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General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

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June 13, 1997

Congressional Committees

Subject: Air Force Rationale for JDAM Production Decision

In a March 1997 letter to the Secretary of the Air Force, we expressed concern that the Air Force might be making a premature commitment to significant production of Joint Direct Attack Munitions (JDAM) before demonstrating through operational testing that the JDAM could meet key performance parameters.¹ On April 29, 1997, the Secretary responded that the Air Force had sufficient data to make the production decision. Since we had provided copies of our original letter to the congressional committees having jurisdiction, the purpose of this letter is to convey the Air Force's response (see enclosure), along with our analysis.

JDAM is a tailkit to be attached to a 2,000 pound bomb that will convert the unguided free-fall bomb into a precision guided, or smart munition. The services plan to buy about 87,500 kits at an estimated average cost of \$32,900, for a total cost of about \$2.87 billion. In our letter, we advised the Secretary that (1) the developmental and operational testing would not be completed before the decision to begin low-rate initial production, and (2) the number of units that the services planned to buy during this phase of production exceeded the amount needed to meet the objectives of low-rate initial production as set forth in the applicable Department of Defense regulations.

The Secretary replied that (1) a significant portion of the developmental testing was completed and some operational testing had been conducted prior to the low-rate initial production decision, (2) an operational assessment was prepared prior to the low-rate production decision, and (3) the low-rate initial production decision was not the final production decision. The Secretary did not comment on our concern about the number of JDAM units to be bought under low-rate production.

¹Joint Direct Attack Munition: Low-Rate Initial Production Decision
(GAO/NSIAD-97-116R, Mar. 17, 1997).

Our review indicates that, although the initial production decision was made in April 1997 and the low-rate production contract signed on April 30, 1997, dedicated developmental testing with the B-52H and the F/A-18C/D will not end until August 1997. Moreover, initial operational testing will not begin until September 1997. The Secretary's response stated that the Air Force conducted some operational testing with the F-16 in January 1997. However, an official of the Air Force Test and Evaluation Command stated that the January testing was not the same as operational testing because the Air Force used the F-16, which is not one of the threshold aircraft, and it did not have operational flight software. The same official further stated that even the threshold aircraft, the B-52H and the F/A-18C/D, would have to be certified as using operational software in order to be judged ready to conduct operational testing.

The January tests evaluated four areas of JDAM development, rating two as having no problems, while rating the other two as having issues that required attention. However, this assessment is not the same as an evaluation prepared after dedicated operational testing. According to Air Force officials, the purpose of this assessment was to evaluate performance to determine if the weapon will be ready for dedicated operational testing. Because of JDAM's developmental phase and consequent lack of data, some critical operational issues were not evaluated, in areas that were subsequently assessed as having no issues. For example, in their assessment of operational effectiveness and suitability, subsequently rated as having no issues, the testers did not assess whether the JDAM system (1) could allow a single aircraft to attack a target with multiple weapons; (2) allowed the attacking aircraft a wide range of tactically sound delivery options; or (3) allowed for timely and flexible targeting, retargeting, and employment against the user-validated worldwide target set.

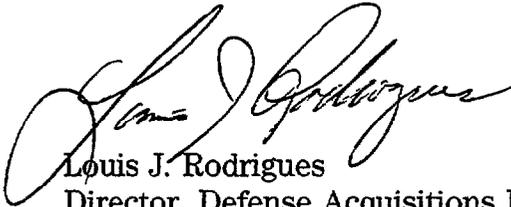
In response to our question about the potential impact of delaying the initial JDAM production decision until the Services complete developmental and operational tests with the F/A-18C/D and B-52H, the Secretary replied that such a delay would abrogate the production contract with McDonnell Douglas, would result in substantial contractor claims, and delay delivery of production tailkits. However, until the contract option for JDAM production was awarded on April 30, 1997, there would have been no basis for contractor claims. A delay in starting production may have required a renegotiation of the contract terms which may have affected the government's costs and would have likely delayed the initial deliveries.

Over the years, we have found numerous instances where production was permitted to begin based on factors other than the system's technical maturity.

Unfortunately, many of those systems later experienced significant effectiveness and/or suitability problems. Further, in today's national security environment, we believe there should be very few cases in which an urgent need dictates that DOD start low-rate initial production without a demonstrated level of confidence that the system will work as intended.

Our evaluations of numerous acquisition programs has led us to conclude that production, once begun, severely limits DOD's options if problems arise. We have recommended that the initial production decision be based on enough operational testing to ensure that the system will be operationally suitable and effective. The final production decision referred to by the Secretary is, we believe, a decision about the rate at which the articles will be produced rather than an opportunity to reconsider whether the weapon is operationally suitable and effective.

If you or your staff have any questions on these matters, please call me on (202) 512-4841 or Bill Graveline on (202) 512-4056.



Louis J. Rodrigues
Director, Defense Acquisitions Issues

Enclosure

List of Committees

The Honorable Strom Thurmond
Chairman
The Honorable Carl Levin
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable Ted Stevens
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The Honorable Daniel K. Inouye
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House of Representatives

The Honorable C. W. Bill Young
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The Honorable John P. Murtha
Ranking Minority Member
Subcommittee on National Security
Committee on Appropriations
House of Representatives

ENCLOSURE I

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SECRETARY OF THE AIR FORCE
WASHINGTON

APR 29 1997

Mr. Louis J. Rodrigues
Director, Defense Acquisition Issues
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Rodrigues:

This is the Department of the Air Force response to the General Accounting Office (GAO) Letter of Inquiry GAO/NSIAD-97-116R, "Joint Direct Attack Munition: Low-Rate Initial Production Decision", dated March 17, 1997 (GAO Code 707201), OSD Case 1321.

The Air Force nonconcurrs with the issues included in the GAO Letter of Inquiry concerning the Joint Direct Attack Munition (JDAM). The Air Force believes the JDAM program completed a significant portion of the Development Test & Evaluation (DT&E) program and demonstrated the JDAM weapon system works. Those results, coupled with the Air Force Operational Test and Evaluation Center's (AFOTEC) Operational Assessment, provided sufficient data for the Air Force Acquisition Executive to make a Low-Rate Initial Production decision. This is not the final production decision. The final production decision will be based on the completion of the B-52H and F/A-18 Initial Operational Test and Evaluation (IOT&E) programs, which will ensure the tail kit works and is successfully integrated with the threshold delivery platforms. The detailed Air Force comments in response to the GAO questions are provided in the enclosure.

If you have any additional questions, please contact Maj Paul Waugh, SAF/AQPB, 697-7715x110, or L/C Bob Marinar, AFPEO/WP, 695-8345.

Sincerely,

Enclosure

A handwritten signature in cursive script, appearing to read "Paul Waugh".

GAO/NSIAD-97-176R JDAM Production Decision

GAO LETTER OF INQUIRY GAO/NSIAD-97-116R
DATED MARCH 17, 1997
(GAO CODE 707201) OSD CASE 1321

"JOINT DIRECT ATTACK MUNITION: LOW-RATE INITIAL PRODUCTION
DECISION"

AIR FORCE RESPONSE TO THE GAO LETTER OF INQUIRY

QUESTION 1 In the absence of operational test results, how can the Air Force be sure that the Joint Direct Attack Munition (JDAM) is operationally reliable and suitable and will not need major design changes after committing to production? What are the cost, schedule and performance risks of making the production decision before operational testing is done with the aircraft? (pp. 3-4/GAO Letter of Inquiry)

AIR FORCE RESPONSE: The Air Force is not making a production decision before completing operational testing. The April 97 decision point will be to enter Low-Rate Initial Production (LRIP) -- 937 tail kits or 1.07% of the total JDAM buy. It is not a final production decision. The final production decision will take place the third quarter of FY98 after the completion of F/A-18 and B-52 operational testing.

The Congressional Heavy Bomber Study stated that the Services needed an adverse weather, accurate, air-to-ground capability as soon as possible. Based on this Congressional recommendation, the Air Force accelerated the JDAM program in FY95. Nevertheless, the acquisition strategy has not changed. We plan to complete an acceptable amount of Development Test & Evaluation (DT&E) and some Initial Operational Test & Evaluation (IOT&E) before the LRIP decision, then complete DT&E and IOT&E prior to the Milestone III full rate production decision. This strategy ensures the Air Force and Office of the Secretary of Defense (OSD) have sufficient testing to make a final production decision. By following this strategy, the JDAM program will mitigate cost, schedule and performance risks, while ensuring a timely and smooth transition to production.

QUESTION 2: How can the Air Force have confidence in the operational assessment without any operational test data and only limited development test data? (pp. 4/GAO Letter of Inquiry)

AIR FORCE RESPONSE: The Air Force has great confidence in the Operational Assessment (OA) because the operational testers based the assessment on actual testing. Early-on in the program, the JDAM acquisition community requested the user's (Air Combat Command) assistance in evaluating the operational suitability of the JDAM weapon system. The result of the System Program Office (SPO) and User interaction was the Integrated System Evaluation (ISE) test program.

The ISE program consisted of 22 JDAM guided drops over three weeks. Operational aircrews and maintenance crews from the Air Force weapons school planned, built-up, loaded, and flew these missions. The Air Force Operational Test and Evaluation Center (AFOTEC) personnel observed all phases of ISE. They also conducted mission planning testing on the B-52. AFOTEC personnel also observed many of the twenty DT&E guided test drops and the B-1B, B-2, B-52H, F-16C/D, and F/A-18C/D safe separation flight tests. AFOTEC personnel used all of this data to develop their OA findings.

The bottomline -- the JDAM test results speak for themselves; i.e.,

- 97% confident actual Circular Error Probable (CEP) is within 10.2 +/-20% meters (13 meter requirement)
- 100% Storage Reliability
- 90% Mission Reliability (90% requirement).

AFOTEC has more data to support the JDAM OA than in a typical weapons program. For example, the Sensor Fuzed Weapon (SFW) was the last major weapon system for which the Air Force made a production decision. Prior to the initial SFW LRIP decision, the Air Force conducted only a total of thirty-four missions, and those tests were conducted without using operational aircrews or munitions loading personnel. However, the initial OT&E testing was completed prior to the full-rate production decision. JDAM has followed a similar approach, but accelerated some operational testing prior to LRIP and conducted an Operational Assessment, with the support of AFOTEC.

QUESTION 3: Since none of the primary or test aircraft have a mature operational flight program that includes JDAM, how can the Air Force rely on the development test results? How can the Air Force determine a favorable operational assessment for the low-rate initial production decision based on data collected from the F-16C/D, the F/A-18C/D, and the B-52H aircraft software test tapes? (pp.4/GAO Letter of Inquiry)

AIR FORCE RESPONSE: The key to successful aircraft integration is a systematic, agreed-to, and executable integration program. The key objective is to define the interface early-on, reach agreement, define a process, and execute that process. JDAM did just that. The JDAM program established a signed Interface Control Document for the logical interface prior to Engineering, Manufacturing and Development (EMD) I contract award. The contractors knew the aircraft interface requirements up front. As the program progressed through EMD, the JDAM program established an integration process and conflict resolution process with each aircraft program office.

The DT&E program has shown how well the JDAM/aircraft integration process has worked. The F-16, F/A-18 and B-2 captive carry and guided drop flight tests have shown that JDAM can receive data from the aircraft, can transfer Global Positioning System (GPS) alignment, can navigate to the target, and can initiate the fuze and warhead. The

flight data backs-up the countless hours on weapon simulators in the F-16C/D, B-52H, B-2, B-1B and F/A-18C/D simulation-in-the-loop labs.

The Air Force will have completed a comprehensive OT&E program on the F/A-18 and B-52 prior to making a final production decision in FY98. In the mean time, the LRIP decision will be based on test data that shows the JDAM weapon system can interface with Air Force and Navy aircraft and destroy targets.

QUESTION 4: What impact would delaying the production decision until the Services complete developmental and operational tests with the F/A-18C/D and B-52H, have on the JDAM production program? (pp.4/GAO Letter of Inquiry)

AIR FORCE RESPONSE: Delaying the Low-Rate Initial Production decision, until the completion of developmental and operational testing will abrogate the production contract with McDonnell Douglas Aircraft (MDA) and would result in substantial claims from MDA and their vendors. Such a decision would also delay the delivery of production JDAM tail kits until the third quarter of FY99. This would result in a two-year delay in operational JDAM capability on the B-2, and would eliminate capability on the F/A-18C/D, B-1B, and B-52H until at least FY00 and maybe until FY01. This action contradicts recent Congressional direction to accelerate JDAM on all Air Force bombers.

MDA based their proposal on a JDAM Production Price Commitment Curve (PPCC) that says that the contractor will produce a given quantity of tail kits given a specific level of funding. The Government accepted this proposal and made the PPCC the cornerstone of the JDAM production contract. In order to meet this PPCC, MDA has secured fixed price contract options from major vendors through the first five production lots. These options give the contractor, and the Government, high confidence in the PPCC. If the Government were to unilaterally extend the LRIP decision, we believe MDA's loss of supplier options will inflict sufficient harm to enable MDA to seek relief from the PPCC. Since the Government is now in a sole-source environment, the Air Force believes that any settlement would be less favorable to the Government in terms of price, terms and conditions.

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