

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS,
AND INTERNATIONAL RELATIONS

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MEMORANDUM

To: Members of the Subcommittee on National Security, Emerging Threats, and International Relations

From: J. Vincent Chase, Chief Investigator

Re: Briefing memo for the hearing entitled, *Is DOD Meeting Joint Strike Fighter (JSF) International Cooperative Program Goals* scheduled for July 21st at 11:00 a.m. in room 2154 Rayburn House Office Building.

PURPOSE OF THE HEARING

To determine if international cost sharing agreements will adversely affect the overall development and production of the Joint Strike Fighter (JSF) and examine whether the JSF program office can mitigate the risks associated with technology transfers to foreign suppliers.

HEARING ISSUE

- 1. To what extent do the international JSF program partners share cost increases?**
- 2. How does the JSF program office anticipate and mitigate risks associated with international technology transfer?**

BACKGROUND

The Joint Strike Fighter (JSF) is part of the Department of Defense's tactical aircraft modernization plan, which includes the Air Force F-22 Raptor, and the Navy F/A-18 E/F Super Hornet. The Joint Strike Fighter program is unique because the aircraft would incorporate common components and parts for several services and allied governments for their different missions. The JSF is the Defense Department's largest acquisition program in terms of cost and the number of aircraft to be produced. **(Web Resource 1)**

The Joint Strike Fighter program is scheduled to begin production around 2008 and operational service to begin around 2010. The JSF program will account for more than half of the fighters produced by the United States between 2008 and 2020 if all three tactical aircraft procurement programs remain intact.

The JSF program is an ambitious effort to achieve commonality in fighter design and construction among the aircraft variants desired by the Air Force, Navy, and Marine Corps. The aim is to achieve approximately 80 percent commonality among the three design variants. **(Web Resource 2)**

The JSF program envisions the development and production of three highly common variants: a land-based conventional landing and take-off (CTOL) version for the Air Force, a carrier-based CTOL version (CV) for the Navy, and a short take-off vertical landing (STOVL) version for the Marine Corps and the British Royal Navy and Royal Air Force.

If a common basic design is achieved, the services anticipate that the size of their orders can hold down production costs. The Department of Defense quarterly Selected Acquisition Report (SAR) of December 30, 2002 estimates the JSF program will cost \$1.197 trillion in current-year dollars for 2,457¹ aircraft, which equates to a program acquisition cost of \$81 million per aircraft. Currently, plans

¹ Included in this figure are 14 developmental aircraft purchased for the Navy and Air Force with RDT&E funds.

call for the acquisition of 1,763 aircraft for the Department of the Air Force and 680 aircraft for the Department of the Navy and Marine Corps.²

All JSF planes will be single-engine, single-seat aircraft with supersonic capability and some degree of stealth (low observability to radar and other sensors). Combat ranges and payloads will vary in the different service variants.

The Joint Strike Fighter (JSF) research and development partners include the Air Force, the Marine Corps, the Navy, and Britain's Royal Navy and Air Force. JSF program officials project the flyaway cost per aircraft in FY1994 dollars at \$31 million per unit for the Air Force CTOL variant, \$31-\$38 million per unit for the Navy CV variant (carrier-based CTOLs), and \$30-\$35 million for the Marine Corps STOVL variant. **(Web Resource 2)**

One key objective of the Joint Strike Fighter (JSF) acquisition program is affordability by reducing the development, production, and ownership costs of the program relative to other fighter aircraft procurements.

To achieve this objective, the JSF program office has incorporated various DOD and commercial best practices into the Joint Strike Fighter acquisition strategy. These initiatives include: modifying the traditional weapons acquisition cycle, revising the requirements determination process, and advancing the maturity level of critical technologies (technology maturation) so they represent low technical risk before entering production.³

The expectation is that incorporating these initiatives into the JSF acquisition strategy will avoid the cost growth, schedule slippage, and performance shortfalls experienced in other weapon systems. **(Attachment 1)**

² As part of an FY2004 budget briefing on February 3, 2003, Office of the Secretary of Defense (OSD) Comptroller Dov Zackheim confirmed that as part of the Navy and Marine Corps Tactical Air Integration Plan (TAI) the Navy was planning to reduce JSF purchases from 1,089 to 680 aircraft.

³ Hearing before the Subcommittee on National Security, Veterans Affairs and International Relations, *Joint Strike Fighter Acquisition Reform: Will It Fly?*, Serial No. 106-202, May 16, 2000.

The Joint Strike Fighter (JSF) program emerged in 1995 from the Joint Advanced Strike Technology (JAST) program, which began in 1993 as a result of the administration's Bottom-Up Review (BUR) of U.S. defense policy. BUR envisioned the JAST program replacing the Navy's A-6 and the Air Force's F-16 fighter/attack planes.

In 1995, in response to congressional direction, a program led by the Defense Advanced Research Projects Agency (DARPA) to develop and advanced short takeoff and vertical landing (STOVL) aircraft was incorporated into the JAST program, which opened the way for Marine Corps and British Navy participation. The name of the program was changed to the Joint Strike Fighter (JSF) to focus on the joint development and production of the next-generation of fighter/attack aircraft.

In 1996, the Department of Defense announced two contractors, Boeing and Lockheed Martin, had been chosen to compete in the 1997-2001 concept demonstration phase, when each contractor would build and flight-test two aircraft (one CTOL and one STOVL). On October 26, 2001 the Department of Defense announced that the \$19 billion JSF system development and demonstration contract phase was awarded to Lockheed Martin representing the largest defense contract in history.

The three variants of the Lockheed Martin design (CTOL, CV, and STOVL aircraft) are to have the maximum commonality in airframe, engine, and avionics components to reduce production, operation, and support costs. In addition, the JSF program is structured to use a common production line to produce the three aircraft variants.

The next significant milestone for the JSF program will be the critical design review, currently planned for July 2005. At that time, the final aircraft design should be mature and technical problems resolved so that the production of the aircraft can begin with minimal changes expected. The program is scheduled to begin production around 2008 and will remain in production at least through the 2020. **(Web Resource 2)**

Another departure from previous aircraft acquisition and procurement efforts is the international scope of the Joint Strike Fighter program. The Joint Strike Fighter program structure is based on a set of cooperative agreements involving both government and industry from the United States and currently eight other countries.

These cooperative agreements or memoranda of understanding (MOU) identify the roles, responsibilities, and expected returns for all participants and are negotiated for each acquisition phase: 1) concept demonstration (CD), 2) system development and demonstration (SDD), and 3) production. Only the CD and SDD phase agreements have been negotiated to date, and participation in one phase does not guarantee participation in future phases.

U.S. policymakers have become increasingly interested in pursuing acquisition and procurement programs with allies. Cost appears to be the major motivation because military technologies have become more complex and more expensive, and the U.S. defense procurement budget alone cannot always support the development costs of new high technology weapon systems. In addition, collaborative programs offer the potential for greater operational integration of allied forces and greater political integration through shared training and doctrine. **(Attachment 3)**

The United Kingdom is a full collaborative Level I partner. Italy and the Netherlands are Level II partners, with Turkey, Norway, Australia, Canada, and Denmark subscribed as Level III partners.⁴ **(Attachment 2, p.30-31)**

These cooperative agreements vary depending on the funds invested in the program. The agreements are seen as benefiting the United States by defraying aircraft costs, while improving interoperability with allies. Foreign participants benefit in that they can influence requirements for the final JSF aircraft, access

⁴ The distinction between Level I, II and III partners is based on the following: Level I and Level II partners are guaranteed a waiver for non-recurring production costs; Level III partners are not guaranteed a waiver for non-recurring production costs. Under the first MOU, the United Kingdom shared in the selection of the production contract, this is the distinction between the Level I partner and the Level II partner's.

specific program technology information, and develop business-to-business relationships for possible future partnerships.

There has been growing international frustration with JSF workshare arrangements.⁵ In response, DOD released a report assessing the return on investment for international JSF participants. The report issued in June 2003, *JSF Industrial Participation: A Study of Country Approaches and Financial Impacts of Foreign Supplier*, found countries that have partnered with the U.S. to fund the development and production of the JSF stand to earn a significant return on their investment. **(Attachment 4)**

Joint Strike Fighter partner countries stand to reap \$5-\$40 of revenue for every \$1 invested in the program, according to First Equity, a Westport, Conn.-based investment banking firm specializing in aerospace and defense. Under contract with DOD's Office of Industrial Policy, First Equity reviewed the participation of non-U.S. suppliers, including an assessment of partner country strategies and the financial impact on national defense industries. Besides Canada, Italy and the Netherlands, other countries investigated were Australia, Denmark, Norway, Turkey, and the U.K. U.S. First Equity also compiled a list of 250 companies that could become JSF suppliers.

The study found the loudest complaint from partner countries has been the "lateness and ineffectiveness" of the Global Project Authorization (GPA) process, originally developed to foster an environment of international industrial cooperation. This had the greatest impact on those suppliers that did not have well-established, pre-existing relationships with U.S. prime contractors and first-tier suppliers. The report concluded the JSF program will provide great benefits to the U.S. and global defense industrial base.

JSF foreign partners have contributed over \$4.5 billion, or about 14 percent, for system development and demonstration (SDD) and are expected to purchase about 653 aircraft beginning in the 2012-2015 timeframe. Recently, Israel and Singapore indicated their intention to participate in the JSF program as Security Cooperation

⁵ InsideDefense.com, DOD Study: JSF Could Generate High Return On Investment For Partner Countries, June 13, 2003.

Participants, a non-partner arrangement, which offers limited access to program information. **(Attachment 5)**

According to DOD, Foreign Military Sales to these and other non-partner countries could include an additional 1,500-3,000 aircraft. **(Attachment 2, p.9)**

Arms Control Export Act

The Arms Export Control Act⁶ (AECA) provides the Department of Defense (DOD) the authority to enter into cooperative programs with U.S. allies. In March 1997, the Secretary of Defense directed DOD to engage the allies in discussions to determine the parameters of potential collaboration to meet coalition needs and ensure interoperability between allied systems. DOD guidance states DOD will give favorable consideration to transfers of defense articles, services, and technology consistent with national security interests to support these international programs. **(Attachment 2, p.4)**

The AECA further provides that when the United States enters into cooperative agreements, there should be no requirement for industrial or commercial compensation that is not specifically stated in the agreement. The DOD Arms Transfer Policy Review Group approved the JFS system development and demonstration negotiations based on the AECA requirement that participants contribute an equitable share of the costs and receive an equitable share of the results of a project.

A large number of export authorizations are necessary to share project information with cooperative partner governments, solicit bids from partner suppliers, and execute contracts. During the concept demonstration phase over 400 export authorizations and amendments were granted. According to GAO, Lockheed Martin indicated export authorizations could exceed 1000 during the SDD phase and strain JSF program resources.

⁶ Arms Export Control Act (22 U.S.C. sec. 2767)

In December 2001, the Subcommittee asked the General Accounting Office (GAO) to review the Joint Strike Fighter cooperative agreements pertaining to:

- the role of participating countries in making cost and performance trade-off decisions,
- how program cost increases will be shared, and
- the mechanisms in place or planned to protect sensitive data and technology developed by U.S. contractors. (**Attachment 6**)

In response to this request from the Subcommittee, GAO will release a new report, *JOINT STRIKE FIGHTER ACQUISITION: Cooperative Program Needs Greater Oversight To Ensure Goals Are Met*, (GAO-03775) at the July 21st hearing and testify about the complications of managing JSF program costs resulting from international participation and the challenges JSF technology transfers present for program execution, international suppliers and disclosure policy. (**Attachment 2**)

DISCUSSION OF HEARING ISSUES

1. To what extent do the international JSF program partners share cost increases?

The Joint Strike Fighter program is not immune to unpredictable cost growth, schedule delays, and other management challenges that have historically plagued Department of Defense acquisition programs

According to the General Accounting Office, Joint Strike Fighter cooperative partners are not required to share future program costs under the terms of negotiated memoranda of understanding (MOU). Once established, the contributions for the partners cannot be revised or increased by the United States without the consent of the partner government as stated in the agreements.

According to GAO, since 1996 cost estimates for the system development and demonstration phase increased from 21.2 billion to \$33.1 billion as a result of scope changes and increased knowledge about cost. These cost increases were absorbed by the United States.

According to DOD, the partners were not required to share any of these costs because the changes were DOD directed and unrelated to partner actions or requirements. DOD expects current provisions in partner MOU agreements will maximize partner cost sharing when appropriate.

However, if these scope changes improved JSF capabilities one has to question why DOD didn't ask the partners to share in those cost increases? In addition, if DOD did not have accurate cost data at the time the MOUs were negotiated with the partners, why didn't DOD include language in the MOUs requiring partners to share any cost increases or decreases when more accurate cost data was available?

In addition, some are raising concerns that additional funding from partners to support future cost increases will not be available should political support diminish for the JSF program in those countries. As a result, if program costs increase, the burden is likely to fall almost entirely on the United States.

The Joint Strike Fighter program office and Lockheed Martin will use competitive contracting to minimize cost increases to the JSF program. Unlike other cooperative programs, the JSF program will not guarantee foreign or domestic suppliers a predetermined level of work based on their country's financial contribution to the program. Instead, foreign and domestic suppliers will generally compete for JSF work. However, some partner countries have limited aerospace capabilities which may require the prime contractor to award subcontracts without the benefit of a competitive contract process. As a result, lack of a competitive contract process could cancel any potential savings.

In addition, GAO found some foreign contracts have already been awarded without the benefit of a competitive contract process. As a result, the JSF program will not capture any potential benefits from a competitive contract process.

Finally, if a partner refuses to share legitimate costs during the system development and demonstration phase, the U.S. can use future phase negotiations

to recoup all or part of those costs. These include reducing levies from future sales, refusing to waive portions of the non-recurring cost charges for Level III partners, or in the worst case, choosing not to allow further participation in the program. However, although these tools might help to encourage cost sharing, again, there is no certainty they would be effective.

2. How does the JSF program office anticipate and mitigate risks associated with international technology transfer?

U.S fears regarding leakage of classified technology has become more acute since the September 11, 2001 terrorist attacks. As a result, the issue of agreeing on technology access is problematic for the JSF program.

According to GAO, export authorizations for critical suppliers need to be planned, prepared and approved in a timely manner to avoid program schedule delays. Without proper planning, there could be pressure to expedite review and approvals of export authorizations to support program goals and schedules. Some have raised concerns that the large number of export authorizations needed during the JSF SDD and production phases, and limited program office resources may result in inadequate planning and reviews of license content and have the unintended consequence of releasing sensitive security data.

The United States has committed to design and develop the JSF aircraft intended for partners to be as common to the U.S. JSF configuration as possible to enhance interoperability among partners. As a result, the program office has requested exceptions from the National Disclosure Policy to transfer certain sensitive technologies and related design and manufacturing data to foreign countries and suppliers. However, according to GAO, these technology transfer decisions have been influenced by requirements to achieve interoperability and aircraft commonality goals rather than adjusting program goals to meet current disclosure policy.

In addition, GAO learned Lockheed Martin has not yet fulfilled a requirement to complete a long-term plan that will be necessary to execute the JSF program using international subcontractors to design and manufacture key parts of the aircraft.

Failure to complete this plan will inhibit the program's ability to identify export authorizations needed for international suppliers or anticipate problems subcontractors could face because of licensing or releasability concerns.

Finally, as the first aviation acquisition program to heavily incorporate foreign participation in development and production, the JSF program's technology sharing mechanisms are still evolving. British government officials have expressed some frustration over their perception that UK contractors have not garnered their fair share of work on the project. British officials also fear that U.S. concerns about maintaining control over proprietary U.S. stealth technology may limit UK access to JSF production and maintenance work. British officials want to establish an assembly line because it is critically important for the UK to establish an indigenous ability to support and modify the JSF throughout the aircraft's lifespan.

Norwegian government officials have also voiced complaints about a perceived lack of JSF workshare. In January, Norway signed an industrial partnership agreement with the Eurofighter Consortium, a move many believe to be motivated by Norway's increasing dissatisfaction with that country's access to JSF business.

WITNESS TESTIMONY

PANEL ONE

Katherine Schinasi, Director, General Accounting Office will discuss the complexity of controlling costs, technology transfer risks and the need for greater management oversight challenges resulting from international participation of the Joint Strike Fighter program.

PANEL TWO

Mr. Al Volkman, Director (International Cooperation), Department of Defense will testify how DOD will ensure international JSF program cooperation and how memorandum's of understanding (MOU's) are intended to mitigate cost sharing risks.

Ms. Suzanne Patrick, Deputy Under Secretary (Industrial Policy), Department of Defense will discuss international industrial policy and the complaint from all the partner countries regarding the "lateness and ineffectiveness" of the Global Project Authorization (GPA) process.

Major General John L. "Jack" Hudson, Program Manager, Joint Strike Fighter (JSF) Program will testify how the JSF program office is managing cost sharing, technology transfer, and partner expectations for industrial participation.

ATTACHMENTS

1. *Joint Strike Fighter Single Acquisition Management Plan*, Joint Strike Fighter Program Office, Crystal City, Arlington, Virginia.
2. *JOINT STRIKE FIGHTER ACQUISITION: Cooperative Program Needs Greater Oversight To Ensure Goals Are Met*, Draft Report, GAO-03-775, July 2003.
3. *The Pros and Cons of International Weapons Procurement Collaboration*, Mark Lorell and Julia Lowell, 1995, National Defense Research Institute, RAND.
4. *JSF Industrial Participation: A Study of Country Approaches and Financial Impacts of Foreign Supplier*, Office of the Deputy Under Secretary of Defense (Industrial Policy), Department of Defense, June 2003.
5. *Lockheed martin UK To Provide European HUB For World's Largest Defence Programme*, Pressi.Com, April 1, 2003; *Norway to Contribute to JSF Development*, Norsk Telegrambyra Report, FBIS Translated Text, June, 7, 2003; *JSF Program: Italy to Invest More Than \$1 Billion in 4-Percent Stake*, Rivista Italiana Difesa, FBIS Translated Text, June 6, 2002; *Turkey Will Buy 150 "JSF F-35" Joint Strike Aircraft Between 2015-2030*, Utku Cakirozer, FBIS Translated Text, July 5, 2002.
6. Letter of Inquiry from Congressman Christopher Shays, Chairman, Subcommittee on National Security, Emerging Threats, and International Relations December 4, 2001 to United States Comptroller General David Walker.
7. Letter from the Office of the Under Secretary of Defense, Alfred G. Volkman, Director, International Cooperation dated June 30, 2003 to Katherine V. Schinasi, Director, Acquisition and Sourcing Management U.S. General Accounting Office.

WEB RESOURCES

1. CRS Issue Brief for Congress, *Tactical Aircraft Modernization: Issues for Congress*, June 27, 2003, IB-92115, The Library of Congress, Washington, D.C.

<<http://www.congress.gov/erp/ib/html/IB92115.html>>

2. CRS Report for Congress, *Joint Strike Fighter Program: Background, Status, and Issues*, June 16, 2003, RL30563, The Library of Congress, Washington D.C.

<<http://www.congress.gov/erp/rl/html/RL30563.html>>

WITNESS LIST

PANEL ONE

Katherine V. Schinasi, Director
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PANEL TWO

Mr. Al Volkman, Director
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Department of Defense

Ms. Suzanne Patrick, Deputy Under Secretary
Acquisition, Technology & Logistics (Industrial Policy)
Department of Defense

Major General John L. “Jack” Hudson, Program Manager
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