



441 G St. N.W.
Washington, DC 20548

June 11, 2014

Congressional Committees

Department of Defense’s Waiver of Competitive Prototyping Requirement for the Army’s Indirect Fire Protection Capability Increment 2, Block 1 Program

The Weapon Systems Acquisition Reform Act of 2009, as amended (WSARA), requires the Secretary of Defense to modify 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, reduce 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 mandated to review the rationale for the waiver and submit a written assessment of that rationale to the congressional defense committees.²

On March 24, 2014, the Army received approval to formally begin technology development for its Indirect Fire Protection Capability (IFPC) Increment 2, Block 1 program, and DOD granted a

¹Pub. 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. DOD initially modified its guidance related to the operation of its acquisition system through Directive-Type Memorandum (DTM) 09-027, “Implementation of Weapon Systems Acquisition Reform Act of 2009” (Dec. 4, 2009, incorporating Change 4, Jan. 11, 2013). DOD issued an Interim Instruction 5000.02, “Operation of the Defense Acquisition System,” on November 25, 2013 which incorporated and cancelled DTM 09-027. Major defense acquisition programs are those estimated by DOD to require an eventual total expenditure for research, development, test, and evaluation, or for procurement—including all planned increments—of more than \$480 million or more than \$2.79 billion, respectively, 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.

²Pub. L. No. 111-23, § 203(b)(1) & (2).

competitive prototyping waiver for the program. This program is the first of three blocks of capability within IFPC Increment 2 to detect, assess, and defend against threats from rockets, artillery, mortars, cruise missiles, and unmanned aircraft. Each block of Increment 2 is expected to be a separate major defense acquisition program. Block 1 is expected to provide capabilities to counter cruise missiles and unmanned aircraft, while the remaining blocks will add to and extend range and capability.

On March 31, 2014, we received notice from DOD that it had waived the competitive prototyping requirement for the IFPC Increment 2, Block 1 program. DOD's waiver was based largely on an analysis in which the Army compared the costs and benefits of building its own prototypes—which is its current plan—with those of having two contractors build competing prototypes. In this report, we assess DOD's rationale for granting the waiver 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. We reviewed the Army's cost-benefit analysis, which provides the data and assumptions on which the waiver is based. We did not independently verify the Army's data on cost and benefits. We also submitted written questions to the IFPC Increment 2, Block 1 program officials to clarify information in program documentation, as necessary.

We conducted this performance audit from April 2014 to May 2014 in accordance with generally accepted government auditing standards. Those 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 WSARA's competitive prototyping requirement for the IFPC Increment 2, Block 1 program addresses one of the two bases provided in the statute; namely that the cost of producing competitive prototypes exceeds the expected life-cycle benefits (in constant dollars). The program's strategy mostly utilizes developed and fielded components which, according to the Army, reduces the opportunity to gain significant cost savings by prototyping. The primary developmental component of the system is the Multi-Mission Launcher (MML), which is expected to provide a common launch capability for current and future interceptors. The Army estimated that the cost of having two competing contractors produce MML prototypes would add \$208.5 million (in base year 2013 dollars) to its current strategy, which is to build its own MML prototypes. The Army's analysis found that competitive prototyping may improve software productivity and increase fabrication efficiency, but may only result in total life-cycle benefits of \$9.8 million (in base year 2013 dollars). The Army's analysis found that there would be no additional costs or benefits in operation and support. In the waiver, DOD concluded that the Army prototyping cost-benefit analysis was reasonable and supported waiving the statutory requirement. We also found that the Army's cost-benefit analysis was consistent with general principles in DOD's policy on economic analysis, stating that each feasible alternative for meeting an objective must be considered and its life-cycle costs and benefits evaluated.³

³DOD Instruction 7041.3, Economic Analysis for Decisionmaking, Encl. 3, para. E3.1.1. (Nov. 7, 1995). (Hereinafter cited as DODI 7041.3 (Nov. 7, 1995)).

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 IFPC Increment 2, Block 1 program addressed one of the two bases provided for a waiver in the statute; namely that the cost of producing competitive prototypes exceeds the expected life-cycle benefits, including the benefits of improved performance and increased technological and design maturity that may be achieved through competitive prototyping. In the waiver, DOD indicates that because the Army's acquisition strategy leverages mature, fielded components and subsystems, the benefits of additional technology risk reduction would be limited. DOD also points out that the technology and design risks associated with the major component requiring development, the MML, are low. In its cost-benefit analysis, the Army notes that the four subcomponents that make up the MML are all largely comprised of proven legacy hardware that have already undergone extensive developmental activity as a part of other systems. The Army is planning to build two of its own MML prototypes and conduct a formal review of the system's preliminary design during the technology development phase to further reduce technical, cost, and schedule risks. The Army estimates that this strategy will cost \$219.6 million (in base year 2013 dollars). In comparison, the Army estimates that competitive prototyping would cost around \$428.1 million (in base year 2013 dollars) and add approximately 24 months to the technology development schedule with potential benefits of only about \$9.8 million (in base year 2013 dollars). As a result, DOD and the Army concluded that the potential life-cycle benefits did not justify the cost of producing such prototypes.

In its waiver, DOD found the Army's cost-benefit analysis reasonable and 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.⁴ The Army's analysis considered two strategies. The first strategy reflects the Army's current plan to build two of its own MML prototypes. The second strategy reflects a competitive prototyping scenario in which two competing contractors each build two MML prototypes for a combined total of four. The Army's analysis indicates that nearly all of the cost difference between the two strategies is associated with having contractors build a combined total of four MML prototypes, test ranges, and facilities to support the additional prototypes, and costs associated with retaining systems engineering and program management personnel longer than currently planned.

We found that the Army's approach to its cost-benefit analysis was consistent with certain general principles in DOD's policy on economic analysis, stating that each feasible alternative for meeting an objective and its life-cycle cost must be considered.⁵ The Army assumed that if a competitive prototyping strategy was used, one of the competing developers would be carried forward into engineering and manufacturing development which would provide the benefit of continuous learning. The Army used guidance from DOD's Manufacturing Management Guide and Defense Acquisition University to determine that a 9 percent increase in software productivity and a 15 percent increase in production and fielding efficiency could be realized, which would result in a total life-cycle benefit of around \$9.8 million (in base year 2013 dollars).

⁴DODI 7041.3, Encl. 3, para. E3.1.1. (Nov. 7, 1995).

⁵DODI 7041.3, Encl. 3, para. E3.1.1 (Nov. 7, 1995).

Agency Comments and Our Evaluation

We provided a draft of this report to DOD for comment. In its written comments, which are reprinted in the enclosure, DOD agreed with our assessment of the IFPC Increment 2, Block 1 competitive prototyping waiver.

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We are sending copies of this report to interested congressional committees, the Secretary of Defense and the Secretary of the Army. 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 Travis J. Masters, Assistant Director; Helena Brink; Timothy J. Carr; Kristine Hassinger; and Matthew B. Lea.

A handwritten signature in black ink, appearing to read "Michael J. Sullivan". The signature is fluid and cursive, with a large loop at the beginning and a long horizontal stroke at the end.

Michael J. Sullivan
Director, Acquisition and Sourcing Management

Enclosure

List of Committees

The Honorable Carl Levin
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The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

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Chairman

The Honorable Thad Cochran
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Howard P. "Buck" McKeon
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The Honorable Adam Smith
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Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
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The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

Enclosure

Comments from the Department of Defense



ACQUISITION

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3600 DEFENSE PENTAGON
WASHINGTON, DC 20301-3600

JUN 5 2014

Mr. Michael J. Sullivan
Director, Acquisition and Sourcing Management
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Sullivan:

We have reviewed the Government Accountability Office (GAO) Draft Report, GAO-14-643R, "Department of Defense's Waiver of Competitive Prototyping Requirement for the Army's Indirect Fire Protection Capability Increment 2, Block 1 Program, dated May 30, 2014 (GAO Code 121219). The Department appreciates the opportunity to comment on the draft report.

The GAO concluded that the Army's Indirect Fire Protection Capability Increment 2, Block 1 Program rationale for the competitive prototype requirement waiver is consistent with the Weapon Systems Acquisition Reform Act of 2009, Public Law 111-23. We agree with that conclusion. While the Department is fully vested in the application of competitive prototyping and believes it can provide value and risk reduction to programs, competitive prototyping should be tailored to the needs and risks of each specific program, balanced with any potential adverse cost and schedule impact.

Thank you again for the opportunity to comment on the subject report.

Sincerely,


Katrina McFarland

(121219)

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