing with the redesign remedy. Regarding this recommendation, DOD stated that it will review the law and issue appropriate guidance within 6 months. GAO modified its recommendations to reflect the existence of the new guidance.

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Abbreviations

DOD	Department of Defense
GAO	General Accounting Office
FAR	Federal Acquisition Regulations

Introduction

Background

The Congress passed section 794 of the 1984 Department of Defense (DOD) Appropriations Act (Public Law 98-212) requiring that DOD obtai warranties in its weapon system production contracts. This law was passed because of concern that weapon systems often failed to meet their military missions, were operationally unreliable, had defective an shoddy workmanship, and could endanger the lives of U.S. troops. The belief was that warranties would make contractors more accountable and encourage them to build more quality and reliability into their systems. The law was controversial. DOD and industry officials criticized it as being impractical and unworkable. They also considered warranties to be potentially very costly because, in almost all instances, DOD woulc pay for the additional contractor risk that warranties would constitute In 1984, section 794 was replaced by section 1234 of the 1985 DOD Authorization Act (Public Law 98-525). (Hereafter section 794 of the 1984 DOD Appropriations Act and section 1234 of the 1985 DOD Author zation Act are referred to as the 1984 and 1985 acts, respectively.)

Both acts require that DOD obtain warranties for its weapon systems. Warranties were permitted before the 1984 act but were not required. The 1984 act made warranties mandatory unless a waiver was approved. The 1985 act defines weapon systems as items that could be used directly by the armed forces to carry out combat missions. Under the 1985 act, warranties are required on weapon systems that have a unit cost of more than $100,000, or an expected total procurement cost of more than $10 million. Warranties are not required on items that ar not weapon systems, such as spare parts and items not used to carry o combat missions.

DOD regulations generally define a warranty as a promise or affirmatio given by a contractor to the government about the performance of services or the nature, usefulness, or condition of supplies to be furnished The principal purposes of a warranty are to describe the rights and obl gations of the contractor and the government in those instances when defective items and services are delivered and to foster quality perfor ance. Generally, warranties remain in effect for a stated period of time after the contract items are accepted or until a specified event occurs.

1984 Act

Under the 1984 act, appropriated funds could not be obligated or expended to procure a weapon system unless the prime contractor or other contractors of such a system guaranteed

"(1) that the system and each component thereof were designed and manufactured so as to conform to the Government's performance requirements as specifically delineated in the production contract. . .

"(2) that the system and each component thereof, at the time they are provided to the United States, are free from all defects (in materials and workmanship) which would cause the system to fail to conform to the Government's performance requirements . . . ."

If either of the guarantees was breached, the contractor was required to "bear the cost of all work promptly to repair or replace" the parts necessary to meet the "required performance requirements." A contractor that failed to promptly "repair or replace" would pay the costs to procure such parts from another source.

The Secretary of Defense could waive the guarantee requirements if it was determined that the waiver was necessary in the interest of national defense or the warranty would not be cost effective. However, the Secretary of Defense was required to give written notice of the intention to waive the guarantee and the reasons for doing so to the Senate and House Armed Services and Appropriations Committees.

1985 Act

Section 1234 of the 1985 DOD Authorization Act repealed section 794 and added section 2403 to title 10, United States Code. The 1985 act states that the head of an agency may not enter into contracts after January 1, 1985, for the production of weapon systems unless each prime contractor guarantees that

"(1) the item provided under the contract will conform to the design and manufacturing requirements specifically delineated in the production contract . . .;

"(2) the item provided under the contract, at the time it is delivered to the United States, will be free from all defects in materials and workmanship; [and]

"(3) the item provided under the contract will conform to the essential performance requirements of the item as specifically delineated in the production contract. . . ."

If any of these guarantees are breached, the contractor will, at the election of the Secretary of Defense, or as otherwise provided in the contract,

"(A) promptly take such corrective action as may be necessary to correct the failure at no additional cost to the United States or

"(B) pay costs reasonably incurred by the United States in taking such corrective action."

The Secretary of Defense may waive the guarantee requirements if the Secretary determines that the waiver is necessary in the interest of national defense or would not be cost effective. The Secretary may delegate the waiver authority no lower than an Assistant Secretary of Defense or Assistant Secretary of a military department. The Secretary however, must provide to the Senate and House Armed Services and Appropriations Committees, written notice of the intention to waive any or all of the guarantee requirements on a major defense acquisition and the reasons for doing so.

The 1985 act specifically defines the cost of weapon systems to be covered. It limits the requirement to warrant essential performance to those weapon systems that are in mature full-scale production and excludes the first 10 percent of production or the initial production quantity, whichever is less. Also, in the case of dual-source procurement, it allows the first 10 percent of second-source production to be exempted from the performance guarantee requirement.

In addition to workmanship and materials warranty requirements, the 1985 act establishes a new requirement for a "design and manufacturing" guarantee to ensure that contractors build systems to specifications. It also clarifies that the general exemption of government-furnished equipment from guarantees is not intended to insulate the contractor from liability if such equipment is not properly installed. The requirement to guarantee performance was modified to cover only essential performance requirements. This was intended to clarify that DOD may designate certain types of performance characteristics as nonessential, or as goals or objectives, and remove such characteristics from the statutory requirement.

The 1985 act also attempted to clarify the remedy provision by broadening the scope of possible remedies required of the contractor and by giving the Secretary of Defense the option to select from several remedies. According to the Senate Committee report, this provision was to eliminate concerns about whether certain types of corrective action could be required of the contractor. These corrective actions could include redesign. In addition, the 1985 act allows (1) equitable contract price adjustments when the government does not require corrective action and (2) contractor reimbursement of government repair costs when it is impractical to have the contractor make the repairs.

The 1985 act also clarifies several unrelated issues about the implementation of the law. For example, it gives DOD the authority to negotiate the specific details of a guarantee, including reasonable exclusions, limitations, and time duration, and to use guarantees to a greater extent than required by the law. Further discussion of the provisions of the 1984 and 1985 acts is provided in appendix IV.

Objectives, Scope, and Methodology

The Chairman of the Senate Armed Services Committee asked us to review DOD's implementation of the warranty laws. (See app. I.) Similar requests were later received from the House Armed Services Committee (informal request) and Congressman Mel Levine. (See app. II.) We agreed with the Committee representatives and Congressman Levine to provide information on 11 questions involving (1) compliance with the acts, (2) the type and nature of warranties being obtained before and after the acts, (3) differences in warranties, (4) waivers of the warranty requirement, (5) use of cost-benefit analyses, (6) warranty prices, (7) implementation problems, (8) policy guidance and direction, (9) remedies, (10) warranty exclusions, limitations, and duration periods, and (11) the nature of performance characteristics being warranted. Appendix III lists the questions and indicates where they are addressed in this report. Chapter 2 addresses questions about the extent, nature, and cost of warranties obtained before and after passage of the warranty laws. Chapter 3 discusses DOD's compliance with the warranty laws and related implementation problems.

Our work was performed at six major DOD procurement activities shown in table 1.1. They were selected because they procure a number of high visibility, expensive weapon systems, and components. Also shown are 17 weapon systems that we included in our review at the Committee's request.

Table 1.1: Procurement Activities Visited and Weapon Systems Coverage

Activity	Weapon system
Army Tank-Automotive Command	M1 Abrams tank[a]
	Bradley Fighting Vehicle[a]
	Light Armored Vehicle
Naval Sea Systems Command	SSN 688 Submarine
	DDG-51 Destroyer[a]
	CG-47 Aegis Guided Missile Cruiser[a]
Air Force Aeronautical System Division	F-15 aircraft F-16 aircraft
	B-1B bomber[a]
	Maverick missile[a]
	LANTIRN Navigation System[a]
Army Missile Command	Patriot missile
	Hellfire missile
	Pershing II missile
Naval Air Systems Command	F-14 aircraft
	F-18 aircraft
Joint Cruise Missile Project Office	Ground Launched Cruise Missile

[a]This system or its components were selected for in-depth review.

We focused on the first three activities; the others were selected to cove specific weapon systems. We also performed limited work at the Air Force Product Performance Agreement Center and at the Army Commu nication and Electronics Command.

At the three primary procurement activities, we screened all contractin actions over $10 million from March 1984 through May 1985 to determine if a warranty had been obtained. At the other three activities we screened only contracts on the systems of particular interest to the Con mittee. We identified 97 contracts that included warranties in response to the laws. Table 1.2 shows the number of contracts containing warra ties. (See app. V for a list of the contracts that contained warranties.) For 97 contracts with warranties, we obtained detailed information on the warranty clauses and assessed whether the warranties complied with the warranty legislation. We also determined the extent and type of warranties used in contracts for the same or similar items procured immediately before the warranty legislation.

Table 1.2: Number of Warranted Contracts Reviewed

Procurement activity	1884 act	1985 act	Total
Army Tank-Automotive Command	11	3	**14**
Army Missile Command	5	5	**10**
Naval Sea Systems Command	34	13	**47**
Naval Air Systems Command	1	3	**4**
Joint Cruise Missile Project Office	2	1	**3**
Air Force Aeronautical Systems Division	11	8	**19**
Total	**64**	**33**	**97**

For the 135 contracts that were awarded without warranties between March and September 1984 and were subject to the requirements of the 1984 act, we reviewed pertinent contract files to obtain basic contract information and the activities' rationale for not obtaining a warranty. (See app. XII.) We found no instances of the activities failing to obtain a warranty when one was required; thus, we did not review non-warranty contracts from October 1984 through May 1985.

Although we examined the services' implementation guidance on warranty administration, we did not review warranty administration because warranted equipment would not have been fielded long enough for a meaningful assessment.

We developed a data collection form to analyze procurement actions and whether the actions complied with the warranty legislation as well as DOD and service policies and procedures. This form ensured that comparable information was collected.

Documents reviewed in the files included, but was not limited to, basic contract information, warranties, cost studies, correspondence, and specifications. We interviewed agency management, procurement, and legal officials, as well as selected contractor officials.

We reviewed the provisions of the 1984 and 1985 acts, their legislative histories, DOD policy guidance and regulations, and the services' guidance for complying with and implementing the warranty legislation. We also reviewed internal controls aimed at ensuring that warranties are cost effective.

Our review was performed in accordance with generally accepted government auditing standards from October 1984 to August 1986.

DOD's Use of Warranties

This chapter describes the extent, nature, and cost of weapon system warranties obtained before and after the 1984 and 1985 acts. In brief, we found that

- the warranty laws resulted in a significant increase in the use of warranties;
- few waivers of the warranty requirement have been requested or approved;
- whereas most warranties before the laws were not concerned with guaranteeing performance, all but one warranty obtained in response to the laws contained performance guarantees; and
- the procurement activities we visited are paying $244 million for 61 warranties that had established prices.

Specific provisions included in the 1984 and 1985 acts' warranties are also discussed in this chapter.

Increased Use of Warranties

The 97 warranted contracts included in our review represent a significant increase in the use of warranties. As noted on page 13, we found no instances of activities failing to obtain a warranty when one was required for contracts awarded between March and September 1984. We reviewed 97 immediately preceding contracts for the same or similar items and found that only 36 contained warranties. Of these earlier contracts, as many as 87 might have required a warranty if the warranty legislation had been in effect.

Infrequent Use of Waivers

Both the 1984 and 1985 acts permit waivers of the warranty requirements when a warranty would not be cost effective or the waiver would be in the interest of national defense. Since the warranty laws were passed, few waivers have been requested and even fewer have been granted. After the 1984 act, DOD issued two class waivers and the Army issued a waiver for one contract. T he only waiver related to the 1985 act was an Air Force waiver for one contract.

At the six procurement activities we visited, five waiver requests for individual contracts had been submitted. None were approved. Rather than approve waivers, the services required procurement officials to renegotiate warranty prices and/or terms to obtain a warranty acceptable to the procurement activity.

Class Waivers

A Senate Armed Services Committee report (S. Rep. No. 98-500, 98th Congress, Second Session 247 (1984)) on what became the 1985 act states that a class waiver is for use only in unusual circumstances where it can be clearly shown that such an approach is consistent with the warranty statute and underlying legislative intent. The class waiver can cover more than a single contract or weapon system. Class waivers can reduce the administrative burden of writing numerous single waivers for the same set of circumstances.

Under the 1984 act, the Deputy Secretary of Defense issued two class waivers in the interest of national defense. The first waived the warranty provisions for all weapon system contractual actions for 90 days to ensure that no disruption occurred in the acquisition of essential goods and services and allow the military departments to formulate policy and guidance for implementing the warranty provisions. The second waived the requirement for warranties on all systems procured by cost reimbursement type contracts and was justified on the basis that guarantees on such contracts would not be cost effective. The justification noted that cost-reimbursement contracts may be used during the procurement of many weapon systems when initial limited production of the system begins. The uncertainties involved in contract performance may be of such magnitude that the cost of the warranties cannot be reasonably estimated. The DOD Federal Acquisition Regulation (FAR) Supplement did not continue the class waiver of cost-reimbursement weapon system contracts under the 1985 act. However, the 1985 act applies only to mature weapon system production contracts which are generally not cost-reimbursement contracts. Thus, the discontinuance of the waiver would affect few contracts.

Individual Contract Waivers

To date, two waivers of the warranty requirement for a specific weapon system contract have been approved. In May 1984, the Army waived the warranty in a contract for gyroscope magnetic compass sets used in helicopter navigation. The invitation for bid had been issued before the March 1984 date for implementation of the 1984 act. According to the waiver, including the warranty would have required the Army to recompete the contract and delay the procurement of urgently needed equipment. The second waiver occurred in 1986. The Air Force granted a waiver of 1985 act requirements on the acquisition of 14 Rapier Missile Fire Units. The waiver was granted in the interest of national defense. The missiles were being purchased from the United Kingdom under a Memorandum of Understanding which allowed the use of contracting procedures that do not require warranties.

Waiver Requests Denied

Five requests for waivers on specific contracts were made by the Army Missile Command (two), the Naval Sea Systems Command (two), and the Air Force Aeronautical Systems Division (one). None were approved. Four requests were denied, and the other one became moot when the procurement option it was related to was not exercised.

Army Missile Command

The Army Missile Command requested two waivers from the Assistant Secretary of the Army. The first was for two contracts for Pershing II propellant sections, radars, and warheads. According to an accompanying analysis, the warranty was not considered cost effective. The waiver request was not approved. The Army Missile Command then reduced the contractor's potential liability, changed the warranty price, and included the negotiated warranty in the definitized contract. For the first contract, which fell under the 1984 act, the portion of the contractor's liability related to the propellant sections was reduced from $5 million to $1.5 million, and the overall warranty price was changed from $0.5 million to "no separate price." For the second contract, which fell under the 1985 act, the portion of the contractor's liability related to the propellant sections was reduced from $2.5 million to $0.8 million, and the warranty price was changed from $0.5 million for the motor cases and propellant to $1 million for the motor cases, propulsion sections, guidance and control system, radars, and ballistics cases. No cost-effectiveness analyses were made of the negotiated warranty.

The second waiver request was for the Patriot Air Defense Missile System and was based on cost-effectiveness considerations. Based on early test data, a warranty clause that was considered marginally cost effective had been included in the contract with an option to delete the clause within 180 days if a waiver was obtained. A second cost-effectiveness analysis using more recent and more accurate information was performed during the 180-day period. This analysis concluded that the warranty obtained was not cost effective. The warranty price of $21 million exceeded the government's estimate of the costs to repair the missiles without a warranty. However, the Acting Assistant Secretary of the Army denied the request citing the Under Secretary of the Army's direction that contracts be examined to see if the warranty requirements could be satisfied using existing acceptance, inspection, latent defects, and other standard clauses rather than using "new redundant clauses" with high prices attached. The warranty was renegotiated and a reduction was made to the warranty price (from $21 million to $7 million), and the target profit was increased to compensate for the contractor's

increased risk. The warranty was then evaluated and the Army concluded it was cost effective.

Naval Sea Systems Command

In 1985 the Naval Sea Systems Command requested a waiver for a contract on four Submarine Active Detection Sonar Transmit Groups—subsystems of the Submarine Advanced Combat System. The request was sent to the Assistant Secretary of the Navy (Shipbuilding and Logistics). This was a cost-reimbursement contract, and the waiver was sought on the basis that warranty provisions were not cost effective. The request was not approved. The contractor ultimately agreed that claims costs would not be reimbursable, but the contractor's liability was limited to 3 percent of the target cost. A cost-effectiveness analysis was not made on the revised contract because Naval Sea Systems Command officials considered it to be a no cost warranty.

The Department of the Navy has issued a directive setting forth its position on waivers. The directive emphasizes the need to separately identify performance requirements subject to warranty provisions and states that the proper application of specifications should eliminate the need for waivers.

Air Force Aeronautical Systems Division

In 1985 the Aeronautical Systems Division requested a waiver of production options for the HH-60A Combat Rescue Helicopter Airframe contract. The request was sent to the Air Force Systems Command. A division analysis indicated that the proposed warranty was not cost effective. The request was returned without action, and the HH-60A Program Office was directed to continue warranty negotiations to lower the warranty price and, if appropriate, to reevaluate the need for a waiver. Ultimately, the Air Force did not exercise the options, so the warranty was not needed.

Warranties Before and After the Warranty Laws

Warranties obtained before the 1984 act differ from later warranties, and individual warranties obtained in response to the warranty laws also differ. Warranties were not required before the warranty legislation and almost all were not concerned with guaranteeing system performance. The acts made warranties mandatory and specifically required system performance guarantees. As discussed in chapter 3, 1984 and 1985 act warranties we reviewed generally met the acts' requirements and guaranteed system performance by referring to system specifications or technical data packages.

The 36 warranties we reviewed that were obtained before the warranty acts at the 6 procurement activities consisted of

- shipbuilders' warranties (12),
- warranties of supplies (10),
- correction of deficiencies warranties (8),
- warranty of supplies/correction of deficiencies (2),
- material and workmanship warranties (2), and
- warranties involving monetary incentives/penalties (2).

Appendix VII provides general descriptions of warranty types obtained under the 1984 and 1985 acts.

Sixty-six of the 97 warranties obtained in response to the warranty law either copied or closely paralleled the language in the laws. Forty-eight warranties copied the 1984 act by stating that the contractor guarantees that the system is designed and manufactured to meet the performance requirements and is free from all defects in material and workmanship which would cause it to fail to meet the performance requirements. Eighteen copied the 1985 act by providing warranties on (1) design and manufacturing, (2) material and workmanship, and (3) essential performance.

Thirty of the 31 remaining warranties complied with the acts but did not copy or closely parallel the language of the warranty laws. These warranties are as follows:

- Eleven shipbuilders' warranties covered deficiencies, deteriorations, and failures in vessels.
- Nine warranties were similar to warranties described in FAR before enactment of the warranty legislation. These included (1) warranties of supply which covered material and workmanship and conformity to specifications and (2) warranties with correction of deficiency clauses which covered equipment deficiencies not in compliance with the contract.
- Four warranties specifically addressed system design.
- Three warranties exempted specified numbers of initial failures. (The other provisions of these warranties generally copied or closely paralleled the warranty laws.)
- Three warranties provided for monetary incentives/penalties.

The one remaining warranty included the conformity to specification and manufacturing requirements and material and workmanship provisions of the 1985 act, but did not include the performance provision of the 1985 act. Appendix VI shows the number of warranties included in each category by service.

Warranty Prices

We reviewed 97 warranted contracts of which 61 had negotiated warranty prices totaling $244 million. The warranty prices averaged 1.9 percent of the price of warranted items and 1.4 percent of the contract price.[1] The 61 warranties included 3 warranties which were obtained at no cost. The remaining 36 contracts consisted of 20 contracts with undefinitized warranty prices and 16 contracts with warranties reported as not separately priced. Appendix VIII shows warranty price information by service.

For comparison purposes, we tried to obtain warranty prices before the laws were enacted, but we found that earlier warranties were generally not separately priced. Officials at one procuring activity said that contractors were reluctant to provide warranty price information for proprietary reasons.

Specific Warranty Provisions

Warranty provisions related to remedies, duration periods, and exclusions and limitations can significantly affect warranty coverage. The nature and use of these provisions are described below.

Remedies

The majority of the 97 warranties included one or more remedies similar to those specified in the 1984 and 1985 warranty acts. We identified

- 57 remedies similar to the 1984 act, which requires contractors to bear the cost of work to promptly repair and replace parts necessary to achieve required performance requirements;
- 38 broader remedies similar to the 1985 act, which requires contractors to take action to correct failures at no additional cost to the United States;
- 13 remedies similar to another 1985 act remedy, which requires contractors to pay costs incurred by the government in taking corrective action; and

[1]The contract price includes the price of the warranted item and the warranty and can include such costs as those for technical data, support, test equipment, and services.

- 19 remedies that specifically defined contractor redesign responsibility

Eight contracts specifically excluded redesign as a remedy. Appendix I contains additional information on remedies.

Duration Periods

Warranty duration periods were well defined. Ninety-four percent of th warranty periods began at delivery, acceptance, or a similar event. Six percent of the warranties did not identify the beginning of the warrant duration period. All of the warranty duration periods ended after a specified time or operational use factor, such as miles, cycles, or engine flight hours. The warranty duration period for 47 percent of the warranties was 1 year or less. Seven warranties extended more than 3 years, and the longest was 8.5 years. Appendix X contains additional information on warranty duration periods.

Exclusions and Limitations

Twenty warranties, including 11 with definitized warranty prices, contained a limit on the contractors' liability—a maximum cost the contra tors would incur in correcting deficiencies. Other contracts had a limit on the contractors' liability for certain equipment or for certain remedies, such as the redesign remedy where the cost could be exorbitant. The warranties also contained many standard exclusions. For example,

- 38 relieved the contractor from responsibility for defects due to tampe ing, unreasonable use, mistreatment, or neglect;
- 69 excluded government-furnished equipment except for installation deficiencies;
- 63 excluded loss, damage, or injury to third parties or consequential damage; and
- 75 excluded combat damage.

Appendix XI contains additional information on warranty exclusions and limitations.

DOD Procurement Activities Are Complying With Warranty Laws, But Implementation Improvements Are Needed

DOD procurement activities have complied with the requirements of the 1984 and 1985 acts by including warranties in weapon system contracts. In addition, the terms of the warranties were identical to or consistent with the legislation, except that one warranty did not include a required provision concerning coverage of system performance.

Although the warranties generally complied with the acts, implementation problems exist. For instance, the procurement activities negotiated many warranties without preparing appropriate analyses to determine whether the warranties would be cost effective. In addition, warranty provisions concerning weapon system performance were sometimes unclear because they did not specify which performance requirements were to be validated or how and when they would be validated.

Some warranties did not specify whether the contractor was required to redesign a part or system to correct design related failures. Other problems included (1) the lack of well-defined provisions for coverage during storage, (2) the lack of well-defined provisions for coverage on warranted parts that are repaired or replaced, and (3) the absence of clear requirements that warranted items be physically marked.

Procurement Activities Complied With the Warranty Laws

For the contracting actions we reviewed, the procurement activities had appropriately obtained warranties for weapon system procurements falling under the warranty laws. Moreover, the warranty provisions were structured so that they complied with the acts in all but one contract. This one exception did not guarantee performance as required by the 1985 act.[1]

As previously stated, 61 warranties complied because they copied the language from the 1984 or 1985 act. We reviewed 36 other warranties that did not follow the specific language of the warranty laws, including some which limited the contractors' liability, and concluded that all but 1 complied with the requirements of the respective warranty laws. An example of a limitation provision was in the M-1 tank warranty. This provision excludes a specific number of initial failures from the warranty. The act allows flexibility in negotiating reasonable exclusions, limitations, and other warranty details. The contractor is responsible for up to $27.5 million for the cost of correcting failures beyond those

[1] According to Navy contracting officials, a performance guarantee was not included because they had no means of validating performance.

excluded. The warranty price is $2.9 million, or 0.2 percent of the price of the total contract price.

We also reviewed 135 contracting actions—subject to the 1984 act—on which warranties were not obtained. Our review disclosed no instance where warranties should have been obtained. The main reasons for not obtaining warranties were that the procurement actions pertained to non-weapon systems or components, long lead time items,[2] or research and development efforts, and did not involve contracts for weapon system production. Under these circumstances, warranties were not required under the warranty laws and regulations. (App. XII shows the reasons the services gave for not obtaining a 1984 act warranty.)

Cost-Effectiveness Analyses Are Needed

The services had prepared cost-effectiveness analyses addressing basic cost-effectiveness criteria for only 9 of the 97 warranties we reviewed. The services concluded that these warranties were worth their $64 million price. Cost-effectiveness analyses are called for by DOD guidance to make sure that warranty costs (including the warranty price and other costs) are worth the benefits being purchased. No such analyses were prepared for the following:

- 52 warranties with identifiable warranty prices (including 3 warranties priced at $0) totaling $180 million,
- 16 warranties that were not separately priced, and
- 20 warranties for which the warranty price had not yet been definitize

DOD Policies and Regulations Require Cost-Effectiveness Analyses

Although the 1984 and 1985 acts permit warranties to be waived if the are not cost effective, they do not affirmatively require that cost-effectiveness analyses be prepared. However, the legislative history of the 1985 act clearly shows that cost-effectiveness analyses were expected. The Conference Committee report (H.R. Rep. No. 98-1080, 98th Congress, Second Session 324 (1984)) states that (1) the Armed Services Committee never intended for warranties that were not cost effective t be obtained and (2) failure to do cost-effectiveness analyses and proces waivers where cost-effective warranties were not obtainable would defeat the congressional intent. The conferees then directed each of the military services to establish mechanisms for cost-benefit analysis of

[2]Items or components required for the production of end items that are ordered early because their complicated design, complicated manufacturing processes, or limited production capacity would preclude timely and adequate delivery if they were not ordered early.

proposed warranties. In addition, a Senate Armed Services Committee report (S. Rep. No. 98-500, 98th Congress Second Session 247 (1984)) states that although waiver provisions in a statute are often viewed as extraordinary devices, the cost-effectiveness standard is not intended for extraordinary situations, but rather as an indication that warranties should be obtained only when they are cost effective. These congressional expectations are reflected in the 1985 DOD implementing regulations that require a cost-effectiveness analysis.

DOD's policy statement implementing the 1984 act states that warranty costs are to be specified either in the contract or in the contracting officer's documentation supporting contract negotiations. The statement defines a cost-effectiveness evaluation as relating warranty benefits to warranty costs. The policy also listed the following cost analysis factors for consideration in the evaluation:

- the contractor's fee for the deferred liability under the warranty;
- the government's administration and enforcement costs;
- the effect of competition on the warranty price;
- the cost of correction or replacement without a warranty by the contractor, government, or another source; and
- indirect government costs, such as the effect on logistics support capability, breakout, and competitive procurement of system components.

DOD's implementation regulation for the 1985 act emphasizes a policy of obtaining only cost-effective warranties. The regulation states that a waiver request shall be initiated if a proposed warranty is regarded as not cost effective. As an internal control measure to ensure that warranties are cost effective, the regulation in effect at the time of our review required an analysis comparing the acquisition and administration costs with benefits to be derived from the warranty. This analysis should consider the weapon system's life-cycle costs, both with and without a warranty, and compare costs of similar warranties on similar weapon systems, where possible.[3] The regulation states that the analysis should be documented in the contract file. Supplemental guidance issued by the services also stresses the importance of performing analyses and provides additional criteria concerning

- administration costs,

[3]The final regulation was effective May 1986. It detailed additional types of costs and benefits that are to be considered. For example, enforcement and user costs, costs resulting from warranty limitation, expected logistical/operational benefits, and benefits from additional contractor motivation are also to be taken into account.

- life-cycle savings due to expected increases in reliability,
- productive time lost due to exercising a warranty,
- readiness related costs,
- processing claims, and
- cost avoidance.

Cost-Effectiveness Analyses Not Being Prepared

Cost-effectiveness analyses addressing DOD's basic criteria were performed for only 9 of the 97 warranties reviewed. Twenty of the 97 contracts with warranties did not have definitized warranty prices, so cost-effectiveness analyses could not be prepared.

Procurement officials gave various reasons for not performing cost-effectiveness analyses, including the following: (1) the warranty price fell within what was considered an acceptable percentage of the contract price, (2) no model or historical data was available to perform the analyses, (3) the procurement was competitive, and (4) the warranty was not separately priced or was considered a no cost warranty.

We do not believe that such reasons provide adequate justifications for not performing analyses. For example, even though competitive procurements provide reasonable assurance that fair and reasonable prices are obtained, it is still possible that the procurement could be more cost effective without a warranty. While we agree that cost-effectiveness analyses cannot be prepared when warranties are not separately priced, we believe this argues for obtaining the warranty price so that cost-effectiveness analyses can be prepared. Although it appears on the surface that warranties priced at $0 would inherently be cost effective, other costs and conditions must be considered, such as the administrative burden and the affect on operations of having to maintain control over warranted parts. Also, additional quantities of parts may be required to compensate for return and repair time, downtime, and storage time.

Although procurement activities did not always comply with the DOD policies and regulations in existence regarding cost-effectiveness analyses, the three services are taking action to remedy this situation. DOD has now issued numerous policy guidance documents which clearly establish the requirement to perform a cost-effectiveness analysis for each proposed warranty, and all three services have developed or are developing models for performing the analysis. The Army model, called the Army's "Warranty Model," was used to analyze some of the proposed warranty prices. However, it was used to determine the cost effectiveness of the

final negotiated warranty terms and prices for only one of the warranties we reviewed. The Army has also issued a cost-effectiveness analysis checklist as part of its warranty regulations. The Navy is developing cost-effectiveness models and has drafted guidance on performing cost-effectiveness analyses. The Air Force Product Performance Agreement Center has developed a Decision Support System Users Guide, which includes the Life-Cycle Cost Breakdown Model. This model can be used to perform cost-effectiveness analyses. We did not evaluate the services' models.

Warranties Should Be More Specific Regarding System Performance and Contractor Redesign Responsibility

In terms of system performance guarantees, warranties should (1) clearly define the performance being warranted, (2) specify how and when performance will be assessed during the warranty period, and (3) clearly define the contractors' responsibilities when warranted performance is not achieved. For most of the warranties we reviewed, the performance requirements were referenced to voluminous sets of specifications and technical data packages, without specifying which performance requirements would be assessed or how and when such assessments would be made. Further, while redesign may sometimes be an appropriate and important remedy, especially when essential performance requirements are not met, 72 percent of the warranties did not specify whether the contractors have redesign responsibility.

Warranties Do Not Stipulate How Essential Performance Requirements Will Be Validated

The 1985 act defines essential performance requirements as the operating capabilities or maintenance and reliability characteristics of a weapon system necessary for it to fulfill the military requirement for which it is designed. It also states that the Secretary of Defense shall designate which features of a weapon system are essential to its performance.

In our review, 82 of the 97 warranties identified warranted performance requirements by general reference to performance requirements, specifications, drawings, technical data packages, and other general documents. Sixty-one of the 82 warranties did not specify how or when the performance requirements would be validated during the warranty period.

Specifications and other documents can be voluminous and may contain pages of performance requirements that are written in very exact terms. For example, a performance requirement warranted on the M1A1 tank states:

"Acceleration-With . . . the service brake applied, tactical idle switch set to "ON" and transmission selector level set to "D," the vehicle shall be capable of accelerating in the forward direction on a dry level surface from 0 to 20 MHP in 7.2 seconds maximum after release of the service brake and application of full throttle . . . ."

While performance requirements like this are very precise, the validation of such requirements would require comprehensive testing in a controlled environment with precise means of measurement. This may not be practical and in many cases could be very costly. According to officials at the Army Tank-Automotive Command, comprehensive testing is generally not done during the warranty period to validate each and every performance requirement contained in the warranted specifications. The officials said contractor warranty breaches are generally determined on the basis of breakdowns and obvious performance degradations.

The Maverick Missile warranty specifically delineates warranted performance and specifies the criteria to be used to validate performance. The performance warranty covers performance requirements on (1) incoming reliability, (2) alert reliability, (3) captive carry mean time between failure, (4) storage reliability, and (5) pre-launch reliability. The warranty provides pass criteria for each performance requirement. For example, one criterion states that 95 percent of the guidance control sections must pass a specified test for storage reliability. (App. XIII provides additional information on methods used to describe warranted performance.)

The services have recognized the problems associated with validating essential performance requirements. An Air Force Aeronautical Systems Division letter states that performance warranty findings should identify essential performance requirements and the rationale and support for their selection. Draft guidance issued by the Secretary of the Navy states that it is important that performance requirements can be measured and can be verified by the contractor. The Naval Air Systems Command draft guidance states that performance requirements should be periodically evaluated to ensure that they are measurable, verifiable realistic, and achievable. The Army Materiel Command guidance states that essential performance requirements must be verified in the operations phase following acceptance. In commenting on our draft report, DOD officials identified new or revised guidance related to warranted performance which they said provides "complete coverage in this area." (See app. XIV.) We reviewed the new guidance and found that it appear

to be adequate, especially as contained in the Defense Systems Management College's Warranty Handbook.

Contractors' Redesign Obligation Unclear

Redesign of a part or a system to correct design related failures is a remedy which is permitted, when it is appropriate, under the warranty acts. The majority of the warranties we reviewed did not state whether redesign is an available remedy in the event that guaranteed performance is not achieved. Although 19 warranties were reasonably specific in defining contractor responsibility for redesign and 8 specifically exclude redesign as a remedy, the other 70 did not explicitly address redesign. (See app. IX for additional details on remedies.)

Several questions are raised when warranties do not specify whether redesign is a possible remedy. These include (1) whether the contractor and the government negotiated the warranty price with a common understanding about applicability of the redesign remedy and (2) whether the contractor is, or can be, required to perform redesign work to achieve required performance when

- the stated remedy is to repair and replace parts,
- the stated remedy (related to the 1985 act) is to take corrective action necessary to correct failures, or
- the contractor did not develop the initial design.

In discussing these questions, officials at the three procurement activities took varied positions. A Tank-Automotive Command legal official said that the repair and parts replacement remedy means that the contractor is required only to repair and replace parts and probably does not imply an obligation to redesign. The official said the broader failure correction remedy of the 1985 act could leave more room to imply a redesign obligation, but believed redesign would probably not be covered unless spelled out. The official also said that in instances where the government dictates or controls the design, it would be difficult to enforce a redesign obligation on the contractor unless the contractor explicitly agreed to it.

Aeronautical Systems Division legal and contracting officials responded on a contract-by-contract basis. For several warranties that included basic repair/rework remedies and others that included broad failure correction type remedies, they believed the remedies would cover redesign where the contract included performance specifications.

Navy contracting and legal officials said that the contractor should generally be responsible for redesign of elements which it initially designed. For example, on Navy shipbuilder warranties, the contractor would not be responsible for redesigning the basic structure of the ship if the design were dictated by the Navy. However, the contractor should be responsible for detailed ship design under its control.

Four contractor representatives also took varied positions on redesign. For two warranties that did not include redesign, one Navy contractor representative stated that redesign was not covered because the Navy controlled the design. In the other case, the contractor representative stated that redesign was covered on systemic defects. In Army warranties where redesign was specifically excluded and the Army controlled design, the contractor representatives stated that a redesign remedy would increase the contractor's risk and the warranty would have cost considerably more without the redesign exclusion.

Before the DOD FAR Supplement issued in January 1985 to implement the 1985 act, the FAR gave some general guidance concerning design coverage in warranties. Specifically, it stated:

"If the government specifies the design of the end item and its measurements, tolerances, materials, tests, or inspection requirements, the contractor's obligations for correction of defects shall usually be limited to defects in material and workmanship or failure to conform to specifications. If the government does not specify the design, the warranty extends also to the usefulness of the design."

The Army and the Naval Air Systems Command have issued guidance that to some extent clarifies their position on redesign. The Army Materiel Command requires that warranty clauses include a redesign remedy for systematic deficiencies that cause failure of the essential performance requirements. The Naval Air Systems Command guidance of March 6, 1985, states that when performance is verified through tests, the warranty should require the contractor to perform all design and manufacturing work necessary to ensure that performance requirements will be met.

Warranty Duration Periods Need Better Definition

Warranty duration periods were well defined in most of the 97 warranties we reviewed. However, the duration provisions in some warranties were not as complete as they could have been. Specifically, these warranties did not specify provisions for storage, specify warranty duration for repaired or replaced parts, or coordinate warranty duration periods for government-furnished components and weapon system end items.

Eight warranties extended the warranty duration to account for time the item might be in storage. The remaining warranties did not specifically address storage. Although it might appear that warranties without storage provisions are deficient, storage may have been considered in setting the warranty duration. We did not determine if warranty duration periods took storage into account. However, to ensure that storage is given proper consideration in figuring out the duration period, we believe storage provisions should be specifically addressed in the warranty or in the agency's records. Guidance issued by all three services requires that storage be considered in defining warranty duration periods. Also, the new Defense Systems Management College's Warranty Handbook clearly identifies the importance of the warranty duration period and recent Air Force guidance states that downtime, such as tranportation, storage, and redistribution activities should be considered. The guidance does not, however, specifically mention the need to coordinate warranty duration periods for government-furnished components and related end items.

Sixty warranties we reviewed defined the warranty protection on repaired and replaced parts, but the remainder did not. One warranty specifically limited coverage to a one-time repair or replacement. Although it might be assumed that warranty coverage on repaired or replaced parts extends through the normal duration period, guidance issued to date does not specifically address this issue. Warranties that do not specify coverage for repaired or replaced items increase the possibility of disputes.

We did not evaluate the reasonableness or adequacy of the warranty duration periods. However, as part of our review, we compared the warranty periods for weapon system components to be installed on the DDG-51 Destroyer and the Aegis CG-60 and CG-61 Cruisers with the warranty period on the ships. Our analyses showed that some government-furnished components' warranties would expire before the warranty on the ship started and other components' warranties would expire before the ship warranties ended. Although we did not identify the extent to which this condition existed in other procurements, we

believe its existence in these instances suggests the need for a DOD policy that warranty duration periods for associated items be coordinated as necessary. Guidance issued to date does not specifically address this issue.

Warranty Markings Are Needed

We believe physical markings on warranted items would increase user awareness and the likelihood that appropriate warranty claims are made. Only 23 of the 97 warranties we reviewed included provisions requiring physical markings of warranty items. The remaining 74 warranties did not include such a provision.

An Air Force Audit Agency report on warranty administration[4] disclosed that warranted items are not being appropriately marked. Army, Navy, and Air Force policy guidance now require physical markings on warranted items.

Conclusions

The procurement activities in our review have included warranties in weapon system contracts as required by the legislation, and with one exception, the warranties obtained comply with the specific requirements of the laws. As discussed in chapter 2, the warranty laws have brought about a significant increase in the use of weapon system warranties, and the services have used waivers sparingly. Procurement activities requested few waivers, and the requests were usually not approved. The services generally required the procurement activities to renegotiate the warranty price and terms until an acceptable warranty could be obtained.

Cost-effectiveness analyses are DOD's primary internal control measure to ensure that warranties are cost effective. Such analyses were called for in DOD's implementing policy and regulation. Yet, procurement activities routinely obtained warranties without making cost-effectiveness analyses to aid them in deciding whether a warranty or a waiver of the warranty requirement should be pursued. The analyses were not being prepared in the beginning, in part, because appropriate models and data were not available. New or revised guidance since the period covered by the warranties we reviewed has clearly established the requirement to perform a cost-effectiveness analysis for each proposed warranty.

[4]Administration and Enforcement of Product Performance Agreements, Dec. 26, 1985.

Administration of the warranties we reviewed may prove to be difficult in some instances. Many of the warranties

- were not clear about the validation of warranted performance;
- did not specifically state whether the contractor could be held responsible for redesign, if necessary, to meet performance requirements;
- did not specify the effect of storage time on the warranty period or adequately coordinate warranty duration periods for government-furnished components and related end items;
- did not address coverage on repaired or replaced parts; and
- did not specifically require that warranted items be marked to aid in identification.

DOD's policy and other guidance have been issued since the warranties we reviewed were obtained. The current guidance seems to adequately address most of the issues cited above. However, some of the guidance and DOD officials' views about the need for specifically including or excluding redesign as a remedy are somewhat inconsistent. In addition, guidance concerning warranty duration does not specifically mention the need to coordinate warranty duration periods for government-furnished components and related end items.

Compliance with the current policy is necessary if warranties are to be cost effective, clear, and easy to administer. However, policy guidance pertaining to cost-effectiveness analyses was not always followed in the warranties we reviewed. Some of the issues we raised are complex, and difficulty may be encountered in striking a balance between compliance with policy guidance and use of the flexibility intended by the 1985 act.

Recommendations

We recommend that the Secretary of Defense direct that warranties specifically state whether redesign is or is not a possible remedy under the warranty. We also recommend that the Secretary of Defense direct the military services to review a representative number of recent and future warranties to assure that procuring activities are routinely:

- doing cost-effectiveness analyses of proposed warranties;
- delineating essential performance requirements and identifying how and when performance will be assessed;
- considering storage time, coverage of repaired or replaced parts, and coordination of government-furnished components and related end items in establishing warranty duration periods; and
- directing that warranted items be appropriately marked.

Agency Comments

DOD reviewed a draft of this report and agreed with our findings. DOD stated that the findings generally reflect the actual conditions that prevailed during the 2 years covered by the report. Our draft report proposed that the Secretary of Defense provide guidance and direction to deal with the implementation problems we observed. DOD agreed and pointed out that new or revised policy and other guidance have adequately accomplished all but one of our desired results.

We reviewed the new and revised guidance and, for the most part, agreed with DOD. Accordingly, we modified our recommendation to call for the Secretary of Defense to direct the services to review a representative number of recent and future warranties to decide whether the guidance is being followed.

DOD also concurred with the draft report's remaining recommendation that the Secretary of Defense require that warranties explicitly state whether redesign is or is not a remedy. DOD stated that it will review the law and issue appropriate guidance within 6 months.

Request Letter From Senator John Tower

JOHN TOWER, TEX., CHAIRMAN

[illegible]

United States Senate

COMMITTEE ON ARMED SERVICES

WASHINGTON, D.C. 20510

August 9, 1984

Honorable Charles A. Bowsher
Comptroller General of the United States
General Accounting Office
441 G Street, N.W.
Washington, D. C. 20548

Dear Mr. Bowsher:

As you know, the Congress has had a substantial interest recently in the subject of warranties and product performance assurance for weapons systems.

It is my understanding that the General Accounting Office has undertaken some self-initiated work on this subject. It is a matter that the Armed Services Committee in the Senate regards as one of great importance, I would like to request that some work be done in the area of warranties and that this Committee be considered the sponsor of that work.

Specifically, I think that an overview of the warranty area, with observations about the extent to which warranties and similiar product performance assurance tools have been used would be most useful. In addition, I think that the Committee would be interested in knowing what the effects of Section 794 of Public Law 98-212 have been, and the manner in which this law has been implemented. Presently, as you may be aware, there are proposed amendments to Section 794 in the Department of Defense Authorization Act for Fiscal Year 1985. If this provision is enacted into law, then we would also be interested in knowing how that is being implemented.

I would ask that those members of your staff designated to work on the warranties matter coordinate their activities with Alan Yuspeh, General Counsel of the Committee on Armed Services. Mr. Yuspeh also supports the efforts of the Ad Hoc Task Force on Selected Defense Procurement Matters of this Committee. He has worked on the legislation in H. R. 5167 on warranties, and is knowledgeable about the matter. I have asked Mr. Yuspeh to consult other interested Members of the Committee so that he may provide your staff with guidance representative of our Members' concerns to assist them in developing a more detailed study plan.

I think it is important that a work plan on this important issue be agreed to between the General Accounting Office and our Committee by October 1. I would appreciate your asking your staff to work toward this goal.

Sincerely,

John Tower

John Tower
Chairman

Request Letter From Congressman Mel Levine

MEL LEVINE
27TH DISTRICT, CALIFORNIA

COMMITTEES:
COMMITTEE ON FOREIGN AFFAIRS
COMMITTEE ON GOVERNMENT OPERATIONS

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January 22, 1985

Honorable Charles A. Bowsher
Comptroller General of the United States
7000 441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Bowsher:

I am writing to request a General Accounting Office study on the implementation of the defense warranty law.

I would like GAO to evaluate how the individual services are interpreting and following the law, and how the Pentagon's exemptions affect the law's enforcement. I am especially interested in GAO's conclusions regarding the impact the current Defense Department waiver for all cost-plus contracts has on the law's implementation.

In addition, I would like GAO to determine how changes in the law made by Congress in 1984, and the subsequent federal regulations released this month, will affect the statute's effectiveness. Finally, I would like GAO to analyze the law's actual and potential cost-savings to the taxpayer and its impact on weapon reliability.

Thank you very much for your assistance.

Sincerely,

Mel Levine
Member of Congress

ML/ams

Specific Questions Addressed in This Report

In discussions with Senate Armed Services Committee representatives, we agreed to address the following 11 questions.

1. What type of warranties are the services negotiating in response to the warranty laws and to what extent do the terms and conditions of such warranties vary, depending on the character of the system, the performance characteristics of the system, or the maturity of the system?

The types of warranties used by the procurement activities covered by our review are shown in appendixes VI and VII. The appendixes provide descriptions of the various warranty types. Because most of the warranties (77) fall into only 3 categories and because most of the systems are mature and treat performance requirements essentially the same, we did not analyze the warranties based on performance requirements and system maturity.

2. In what circumstances have warranties been waived?

This issue is addressed on pages 19 to 17.

3. Have the services performed cost/benefit analyses on warranty alternatives and waivers? If so, what approaches have the services taken in making these analyses?

This issue is addressed on pages 22 to 25.

4. What prices are the services paying for warranties relative to contract prices? Are the warranties separately priced?

This issue is addressed on page 19 and in appendix VIII.

5. What are the major differences between warranties used in DOD contracts before and after enactment of the new warranty laws?

This issue is addressed on pages 17 to 19.

6. What major problems are the services and defense contractors and subcontractors experiencing in implementing the warranty laws?

The problems we identified in DOD's implementation of the warranty laws are addressed on pages 21 to 31. We also interviewed prime contractor representatives and a limited number of subcontractor representatives for the systems selected for detailed analyses. This effort dic not disclose significant contractor or subcontractor problems.

7. Have DOD and the military departments provided adequate policy guidance and sufficient direction to those responsible for implementing the laws?

We obtained and reviewed policy guidance issued by DOD, the services, and the procurement activities covered by our review. Problems about the adequacy of the policy guidance are included in chapter 3 as they relate to the implementation problems disclosed by our review.

Conclusions on pages 30 to 31 point out problem areas, and the recommendations address areas where the policy guidance and direction hav been inadequate.

8. Do the warranties obtained for procurement of weapon systems mee the requirements and intent of section 794 of the 1984 DOD Appropriations Act and section 1234 of the 1985 DOD Authorization Act?

This issue is addressed on pages 21 to 22.

9. Are the remedies sufficiently specific to provide a relative assuranc to the government that it can obtain the benefits of the warranties?

This issue is addressed on pages 19 to 20 and 25 to 30 and in appendix IX.

10. What are the exclusions, limitations, and duration in warranties?

This issue is addressed on page 20 and in appendix XI.

11. What is the nature of performance characteristics in the warranties

The manner in which performance requirements are identified in the warranties is addressed on pages 25 to 27 and in appendix XIII. Our concerns about how essential performance requirements are identified and about the lack of specificity concerning when and how performanc

will be validated are presented on pages 25 to 27. Because most warranties identify warranted performance requirements by reference to specifications which include large numbers of performance requirements, we did not attempt to analyze the nature of performance requirements being warranted. Examples of performance requirements included in warranties are shown on pages 25 to 27.

Legislative History of the Warranty Laws

1984 Act

The legislative history of the 1984 act is sparse. Floor debate in the Senate before its passage was very limited and the conference report sets out, without explanation of changes, the version ultimately enacted. The Senate Appropriations Committee report describes the basic purpose of the law in terms of dissatisfaction with the reliability of U.S. weapon systems as follows:

"The Committee is concerned that for too long Congress has been preoccupied with appropriating funds to correct defective and shoddy workmanship in weapons systems. Tax dollars should no longer be expended for the purpose of producing military weapons that are operationally unreliable, do not meet the military mission, task, and threat, and may imperil the lives of our troops on the frontlines of our Nation's defense. It is the Committee's belief that Congress must demand that those weapons necessary for a strong defense work as intended.

"In order to produce weapons which are reliable and which will enable the protection of vital U.S. security interests, the Committee recommends a general provision in the bill requiring the Department of Defense to obtain written guarantees in production contracts or any other agreements relating to the production of weapons systems . . . ."

The 1984 act was approved on December 8, 1983. On December 16, 1983, DOD issued a 90-day waiver to the warranty requirement to permit time to develop implementing guidance and reduce initial disruptions in acquisitions essential to national defense. A draft of the guidance was published in the Federal Register on January 20, 1984 (49 F.R. 2502), and DOD received several hundred pages of comments. The final DOD guidance setting out the policies and procedures for implementing the law became effective on March 14, 1984.

The 1984 act had much controversy. On March 15, 1984, Senator Ted Stevens requested that we perform a legal review of DOD's guidance to determine if it was responsive to the law, if its general requirements were excessive, and in specific instances, if its requirements were adequate to meet the statutory requirements. We responded on April 24, 1984, stating that the March 14 policy guidance was consistent with and did not go beyond the requirements of the statute.

While many applauded the 1984 act, a large number of DOD and industry officials criticized it as being impractical, unworkable, and potentially very costly. They argued that it would significantly affect DOD procurement, logistics, and readiness. Some of the important issues raised were that the warranty law could inhibit competition; discourage small business participation in government contracts; and significantly increase

administrative burdens, procurement lead times, and the up-front cost of weapon systems. There was also concern that the law would not result in improved weapon system performance.

The 1984 act was replaced by the 1985 DOD Authorization Act, which still requires warranties in weapon system contracts but gives DOD more flexibility on warranty terms.

1985 Act

Compared to the legislative history for the 1984 act, the history for the 1985 act is substantial. The Senate Committee on Armed Services report identified three major sets of problems and explained the Committee's attempt to remedy these and related problems by a relatively modest set of adjustments to the 1984 act. The House conference report sets out, with some explanation of changes, the version ultimately enacted as the 1985 act and expressed dissatisfaction with the military services' implementation of the 1984 act.

The Senate Armed Services Committee report expressed concern that a statutory requirement for contractual warranties in virtually all cases may be too narrow an approach to a very complex problem. The three major problems identified were as follows:

- The 1984 act could have an adverse effect on the ability of small businesses to compete for defense contracts. Small businesses acting as subcontractors may not have the financial strength to provide a warranty. Prime contractors may insist on furnishing all spare parts. This would be anticompetitive and would undermine the breakout program.
- Insistence on performance guarantees for initial production of a new weapons system would have undesirable effects. The open-ended exposure for contractors, when the basic capabilities of a new system had not been demonstrated, seemed to invite prices for performance guarantees that could exceed reasonable amounts for the government to pay. There might then be an inevitable negotiation downward of performance specifications to reduce risk and ensure that modified requirements could be met.
- The 1984 act imposed liability on contractors when performance requirements were not met because of the design of the system—even when the contractor did not have control over the design. This raised fundamental questions of equity and may have created situations inconsistent with general principles of American law that liability should be associated with some fault.

The conference report stated that it was the consensus of the conferees that the military departments had not implemented the 1984 act in the manner that had been anticipated. Specifically, the Congress anticipate that weapon system warranties would be negotiated on a case-by-case basis. The conferees learned that the general approach of the military services about the 1984 act had been to specify a warranty clause and t require that it be used with no adjustment in its terms. The conferees believed the warranty law was never intended to create this type of sim plistic, mechanistic approach to defense contracting.

The conference report showed that the conferees had the following add tional concerns:

- Contractors which may have had limited responsibility in the design of weapon system would nevertheless be called on to guarantee the performance of that system.
- A failure to do cost-benefit analyses and to process waivers where cost-effective guarantees are not obtainable would defeat the intent of the warranty initiatives.
- It would be necessary for the government to grant an equitable adjustment in terms of any performance guarantee if it directs a change that affects the performance of a system.
- There had been an inadequate effort on the part of the military departments to communicate fully with procurement personnel in the field about the implementation of the 1984 act.

Contracts We Reviewed Containing Warranty Provisions

Army Tank-Automotive Command Item description	End item	Contract number DAAE07-
Bradley Fighting Vehicle	Bradley Fighting Vehicle	84-C-A005
HMPT-500 transmissions	Bradley Fighting Vehicle	83-C-A054
M1 Abrams tank	M1 Abrams tank	83-C-A128
X1100-3B transmissions	M1 Abrams tank	85-C-A019
X1100-3B transmissions	M1 Abrams tank	83-C-A395
AGT 1500 engines	M1 Abrams tank	84-G-0005
AGT 1500 engines	M1 Abrams tank	83-C-A185
M901A1 Improved TOW Vehicle	M901A1 Improved TOW Vehicle	85-C-0539
Light Armored Vehicle	Light Armored Vehicle	82-C-4044
AVDS 1790 engine	M-60 tank	82-C-0202
XTG411-2A transmissions	Field Artillery Ammunition Support Vehicle	82-C-0500
Carrier Electronic Warfare System	Carrier Electronic Warfare System	84-C-A188
M-88A1 Medium Recovery Vehicle	M-88A1 Medium Recovery Vehicle	84-C-A120
XT1410-4 transmissions	M-88A1 Medium Recovery Vehicle	82-C-0156
Army Missile Command		**DAAH01-**
Pershing II missiles & components	Pershing II missile	84-C-0039
Pershing II missiles & ground support equipment	Pershing II missile	85-C-A027
Hellfire missiles	Hellfire missile	84-C-A162
Hellfire missiles	Hellfire missile	85-C-A040
Hellfire missiles	Hellfire missile	85-C-A041
Hellfire missiles	Hellfire missile	84-C-A163
Laser Locator Designator	Hellfire missile	85-C-0047
Launcher	Hellfire missile	84-C-0769
Patriot missiles, launchers & ground support equipment	Patriot missile	84-C-A041
Canisters	Patriot missile	84-C-A115
Naval Sea Systems Command		**N0024-**
SSN 688 Submarines	SSN 688 Submarine	84-C-2063
SSN 688 Submarines	SSN 688 Submarine	84-C-2064
Main condensers	SSN 688 Submarine	85-C-4079
AN/BQQ Sonar	SSN 688 Submarine	84-C-6162
Main Propulsion Complex	SSN 688 Submarine	85-C-4057
Turbine Generator Shipset	SSN 688 Submarine	85-C-4070
SUBSACS Transmitter Group	SSN 688 Submarine	85-C-6143
Periscope set	SSN 688 Submarine	85-C-4275
Sonar Towed Array	SSN 688 Submarine	84-C-6074

(continued)

Item description	End item	Contract number DAAE0
CG-47 Class Guided Missile Cruiser	CG-47 Guided Missile Cruiser	85-C-20
CG-47 Class Guided Missile Cruiser	CG-47 Guided Missile Cruiser	85-C-20
Navy Tactical Display System	CG-47 Guided Missile Cruiser	83-C-70
Gun & Guided Missile Director MK-82	CG-47 Guided Missile Cruiser	84-C-51
Integrated Voice Communication System	CG-47 Guided Missile Cruiser	84-C-21
AN/SPS-49V Radar	CG-47 Guided Missile Cruiser	83-C-71
Gun mounts & ammunition hoists	CG-47 Guided Missile Cruiser	84-C-70
AEGIS Weapons System less vertical launch	CG-47 Guided Missile Cruiser	84-C-51
Sonar Detecting Ranging Sets	CG-47 Guided Missile Cruiser	84-C-62
Transmitter Group & Fire Control System	CG-47 Guided Missile Cruiser	84-C-51
AN/SPG-51 Radars & Fire Control System	CG-47 Guided Missile Cruiser & DD 993 Destroyers	85-C-55
Gun and Guided Missile Director MK-82	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	85-C-51
AEGIS Weapon System less Vertical Launch	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	85-C-51
Vertical Launching System	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	85-C-55
Vertical Launching System	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	85-C-55
Transmitter Group & Fire Control System	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	85-C-51
Interface units & power display panels	CG-47 Guided Missile Cruiser & DD 963 Destroyer	83-C-63
AN/UYK-7(V) computers	CG-47 Guided Missile Cruiser	84-D-713
Sonar Towed Array	CG-47 Guided Missile Cruiser & DDG-51 Destroyer	83-C-629
AN/UYA-4 display consoles	CG-47 Guided Missile Cruiser & FFG Frigate	84-C-700
DDG-51 Destroyer	DDG-51 Destroyer	85-C-21
Hunter Minesweeper	Hunter Minesweeper	85-C-20
Mine Neutralization System	Hunter Minesweeper	84-C-60
LSD Dock Landing Ship	LSD Dock Landing Ship	83-C-20
LSD Dock Landing Ship	LSD Dock Landing Ship	84-C-20
T-AO 187 Class Oiler Ship	T-AO 187 Class Oiler Ship	85-C-21
Ocean Surveillance Ships	Ocean Surveillance Ship	85-C-20
Tracked Landing Vehicle	Tracked Landing Vehicle	82-C-21
Fire Control System	FFG Frigate	84-C-71
AN/SQS-56 Sonar	FFG Frigate	84-C-63
MK 57 Sea Sparrow missiles	Various ships	85-C-52

(continue

Item description	End item	Contract number DAAE07-
Electrically Suspended Gyro Navigators	Attack submarines	85-C-4127
Close-in Weapon System	Various ships	84-C-7000
MK23 Acquisition System	Various ships	84-C-5203
AN/UYQ-21 Tactical Display Systems	Various ships	84-C-7004
Guidance control & automatic pilot	Standard missile for various ships	85-C-5500
Guidance control & automatic pilot	Standard missile for various ships	84-C-5500
MK 47 Target Detecting Device	Standard missile for various ships	84-C-5504
Naval Air Systems Command		**N0019-**
F-404-GE 400 engines	F-18 aircraft	83-C-0086
HARM AGM-88A tactical missiles	F-18 aircraft	85-C-0044
Target detectors for Sidewinder missile	F-14 & F-18 aircraft	85-C-0261
Guidance controls for Sidewinder missile	F-14 & F-18 aircraft	85-C-0249
Joint Cruise Missile Project Office		N0032-
Tomahawk Weapon Control and Vertical Launch Systems	Sea Launched Cruise missile	84-C-4225
Common Weapon Control System	Ground & Sea Launched Cruise missiles	84-C-3405
F-107, WR-101, & WR-400 engines	Air, Ground, & Sea Launched Cruise missiles	84-C-4210
Aeronautical Systems Division		**F33657-**
Maverick missiles	Maverick missiles	84-C-2220
Launcher electronic unit & production test equipment	Maverick missiles	84-C-0007
Electronic components for offensive avionics system	B-1B bomber	81-C-0213
F-101, GE-102 engines	B-1B bomber	84-C-2047
Ejection seats	B-1B bomber	84-C-0021
F-15 aircraft	F-15 aircraft	84-C-2131
F-15 aircraft	F-15 aircraft	85-C-2086
AN/ALQ-135 internal countermeasures	F-15 aircraft	83-C-2149
Replacement Units for AN/ALR-56 radar warning receiver	F-15 aircraft	84-C-2258
Avionics intermediate shop & test stations	F-15 aircraft	83-C-0472
ACES II ejection seats	F-15 & F-16 aircraft	84-C-2159
F-100 engines	F-15 & F-16 aircraft	83-C-2001
LANTIRN Navigation System	F-15 & F-16 aircraft	84-C-0004

(continued)

Item description	End item	Contract number DAAE07
AN/ALQ-135 internal countermeasures	B-52 aircraft	83-C-015
Munitions handling trailer	B-52 aircraft	84-C-023
T-56 Turboprop engines	C-130, P-3, C2A & E2C aircraft	84-C-224
AN/ALQ-99 Jamming System	EF-11A aircraft	84-C-007
F108-CF-100 engines	KC-135 tanker	84-C-212
ASARS-2 Radar	TR-1 aircraft	83-C-017

Major 1984 and 1985 Act Warranty Categories by Year and Branch of Service

	Warranties under 1984 act				Warranties under 1985 act				
Warranty category[a]	**Army**	**Navy**	**Air Force**	**Total**	**Army**	**Navy**	**Air Force**	**Total**	**Total**
Design & manufacturing/performance and material & workmanship/performance	12	25	5	**42**	1	4	1	**6**	**48**
Design & manufacturing, material & workmanship and essential performance	0	0	0	**0**	3	9	6	**18**	**18**
Design & manufacturing and material & workmanship	0	0	0	**0**	0	1	0	**1**	**1**
Correction of deficiencies (warranty of systems under specifications and design criteria)	0	1	3	**4**	0	0	0	**0**	**4**
Warranty of supplies (material and workmanship/ conformity to specifications)	1	2	0	**3**	0	0	0	**0**	**3**
Warranty of supplies with design	0	0	1	**1**	1	0	0	**1**	**2**
Shipbuilders warranties	0	8	0	**8**	0	3	0	**3**	**11**
Exempt failures	1	0	0	**1**	1	0	1	**2**	**3**
Monetary incentives/penalties	0	1	2	**3**	0	0	0	**0**	**3**
Design warranties	2	0	0	**2**	2	0	0	**2**	**4**
Total	**16**	**37**	**11**	**64**	**8**	**17**	**8**	**33**	**97**

[a]The warranties were categorized according to their basic language and/or their most distinctive feature. The categories are not mutually exclusive, so more than one warranty type may be included in a given contract. Also, a particular warranty may fit into more than one category. This appendix includes only one warranty type per contract. Appendix VII describes the various warranty combinations.

General Description of Warranty Provisions Being Obtained by DOD Procurement Activities

Design and Manufacturing/ Performance and Material and Workmanship/ Performance (1984 Act Language)

The 48 warranties in this category copy the basic warranty provisions of the 1984 act. Generally, the contractor guarantees that (1) the systen and each component were designed and manufactured to conform to the performance requirements and (2) at the time of delivery, systems are free from all defects in material and workmanship that would cause the system to fail to conform to the specified performance requirements. The basic remedy in most Army and Navy contracts included in this category is to repair and replace parts necessary to achieve required performance. Most of the Air Force warranties include a broader remedy, which requires that the contractor correct defects at no increase in contract price. This remedy could include redesign. The percentage of warranty price to the price of warranted items, hereafter, referred to as the warranty price percentage, on 31 definitively priced warranties was 2.03 percent.

One warranty included in this category was used in combination with a correction of deficiency clause. Another is very specific in defining coverage on various components of the system being warranted. Also, two warranties used the basic language described above; however, they also included other unique provisions. Thus, we put them in other categories. One is included in the exempt failure category described on pages 48 and 49, and one is included in the shipbuilders warranty category described on page 48.

Design and Manufacturing, Material and Workmanship, and Essential Performance (1985 Act Language)

All of the 18 warranties in this category contain the basic warranty provisions of the 1985 act. Generally, the contractor guarantees that the system (1) will conform to the design and manufacturing requirements in the production contract, (2) at the time of delivery will be free from defects in material and workmanship, and (3) will conform to the essential performance requirements. Under the 1985 act, design and manufacturing requirements mean structural engineering plans and particulars, including precise measurements, tolerances, materials, and finished product tests. Most of these warranties include a broadly stated remedy to take action necessary to correct failures. The warranty price percentage on 10 definitively priced warranties is 2.11 percent.

Two additional warranties used this language; however, because they include other unique provisions, they are included in the exempt failure warranty category described on pages 48 and 49.

Material and Workmanship and Design and Manufacturing

The one warranty in this category includes the first two warranty elements of the 1985 act. The contractor warrants that at the time of acceptance by the government, the item (1) will conform to the design and manufacturing requirements as specifically delineated in the contract and (2) will be free from all defects in material and workmanship. It does not include the third provision of the 1985 act covering performance. In the event of a breach, the contractor shall repair or replace nonconforming supplies. The warranty price percentage is 2 percent.

Correction of Deficiencies (Warranty of Systems Under Specifications and Design Criteria)

The four warranties in this category generally state that the contractor is responsible for taking action necessary to correct deficiencies at no increase in contract price. Deficiencies are generally defined as any condition or characteristic that does not comply with contract requirements. Correction is defined as any and all actions necessary to eliminate any and all deficiencies. Although this language might imply a redesign remedy, only one of the warranties in this category contain information indicating that redesign is covered. The warranty price percentage on two definitively priced warranties is 2.78 percent.

Warranty of Supplies (Material and Workmanship/ Conformity to Specifications)

The terms of the three warranties in this category are similar to those used in FAR warranties of supply, under which the contractor guarantees that supplies will be free from all defects in material and workmanship and will conform with contract requirements or specifications. The basic remedy under these warranties is to repair and replace parts. The warranty price percentage on two definitively priced warranties is 0.81 percent.

Warranty of Supplies With Design

In the two warranties in this category, design is added to the basic material and workmanship warranty. One warranty states that supplies will be free from all defects in design, material, and workmanship and will conform with specifications and all other contract requirements. The basic remedy is that the contractor will correct or replace nonconforming supplies. Another warranty states that the contractor agrees to correct deficiencies at no increase in contract price in the event that the cause of the failure is established as defective design, material, or workmanship attributable to the contractor. The warranty price percentage on two definitively priced warranties, including one priced at zero, is 0.3 percent.

Shipbuilders' Warranties

The 11 warranties in this category state that the contractor is responsible for correcting deficiencies, deteriorations, and failures in the vessel during the guarantee period, which begins when the vessels are delivered to the Navy and ends at the end of the warranty period. One shipbuilders' warranty in this category was used in combination with a "design and manufacturing/performance and material and workmanship/performance" described on page 47. The warranty price percentag could not be calculated because most of the shipbuilders' warranties were not separately priced and the remainder were undefinitized.

Exempt Failures

Under the three warranties in this category, the contractor is exempt from responsibility for a specific number of initial failures. The failures relate to accumulated failures of all systems purchased under the contracts. This type of provision is included in two Tank-Automotive Command and one Aeronautical Systems Division warranties that cover the basic requirements of either the 1984 or 1985 acts. The basic warrantie cover material and workmanship, design and manufacturing, and performance. However, additional provisions state that the government is responsible for a specified number of initial failures and the contractor is responsible for failures in excess of the specified threshold up to the contractor's dollar liability limit (if applicable). Two of the warranties included in this category use the basic language included in the design and manufacturing, material and workmanship, and essential performance warranty described on page 47; and one uses the design and manu facturing/performance, material and workmanship/performance warranty described on page 46. The warranty price percentage for the three warranties is 0.2 percent.

The following discussion of the M-1 Abrams tank and Maverick Missile warranties help describe exempt failure warranties.

M-1 Abrams Tank Warranty

The M-1 Abrams tank warranty uses 1985 act language but goes on to state that the contractor is only responsible for (1) validated warranty failures beyond an accumulated total of 5,745 failures of depot/general support maintenance parts reported within 60 days after the item is received and (2) defects in material or workmanship that occur on a "lo basis"—when a number of systems have the same failure. The basic remedy is a one-time repair or parts replacement.

The rationale for exempting a specified number of failures is that the vehicle was not designed to be perfect and failures are expected. The

threshold of 5,745 failures was based on the tank's mean mile between failure performance requirements, its performance history, factors that account for increased contractor risk such as additional vehicle weight, and failures detected when vehicles initially arrive at their destination, which are described as cosmetic defects and/or corrections that could prevent future failures. Tank-Automotive Command officials said the $2.9 million warranty price (0.2 percent of warranted items) represents only the contractor's expected costs of administering the warranty and the price of machinery that will be used for warranty markings.

Maverick Missile Warranty

Under the Aeronautical Systems Division's warranty on the Maverick missile, the contractor guarantees that the missiles and each component thereof will conform to the following performance requirements, which were used to establish thresholds for the start of the contractor's warranty responsibility.

- Incoming reliability: 95 percent of inspected missiles shall pass incoming inspection. The warranty threshold is 99 confirmed failures.
- Alert reliability: 95 percent of missiles checked on cluster shall pass. The warranty threshold is 16 confirmed failures.
- Captive carry mean time between failure. Training guided missiles shall demonstrate a captive carry mean time between failure of 36 hours. The warranty threshold is 1,250 failures.
- Storage reliability: 95 percent of guided control sections inspected shall pass. The warranty threshold is 150 confirmed failures.
- Prelaunch reliability: 93.5 percent of missile launch attempts shall pass. The warranty threshold is 16 confirmed failures.

The basic remedy is elimination of a defect by repair, replacement, or rework. According to Air Force contracting officials, the thresholds are based on the respective performance requirements. The basic rationale for the thresholds is that the missile was not designed to be perfect and therefore the warranty should cover only failures that exceed those expected under the performance requirements criteria. The price of the Maverick warranty is $324,386 (0.13 percent of warranted item price), which, according to Aeronautical Systems Division officials, represents only the contractor's expected cost of administering the warranty.

Monetary Incentives/ Penalties

Three warranties on the (1) F-101-GE-102, (2) F-108-CF-100, and (3) F-107-WR-101 and F-107 WR-400 engines include monetary incentive/penalty provisions for achieving or not achieving specified performance.

F-101-GE-102 Engines

The F-101-GE-102 engine contract contains a two-part warranty. Under part 1, the contractor warrants that engines, components, and parts acquired from the contractor shall (1) be free from defects in material and workmanship, (2) conform to specifications, and (3) be free from any condition rendering the engine unusable and/or unserviceable. The contractor further warrants the performance of designated engines for a 7-year period, 1,500 engine flight hours, or 1,000 total accumulated cycles shall not be less than 95 percent of intermediate thrust and shall not exceed 104 percent of intermediate fuel consumption. Failure to meet these requirements results in the contractor paying the Air Force $25,000, $10,000, $4,000, or $1,200, depending on the item that failed. The warranty also provides that during a 7-year period, the contractor will pay $85,000 for each engine that has to be removed because of performance deterioration.

Under part II, the contractor warrants that the fleet-wide unscheduled engine removal rate per 1,000 engine flying hours shall not be greater than specified rates. Adjustments are made to the contract price if the rates exceed or fall below specified levels. Part II also includes similar unscheduled removal rate incentives/penalties on selected controls and accessories, such as the main engine and fuel controls. The warranty price percentage is 2.6 percent.

F-107-WR-101, and F-107-WR-400 Cruise Missile Engines

Under the Cruise Missile engine warranty, the contractor guarantees that all engines will demonstrate, at minimum, the performance effectiveness as measured by specified success rates. It covers all mission critical failures as determined by unsuccessful demonstration tests performed during the warranty period, including defects in design, material, workmanship, manufacturing, process, and quality. Contractor costs of engineering change proposals to correct failures are charged to a warranty line item. After the warranty expiration date and contract close out, the warranty price is settled. Any underrun of the $6 million fixed-price warranty is shared on a 50/50 basis.

A cumulative liability of the contractor for corrective action to engines delivered under the warranty is $12 million. This consists of the sum of the fixed-price warranty allowance of $6 million allocated to the contractor plus an additional $6 million of contractor cost liability.

The contract also contains $2 million in warranty incentives based on the contractor's performance effectiveness in passing (1) operational test launches, (2) product assurance tests, and (3) mission simulated

tests. The contractor's share of the $2 million incentive is based on success rate matrices set up for four test periods with $500,000 in incentives available for each period.

The warranty price percentage is 5.3 percent. However, this could vary depending on the incentive provisions.

F-108-CF-100 Engine Warranty

This warranty provides coverage on items such as engines, parts, alternate engine life, campaign parts changes, and vendor backup. It contains provisions for monetary credits ranging from $10,000 to $25,000 per engine based on shop visit rates, in-flight shutdown rates, and exhaust gas temperature margins. It also provides

- a pro rata parts and labor credit allowance, ranging from 100 percent at 2,500 flight hours or less to 0 percent at 3,000 flight hours;
- a 100-percent parts credit allowance for failures due to damage suffered by another part within the same engine;
- an ultimate life warranty on certain parts for 8-1/2 years; and
- a campaign change post credit allowance on engines and modules starting with 100 percent with less than 2,500 flight hours and 50 percent on parts with more than 2,500 flight hours.

The basic remedy is to reduce the contract price based on nonperformance. The warranty price percentage is 1 percent.

Design Warranty

Four Army Missile Command contracts include design warranties that cover performance. In all four cases, the design warranty is used in combination with a correction of deficiency type warranty covering defects in material and workmanship.

The design warranties state that on the basis of previous experience, it appears reasonable to assume that the technical data package may contain design deficiencies which would make it impossible to produce, fabricate, assemble, or pass the contractually required inspection, test, and acceptance procedures. The contractor is obligated to perform detailed evaluations of all technical data, which shall include but not be limited to analysis, identification, and recommended correction of any deficiency necessary to ensure that

- all components, assemblies, repair parts, and parts thereof can be produced, fabricated, and assembled in complete accordance with the performance requirements, and technical data are corrected without resorting to any deviations, waivers, or changes therefrom;
- the quality assurance provisions and engineering parts lists are compati ble with all other technical data;
- parts and materials required for systems manufacture can be procured using the applicable technical data; and
- the hardware shall pass the "Fly-to-Buy Program" and other acceptance criteria.

The basic remedy under the design portion of the warranty is that contractor initiated engineering change proposals are implemented by the contractor at no increase in contract price.

The warranty states that contractor initiated changes shall not be the cause of any price increase or revision in the delivery schedule except that the contractor shall be entitled to equitable adjustment in accordance with the "changes" for value engineering change proposals, government directed changes, and changes related to prior contracts. The warranty price percentage on four definitively priced warranties is 3.36 percent.

Pricing Data on 1984 and 1985 Act Warranties

Definitized prices (in millions of dollars)

	Army		
Contracts with warranties	**1984**	**1985**	**Tot**
Number of warranties not separately priced	0	0	
Number of contracts with warranty price or contract price undefinitized	3	1	
Number of contracts which include definitized warranty prices	13	7	
Total	**16**	**8**	
Total price of contracts	$2572.0	$2478.2	**$5050**
Total warranty prices	$51.6	$12.1	**$63**
Total price of contracts with definitized warranty prices	$2206.0	$2361.5	**$4567**
Percentage of warranty price to price of warranted items	2.34	0.51	**1.**

Navy			Air Force			Total		
1984	1985	Total	1984	1985	Total	1984	1985	Total
10	3	**13**	2	1	**3**	12	4	**16**
9	7	**16**	0	0	**0**	12	8	**20**
18	7	**25**	9	7	**16**	40	21	**61**
37	**17**	**54**	**11**	**8**	**19**	**64**	**33**	**97**
$2554.5	$1217.7	**$3772.2**	$3225.6	$5359.6	**$8585.1[a]**	$8352.1	$9055.5	**$17407.6**
$37.2	$13.9	**$51.1**	$42.4	$86.6	**$129.0**	$131.2	$112.6	**$243.8**
$1414.4	$770.7	**$2185.1**	$2227.1	$3900.4	**$6127.4[a]**	$5847.5	$7032.6	**$12880[a]**
2.63[b]	1.72	**2.31[b]**	1.91	2.22	**2.11**	2.24[b]	1.59	**1.89[b]**

[a]Total does not add due to rounding.

[b]Percentages exclude two Navy contracts with warranty prices that did not have separately priced warranted items.

Remedies Contained in Contract Warranty Provisions by Year and Branch of Service

	Army			Navy			Air Force			Total		
Description	**1984**	**1985**	**Total**	**1984**	**1985**	**Total**	**1984**	**1985**	**Total**	**1984**	**1985**	**Tot**
Number of contracts reviewed with warranties	16	8	**24**	37	17	**54**	11	8	**19**	64	33	9
Contractor required to repair and replace parts	14	6	**20**	27	8	**35**	2	0	**2**	43	14	5
Contractor reimburses government for cost of repair and replacement	9	2	**11**	1	1	**2**	0	0	**0**	10	3	
Contractor reimburses government for cost of repair and/or replacement if contractor fails to promptly repair and/or replace or correct defects	8	3	**11**	32	11	**43**	8	7	**15**	48	21	
Contractor provides "no-cost spares"	0	0	**0**	0	1	**1**	1	0	**1**	1	1	
Broad remedies similar to 1985 act language[a]	0	0	**0**	12	9	**21**	8	8	**16**	20	17	
Contract price reduced based on nonperformance	0	0	**0**	1	0	**1**	2	0	**2**	3	0	
Contract price reduced when correction is not feasible or desired	5	4	**9**	13	12	**25**	6	4	**10**	24	20	
Contractor bears transportation cost	16	6	**22**	25	11	**36**	10	7	**17**	51	24	
Contractor bears cost of repackaging and marketing corrected item	0	0	**0**	0	0	**0**	1	0	**1**	1	0	
Contractor bears cost of disassembly and/or assembly of parts	7	0	**7**	1	0	**1**	6	2	**8**	14	2	
Redesign:												
Defects corrected by redesign	3	4	**7**	8	1	**9**	0	3	**3**	11	8	
Contractor not responsible for redesign to achieve performance	4	2	**6**	0	1	**1**	1	0	**1**	5	3	
Total addressing redesign	7	6	**13**	8	2	**10**	1	3	**4**	16	11	
Number not addressing redsign	9	2	**11**	29	15	**44**	10	5	**15**	48	22	
Total	**16**	**8**	**24**	**37**	**17**	**54**	**11**	**8**	**19**	**64**	**33**	

[a]Described on page 10.

Duration Period for Warranties Reviewed by Year and Branch of Service

	Army			Navy			Air Force			Total		
Description	**1984**	**1985**	**Total**	**1984**	**1985**	**Total**	**1984**	**1985**	**Total**	**1984**	**1985**	**Total**
Delivery or acceptance	13	7	**20**	36	17	**53**	8	6	**14**	57	30	**87**
Other	0	0	**0**	0	0	**0**	2	2	**4**	2	2	**4**
Not stated	3	1	**4**	1	0	**1**	1	0	**1**	5	1	**6**
Total	**16**	**8**	**24**	**37**	**17**	**54**	**11**	**8**	**19**	**64**	**33**	**97**
Ending[a]												
Completion of test or event	0	1	**1**	0	1	**1**	1	0	**1**	1	2	**3**
6 months or less	0	0	**0**	1	0	**1**	1	1	**2**	2	1	**3**
7 to 9 months	0	0	**0**	7	4	**11**	0	0	**0**	7	4	**11**
10 to 12 months	9	4	**13**	11	2	**13**	3	3	**6**	23	9	**32**
13 to 15 months	4	2	**6**	0	0	**0**	0	0	**0**	4	2	**6**
16 to 18 months	1	1	**2**	1	1	**2**	2	0	**2**	4	2	**6**
19 to 24 months	2	0	**2**	10	3	**13**	0	2	**2**	12	5	**17**
25 to 36 months	0	0	**0**	4	5	**9**	1	2	**3**	5	7	**12**
Over 36 months	0		**0**	3	1	**4**	3	0	**3**	6	1	**7**
Total	**16**	**8**	**24**	**37**	**17**	**54**	**11**	**8**	**19**	**64**	**33**	**97**

[a]Twenty-nine warranties had different duration periods for various aspects such as material and workmanship and performance

Warranty Exclusion and Limitation Provisions by Year and Branch of Service

Description	Army			Navy			Air Force			Total		
	1984	1985	Total	1984	1985	Total	1984	1985	Total	1984	1985	Tot
Number of contracts reviewed with warranties	16	8	**24**	37	17	**54**	11	8	**19**	64	33	
Contractor not responsible for defects due to tampering, unreasonable use, mistreatment, or neglect	12	3	**15**	9	10	**19**	1	3	**4**	22	16	
Contractor not responsible for defects in GFE except for deficiencies in installation	10	6	**16**	25	13	**38**	8	7	**15**	43	26	
Contractor not obligated to correct or replace defective items if government keeps necessary information from contractor	0	2	**2**	3	4	**7**	1	2	**3**	4	8	
Implied warranties of merchantability and fitness for a particular purpose are excluded from contractual obligation	14	5	**19**	8	7	**15**	10	8	**18**	32	20	
Guarantee does not cover liability for loss, damage, or injury to third parties or consequential damage	9	5	**14**	27	10	**37**	5	7	**12**	41	22	
Guarantee does not apply to combat damage	14	5	**19**	29	15	**44**	4	8	**12**	47	28	
Contractor not responsible for redesign	4	2	**6**	0	1	**1**	1	0	**1**	5	3	
Guarantee does not apply unless items are operated and maintained properly	11	5	**16**	7	6	**13**	3	1	**4**	21	12	
Performance requirements exclude goals and objectives	4	2	**6**	23	10	**33**	3	5	**8**	30	17	
Contractor dollar limit on liability	3	3	**6**	8	2	**10**	2	2	**4**	13	7	

Services' Reasons for Not Obtaining a Warranty Under the 1984 Act

Reason	Army	Navy	Air Force	Total
Not a weapon system or component thereof	21	34	15	**70**
Cost contract	0	3	0	**3**
Long lead time items	3	4	7	**14**
Funding action on contracts awarded before the laws	2	5	2	**9**
Research and development effort	0	0	15	**15**
Foreign military sale	3	3	2	**8**
Contract definitized during 90-day waiver period	2	5	0	**7**
Exercise of option without further definition or renegotiation of terms	1	4	2	**7**
Undefinitized contract, warranty to be included later	0	0	1	**1**
Contract for replacement parts	0	1	0	**1**
Total	32	59	44	**135**

Methods of Describing Warranted Performance by Year and Branch of Service

Warranty performance provision refers	Army			Navy			Air Force			Total		
	1984	1985	Total	1984	1985	Total	1984	1985	Total	1984	1985	To
General references												
Performance requirements of contract	0	0	**0**	1	5	**6**	0	0	**0**	1	5	
System specifications	9	7	**16**	28	9	**37**	10	3	**13**	47	19	
Drawings	0	0	**0**	1	0	**1**	0	0	**0**	1	0	
Technical data package	4	0	**4**	0	0	**0**	0	0	**0**	4	0	
Other means of identifying requirements	1	1	**2**	1	1	**2**	1	0	**1**	3	2	
Total	**14**	**8**	**22**	**31**	**15**	**46**	**11**	**3**	**14**	**56**	**26**	
Specific references												
Maintenance manuals	1	0	**1**	0	0	**0**	0	0	**0**	1	0	
Test plans	0	0	**0**	2	0	**2**	0	0	**0**	2	0	
Portions of systems specifications	1	0	**1**	4	0	**4**	0	0	**0**	5	0	
Delineated performance requirements	0	0	**0**	0	0	**0**	0	5	**5**	0	5	
Total	**2**	**0**	**2**	**6**	**0**	**6**	**0**	**5**	**5**	**8**	**5**	
Warranty does not refer to specific performance requirements	0	0	**0**	0	2	**2**	0	0	**0**	0	2	
Total	**16**	**8**	**24**	**37**	**17**	**54**	**11**	**8**	**19**	**64**	**33**	

Comments From the Assistant Secretary of Defense

ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-8000

ACQUISITION AND LOGISTICS

P/DSPS

April 14, 1987

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) Draft Report, "Improvements Needed in Implementation of Warranty Legislation," dated February 5,1987, (GAO Code 396006, OSD Case 7223).

The Department generally concurs with the draft report. It finds that the Department is following the intent of the 1985 law and the Department has institutionalized the use of warranties on major weapon systems. About two-thirds of the programs reviewed by the GAO were under the FY 1984 law and the remaining one-third reviewed were under the requirements of the FY 1985 law. The report does recognize the difference in the requirements of the two warranty laws and the corresponding policy guidance differences. The report further recognizes that the policy guidance has been refined and is still evolving as we gain further experience.

The findings generally reflect the actual conditions that have prevailed over the two years covered by the report. Many of the shortcomings in the early implementation of the FY 1984 law have been corrected as the Department gained experience in implementing the FY 1985 law. The report portrays this transition accurately.

The law has been implemented in the recent revision to the Department of Defense Federal Acquisition Regulation Supplement and the individual Services policy guidance. Also, a new warranty handbook was released recently by our Defense Systems Management College. The Services are working with new policy drafts in some areas. The most notable is contract administration where learning and further policy adjustments are expected through experience, as warranted equipment is being delivered and used in the field.

The Department has maintained a strong position in retaining as much flexibility as possible in tailoring the elements of a good contract warranty clause to the individual application. The report has captured the need for tailoring and recognized the benefits of fitting the warranty application to the specific needs of the individual weapon system. The DoD plans to continue to use this flexibility for tailoring which was strongly supported by all parties in improving the FY 1985 law over the FY 1984 law.

Specific DoD comments on the findings and recommendations contained in the draft report are provided in the enclosure.

Sincerely,

Thomas P. Christie
for Robert B. Costello
Assistant Secretary of Defense
(Acquisition & Logistics)

Enclosure

GAO DRAFT REPORT - DATED FEBRUARY 5, 1987
(GAO CODE 396006) OSD CASE 7223

"IMPROVEMENTS NEEDED IN IMPLEMENTATION OF WARRANTY LEGISLATION"

FINDINGS AND RECOMMENDATIONS TO BE ADDRESSED IN THE
DOD RESPONSE TO THE GAO DRAFT REPORT

* * * * *

FINDINGS

Now on pp. 2 and 8 to 9.

- **FINDING A: Section 794 Of The Department Of Defense (DoD) Appropriations Act (Public Law 98-212).** The GAO reported that because of concern that weapon systems often fail to meet their military missions, are operationally unreliable, have defective and shoddy workmanship, and can imperil the lives of U.S. troops, the Congress passed section 794 of the 1984 DoD Appropriations Act (hereafter referred to as the 1984 Act) requiring the DoD to obtain warranties in its weapon system production contracts. The GAO observed that the law was very controversial. On one hand, the belief was that warranties would make contractors more accountable and encourage them to build more quality and reliability into their systems. While on the other hand, Defense and industry officials criticized it as being impractical and unworkable. The GAO reported the 1984 Act provides that no funds may be obligated or expended for the procurement of a weapon system unless the prime contractor guarantees the system is designed and manufactured to meet the Government's performance requirements and is free from all defects in material and workmanship, which would cause it to fail to conform to performance requirements. Further, the GAO reported that the Secretary of Defense could waive the warranty requirements if (1) a waiver was necessary in the interest of national defense, (2) the warranty would not be cost-effective, and (3) notification was provided to appropriate congressional committees. The GAO concluded that the 1984 Act changed the basic DoD approach on weapon system warranties from a policy, of allowing warranties, to one requiring warranties, unless a waiver is approved. (p. 1, Executive Summary; pp. 7-9/GAO Draft Report)

  DoD Response: Concur.

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GAO Draft Report #7223
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Now on pp. 2 and 9 to 11.

- **FINDING B: Section 1234 of the DoD Authorization Act (Public Law 98-525).** The GAO reported that Congress replaced the 1984 act with Section 1234 of the 1985 DoD Authorization Act (hereafter referred to as the 1985 Act). The GAO found that changes in the 1985 Act broaden, restrict, or clarify warranty requirements under the 1984 Act. Specifically, the GAO reported that the 1985 Act (1) defines the cost of weapon systems to be covered, (2) limits the requirement to warrant essential performance to those weapon systems that are in mature full-scale production, (3) excludes the first 10 percent of production or the initial production quantity, whichever is less, (4) establishes a new requirement for a "design and manufacturing" guarantee to ensure that contractors build systems to specifications, and (5) attempts to clarify the remedy provision by broadening the scope of corrective actions required of the contractor and by giving the Secretary of Defense the option to select from several remedies. The GAO also found that the 1985 Act also clarifies several unrelated issues regarding the implementation of the law. The GAO cited, as an example, that the Act gives the DoD authority to negotiate the specific details of a guarantee, and to use guarantees to a greater extent than required by the law. The GAO concluded that while the 1985 Act still requires warranties, it specifically allows more flexibility how they are structured. (p. 2, Executive Summary; pp. 9-12/GAO Draft Report)

  DoD Response: Concur.

- **FINDING C: Increased Use Of Warranties But Infrequent Use Of Waivers.** The GAO found that the warranted contracts included in the review represented a significant increase in the use of warranties. In addition, for contracts awarded between March and September 1984, the GAO found no instances of activities failing to obtain a warranty when one was required. The GAO found, however, that while both the 1984 and 1985 Acts permitted waivers (in certain instances), few waivers have been required and even fewer have been granted. Specifically, the GAO reported that after the 1984 Act, the DoD issued two class waivers and the Army issued a waiver for one contract for gyroscope magnetic compass sets used in helicopter navigation. (The GAO noted that the invitation for bid had been issued before the March 1984 date for the implementation of the 1984 Act and inclusion of the warranty would have required the Army to recompete the contract and

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Now on pp. 14 to 17.

delay the procurement of urgently needed equipment.) According to the GAO, the only waiver related to the 1985 Act was an Air Force waiver, granted in the interest of national defense for one contract on the acquisition of 14 Rapier Missile Fire Units. Which were being purchased from the United Kingdom. The GAO reported that at the six procurement activities it visited, five waiver requests for individual contracts had been submitted--but none were approved. According to the GAO, rather than approve waivers, the Services require procurement officials to renegotiate warranty prices and/or terms to obtain a warranty acceptable to the procurement activity. The GAO concluded that the procurement activities reviewed have included warranties in weapon system contracts as required by the law. The GAO further concluded that the warranty laws have brought about a significant increase in the use of weapon system warranties, while the Services have used waivers sparingly. (pp. 16-21/GAO Draft Report)

DoD Response: Concur.

- **FINDING D: Warranties Before And After The Warranty Laws.** The GAO observed that warranties were not required before the warranty legislation and almost all were not intended to guarantee system performance. The GAO cited, as examples, warranties of supplies or warranties involving monetary/incentives penalties. The GAO found that the 1984 and 1985 Act warranties it reviewed generally met the requirements of the Acts (in all but one instance) and guaranteed system performance by referring to system specifications and/or technical data packages. The GAO further found that 66 of the 97 warranties obtained (in response to the warranty laws) either copied or closely paralleled the language in the laws. The GAO cited as an example, 48 warranties copied the 1984 Act by stating that the contractor guarantees that the system is designed to meet the performance requirements and is free from all defects in material and workmanship which would cause it to fail to meet the performance requirements. The GAO further found that 30 of the 31 remaining warranties were in compliance with the Acts, but did not copy or closely parallel the language of the warranty laws. While one warranty included the conformity to specification and manufacturing requirements and material and workmanship provisions of the 1985 Act, the GAO further found it did not include the performance provision of the 1985 Act. The GAO also found that for the contracting actions reviewed, the

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procurement activities had appropriately obtained warranties for weapon system procurements falling under the warranty laws. Specifically, for the 135 contracting actions reviewed (which were subject to the 1984 Act), the GAO found no instance where warranties should have been obtained. The GAO concluded that the warranties obtained before the 1984 Act differ from subsequent warranties, and individual warranties obtained in response to the Act also differ. The GAO further concluded, however, that in all but one instance the warranties were structured so they complied with the Acts. (pp. 16, pp. 22-24, pp. 29-30/GAO Draft Report)

Now on pp. 14 and 17 to 19 and 21 to 22.

DoD Response: Concur.

- **FINDING E: Warranty Prices And Specific Warranty Provisions.** The GAO observed that of the 97 warranted contracts it reviewed, 61 had negotiated warranty prices totaling $244 million, while the warranty prices averaged 1.9 percent of the price of warranted items and 1.4 percent of the contract price. The GAO reported that the remaining 36 contracts consisted of 20 contracts with undefinitized warranty prices and 16 contracts with warranties reported as not separately priced. (The GAO noted that it was unable to compare warranty prices because earlier warranties were generally not separately priced.) The GAO further found that the majority of the 97 warranties included one or more remedies similar to those specified in the 1984 and 1985 Warranty Acts. In addition, warranty duration periods were well defined, with 94 percent of the warranties beginning at delivery, acceptance or a similar event and ending after a specified time or operational use factor. The GAO noted that the warranty duration period for 47 percent of the warranties was one year or less; however, seven warranties extended more than three years, and the longest was 8.5 years. The GAO also reported that 20 warranties, including 11 with definitized warranty prices, contained a limit on the contractors' liability, while other contracts had a limit on the contractor's liability for certain equipment or certain remedies. (pp. 24-27/GAO Draft Report)

Now on pp. 19-20.

DoD Response: Concur.

- **FINDING F: Cost-Effectiveness Analyses Are Needed.** The GAO observed that although the 1984 and 1985 Acts permitted warranties to be waived if they are not cost-effective, the Acts do not specifically require that cost-effectiveness analyses be prepared. The GAO found, however, that the legislative history of the 1985 Act clearly shows that the

Congress expected cost-effectiveness analyses and a Senate Armed Services Committee report (S. Rep. No. 98-500, 98th Congress Second Sess. 247 (1984)) states, "although waiver provisions in a statute are often viewed as extraordinary devices, the cost-effectiveness standard is not intended for extraordinary situations but rather as an indication that warranties should be obtained only when they are cost-effective." The GAO further noted that (1) the DoD policy statement implementing the 1984 Act states that warranty costs are to be specified either in the contract or in the contracting officer's documentation supporting contract negotiations, (2) the implementating DoD regulation for the 1985 Act emphasizes a policy of obtaining only cost-effective warranties, and (3) supplemental guidance issued by the Services also stresses the importance of performing analyses. The GAO further found, however, that cost-effectiveness analyses addressing the basic DoD criteria were performed for only nine of the 97 warranties reviewed. (The GAO noted that 20 of the 97 contracts with warranties did not yet have definitized warranty prices, so cost-effectiveness analyses could not be prepared.) The GAO cited various reasons given by procurement officials for not performing cost-effectiveness analyses, including the fact that the procurement was competitive. The GAO concluded, however, that such reasons do not provide adequate justification for not performing cost-effectiveness analyses. The GAO cited, as an example, that even though competitive procurements provide reasonable assurance that fair and reasonable prices are obtained, it is still possible the procurement could be more cost-effective without a warranty. The GAO observed that the three Services are taking action to remedy this situation. In this regard, the GAO reported that all three Services have developed or are developing models for performing cost-effectiveness analyses. The GAO concluded that a cost-effectiveness analyses is the primary DoD internal control measure to ensure that warranties are cost-effective, and such analyses were called for in the DoD implementing policy and regulation. (pp. 30-34, p. 42/GAO Draft Report)

Now on pp. 22 to 25 and 30.

DoD Response: Concur.

- **FINDING G: Warranties Do Not Stipulate How Essential Performance Requirements Will Be Validated.** The GAO explained that the implementing DoD regulation for the 1985 Act defines essential performance requirements as the operating capabilities or maintenance and reliability characteristics of a weapon system necessary for it to

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Now on pp. 25 to 26 and 31.

fulfill the military requirements for which it is designed. The GAO further explained that the regulation also states that the Secretary of Defense, or his delegates, shall designate which features of a weapon system are essential to its performance. The GAO found, however, that 82 of the 97 warranties reviewed only identified warranted performance requirements by general reference to performance requirements, specifications, drawings, technical data packages, and other general documents. In addition, the GAO found that 61 of the 82 did not specify how or when the performance requirements would be validated during the warranty period. The GAO recognized that specifications and other documents can be voluminous and many contain pages of performance requirements that are written in very exact terms. The GAO concluded, however, that while performance requirements may be very precise, in some instances, the validation of such requirements would require comprehensive testing in a controlled environment with precise means of measurement. The GAO observed that the Services have recognized the problems associated with validating essential performance requirements. The GAO cited as an example, the Army Materiel Command guidance states that essential performance requirements must be verified in the operations phase following acceptance. The GAO concluded that administration of the warranties reviewed may prove difficult, in some instances, because many of the warranties were not clear regarding the validation of warranted performance. (pp. 35-37, p. 43/GAO Draft Report)

DoD Response: Concur.

- **FINDING H: Redesign Obligation Unclear.** The GAO explained redesign of a part or a system to correct design-related failures is a remedy that is permitted when it is appropriate under the Warranty Acts. The GAO found that a majority of the warranties reviewed did not state whether redesign is an available remedy in the event guaranteed performance is not achieved. According to the GAO, several questions are raised when warranties do not include redesign responsibility. The GAO observed that these include whether the contractor is or can be, required to perform redesign work to achieve required performance when (1) the stated remedy is to repair and replace parts, (2) the stated remedy (related to the 1985 Act) is to take corrective actions necessary to correct failures, or (3) the contractor did not develop the initial design. The GAO noted that in discussing these questions, officials at the three procurement activities took varied positions, The GAO

cited, as examples, a Tank-Automotive Command legal official stated (in part) that the repair and parts replacement remedy means that the contractor is required only to repair and replace parts and probably does not imply an obligation to redesign. On the other hand, Navy contracting and legal officials stated the contractor should generally be responsible for redesign of elements that it initially designed. The GAO observed that prior to the DoD Federal Acquisition Regulation (FAR) Supplement issued in January 1985, to implement the 1985 Act, the FAR gave some general guidance concerning design coverage in warranties. The GAO observed that the withdrawal of this FAR provision in January 1985, created a void in the DoD guidance concerning redesign in warranties. The GAO noted, however, the Army and the Naval Air Systems Command have issued guidance that, to some extent, clarifies their positions on redesign. The GAO concluded that while redesign may be an appropriate and important remedy, especially when essential performance requirements are not met, many of the warranties were not clear regarding contractors responsibility, if any, to redesign systems to meet performance requirements. (p. 35, pp. 37-40, p. 43/GAO Draft Report)

Now on pp. 25 and 27 to 28 and 31.

DoD Response: Concur.

- **FINDING I. Warranty Duration Periods Need Better Definition.** The GAO found that warranty duration periods were well defined in most of the 97 warranties reviewed; however, the duration provisions in some warranties were not as complete as they could have been. Specifically, the GAO noted that these warranties did not (1) specify provisions for storage (2) specify warranty duration for repaired or replaced parts, or (3) coordinate warranty duration periods for government-furnished components and weapon system end-items. While the GAO did not evaluate the reasonableness or adequacy of the warranty durations periods (as a part of this review), the GAO did compare the warranty periods for weapon system components to be installed on the DDG-51 Destroyer and the AEGIS CG-60 and CG-61 Cruisers with the warranty period on the ships. The GAO reported that its analysis showed that some Government-furnished warranties on components would expire before the warranty on the ship started and other warranties on other components would expire before the ship warranties ended. While not identifying the extent to which this condition existed in other procurements, the GAO concluded the fact it exists suggests the need for a Defense policy that warranty duration periods for associated items be coordinated as

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Now on pp. 29 to 31.

necessary. The GAO further concluded that storage provisions should be specifically addressed in the warranty or in the records of the agency, and warranties should address coverage on repaired or replaced parts. (pp. 40-41, p. 43/GAO Draft Report)

DoD Repsonse: Concur.

Now on pp. 30 to 31.

- **FINDING J. Warranty Markings Are Needed.** The GAO found that for the warranties it reviewed, only 23 of 97 warranties included provisions requiring physical markings of warranty items. The GAO noted a recent Air Force Audit Agency report on warranty administration disclosed that warranted items are not being appropriately marked. The GAO further noted that Army and Navy policy guidance now require physical markings on warranted items, and the Air Force plans to issue similar guidance. The GAO concluded that physical markings on warranted items would increase user awareness and the likelihood that appropriate warranty claims are made. (pp. 41-42/GAO Draft Report)

DoD Response: Concur.

RECOMMENDATIONS

Now on p.31.

- **RECOMMENDATION 1:** The GAO recommended that the Secretary of Defense direct that cost-effectiveness analyses of warranties be performed. (p. 43/GAO Draft Report)

DoD Response: Concur. It is Department of Defense policy only to obtain warranties that are cost-effective. The revised DFAR Supplement issued in January 1987 provides ample guidance in this area as does the individual Service policy guidance on warranties. Army regulation AR700-139 and sup 1; Navy Draft SECNAVINST 4330.xx and ASN S&L policy letter of September 8, 1986; and Air Force Sup to DFARS part 46.7 on warranties are examples of policy guidance that is in draft or that has been issued by the Services on warranty implementation. All the services have taken appropriate steps to increase the level of attention given cost-benefit analysis of warranty requirements. The Deputy Secretary of Defense, in his memorandum of May 30, 1985, set the stage for further emphasis on cost-benefit analysis. The release in June 1986 of the Defense Systems Management College (DSMC) warranty handbook has an excellent chapter devoted to the subject of cost-benefit analysis. This handbook is used in the DSMC program management courses. In addition, copies have been disseminated to field activities in the

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Department. Policy guidance and instructions have been much improved over the early warranty instructions in compliance with the FY 1984 law and the initial FY 1985 guidance.

Now on p. 31.

- **RECOMMENDATION 2:** The GAO recommended that the Secretary of Defense better define warranty coverage of weapon system performance by requiring that warranties specifically delineate the essential performance requirements and set out how and when performance will be assessed. (p. 43/GAO Draft Report)

  DoD Response: Concur. The aforementioned Departmental policy guidance, Service policy guidance, and DSMC warranty handbook provide complete coverage in this area.

Now on p. 31.

- **RECOMMENDATION 3:** The GAO recommended the Secretary of Defense require that warranties explicitly state whether redesign is or is not a remedy under the warranty. (p. 44/GAO Draft Report)

  DoD Response: Concur. Within the next six months the DoD will review the law and issue appropriate guidance.

Now on p. 31.

- **RECOMMENDATION 4:** The GAO recommended that the Secretary of Defense direct that the development of warranty duration periods adequately consider storage time, coverage of repaired or replaced parts, and coordination of warranties on Government-furnished components and related end-items. (p. 44/GAO Draft Report)

  DoD Response: Concur. The aforementioned Departmental policy guidance, Service policy guidance, and DSMC warranty handbook provide complete coverage in this area.

Now on p. 31.

RECOMMENDATION 5: The GAO recommended that the Secretary of Defense direct that warranted items be appropriately marked. (p. 44/GAO Draft Report)

DoD Response: Concur. The aforementioned Departmental policy guidance, Service policy guidance, and DSMC warranty handbook provide complete coverage in this area.

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