

GAO

Report to the Honorable
Walter B. Jones
House of Representatives

September 1998

DEFENSE DEPOT MAINTENANCE

Weaknesses in the T406 Engine Logistics Support Decision Methodology



**National Security and
International Affairs Division**

B-280621

September 14, 1998

The Honorable Walter B. Jones
House of Representatives

Dear Mr. Jones:

The Navy recently designated the V-22 aircraft's T406¹ engine a commercial item for purposes of logistics support and contracted with Allison Engine Company, the engine manufacturer, for a support arrangement known as "power by the hour."² The V-22 aircraft, otherwise known as the Osprey, is a new vertical take-off and landing aircraft being fielded primarily for use by the Marine Corps, but also for the Navy and the Air Force. You have raised questions about the methodology the Navy used for its decision to have the engine maintained by the contractor. We briefed you on July 16, 1998, and, as requested, are providing this written statement of our findings. This report, as it relates to logistics support, addresses (1) the criteria used in determining that the T406 engine is a commercial item for purposes of exemption from establishing in-house maintenance capabilities for new systems identified by the Secretary of Defense under 10 U.S.C. 2464, (2) the rationale and support for the decision to designate the T406 a commercial item, and (3) the extent to which the cost-effectiveness of the decision was evaluated.

Background

Logistics support decisions are a critical part of the weapon systems acquisition process. They affect the ability of operational units to meet mission objectives and they drive significant portions of the life-cycle costs of military systems and equipment. Traditionally, the services established in-house capabilities for maintaining and supplying parts for most new systems. Nonetheless, the services have also used a combination of military and contractor support for maintaining and repairing military systems and equipment. At the same time, a limited, but growing, number of commercial items or commercial derivatives are being supported over

¹The T406 engine carries a commercial designation of AE1107C and is the turbo-shaft member of the Allison Engine Company's AE family of engines. In this report, we refer to this engine as the T406.

²Under a power-by-the-hour arrangement, the contractor provides fixed-cost maintenance based on the number of hours flown each year. Using this concept, the customer provides a fixed level of funding and expects, subject to some exclusions, to receive a given level of support by the contractor. The contractor expects to be provided a fixed level of funding up front and anticipates a long-term support arrangement.

the life of the systems through contractor logistics support,³ generally through contracts with the original equipment manufacturer. Department of Defense's (DOD) policy guidance for supporting military systems, issued in March 1996, calls for contractor logistics support for most new systems. Our prior work shows that DOD is moving toward greater reliance on the private sector for maintenance.⁴ In line with this evolving strategy, the Navy has adopted a depot maintenance strategy that provides for performing core⁵ maintenance capability in military depots and contracting out noncore workload to the private sector when it is cost-effective to do so.

Various statutes affect the mix of depot maintenance workloads between the public and private sectors. The provision directly affecting the issues discussed in this report is 10 U.S.C. 2464, which requires the Secretary of Defense to identify and maintain a core logistics capability that is government-owned and -operated unless the Secretary specifically waives that requirement. The 1998 Defense Authorization Act, Public Law 105-85, amended 10 U.S.C. 2464 to require that repair capability be established in military depots for a new system that is identified as a core system (except special access programs, nuclear carriers, and commercial items) within 4 years of a system's achievement of initial operational capability. The determination as to whether an item is a commercial item for purposes of meeting this exception to 10 U.S.C. 2464 is a matter of agency judgment. The agency determination will be upheld unless shown to be unreasonable. Moreover, there is no requirement that the agency document the bases for those determinations, or to maintain any supporting documentation.

On September 10, 1996, the V-22 program office identified the V-22 T406 engine as a commercial item as defined in 41 U.S.C. 403 and decided to procure the engine using a commercial item acquisition strategy, and then to explore the option of using contractor logistics support. Early in 1998, subsequent to the amendment to 10 U.S.C. 2464, the V-22 program office determined that the T406 engine was a commercial item under 10 U.S.C. 2464. Accordingly, the engine could be excluded from the 10 U.S.C. 2464 requirement for establishing a core logistics capability. Subsequently, on

³Contractor logistics support is contractor-provided, long-term, total life-cycle logistics support that combines depot level maintenance along with wholesale and selected retail material management functions.

⁴Defense Depot Maintenance: DOD Shifting More Workload for New Weapon Systems to the Private Sector ([GAO/NSIAD-98-8](#), Mar. 31, 1998). Also, see DOD Regulation 500.2-R.

⁵Core capability is the equipment and resources required to be maintained in government facilities to assure having the ability to respond to contingency situations and to otherwise provide mission critical activities.

March 2, 1998, the Naval Air Systems Command decided that the engine did not require a core depot maintenance capability because of the commercial item determination. Between March and April 1998, the program office negotiated a contract modification with Allison Engine Company to finalize the number of engines to be procured and to provide for logistics support. During this period, the Navy also conducted a cost analysis of contractor logistics support and completed a cost analysis comparing contractor logistics support with military support. Subsequently, on May 8, 1998, the Navy finalized its T406 engine logistics support decision and executed the contract modification that included both the purchase of 287 T406 engines and the logistics support for those engines that will be operational between fiscal year 1999 and 2003.

During the first 6 years of logistics support, we estimate that those logistics support costs will range from \$6 million to \$19 million, based on an initial cost of approximately \$200 per flying hour. Over the early years of the program, the relatively small numbers of aircraft and engines in the system will limit the overall flying hours and the support costs for the engine. However, as the number of engines increase over the next 20 years, these costs would be expected to increase proportionately with the growth of the flying hour program. The estimated logistics support costs for a 55-year period is \$2.3 billion.

The T406 contract has a separate line item for logistics support for each fiscal year, with different quantities of engines to be supported and different hourly rates. The contract contains options for each of these items, which the Navy may exercise by the specified dates.

Results in Brief

As provided by 10 U.S.C. 2464, the Navy has determined that the T406 engine is a commercial item and that it is not required to establish maintenance capability for the engine in a military depot. The determination as to whether an item is a commercial one for purposes of meeting this exception to 10 U.S.C. 2464 is a matter of agency judgment. Given the discretion the agency has for making this determination, we cannot conclude that the Navy's judgment was unreasonable in determining that the T406 engine is a commercial item. However, we found that the Navy's methodology for its commercial item determination was inconsistent and poorly document.

Specifically, the Navy stated that it was relying on the contractor's assurance of 90-percent common parts between the T406 engine and

others in the Allison engine family and also cited the technical judgment of program officials. However, neither the Navy nor the contractor had recently evaluated the extent of common parts in advance of the Navy's determination that the T406 was a commercial item. A subsequent analysis was made by the Allison Engine Company to support the claim of 90 percent common parts, but our evaluation showed about 79 percent common to at least one of the other engines in the AE family. The Navy also stipulated that the limited number of engine modifications required to produce the T406 engine was a factor in its commercial item determination. However, data were not available to enable us to assess the value of those engine modifications.

The Navy calculated that using contractor support rather than the military support system would save \$487 million over the 55-year life of the program. Our limited review of that analysis identified significant errors and inconsistencies that could both overstate and understate the differences in cost between the two alternatives. For example, the Navy did not consider the impact of a reduction in the T406 engine price on the cost of other elements such as the estimated cost of spares, which resulted in a net overstatement of the military alternative of \$476.6 million. Additionally, the Navy used a higher reliability factor for the commercial alternative, which resulted in a \$96.7 million understatement of the cost of the commercial alternative. We discussed our findings with the Navy, and Navy officials are continuing to update their analysis.

Logistics Commercial Item Criteria

An item is exempt from the requirement in 10 U.S.C. 2464 regarding core logistics capabilities if it is deemed to be a commercial item that has been sold or leased in substantial quantities to the general public and is purchased in the same form that is sold in the commercial market or with minor modifications to meet federal government requirements. The basic definition of a commercial item for the purposes of governmentwide procurement is set forth in 41 U.S.C. 403 (12). That section states that a commercial item is one of a type customarily used by the general public or by nongovernmental entities for other than governmental purposes. There is no requirement that the item have actually been sold—only that it have been offered for sale.

In our view, to be considered a commercial item under 10 U.S.C. 2464, the item would first have to meet the criteria set forth in 41 U.S.C. 403, along with the added requirements that the item has actually been sold in substantial quantities in the commercial market and meets government

requirements with only minor modifications. The concept of minor modifications also appears in 41 U.S.C. 403. Minor modifications, which have been the subject of a number of bid protest decisions, are defined in section 2.101 of the Federal Acquisition Regulation (FAR). Both the FAR and our bid protest decisions provide that minor modifications are ones that do not significantly alter the nongovernmental function or essential physical characteristics of the item that is modified.

Factors to be considered in determining whether modifications are minor include the value and size of the modifications and the comparative value and size of the modifications to the final product. There is no definitive test for assessing whether modifications are minor; the decision is left to an agency's judgment. Also, there is no requirement in the applicable statute or regulation that an agency's analysis supporting its commercial item determinations must be documented.

Weaknesses in the Navy's Methodology for T406 Commercial Item Determination

Our review identified various weaknesses in the Navy's methodology for reaching its determination that the engine was a commercial item. Although the Navy stated that the T406 had parts that were 90 percent common to those in other engines in the Allison engine family, neither the Navy nor the contractor had documented support for that position at the time the Navy made its determination and we found that the subsequent documentation overstated the percentage. Further, while the Navy stated that the number of modifications was limited, neither the Navy nor the contractor could provide us the value of the modifications required to produce the T406 engine.

Navy Did Not Independently Analyze the Extent of Common Parts Being Used

In making its February 2, 1998, commercial item determination under 10 U.S.C. 2464, the Navy stated that 90 percent of the parts in the T406 engine are common to Allison's AE commercial family of engines.⁶ While 10 U.S.C. 2464 does not specifically contain a requirement for an analysis of common parts, the Navy used the concept of common parts as an indicator that the engine was a commercial item.

The Navy concluded that the engine was a commercial item based largely on statements provided by the engine manufacturer that 90 percent of the T406 engine's parts were common to the AE family of engines. The Navy

⁶According to the contractor, the AE family of engines includes the AE3007A and the AE3007A1, which are in the Embraer ERJ-145 and ERJ-135 aircraft; the AE3007C, which is in the Cessna Citation X; the AE3007H, which is in the Teledyne Ryan Global Hawk; the AE2100D3, which is in the Lockheed Martin C-130J; the AE2100A, which is in the SAAB 2000; and the AE2100C, which is in the IPTN N-250.

also relied on program office officials' expertise regarding technical aspects of the aircraft and the engine. The program office did not make its own assessment of common usage of parts between the T406 engine and other engines in the AE family because, according to program officials, it did not have access to information about the parts in Allison's other engines.

At the time the commercial item determination was made, neither the Navy nor the contractor had completed a quantitative analysis to document how common were the parts in the T406 engine with the other engines. Contractor officials stated that they had performed a parts number comparison in 1992, but they noted that this comparison was no longer relevant because the numbers used to identify the parts had changed since that time.

In response to our request, the contractor performed an analysis to quantify how common were the parts. Comparing the parts in the T406 engine core with the parts in the core of other Allison engines, the contractor concluded that about 90 percent of the parts in the T406 engine core were common to one or more of the engines in the AE family.⁷ To verify the contractor's calculations, we obtained parts lists for the T406 core and each engine core identified as being in the AE family of engines and analyzed the extent to which common parts were in use. We measured the parts from three perspectives, each of which resulted in a lower indication of common parts than the Navy reported in its determination. We found that common parts ranged from 44 to 79 percent, in contrast with the Navy's claim and the contractor's subsequent statement that 90 percent were common.

In completing our analysis, we first measured common parts by using the combined parts lists from the entire family of engines—the approach used by the contractor in calculating 90-percent common parts. We found that about 79 percent of the T406 parts are on at least one of the other engines in the AE family. We determined that the difference between Allison's calculation of common parts and our calculation of 79 percent was caused by their overstatement of the total number of parts used as a base for the Allison calculation. We discussed our finding with the Allison officials responsible for their analysis. Allison officials noted that to reduce differences among the engines, they are continuing to make changes to improve the extent to which common parts are in use.

⁷While the Navy's earlier statements did not specify the engine core as the basis of comparison, we based our quantitative analysis only on part numbers in the engine core, as did the contractor.

Second, we compared the T406 engine with the individual engines in the AE family and determined that four of the engines had about 44 to 46 percent parts in common and the other three about 76 percent. (See table 1).

Table 1: Our Analysis of Parts' Commonality of T406 Engine and Other Allison AE Commercial Family of Engines

Engine type	No. of parts in common with T406 engine	Percentage of common parts
AE2100A	419	76.2
AE2100C	420	76.4
AE2100D3	416	75.6
AE3007A	245	44.5
AE3007A1	244	44.4
AE3007C	248	45.1
AE3007H	255	46.4
Weighted average of common parts	343	64.0

Third, to provide another perspective on the rate of common parts in use across the Allison family of engines, we calculated a weighted average,⁸ which indicated that about 64 percent of the parts were common. Moreover, there is a broad range of quantities and percentage of common parts among the seven engine types. A weighted average provides one means to gauge the volume of common parts across the family. Since common parts' usage is a significant driver in the ability to produce logistics support cost reductions, we believe this can be an important indicator in commercial item determinations.

Relative Value of T406 Modifications Not Available

In making its commercial item determination, the Navy stated that it based its decision also on the limited number of modifications required to produce the engine. However, the Navy did not quantify the value of the modifications required to produce the T406 engine or develop information regarding the cost of the modifications relative to the overall engine cost. Thus, the value of the changes required to modify the commercially used engine to satisfy the Navy's requirements is unclear. FAR 2.101 states that the value and size of the modifications and the comparative value and size of the final product are factors to be considered when determining whether modifications are minor. The Navy did not develop data to measure the comparative value and size of the T406 engine modifications.

⁸To calculate the weighted average, we multiplied the number of each type of engines by the number of common parts and then divided by the total number of engines to calculate a weighted per engine average of common parts.

We attempted to collect information regarding the value of the modifications and the comparative value of the engines. However, the Navy did not have this information and the contractor stated it would be difficult to develop it. Accordingly, we were not able to obtain the modifications cost information. We recognize that other factors in addition to modifications could affect cost differences. Nonetheless, we did determine that the Navy is paying significantly more for the T406 engine than Lockheed Martin is paying for the AE2100D3 engine, an AE family engine that closely resembles the T406 engine.⁹

Navy's Evaluation of Cost-Effectiveness

Having made the commercial item determination, the Navy decided to evaluate the estimated difference in costs between performing repair and maintenance activities in house and having it done by the private sector. The Navy calculated that using a commercial source to repair the T406 engine would save about \$487 million over the projected 55-year life of the V-22 aircraft. We made a limited review of the Navy's cost analysis and found (1) inconsistencies between the way the Navy estimated the in-house and commercial support costs and (2) significant errors in the data used in the analysis. We did not determine the full extent of the errors or the net effect on the cost estimate.

According to Navy officials, to award a logistics support contract for the T406 engine, the outcome of the Navy's cost analysis had to reflect savings to the government through the use of a commercial source. In August 1996, the Navy initially evaluated the comparative costs of contractor versus military logistics support, projecting that contractor support would be about \$200 million more than military support over the program's life. Navy officials stated that they carefully reviewed the key cost drivers and were able to reduce the cost of contractor support through negotiations with the contractor. According to program office officials, the Navy reduced the power-by-the-hour rate and engine price. After negotiations, the Navy updated its cost analysis and projected that contractor support would save \$487 million over the life of the program.

Our review of the Navy's analysis determined that when the Navy updated its cost analysis to reflect the results of contractor negotiations, it did not consider the impact of a reduction in the T406 engine price on the cost of other elements, such as the estimated cost of spares.¹⁰ This factor affected

⁹The AE2100D3 is used to power Lockheed Martin's C130J aircraft. The Air Force is purchasing the C130J using a commercial item acquisition strategy.

¹⁰The cost of spare parts was estimated by using a percentage of the cost of the engine.

both the military and commercial cost projections and resulted in about a \$551.9 million overstatement of material costs to the military alternative and about a \$75.3 million overstatement of exclusion costs¹¹ in the commercial alternative—a net overstatement of about \$476.6 million to the cost of the military alternative. Navy officials said they inadvertently overlooked this factor and did not adjust the cost analysis to reflect changes resulting from changes to the engine price. Our review of the Navy's cost analysis identified other errors and/or omissions that could both overstate and understate the differences in cost between both alternatives. We found that the Navy

- did not include a cost estimate for jet fuel used in T406 test cells during maintenance, which understated the military alternative cost by \$5 million;
- did not include a cost estimate for the value of engine modifications for the military alternative, which understated that alternative by an estimated \$36.8 million; and
- overstated the indirect logistics support cost in the commercial alternative by an estimated \$21.5 million.

We also identified inconsistencies in the assumptions used and in the way data were collected. For example, the Navy used a higher engine reliability factor for the commercial alternative, which resulted in a \$96.7 million understatement of the alternative's cost. It also used a two-level maintenance strategy for the commercial alternative but a three-level maintenance strategy for the military alternative. Thus, the military alternative included about \$836 million for establishing and operating intermediate maintenance capability.

V-22 program office officials stated that a two-level strategy was not allowable under the Navy's Operational Requirements Document. While we did not independently review the potential costs and benefits of that strategy for the military alternative, it would appear to have been a viable option given that the Navy is pursuing a similar two-level strategy in-house for another engine. With regard to historic engine repair cost data used to estimate labor and material costs for the T406 engine, the Navy did not use the same baseline data. For example, the Navy used fiscal year 1990 through 1994 data for the military option and fiscal year 1994 and 1995 data for the commercial option.

¹¹Exclusion costs are those caused by abnormal operations; these costs are not covered by the contractor's power-by-the-hour rate. For example, repairs required as a result of misuse or negligence are exclusion costs.

We did not completely review the Navy's cost analysis; therefore, we cannot project what would have been the net effect of the errors and omissions. At the time of our review, the Navy was continuing to correct and update its cost analysis.

Conclusions

Acting in accordance with the provisions of 10 U.S.C. 2464, pertaining to core logistics capability, the Navy has determined that the T406 engine is a commercial item and by virtue of that designation, that it is not required to establish maintenance capability in a military depot within 4 years of the establishment of operational capability. Given the discretion afforded agencies in making such determinations, we cannot say that the Navy's action was unreasonable. However, we did find a number of weaknesses in the methodology for its commercial item determination and an absence of documentation to support that determination. Further, the accuracy of the Navy's life-cycle cost comparisons between military and contractor alternatives is questionable due to data errors and omissions.

Recommendations

This is the first commercial item determination DOD has made under the requirements of 10 U.S.C. 2464 as it pertains to logistics support capability. However, it is likely that other such determinations will be made in the future. Thus, basic guidance should be provided on the type of supporting data that should accompany such determinations. Accordingly, we recommend that the Secretary of Defense:

- Issue guidance requiring the services to document in the contract file support for their commercial item determinations under 10 U.S.C. 2464 and subsequent logistics support decisions. On the basis of our review of the T406 case, examples of items that might be considered for documentation include (1) percentage of common parts, (2) a comparative value of the average sales price of the baseline commercial item with the estimated price of the item that is the subject of the determination, (3) the value of unique support and test equipment and tools required to support the military requirement, and (4) a cost evaluation documenting that the life-cycle logistics support in the private sector is expected to result in a lower cost to the government.

Additionally, we recommend that the Secretary of Defense:

- Require the Secretary of the Navy to complete a new and updated cost analysis, correcting previous errors and inconsistencies, before executing future option years under the current T406 contract.

Agency and Contractor Comments and Our Evaluation

DOD's written comments on the draft of this report are presented in appendix I. DOD agreed with our recommendation concerning a new and updated cost analysis before executing future option years under the current T406 contract. It disagreed with our recommendation concerning the documentation of analyses supporting commercial item determinations. DOD stated that such a requirement would impose a stricter definition and criteria for commercial items subject to depot repair than the legislative exemption for commercial items with minor modifications. It also stated that our recommendation for a documented analysis of percentage of common parts would restrict planned use of commercial support for many current and future weapon systems, would require system component assessments for which there is no standard industry methodology, and would discourage many private sector companies from doing business with the government.

The intent of our draft recommendation was that DOD establish a consistent management process for documenting the support for commercial item determinations and their cost-effectiveness under the provisions of 10 U.S.C. 2464. In response to DOD's concerns, we modified our draft recommendation to make it clear the actions we listed were meant to be illustrative.

We discussed our draft report with officials of Allison Engine Company. These officials asked us to refer to the V-22 engine as the AE1107C rather than the T406, the designation we used in the draft report. In response, we added a footnote indicating that the commercial designation for the T406 is AE1107C. Allison officials also asked us to update our analysis to reflect an additional 12 common parts that they had not identified to us. We revised the figures contained in our draft report to reflect this contractor update. Additionally, we made several minor technical changes to reflect other contractor comments.

We made changes to the report, as appropriate, to address agency comments.

Scope and Methodology

To identify the legal standards used in assessing the commercial status of the T406, we interviewed responsible legal advisors at the Navy's V-22 program office, Patuxent River Naval Air Station, Patuxent River, Maryland; and the Allison Engine Company's T406 Program Office, Indianapolis, Indiana. We reviewed applicable statutes, regulations, and relevant case law to identify the applicable commercial item criteria.

To assess the Navy's rationale, justification, and support for designating the T406 engine a commercial item, we interviewed Navy V-22 program office officials at the Patuxent River Naval Air Station and Allison Engine Company officials at the Allison T406 Program Office. Using the commercial item criteria, we assessed compliance through discussions with the Navy and Allison officials. We reviewed all documentation the Navy provided to support its determination, and we independently calculated the rate of parts commonality between the T406 and other engines using parts lists Allison provided. We paralleled Allison's approach for calculating commonality rates across the family of engines, correcting for inconsistencies between the numerator and the denominator used. To calculate the commonality rates between the T406 and individual engines, we performed a match of unique T406 parts to each individual engine in the Allison family (as identified in table 1). To calculate the weighted average of common parts, we multiplied the number of each type of engine by the number of common parts and then divided by the total number of engines to calculate a weighted per engine average of common parts.

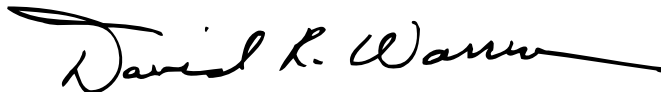
To evaluate the extent to which the Navy evaluated the cost-effectiveness of its decision, we interviewed and collected supporting documentation from the cost evaluation team and V-22 program office officials at the Patuxent River Naval Air Station, Maryland, and interviewed and collected engine performance and cost data from officials at the Cherry Point Naval Aviation Depot, North Carolina; Defense Contract Management Command operating at the Allison Engine Company facilities, Indiana; and the Air Force's C130J Aircraft Program Office, Wright Patterson Air Force Base, Ohio. We analyzed the supporting data to (1) determine whether the assumptions the Navy used to structure its cost evaluation were reasonable and consistently applied between the alternatives the Navy evaluated and (2) identify errors in the Navy's cost projections. Our cost analysis was limited by the time we had available.

We conducted our review between May 8, 1998, and July 21, 1998, in accordance with generally accepted auditing standards.

We are sending copies of this report to the Chairmen of the Senate Committees on Appropriations and on Armed Services and the House Committees on Appropriations and on National Security; the Secretaries of Defense and the Navy; and the Director of the Office of Management and Budget. We will also make copies available to others on request.

Please contact me at (202) 512-8412 if you or your staff have any questions concerning this report. Major contributors to this report are included in appendix II.

Sincerely yours,

A handwritten signature in black ink that reads "David R. Warren". The signature is written in a cursive style with a long horizontal flourish at the end.

David R. Warren, Director
Defense Management Issues

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Table 1: Our Analysis of Parts' Commonality of T406 Engine and Other Allison AE Commercial Family of Engines

Abbreviations

DOD	Department of Defense
FAR	Federal Acquisition Regulation

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000

26 AUG 1998

Mr. David R. Warren
Director, Defense Management Issues
National Security and International Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Warren:

This is the Department of Defense (DoD) response to the General Accounting Office Draft Report, "NAVY DEPOT MAINTENANCE: Weaknesses in the T406 Engine Logistics Support Decision," dated July 21, 1998 (GAO Code 709346), OSD Case 1656.

The Department nonconcur with the report's first recommendation. The enactment of this provision will force the inefficient use of already scarce funding. For instance, the loss of "commercial item" designation for a component like the V-22 engine will necessitate a \$200 million investment, currently unprogrammed, to establish an organic support capability. Commercial logistical support provided by contractors will save the Department over \$500 million over the life cycle of the V-22 program. The Department generally concurs with recommendation two.

Detailed DoD comments are provided to the GAO final report. The Department appreciates the opportunity to comment on the GAO draft report.

Sincerely,

A handwritten signature in black ink that reads "Roger W. Kallock".

Roger W. Kallock
Deputy Under Secretary
of Defense (Logistics)

Enclosure:
As stated



See comment 1.

GAO REPORT - DATED JULY 21, 1998
(GAO CODE 709346) OSD CASE 1656

**“DEFENSE DEPOT MAINTENANCE: Weaknesses in the T406 Engine
Logistics Support Decision”**

DEPARTMENT OF DEFENSE COMMENTS TO THE RECOMMENDATIONS

RECOMMENDATION 1: GAO recommends that the Secretary of Defense issue guidance requiring that “the Services document analyses supporting commercial item determinations for purposes of exemption from 10 U.S.C. 2464, including such items as (1) percentage of common parts, (2) a comparative value of the average sales price of the baseline commercial item with the estimated cost of the item that is the subject of the determination; (3) the value of unique support and test equipment and tools required to support the military requirement, and (4) a cost evaluation documenting that the life cycle logistics support in the private sector is expected to result in a lower cost to the government.” (p. 14/GAO Draft Report)

Now on p. 10.

DOD RESPONSE: Nonconcur with recommendation.

RECOMMENDATION 2: Secretary of Defense “require the Secretary of the Navy to complete a new and updated cost analysis, correcting previously existing errors and inconsistencies, before executing future option years under the current T-406 contract.” (p. 14/GAO Draft Report)

Now on p. 11.

DOD RESPONSE: Concur with the recommendation.

COMMENTS :

1. Page 14, paragraph 1. **GAO recommends that the Secretary of Defense issue guidance requiring that “the Services document analyses supporting commercial item determinations for purposes of exemption from 10 U.S.C. 2464, including such items as (1) percentage of common parts, (2) a comparative value of the average sales price of the baseline commercial item with the estimated cost of the item that is the subject of the determination; (3) the value of unique support and test equipment and tools required to support the military requirement, and (4) a cost evaluation documenting that the life cycle logistics support in the private sector is expected to result in a lower cost to the government.”**

GAO recommendation imposes stricter definition and criteria for commercial items subject to depot repair that would be exempt from the requirements regarding core logistics capabilities. Title 10, section 2464 currently exempts commercial items, with minor modifications, from “core” (in-house) depot maintenance -- enabling them to be repaired in the private sector. The recommendation, as written, could potentially impact every DoD weapon system that uses commercial support, undermining the Department’s acquisition reform efforts to streamline its logistics support systems. The individual components of recommendation 1 are addressed below.

The “(1) percentage of common parts” requirement would restrict planned use of commercial support for many current and future weapon systems. This criterion would require system component assessments, for which there is no standard industry methodology, and it would discourage many private sector companies from doing business with the government.

The recommendation that Services document analyses for: “(2) a comparative value of the average sales price of the baseline commercial item with the estimated cost of the item that is the subject of the determination”; “(3) the value of unique support and test equipment and tools required to support the military requirement”; and “(4) a cost evaluation documenting that the life cycle logistics support in the private sector is expected to result in a lower cost to the government”, would reduce commercial participation in life cycle support for DoD weapon systems, thus increasing sustainment costs and forcing the establishment of unnecessary and duplicative infrastructure within DoD. The loss of commercial item designation for a component like the V-22 engine would necessitate an unprogrammed \$200 million expenditure to establish an organic support capability. In contrast, commercial logistical support provided by contractors is projected to save the Department over \$500 million over the life cycle of the V-22 program.

2. DoD concurs with the GAO’s recommendation that the Secretary of Defense “require the Secretary of the Navy to complete a new and updated cost analysis, correcting previously existing errors and inconsistencies, before executing future option years under the current T-406 contract.” In the interest of completeness, the following comments are submitted for consideration:

Appendix I
Comments From the Department of Defense

See comment 2.

See comment 3.

See comment 4.

- The Program Office updated the cost study based on the GAO's recommendations during the audit process. With these updates, the results of the analysis continued to show substantial savings for CLS. (As recommended, the data used in the study was updated to include a consistent set of FY93-95 data, the complexity factor was modified for the negotiated engine price, the omissions and overstatements were corrected, and the cost allocation process was revamped.)
- The cost study conducted to aid in the commercial versus organic determination was sound. It was based on the technical information, schedule and cost data available at the time. The "significant error" mentioned in the GAO draft report – not updating a material/spare parts complexity factor to reflect the negotiated engine price was made *only* in the *post*-negotiation cost update (18 months after the completion of the initial study) and had no impact on the Navy's commercial procurement and logistics support decisions.
- The Program Office is revisiting the commonality issue with Allison based on the GAO audit findings. While the review is continuing, it is readily apparent there is a great degree of part number commonality between the AE1107C core and the AE engine family core. In addition to the part number commonality, there are many unique parts, for which the difference in physical appearance, manufacturing process, or repair process is slight or negligible. Furthermore, Allison has identified parts that are very likely to become common during full rate production.
- Additionally, in accordance with the draft GAO report's recommendations, the Program Office will complete a new and updated cost analysis before executing contract options under the current AE1107C contract. This analysis will reexamine all ground rules and assumptions. It will also update the estimate for organic maintenance by incorporating fleet maintenance data history from FY96 and FY97 that was not available at the time of the original cost study in September 1996.

The following are GAO's comments on the Department of Defense's (DOD) letter dated August 26, 1998.

GAO Comments

1. The intent of our recommendation concerning documentation of commercial item determinations was not that a commercial item designation be taken away. Rather, we were indicating the need for such determinations to be well supported.
2. We recognize that program office officials have been working to deal with problems identified during our review. That, along with their plans to complete a new and updated cost analysis prior to executing contract option years, should provide a more complete basis for assessing the accuracy and completeness of data and expected savings.
3. We agree that the identified error in the Navy's savings estimate occurred after the negotiations over engine procurement and contractor maintenance support were completed. The post negotiation rate update referred to by the Navy involved an additional analysis by the Navy to reassess contractor maintenance support costs. The Navy undertook that update because at the time it had concluded its agreement with the contractor for maintenance support, its analysis showed there were additional costs, not savings, associated with contractor logistics support versus in-house performance of this function. The update provided the basis for a new cost savings estimate of \$487 million from contractor support. Our review raised questions about the reliability of the Navy's new estimate. Although the Navy has updated some of the data related to its analysis of contractor maintenance support costs, it did not make a similar update to the projected costs of in-house performance; accordingly, it is not clear to us that the Navy has a full and complete basis for an updated comparison of in-house versus contractor maintenance support costs.
4. While DOD stated that there is a great degree of commonality between the T406 and the Allison AE engine family and that many of the unique parts have only slight or negligible differences, sufficient data were not available to enable us to make such a determination. We attempted to gauge the degree of differences between dissimilar parts by collecting cost data on parts modifications, but the Navy and the contractor could not provide such data. Thus, we cannot comment whether dissimilar parts are likely to become common during full-rate production because our analysis

Appendix I
Comments From the Department of Defense

was limited to trying to determine the degree of commonality at the time the commercial item determination was made.

Major Contributors to This Report

**National Security and
International Affairs
Division Washington,
D.C.**

Barry W. Holman
Julia Denman
Leticia Bates

Dallas Field Office

Larry Junek
John Strong

**Office of the General
Counsel**

John Brosnan
Stephanie May

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