U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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Congressional Committees

National Defense: Department of Defense's Waiver of Competitive Prototyping Requirement for the Navy's Fleet Replenishment Oiler Program

The Weapon Systems Acquisition Reform Act of 2009, as amended (WSARA), requires the Secretary of Defense to modify defense guidance to ensure that the acquisition strategy for each major defense acquisition program provides for competitive prototypes before Milestone B approval—which authorizes entry into system development—unless the Milestone Decision Authority waives the requirement.[1] Competitive prototyping, which involves commercial, government, or academic sources producing early prototypes of weapon systems or critical subsystems, can help Department of Defense (DOD) programs reduce technical risk, refine requirements, validate designs and cost estimates, and evaluate manufacturing processes prior to making major commitments of resources. It can also help reduce the time it takes to field a system, and as a result, its acquisition cost. WSARA states that the Milestone Decision Authority may waive the competitive prototyping requirement only on the basis that (1) the cost of producing competitive prototypes exceeds the expected life-cycle benefits (in constant dollars) of producing such prototypes, including the benefits of improved performance and increased technological and design maturity that may be achieved through competitive prototyping; or (2) but for such a waiver, DOD would be unable to meet critical national security objectives.

WSARA also provides that whenever a Milestone Decision Authority authorizes a waiver of the competitive prototyping requirement on the basis of what WSARA describes as "excessive cost," the Milestone Decision Authority is required to submit notification of the waiver, together with the rationale, to the Comptroller General of the United States at the same time it is submitted to the congressional defense committees. WSARA further provides that no later than 60 days after receipt of a notification of a waiver, we are to review the rationale for the waiver and submit a written assessment of that rationale to the congressional defense committees.[2]

[1]Pub. L. No. 111-23, § 203(a), as amended by the Ike Skelton National Defense Authorization Act for Fiscal Year 2011, Pub. L. No. 111-383, § 813(b). DOD modified its guidance related to the operation of its acquisition system through Directive-Type Memorandum (DTM) 09-027, "Implementation of Weapon System Acquisition Reform Act of 2009 (Dec. 4, 2009, incorporating Change 4, Jan. 11, 2013) which was incorporated into and canceled by Interim DOD Instruction 5000.02, *Operation of the Defense Acquisition System* (Nov. 25, 2013). Major defense acquisition programs are those estimated by DOD to require, for all increments of the program, an eventual total expenditure for research, development, test, and evaluation of more than $480 million, or for procurement of more than $2.79 billion in fiscal year 2014 constant dollars. The Milestone Decision Authority for major defense acquisition programs is the Under Secretary of Defense for Acquisition, Technology and Logistics, the head of a DOD component, or if delegated the component acquisition executive.

[2]Pub. L. No. 111-23. § 203(b) (2).

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On July 15, 2014, we received notice from DOD that it had waived the competitive prototyping requirement for the Fleet Replenishment Oiler (T-AO(X)) program. The Navy's T-AO(X) program is an effort to replace its 15 existing fleet oilers. These ships entered service between 1986 and 1996 and have an expected service life of 35 years. The first ship will reach that age in 2021. The primary role of fleet oilers is to transfer fuel to Navy surface ships that are operating at sea, so as to extend the operating endurance of these ships and the aircraft they carry. Fleet oilers also provide other surface ships with lubricants, fresh water, and small amounts of dry cargo. Fleet oilers transfer fuel and other supplies to other surface ships in operations called "underway replenishments." During underway replenishments, an oiler steams next to the receiving ship and transfers fuel by hose. The Navy's acquisition strategy for the T-AO(X) program includes competitive contract awards for industry studies, detailed design and construction, and follow-on ship procurement.

In this report, we assess DOD's rationale for waiving the competitive prototyping requirement for the T-AO(X) program and the analysis used to support it. To conduct our assessment, we compared the rationale in the waiver to the WSARA requirement to determine the extent to which the waiver is consistent with the statute. In addition, we reviewed the Navy's cost-benefit analysis, which provides the data and assumptions on which the waiver is based. We also questioned DOD and the Navy to clarify information in this documentation, as necessary.

We conducted this performance audit from August 2014 to October 2014 in accordance with generally accepted government auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Results in Brief

DOD's rationale for waiving the WSARA's competitive prototyping requirement for the T-AO(X) program covered one of the two bases provided in the statute; namely that the cost of producing competitive prototypes exceeds the expected life-cycle benefits (in base year dollars) of producing the prototypes. DOD's rationale is based largely on the acquisition strategy for the program. According to the waiver, the T-AO(X) program is a non-developmental ship acquisition program that requires no new technology development. In the waiver, DOD concluded that the Navy's cost-benefit analysis was reasonable. We also found that the Navy's cost-benefit analysis was consistent with key principles in DOD's policy on economic analysis.[3] The Navy cost-benefit analysis supporting the waiver examined two prototyping scenarios: competitively producing and testing two ship prototypes, which would increase acquisition costs by $1.35 billion (in base year 2013 dollars), and producing and testing a single ship prototype, which would increase the acquisition costs by $742 million (in base year 2013 dollars). Because the T-AO(X) program is a non-developmental ship acquisition program, requires no technology development, and utilizes limited military unique systems and equipment, the Navy concluded the only life-cycle benefits that could likely be realized from prototyping was a reduction in

[3]DOD Instruction 7041.3, Economic Analysis for Decisionmaking. (Nov. 7, 1995). (Hereinafter cited as DODI 7041.3 (Nov. 7, 1995)). These general principles state that each feasible alternative for meeting an objective must be considered and the costs and benefits associated with each alternative under consideration should be quantified. DODI 7041.3, Encl. 3, pg. 7, para. E3.1.1 and pg. 8, E3.2.4 (Nov. 7, 1995).

operations and support costs through savings in fuel consumption, maintenance, and sustainment support. The Navy's analysis assumed $370 million (in base year 2013 dollars) in operations and support cost savings for both scenarios, but based on similar shipbuilding programs the likely cost savings would be lower.

Waiver Rationale Is Consistent with WSARA and the Supporting Analysis Considered a Reasonable Set of Prototyping Alternatives

DOD's rationale for waiving WSARA's competitive prototyping requirement for the T-AO(X) program addressed one of the two bases provided for a waiver in the statute, namely that a waiver may be granted if the estimated costs of producing competitive prototypes exceed the expected life-cycle benefits, including the benefits of improved performance and increased technological and design maturity that may be achieved through competitive prototyping.[4] The T-AO(X) program is a non-developmental ship acquisition program that requires no new technology development. The program will employ primarily commercial-off-the-shelf systems and equipment. The only military unique systems planned are in the areas of command, control, communications, computers, and intelligence; aviation; and underway replenishment. The command, control, communications, computers, and intelligence and aviation systems are existing Navy programs. The "underway replenishment" system for both fuel and solid cargo transfer is currently being developed, prototyped, and tested by the Navy. According to DOD, the system is not a new technology, but rather a new application of existing technologies. The Navy plans to complete prototyping and testing efforts of this subsystem prior to procuring the system for the T-AO(X) program.

In its waiver, DOD found the Navy's cost-benefit analysis reasonable and we found that its approach was consistent with general principles in DOD's policy on economic analysis, including consideration of each feasible alternative for meeting an objective and evaluation of its life-cycle costs and benefits.[5] In its cost-benefit analysis, the Navy developed two prototyping scenarios. According to the Navy, the cost estimating approach and methodology used for these scenarios had been previously reviewed and validated by DOD's independent Office of Cost Assessment and Program Evaluation. In the first scenario, scenario A, the Navy estimated that competitive prototyping, in which two prototype ships would be constructed and later one ship converted to an operational asset, would increase acquisition costs by around $1.35 billion (in base year 2013 dollars) with potential benefits of only about $370 million (in base year 2013 dollars). In the second scenario, scenario B, the Navy estimated that the award of a single contract for the design and construction of a single prototype ship, which would also be later converted to an operational asset, would increase acquisition cost by around $742 million (in base year 2013 dollars) with potential benefits of only about $370 million (in base year 2013 dollars). The Navy's analysis indicated that nearly all of the cost difference between the two prototyping scenarios can be attributed to the additional cost of the second ship under scenario A. Under both scenarios A and B, the Navy also estimated that competitive prototyping would result in a 5-year schedule delay for procurement of follow-on ships when compared to its

[4]In the waiver, DOD stated that the cost of competitive prototyping, a single prototype, and critical subsystem prototypes of the T-AO(X) program before Milestone B exceeded the expected life-cycle benefits. WSARA provides that whenever a Milestone Decision Authority authorizes a competitive prototyping waiver, the program is still required to produce a prototype prior to Milestone B approval if the expected life-cycle benefits (in base year dollars) of producing such prototype exceed its cost and its production is consistent with achieving critical national security objectives. Pub. L. No. 111-23 § 203(a)(3)(A).

[5]DODI 7041.3, *Encl. 3, pg. 7, para. E3.1.1* (Nov. 7, 1995).

current acquisition strategy, extending the existing fleet of oilers time in service well past their intended service life. As a result, DOD and the Navy concluded that the potential life-cycle benefits did not justify the cost of producing prototype ships under either scenario.

Because the T-AO(X) program is a non-developmental ship acquisition program, requires no technology development, and utilizes limited military unique systems and equipment, the Navy concluded the only life-cycle benefit that could likely be realized from prototyping was a reduction in operations and support costs. The Navy based this conclusion, in part, on its most recent auxiliary shipbuilding program, the T-AKE program. The T-AKE program had a formal total ownership cost reduction program in which the shipbuilder was incentivized to identify, analyze, propose, and implement design improvements and material and equipment selections with an emphasis on reducing operations and support costs. In its cost-benefit analysis, the Navy initially assumed a 5 percent savings in fuel consumption, maintenance, and sustainment support, the three main drivers of operations and support cost, which resulted in a total life cycle benefit of around $370 million (in base year 2013 dollars) for both prototyping scenarios. Based on the Navy's cost-reduction experience with commercial-based, non-developmental shipbuilding programs similar to T-AO(X), this estimate may be optimistic and would still not generate enough savings to cover the cost of prototyping under either scenario.

Agency Comments

We provided a draft of this report to DOD for comment, but none were provided.

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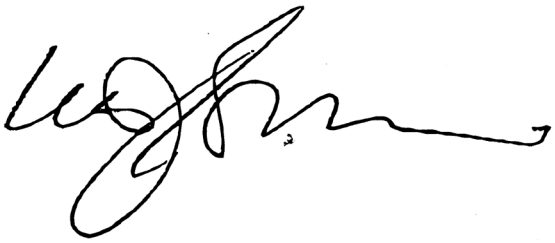
We are sending copies of this report to interested congressional committees, the Secretary of Defense, and the Secretary of the Navy. In addition, the report will be available at no charge on the GAO website at http://www.gao.gov.

If you or your staff have any questions, please contact me at (202) 512-4841 or sullivanm@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report were Ron Schwenn, Assistant Director; Pedro Almoguera; Kristine Hassinger; and James Haynes.



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