

February 25, 2010

HASC Staff Fact Sheet on Department of Defense Report on Alternate Engine

The DOD report on the alternate engine was received by the House Committee on Armed Services on February 24, 2010. It includes four sections: (1) Unclassified/For Official Use Only (FOUO) with an Unclassified Information Memorandum, (2) a business proprietary independent cost analysis, and (3-4) two business proprietary attachments.

This report was prepared after August 31, 2009, when Secretary Gates first made reference to the business case not supporting the alternate engine, and it has been refined since that time. The report of the analysis indicates that it costs no more on a net present value analysis basis to do a two-engine program than it does to execute a one-engine F-35 program. Back in 2007, the Department estimated on a net present value basis that it would cost \$1.2 billion more to have a two-engine program. The 2010 analysis now shows the two options to be cost-neutral -- it doesn't cost any more, but there are no savings.

In the KC-X tanker replacement program and most other acquisition programs, DOD often prefers to do a "best value" selection -- meaning that costs are considered but so are additional, non-quantitative factors that go to the best value of the program for the Department. However, in this case DOD views the alternate engine as:

- Not having any cost savings,
- Having up-front investment costs DOD does not want to make, and
- Providing an additional government management burden.

The Department's analysis does not consider, and thus does not ascribe value, to the following non-financial benefits of a two engine program addressed in the 2007 DOD report:

- 1) Providing competition to act as a hedge against risks incurred in specific aspects of the development, production, and operational phases of a defense program, that could mitigate aircraft weight concerns or potential aircraft groundings in the event of a significant design flaw in the Joint Strike Fighter (JSF), single-engine tactical fighter;
- 2) Providing different growth paths for the propulsion system that would remain open to the Department;
- 3) Providing likely enhanced contractor responsiveness to government concerns because of the need to compete;
- 4) Increasing the likelihood of technological innovation; and
- 5) Providing for a more robust industrial base, which would otherwise evolve into a single U.S. manufacturer of tactical fighter engines.

In addition, comment is provided on specific references in this attachment:

Page 1, paragraph 2. The paper says DOD has not funded the alternate engine since 2007. DOD included funding for the JSF from 1996-2006 (FY97-FY06). The first year a budget request was not included was 2006, when the budget request was submitted for fiscal year 2007. Also in February 2006, the first year DOD did not request funding for the alternate engine since 1995, the Deputy Secretary of Defense signed a Memorandum of Understanding with the Joint Strike Fighter international partners in November committing the U.S. to producing both the F135 and F136 engines.

Page 1, paragraph 2. DOD says that funding was not included in 2007 for the alternate engine because a second engine was too costly. The JSF program at the time was experiencing significant cost overruns and had completely depleted its development management reserve by 2006. Therefore, it is possible that the reason the alternate engine wasn't funded was not because it was too costly, but because the money that was programmed for the alternate engine was needed to cover JSF cost overruns and fund the management reserve for the JSF program. The Congress, in that and subsequent years, saw continued value in the alternate engine program and continued to provide funding for it -- although only at 85 percent of the amount required to maintain the alternate engine schedule for FY07-FY10.

Page 1, paragraph 2. DOD states that the alternate engine program would require \$2.5 billion over the next five years and \$2.9 billion over six years. DOD assumptions slip the development and competitive procurement of the F136 by three years which adds cost to the program. While underfunding of the F136 by DOD and Congress of 15 percent over the past four years has caused some program delay, there is no need for a slip in the development program -- this all adds unnecessary costs.

Page 2, paragraph 3. DOD states that the fundamental conclusion remains the same as the 2007 study -- the potential life cycle cost savings do not provide a compelling business case. What the 2007 study said was the financial analysis "results [were] not compelling" either way. There was no mention of a business case.

Attachments:

1. Letter to Secretary Gates
2. DOD Update on Alternate Engine

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U.S. House of Representatives

Washington, DC 20515-6035

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ERIC C. CONATON, STAFF DIRECTOR

February 16, 2010

The Honorable Robert Gates
Secretary of Defense
1000 Defense Pentagon
Washington, DC 20301-1000

Dear Secretary Gates:

As you heard during your February 3rd testimony before the House Armed Services Committee, there appears to be a major disconnect between the perspectives of the Department and the Committee regarding the F-35's F136 alternate, competitive fighter engine program. We maintain great respect for your judgment and the sincerity of your position, but have not been provided any analysis that supports your view. In fact, the best "business case" information the committee has received clearly supports continued development of the alternate engine. Therefore, we are concerned by your reference to a possible Presidential veto over this issue, and we are equally concerned that the Department has not provided us with the "business case" analysis you have referenced, despite our repeated requests.

Approximately seventy-five percent of the development investment has already been made in the alternate engine. From various sources, including the 2007 analysis by the Department's Cost Analysis Improvement Group, we understand that for little or no net additional cost to the taxpayer, the alternate engine competition improves the F-35 program by addressing potential aircraft weight growth. The follow-on alternate engine may meet this challenge through evolving technology. Other advantages include insurance against fleet-wide engine problems, growth paths for propulsion systems, enhanced contractor responsiveness, technological innovation, improved operational readiness and a more robust industrial base. Consequently, we were surprised by the Department's 2006 decision not to include a request for funding in the fiscal year 2007 budget for the F136, after ten years of defending it for all the reasons we have listed.

Since the Department's about face, Congress has invested an additional \$1.75 billion in the alternate engine. Most of this additional investment came after the Department's 2007 analysis concluded that the alternate engine program lifecycle cost considerations were "not compelling" because then year dollar projections showed a \$2.2 billion savings while present value dollar projections showed a \$1.2 billion dollar loss. It is very possible that our additional fiscal year 2007-2010 investments changed the cost case from "not compelling" to a "net savings," a rare win, win for defense dollar expenditures. At the very least, our recent investments in the alternate engine make breakeven more likely going forward.

We will not detail here the accumulated testing failures, required redesigns, major cost growth and repeated delays experienced thus far with the baseline engine. We simply note that, in our view, these problems bolster

the case for a competing alternate engine. History tells us that competition serves the taxpayer well – especially when it comes to fighter engines.

In an August 2009 speech in Fort Worth, you mentioned that the “business case” did not support the alternate engine program. The committee requested a copy of that “business case” and was told by your legislative affairs staff that there was no formal analysis, beyond the Department’s 2007 study. Yet you again referenced the “business case” during the February 3rd hearing and in your February 1st meeting with chairmen and ranking members of the congressional defense committees.

Therefore, we respectfully request that you immediately provide the Committee with the “business case” analysis you referenced in testimony that supports discontinuing the alternate engine program for the F-35.

Very truly yours,

IKE SKELTON
Chairman

HOWARD “BUCK” McKEON
Ranking member

GENE TAYLOR
Chairman
Seapower and Expeditionary Forces
Subcommittee

TODD AKIN
Ranking member
Seapower and Expeditionary Forces
Subcommittee

ADAM SMITH
Chairman
Air and Land Forces Subcommittee

ROSCOE BARTLETT
Ranking member
Air and Land Forces Subcommittee

JIM MARSHALL
Member of Congress

- cc: Congressional Defense Committees
- DEPSECDEF
- USD/AT&L
- CJCS
- VCJCS

- SECAF
- SECNAV
- CSAF
- CNO

JM:dr

Information Memorandum
Update of Joint Strike Fighter (JSF) Alternate Engine Cost/Benefit Analysis

This memo provides historical background information on the JSF alternate engine program as well as a summary of the CAPE alternate engine cost and cost/benefit analyses that have been developed since 2007.

The Department has not funded an alternate engine for the JSF program since 2007 because in the Department's view, a second engine is unnecessary and too costly. This position is most recently reflected in the FY 2011 President's Budget submission which, once again, does not include funding for the JSF F136 alternate engine. The Department's position is based in part on updated analyses which continue to show that the business case for a JSF alternate engine is not compelling, and that the alternate engine program would require a significant DoD investment of additional resources within the FYDP.

Previous JSF Alternate Engine Analyses

The JSF F136 alternative engine program began in 1996, consistent with congressional direction. In the December 1997 Selected Acquisition Report, Navy and Air Force committed to funding the alternative engine throughout the Future Years Defense Program (FYDP). In the FY 2007 President's Budget, DoD recommended termination of the JSF alternative engine program. In response, Congress reduced JSF aircraft production quantities and reallocated the resources to the continued development of the F136 engine program. Congress also directed that the GAO, an FFRDC (i.e., IDA), and the CAIG develop separate, sequestered analyses of alternative engine acquisition strategies for the JSF program.

In March 2007, the CAIG (now CAPE) delivered an extensive cost-benefit analysis report on the F136 alternative engine acquisition strategies to the Congress (Tab A). At that time, the CAIG found that the potential life-cycle cost savings from a competitive F136 engine acquisition strategy for JSF were not compelling, and estimated that the alternate engine would cost an additional \$1.2B in net present value. The report did document other potential benefits from a competitive F136 acquisition strategy such as providing a hedge against potential technical problems in the baseline F135 engine, and motivating increased contractor responsiveness through competition. The results of the 2007 CAIG analysis are similar to those presented in the 2007 IDA study. Both studies found that investment costs would not be fully recovered during the procurement phase of the program. In contrast, the 2007 GAO report to Congress was more favorable toward a competitive alternative engine acquisition strategy for reasons that are not

readily apparent. A February 2009 report from the Congressional Research Service¹ provides an excellent summary and comparison of the three reports provided to Congress in 2007.

Update of the 2007 Analysis

Since 2007, Congress has provided an additional \$1.3 billion in RDT&E funding in FY 2008-10 for continued development of the F136 alternative engine.

In 2010, CAPE was tasked to update the 2007 cost-benefit study of the competitive alternate engine acquisition strategy for the JSF. In response, CAPE updated two key factors in the 2007 analysis: 1) the additional appropriations through FY 2010 that had been directed by Congress for development of the F136 alternative engine, which now represent 'sunk costs'; and, 2) the cost estimates for the primary and second engine System Design and Development (SDD) programs based on more recent actual cost information from both engine programs. The CAPE 2010 update made no other changes to the extensive list of assumptions used in the 2007 report to Congress, including the assumption that competition would begin in 2014.

As expected, the 2010 update analysis indicates that a competitive engine acquisition strategy becomes slightly more attractive in an economic sense than the 2007 analysis for the report to Congress. This is because the costs of the SDD program for the second engine have become increasingly sunk with the additional directed congressional appropriations in FY 2008-10 for the F-136 development program. While the 2010 updated result is in fact more favorable to a competitive acquisition strategy than the 2007 analysis suggested, the fundamental conclusion remains the same: the potential life-cycle cost savings from a competitive sourcing of engines for the JSF program do not provide a compelling business case. In net present value terms, the estimated costs of a competitive engine acquisition strategy are projected to be approximately equivalent to a sole-source scenario, or at the breakeven point, as a result of the additional sunk costs for the F-136 development program during the last three years. A table summarizing the results of the 2010 update and a comparison to the results of the initial 2007 analysis are provided at Tab B.

Implications of JSF Program Restructuring

During the preparation of the FY 2011 budget, the JSF program was restructured by adding four additional aircraft to the SDD flight-test program for the JSF aircraft, extending the duration of the SDD program by thirteen months, and reducing near-term JSF aircraft procurement quantities in accordance with the recommendations of an

¹ Bolcom, Christopher, *Proposed Termination of Joint Strike Fighter (JSF) F136 Alternate Engine*, Congressional Research Service, February 18, 2009.

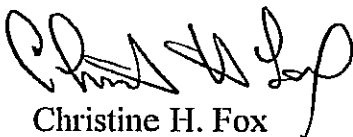
Independent Manufacturing Review Team (IMRT). Based on this restructuring, CAPE assesses that the competitive procurement of engines would now begin in 2017, three years later than the 2014 date assumed in prior analyses. This adjustment more appropriately reflects the programmatic and schedule changes incorporated into the restructured JSF aircraft development program, as well as the status of the alternative engine development program. It would provide necessary time to complete developmental qualification of the alternate engine. It would also provide a sufficient window for directed production buys to allow the second engine source to progress, with learning or cost improvement, to be positioned to compete more effectively with the primary engine source beginning in 2017.

Based on this assessment, CAPE analysis shows that it would require a DoD investment of \$2.9 billion (TY \$) over the next six years to get the alternate engine in position for competition. This investment would:

- Complete the development program (i.e., SDD) for the alternate engine.
- Fund an engine “component improvement program” (or CIP) to maintain engine currency.
- Perform directed buys of engines from the primary and second sources to prepare for a competition.
- Procure tooling, support equipment, and spares.

Differences in ‘sunk cost’ estimates

Congress has suggested that the alternative engine development costs are approximately 75% sunk, based on the total projected cost of the alternate engine development program (i.e., the SDD program), and question the need for the additional \$2.9B to get the second engine to competition. Although CAPE’s estimate of development (SDD) costs varies a little from Congress’ estimate, the major source of the difference is what is included in the cost to get to competition. The 75% estimate excludes associated Component Improvement Program (CIP) costs, which are recurring costs funded in the RDT&E appropriation that would continue through the duration of the JSF aircraft program. This figure also excludes all costs that would normally be funded in the procurement appropriation: the costs to perform directed buys of engines from the primary and second sources to prepare for a competition; and costs to procure tooling, support equipment, and spares to enable DoD to conduct competitive procurement of JSF engines beginning in 2017.



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