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IS DOD MEETING JOINT STRIKE FIGHTER [JSF] INTERNATIONAL COOPERATIVE PROGRAM GOALS?

HEARING

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

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IS DOD MEETING JOINT STRIKE FIGHTER [JSF] INTERNATIONAL COOPERATIVE PROGRAM GOALS?

MONDAY, JULY 21, 2003

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS AND INTERNATIONAL RELATIONS,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 11 a.m., in room 2154, Rayburn House Office Building, Hon. Michael R. Turner (vice chairman of the subcommittee) presiding.

Present: Representatives Shays, Turner, Schrock, and Kucinich.

Staff present: Lawrence Halloran, staff director and counsel; J. Vincent Chase, chief investigator; Thomas Costa, professional staff member; Robert A. Briggs, clerk; Joe McGowen, detailee; Chris Skaluba, fellow; David Rapallo, minority counsel; and Jean Gosa, minority assistant clerk.

Mr. TURNER. Good morning. A quorum being present, the Subcommittee on National Security, Emerging Threats and International Relations hearing entitled, "Is DOD Meeting Joint Strike Fighter [JSF], International Cooperative Program Goals," is called to order.

The Joint Strike Fighter [JSF], could be a model for 21st century system acquisition, promising three-planes-in-one jointness, low risk development strategies, and unprecedented international participation. Or it could fall prey to the same cost growth, schedule delays, and inter-service disputes that plagued so many cold war procurements.

In previous hearings on the JSF programs, we examined efforts to implement a knowledge-based development cycle, allowing technology maturity and design stability, not external funding deadlines, to drive the program forward. Today, we ask whether international participation and technology sharing are being managed so as to maximize benefits and minimize risk to the Department of Defense's largest cooperation program.

At our request, the General Accounting Office [GAO], examined the complex set of relationships between the JSF program and its eight international partners. They assessed how DOD measures expected cost-sharing benefits, manages foreign partner expectations, and mitigates the risks of significant technology transfers. Their report, which has been released, finds the JSF program in need of stronger management and oversight, because international partici-

pants currently have no requirement or incentive to share in cost growth. GAO also found that the Department of Defense has insufficient knowledge about contractor activities to anticipate and mitigate risks associated with technology transfers. And the countries that are currently our eight international are the United Kingdom, which is a full collaborative level 1 partner, Italy and the Netherlands are level 2 partners, Turkey, Norway, Australia, Canada, and Denmark are level 3 partners.

In meeting our national and global security obligations, collaborative programs with allies offer the potential for common doctrine, shared training, and far greater operational integration in combat. That level of collaboration also demands greater access to sensitive defense technologies than we are accustomed. It also may demand technology transfers at a pace and volume our current laws, regulations, and management systems cannot handle safely.

Others in the Department of Defense and defense ministries in other nations are watching the JSF for signs that collaboration is worth emulating in other programs.

For the Joint Strike Fighter to fly as the new standard for efficient, affordable, truly joint acquisition, management of international participation and technology transfers must be improved. As vice chairman of this subcommittee as well as a member of the Armed Services Committee, I am very interested in the continued monitoring of this program.

Today, witnesses from GAO and the Department of Defense will discuss these important issues and efforts to strengthen management of the Joint Strike Fighter program. We welcome them, and we look forward to their testimony.

And we have with us today Mr. Kucinich, who is the ranking member on this subcommittee, and Mr. Schrock, who is also in attendance and a member of the subcommittee. The individuals testifying for us today are Katherine Schinasi, Director, Acquisition and Sourcing Management, U.S. General Accounting Office. She is accompanied by Brian Mullins, who is the Senior Defense Analyst, Acquisition and Source Management, U.S. General Accounting Office. Mr. Al Volkman, Director, Acquisition, Technology, and Logistics, International Cooperation, Department of Defense. Ms. Suzanne Patrick, Deputy Under Secretary, Acquisition, Technology and Logistics, Industrial Policy, Department of Defense. And Major General John L. Hudson, Program Manager, Joint Strike Fighter [JSF], Program, Department of Defense.

Mr. Kucinich, would you have an opening statement?

[The prepared statement of Hon. Christopher Shays follows:]

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SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS,
AND INTERNATIONAL RELATIONS

Christopher Shays, Connecticut
Chairman
Room B-372 Rayburn Building
Washington, D.C. 20515
Tel: 202 225-2548
Fax: 202 225-2382
E-mail: hr.groc@mail.house.gov

Statement of Rep. Christopher Shays
July 21, 2003

The Joint Strike Fighter, or JSF, could be a model for 21st Century weapon system acquisition, promising three-planes-in-one jointness, low risk development strategies and unprecedented international participation. Or, it could fall prey to the same cost growth, schedule delays and inter-service bickering that plagued so many Cold War procurements.

In previous hearings on the JSF program, we examined efforts to implement a knowledge-based development cycle, allowing technology maturity and design stability - not external funding deadlines - to drive the program forward. Today we ask whether international participation and technology sharing are being managed so as to maximize benefits and minimize risks to the Department of Defense's (DOD) largest cooperative program.

At our request, the General Accounting Office (GAO) examined the complex set of relationships between the JSF program and its eight international partners. They assessed how DOD measures expected cost sharing benefits, manages foreign partner expectations and mitigates the risks of significant technology transfers.

Their report, released, finds the JSF program in need of stronger management and oversight because international participants currently have no requirement or incentive to share in cost growth. GAO also found DOD

has insufficient knowledge about contractor activities to anticipate and mitigate risks associated with technology transfers.

In meeting our national and global security obligations, collaborative programs with allies offer the potential for common doctrine, shared training and far greater operational integration in combat. That level of collaboration also demands greater access to sensitive defense technologies than we are accustomed. It also may demand technology transfers at a pace and volume our current laws, regulations and management systems cannot yet handle safely.

Others in DOD, and defense ministries in other nations, are watching the JSF for signs that collaboration is worth emulating in other programs. For the Joint Strike Fighter to fly as the new standard for efficient, affordable, truly joint acquisition, management of international participation and technology transfers must be improved.

Today, witnesses from GAO and the Department of Defense will discuss these important issues, and efforts to strengthen management of the Joint Strike Fighter program. We welcome them, and we look forward to their testimony.

Mr. KUCINICH. Thank you very much, Mr. Chairman. I want to thank you for calling this hearing on the Joint Strike Fighter program, and welcome the witnesses to this hearing.

I would like to raise two issues regarding this topic that I hope our witnesses can address. First is the issue of cost sharing.

As we learned in earlier hearings on this program and the F–22, the increasing cost of aircraft development and production programs is one of the most reliable events in Washington. As we have seen over and over again, DOD is not capable of accurately predicting cost increases, and its efforts to effectively control them are, frankly, lacking intent and competence. I believe any serious person examining DOD's track record would agree.

For example, as we learned at our last hearing, F–22 production costs have increased by nearly $20 billion since 1996, and the number of planes the Pentagon can afford within the congressional cost cap for this program has plummeted to less than a third of their original goal.

Today, the subcommittee will focus on the Joint Strike Fighter program. I look forward to the testimony of the U.S. General Accounting Office, which will release a new report on the implications of the international cost sharing agreement of the JSF program.

As the GAO report demonstrates, international involvement in the program has benefits and risks. On the one hand, foreign governments will share at least some of the cost of the program. However, the GAO report concludes that this cost sharing arrangement is by no means ideal. While the inclusion of international partners is intended to defray some costs, the GAO report finds that partner countries are not required to share any future program cost increases.

As we know from our past experience, staggering cost increases are a guarantee in aircraft development programs. For the JSF cost sharing arrangement to allow foreign partners to be exempt from future cost increases seems to ignore reality and submit the American taxpayer to an unfair burden.

Indeed, GAO concluded that if costs increase, which is a virtual certainty, "the burden may fall almost entirely on the United States." I hope our witnesses can address this concern.

My second concern is that the Pentagon's current plan for developing and producing aircraft will do nothing to address the fundamental problem with our military's rapidly aging fleet. As the average age of our fleet continues to grow, maintenance costs will continue to soar, and the effectiveness of the U.S. military will decline.

Buying only a few hundred expensive planes from the F–22 and JSF programs will not decrease the average age of our planes. To the contrary, under the Pentagon's current plan, the average age of U.S. aircraft will continue to grow.

Mr. Chairman, these may seem like obvious problems, but I have yet to hear an obvious explanation for how the Pentagon intends to address them. And, until I do, I cannot support the administration's current plan for aircraft development and/or acquisition.

I thank you, Mr. Chairman. And, once again, thank you for making this hearing possible.

[The prepared statement of Hon. Dennis J. Kucinich follows:]

Opening Statement
Representative Dennis J. Kucinich

Ranking Member
Subcommittee on National Security,
Emerging Threats, and International Relations

July 21, 2003

MR. CHAIRMAN, THANK YOU FOR CALLING THIS HEARING ON THE JOINT STRIKE FIGHTER PROGRAM. I WOULD LIKE TO RAISE TWO ISSUES REGARDING THIS TOPIC THAT I HOPE OUR WITNESSES CAN ADDRESS. FIRST IS THE ISSUE OF COST-SHARING.

AS WE LEARNED IN EARLIER HEARINGS ON THIS PROGRAM AND THE F-22, THE INCREASING COST OF AIRCRAFT DEVELOPMENT AND PRODUCTION PROGRAMS IS ONE OF THE MOST RELIABLE EVENTS IN WASHINGTON. AS WE HAVE SEEN OVER AND OVER AGAIN, THE DEFENSE DEPARTMENT IS INCAPABLE OF ACCURATELY PREDICTING COST INCREASES, AND ITS EFFORTS TO EFFECTIVELY CONTROL THEM ARE, FRANKLY, INEPT. I BELIEVE ANY SERIOUS PERSON EXAMINING THEIR TRACK RECORD MUST AGREE WITH THIS CONCLUSION.

FOR EXAMPLE, AS WE LEARNED AT OUR LAST HEARING, F-22 PRODUCTION COSTS HAVE INCREASED BY NEARLY 20 BILLION DOLLARS JUST SINCE 1996. AND THE NUMBER OF PLANES THE PENTAGON CAN AFFORD WITHIN THE CONGRESSIONAL COST CAP FOR THIS PROGRAM HAS PLUMMETED TO LESS THAN A THIRD OF THEIR ORIGINAL GOAL.

TODAY THE SUBCOMMITTEE WILL FOCUS ON THE JOINT STRIKE FIGHTER PROGRAM. I LOOK FORWARD TO THE TESTIMONY OF THE U.S. GENERAL ACCOUNTING OFFICE, WHICH WILL RELEASE A NEW REPORT ON THE IMPLICATIONS OF THE INTERNATIONAL COST SHARING AGREEMENT OF THE J.S.F. PROGRAM.

AS THE G.A.O. REPORT DEMONSTRATES, INTERNATIONAL INVOLVEMENT IN THE PROGRAM HAS BENEFITS AND RISKS. ON ONE HAND, FOREIGN GOVERNMENTS WILL SHARE AT LEAST SOME OF THE COSTS OF THE PROGRAM.

HOWEVER, THE G.A.O. REPORT CONCLUDES THAT THIS COST SHARING ARRANGEMENT IS BY NO MEANS IDEAL. WHILE THE

INCLUSION OF INTERNATIONAL PARTNERS IS INTENDED TO DEFRAY SOME COSTS, THE G.A.O. REPORT FINDS THAT PARTNER COUNTRIES ARE NOT REQUIRED TO SHARE ANY FUTURE PROGRAM COST INCREASES.

AS WE KNOW FROM OUR PAST EXPERIENCE, STAGGERING COST INCREASES ARE A GUARANTEE IN AIRCRAFT DEVELOPMENT PROGRAMS. FOR THE J.S.F. COST SHARING ARRANGEMENT TO ALLOW FOREIGN PARTNERS TO BE EXEMPT FROM FUTURE COST INCREASES SEEMS TO IGNORE REALITY AND SUBMIT THE AMERICAN TAXPAYER TO AN UNFAIR BURDEN.

INDEED, G.A.O. CONCLUDED THAT IF COSTS INCREASE, WHICH IS A VIRTUAL CERTAINTY, "THE BURDEN MAY FALL ALMOST ENTIRELY ON THE UNTIED STATES." I HOPE OUR WITNESSES CAN ADDRESS THIS CONCERN.

MY SECOND CONCERN IS THAT THE PENTAGON'S CURRENT PLAN FOR DEVELOPING AND PRODUCING AIRCRAFT WILL DO NOTHING TO ADDRESS THE FUNDAMENTAL PROBLEM WITH OUR

MILITARY'S RAPIDLY AGING FLEET. AS THE AVERAGE AGE OF OUR FLEET CONTINUES TO GROW, MAINTENANCE COSTS WILL CONTINUE TO SOAR, AND THE EFFECTIVENESS OF THE U.S. MILITARY WILL DECLINE.

BUYING ONLY A FEW HUNDRED EXPENSIVE PLANES FROM THE F-22 AND JSF PROGRAMS WILL NOT DECREASE THE AVERAGE AGE OF OUR PLANES. TO THE CONTRARY, UNDER THE PENTAGON'S CURRENT PLAN, THE AVERAGE AGE OF U.S. AIRCRAFT WILL CONTINUE TO GROW.

MR. CHAIRMAN, THESE MAY SEEM LIKE OBVIOUS PROBLEMS, BUT I HAVE YET TO HEAR AN OBVIOUS EXPLANATION FOR HOW THE PENTAGON INTENDS TO ADDRESS THEM. UNTIL I DO, I CANNOT SUPPORT THE ADMINISTRATION'S CURRENT PLAN FOR AIRCRAFT DEVELOPMENT AND ACQUISITION.

THANK YOU, MR. CHAIRMAN.

Mr. TURNER. I ask for unanimous consent that all members of the subcommittee be permitted to place any opening statement in the record, and that the record remain open for 3 days for that purpose. Without objection, so ordered. I ask further unanimous consent that all witnesses be permitted to include their written statements in the record. And without objection, so ordered.

Turning then to the administration of the oath. If the witnesses would stand.

[Witnesses sworn.]

Mr. TURNER. Note for the record that the witnesses responded in the affirmative. Thank you.

During the testimony, the lights that appear before you will mark off 5-minute increments. Each of you will have 10 minutes for your presentation before the committee. We will begin with Katherine Schinasi. Thank you.

STATEMENT OF KATHERINE V. SCHINASI, DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY BRIAN MULLINS, SENIOR DEFENSE ANALYST, ACQUISITION AND SOURCING MANAGEMENT, U.S. GENERAL ACCOUNTING OFFICE

Ms. SCHINASI. Thank you, Mr. Chairman, and members of the subcommittee. I am pleased to be here today to discuss the Joint Strike Fighter program's international acquisition strategy. With your permission, I would like to summarize my statement, and then, as you indicated, have the entire text put in the record.

DOD views the Joint Strike Fighter program as both a model for acquisition reform and as an example for the future of international cooperation. We have previously reported to the subcommittee on how the Joint Strike Fighter program is being managed relative to best practices for product development. Today, I would like to focus my remarks on the international structure of the Joint Strike Fighter program, the benefits and challenges cooperative development brings to the overall acquisition approach, and the opportunity DOD has to achieve critical program goals.

As we found in our earlier assessments of how well the Joint Strike Fighter program is meeting its cost schedule and performance goals, we have again determined that one of the keys to lowering risks of managing the international participants in this program is having sufficient knowledge on which to base decisions. The Joint Strike Fighter program is structured on a multi-tiered set of relationships involving both government and industry from the United States and eight partner countries. We prepared a chart that illustrates the significant relationships between the participants.

At the top level, there is a framework MOU and supplemental memorandums of agreement between the Department of Defense and each of the partner countries' departments of defense that identify the roles, responsibilities, and expected benefits for all participants. And I would be happy to answer questions about this chart as we go through the Q and A session.

The current agreement covers only the system development and demonstration phase, which was begun with the contract award to Lockheed Martin, the prime contractor, in October 2001, and is

scheduled to run about 10 years at an estimated cost of $33 billion. Additional agreements will need to be negotiated for the production phase of the Joint Strike Fighter program.

The United States and its foreign partners expect to realize a variety of benefits from cooperation on the Joint Strike Fighter program. The United States expects to benefit from partner contributions and potential future aircraft sales through access to industrial capabilities in partner countries and through improved interoperability with allies once the aircraft is fielded. Partner governments expect to obtain an aircraft that they could not afford to develop on their own and to benefit from increased access to Joint Strike Fighter program data and technology transferred from U.S. aerospace companies to their national industries.

Because of the significant expectations partners have regarding government and industry return, the Joint Strike Fighter Program Office and Lockheed Martin face significant challenges in balancing these expectations against other program goals. Achieving program goals for cost, schedule, and performance requires that subcontracts be awarded to companies who can deliver quality products on time and at cost. In addition, the Program Office and DOD must balance the need to transfer sufficient technology to foreign companies to perform successfully in a timely fashion while adhering to the broader U.S. disclosure and export control safeguards.

Although the Program Office and Lockheed Martin have anticipated some of these challenges and are developing plans to address them, some decisions have already been taken that depart from early goals. Let me briefly address these.

First, industrial participation. As the prime contractor, Lockheed Martin makes the key subcontracting decisions and therefore bears the primary responsibility for managing partner expectations. The approach Lockheed Martin has put in place is referred to as best value. Best value is meant to differentiate this program from earlier cooperative ventures in which a share of work was guaranteed for a certain level of investment. Best value is meant to focus more heavily on the use of competition.

Lockheed Martin performed assessments for many of the partners to determine the ability of their industries to compete for JSF contracts, and then signed agreements with some partner governments and suppliers to document the opportunities they would have to bid for JSF contracts as well as the potential value of those contracts.

Lockheed Martin has modified that concept a bit, and has now adopted what they call a strategic best value sourcing plan, which appears to modify the original best value approach by allowing work packages to be directly awarded to industry and partner countries where contract awards to date have not met partner expectations. While there are predetermined cost goals under these strategic awards, there are concerns that this represents a departure from the competitive approach.

The second set of expectations in this Joint Strike Fighter program relates to technology. The United States has committed to design, develop, and qualify aircraft for the partners that are as common to the U.S. Joint Strike Fighter configuration as possible, within national disclosure policy boundaries. DOD, the Joint Strike

Fighter Program Office, and Lockheed Martin have taken a number of steps to anticipate and solve problems associated with technology transfers, including requests for exceptions from the national disclosure policy. However, partners continue to express concern about the pace of information sharing and decisionmaking, particularly relating to the Joint Strike Fighter support concept.

In addition to timely and favorable disclosure decisions, the Joint Strike Fighter contractors must receive authorization to transfer data and technology through the export licensing process. Export authorizations for critical suppliers need to have timely planning, preparation, and disposition to help avoid schedule delays and cost increases. Without proper planning, there could be pressure to expedite reviews and approvals to support program schedules. Planning could also help identify alternative sources for critical contracts to prevent problems in the event that technology transfer approvals are disallowed. Lockheed Martin has already added resources to address the volume of authorizations, but it has not yet completed a required long-term industrial participation plan that could help identify mitigation strategies.

Finally, let me touch briefly on the impact of technical issues in the program. At its recent preliminary design review, the Joint Strike Fighter program uncovered problems with regard to aircraft weight, design maturity, and weapons integration. These problems with their resulting cost increases are common in DOD programs. However, partners have less control over program decisions that both cause and result from a lack of knowledge, while the impact may be more substantial as they cannot as easily adjust to these changes.

In summary, the Joint Strike Fighter program is not immune to problems that have historically plagued DOD systems acquisitions. International participation in the program, while providing benefits, makes managing these challenges more difficult and places additional risk on DOD and the prime contractor. Because Lockheed Martin bears the responsibility for managing partner industrial expectations, it will be forced to balance its ability to meet partner expectations, which could be key to securing future sales and profitability, against program milestones and the company's ability to collect award fees.

In turn, DOD must be prepared to balance risks resulting from contractor decisions against the national obligations set forth in agreements with partner governments and the need to protect some of the most sensitive U.S. military technology. While some steps have been taken to position the JSF program for success, given its size and importance, additional attention from DOD and the Program Office would help decrease the risks associated with implementing the international program.

In the report we are releasing today to this subcommittee, we recommend that DOD ensure that the JSF Program Office and its prime contractors have sufficient information on international supplier planning to fully anticipate and mitigate the risks associated with technology transfer, and that information concerning the selection and management of suppliers is available, closely monitored, and used to improve program outcomes. Toward this end, DOD and the Joint Strike Fighter Program Office need to maintain

a significant knowledge base to enable adequate oversight and control.

Mr. Chairman, this concludes my summary, and I would be happy to take your questions.

[NOTE.—The GAO report entitled, "Joint Strike Fighter Acquisition, Cooperative Porgram Needs Greater Oversight to Ensure Goals Are Met," may be found in subcommittee files.]

[The prepared statement of Ms. Schinasi follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform, House of Representatives

For Release on Delivery
Expected at 11:00 a.m. EDT
Monday, July 21, 2003

JOINT STRIKE FIGHTER ACQUISITION

Managing Competing Pressures Is Critical to Achieving Program Goals

Statement of Katherine V. Schinasi, Director
Acquisition and Sourcing Management

GAO-03-1012T

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here to discuss the Joint Strike Fighter (JSF) international acquisition strategy. DOD views the JSF program as both a model for acquisition reform and an example for the future of international cooperation. We have previously reported to you on how the JSF program is being managed relative to best practices for product development. Central to these best practices is the understanding that attainment of sufficient knowledge at key program junctures results in a low-risk path from design to production.

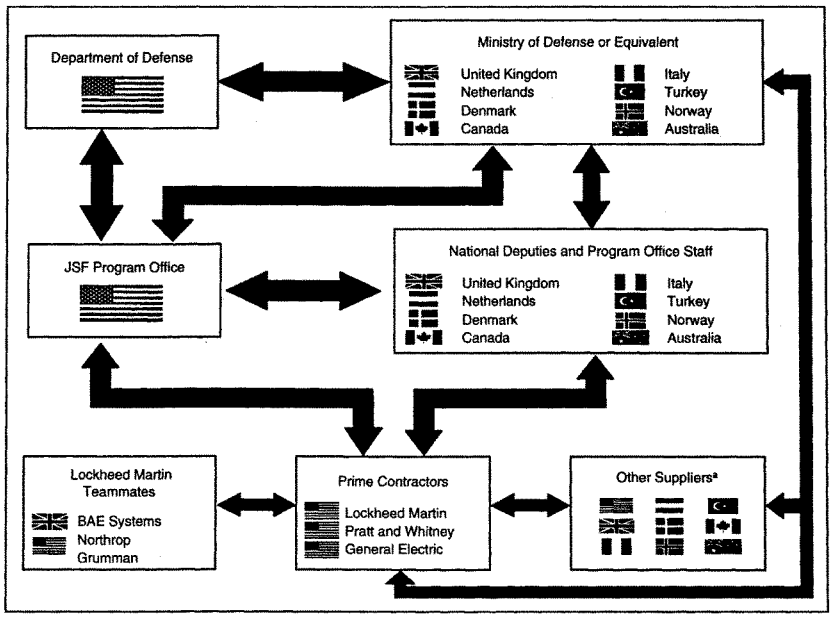
My statement focuses on the structure of the JSF program, the benefits and challenges cooperative development brings to the overall acquisition approach, and the opportunity DOD has to achieve critical program goals. We are also releasing a report today, done at your request, which addresses many of the issues I am discussing in this statement.

Because international participation adds complexity to already challenging acquisition programs, proponents of other DOD acquisition efforts are assessing the potential benefits of using the JSF model and incorporating key elements into their program strategies. Choices made to balance both partner expectations and overall program goals will be critical not only to the success of this program, but potentially for many future cooperative development efforts. DOD and the JSF Program Office need to ensure that sufficient knowledge is available and appropriately used in making these decisions.

Background

The JSF program is DOD's largest cooperative program. It is structured on a multitiered set of relationships involving both government and industry from the United States and eight allied nations—the United Kingdom, Italy, the Netherlands, Turkey, Denmark, Norway, Canada, and Australia. These relationships are shown in figure 1.

Figure 1: JSF Program Relationships



Source: GAO analysis of JSF program documents.

[a]Figure does not reflect relationships that the prime contractors may have with nonpartner countries.

The JSF program structure was established through a framework memorandum of understanding (MOU) and individual supplemental MOUs between each of the partner country's defense department or ministry and DOD, negotiating on behalf of the U.S. government. These agreements identify the roles, responsibilities, and expected benefits for all participants. The current negotiated agreement covers only the system development and demonstration phase, and participation now does not guarantee participation in future phases.

The program intends to produce three fighter variants to meet multiservice requirements: conventional flight for the Air Force, short take-off and vertical landing for the Marine Corps, and carrier operations for the Navy. As currently planned, the program will cost about $200 billion to develop and procure about 2,600 aircraft and related support equipment.

In October 2001, DOD awarded Lockheed Martin Aeronautics Company a contract for the system development and demonstration phase. Pratt and Whitney and General Electric were awarded contracts to develop the aircraft engines. This phase is estimated to last about 10 years and cost about $33 billion; it will involve large, fixed investments in human capital, facilities, and materials. The next significant knowledge point will be a critical design review, currently planned for July 2005. At that time, the aircraft design should be stable and engineering drawings should be available to confirm that the design performs acceptably and can be considered mature.

United States and Partners Expect Significant Benefits

The United States and its partners expect to realize a variety of benefits from cooperation on the JSF program. The United States expects to benefit from partner contributions and potential future aircraft sales; access to partner industrial capabilities; and improved interoperability with partner militaries once the aircraft is fielded. Partner governments expect to benefit financially and obtain an aircraft they could not afford to develop on their own. Partners also expect to benefit from increased access to JSF program data, defined influence over aircraft requirements, and technology transfers to their industries from U.S. aerospace companies. For the partners, industrial return, realized through JSF subcontract awards, is critical for their continued participation in the program.

United States Benefits from Financial Contributions and Access to Partner Industry

According to DOD and the program office, through its cooperative agreements, the JSF program contributes to armaments cooperation policy in the following four areas:

- Political/military–expanded foreign relations.
- Economic–decreased JSF program costs from partner contributions.
- Technical–increased access to the best technologies of foreign partners.
- Operational–improved mission capabilities through interoperability with allied systems.

DOD and the JSF Program Office expect to benefit financially from direct partner contributions and through aircraft purchased by partners and other international buyers, which reduces overall unit cost. Foreign countries become program partners at one of three participation levels, based on financial contribution, which the United States uses to defray program costs. For the current system development and demonstration phase, partner governments have committed to provide over $4.5 billion to the JSF program and are expected to purchase 722 aircraft once the aircraft enters the production phase.[1] According to DOD, foreign military sales to nonpartner countries could include an additional 1,500 to 3,000 aircraft. Expected partner financial contributions and aircraft purchases are detailed in table 1.

[1] Israel and Singapore have recently indicated their intention to participate in the program as security cooperation participants, a nonpartner arrangement, that offers limited access to program information, without a program office presence.

Table 1: JSF Partner Financial Contributions and Estimated Aircraft Purchases

	System development and demonstration			Production	
Partner country	Partner level	Financial contributions (in millions)[a]	Percentage of total costs	Projected quantities	Percentage of total quantities
United Kingdom	Level I	$2,056	6.2	150	4.7
Italy	Level II	$1,028	3.1	131	4.1
Netherlands	Level II	$800	2.4	85	2.7
Turkey	Level III	$175	0.5	100	3.2
Australia	Level III	$144	0.4	100	3.2
Norway	Level III	$122	0.4	48	1.5
Denmark	Level III	$110	0.3	48	1.5
Canada	Level III	$100	0.3	60	1.9
Total partner		$4,535	13.7[b]	722	22.8
United States		$28,565	86.3	2,443	77.2

Sources: DOD and JSF program documents and Arms Export Control Act project certifications to Congress.

[a]Chart values do not reflect any nonfinancial contributions from partners.

[b]Percentages do not add due to rounding.

Contributions can be financial or nonfinancial. For example, Turkey's system development and demonstration contribution was all cash. Denmark contributed $110 million in cash, and also the use of an F-16 aircraft and related support equipment for future JSF flight tests and the use of North Atlantic Treaty Organization command and control assets for a JSF interoperability study, which were valued to be worth an additional $15 million to the program.

In addition, U.S. industry cooperation with aerospace suppliers in partner countries is expected to benefit the JSF program because of the specific advanced design and manufacturing capabilities available from those suppliers. For example, British industry has a significant presence in the program with BAE Systems as a teammate to Lockheed Martin and Rolls Royce as a major engine subcontractor. In addition, Fokker Aerostructures in the Netherlands is under contract to develop composite flight doors for the JSF airframe.

Partners Benefit Financially and from Shared Technology and Information

Partner governments expect to benefit financially by leveraging significant U.S. resources and inventory requirements to obtain an advanced tactical aircraft they could not afford to develop on their own. From a government perspective, Level I and II partners have been guaranteed waivers of nonrecurring aircraft costs; Level III partners will be considered for a similar waiver.[2] All partners are also eligible to receive potential levies collected on future foreign military sales of aircraft to nonpartner customers.[3] In addition, and in most cases more importantly, partners have identified industrial return to in-country suppliers as vital to their participation in the program. In a recent study assessing the financial impact of the JSF program on international suppliers, DOD reported that partners could potentially earn between $5 and $40 of revenue in return for each dollar contributed to the program.

Through government and industrial participation, partner countries also expect to benefit from the technology transferred from U.S. to partner industry through JSF contract awards. Partners expect that early participation in the JSF program will improve their defense industrial capability through increased access to design, technical, and manufacturing data and through the ability to perform advanced planning for operation and support of the JSF once it is delivered in their respective countries.[4] Involvement in the early phases of the JSF program has provided partners with information on the development of aircraft requirements, program costs and schedules, and logistics concepts. International partners have access to program and technology information through participation on senior-level management decision-making bodies, representation in the JSF Program Office, and involvement on program integrated product teams. Partner program office personnel, regardless of participation level, have equal access to most information. Partner staff can request information from integrated product teams on which they have no membership, as long as the information is not restricted from being released to their countries.

[2] The President of the United States may reduce or waive cooperative project nonrecurring costs in accordance with the Arms Export Control Act (22 U.S.C. 2761 and 2767).

[3] According to DOD, final disposition of levies and nonrecurring costs for partners will be decided in production phase MOU negotiations.

[4] Most partners have been involved in the JSF program since the concept development phase, which began in 1996.

Program Challenges Force JSF Program to Balance Competing Pressures

International program participants have significant expectations regarding government and industry return based on their contributions. As such, the JSF Program Office and Lockheed Martin are faced with balancing these expectations against other program goals. Recent actions by Lockheed Martin to address partner concerns could represent a departure from the JSF competitive contracting approach and result in increased program costs. International participation in the program also presents a challenge because the transfer of technologies necessary to achieve DOD's goals for aircraft commonality is expected to far exceed past transfers of advanced military technology. Further, export authorizations for critical suppliers need timely planning, preparation, and disposition to help avoid schedule delays in the program and ensure partners the opportunity to bid for contracts.

Alternate Contracting Approach May be Used to Meet Partner Expectations

DOD and the JSF Program Office have said that the use of competitive contracting is central to meeting partner expectations for industrial return and will assist in controlling program costs. JSF officials use the term "best value" to describe this approach, which is a departure from other cooperative development programs that guarantee pre-determined levels of works based on contribution.[5] Partner representatives generally agree with the JSF competitive approach to contracting, but some emphasize that their industries' ability to win JSF contracts whose total value approaches or exceeds their financial contributions for the JSF system development and demonstration phase is important for their continued involvement in the program. The program office and the prime contractor have a great deal of responsibility for providing a level playing field for JSF competitions, including visibility into the subcontracting process and opportunities for partner industries to bid on subcontracts. To that end, Lockheed Martin performed assessments for many of the partners to determine the ability of their industries to compete for JSF contracts. The results of these assessments in some cases showed potential return that far exceeded country contribution levels. In some cases, Lockheed Martin then signed agreements with partner governments and suppliers to document the opportunities they would have to bid for JSF contracts, as well as the potential value of those contracts.

[5] This is not necessarily the same as best value under the Federal Acquisition Regulation, which is an acquisition that provides the greatest overall benefit in response to the requirement and can be obtained by using one or a combination of multiple source selection approaches.

DOD and the JSF Program Office have left implementation of the competitive contracting approach to Lockheed Martin whose decisions will therefore largely determine how partner expectations are balanced against program goals. In at least one case, Lockheed Martin has promised an international contractor predetermined work that satisfies a major portion of that country's expected return-on-investment. While disavowing knowledge of the specific contents of any such agreement, DOD was supportive of their use during partner negotiations. DOD officials conceded that the agreements contained in these documents departed from the competitive approach. However, the agreements were necessary to secure political support in some countries, since the U.S. government does not guarantee that the partners will recoup their investment through industry contracts on the JSF program. In addition, Lockheed Martin has recently developed a plan to use "strategic best value sourcing" to supplement its original competitive approach. According to DOD, this plan will allow for a limited number of work packages to be directly awarded to industry in partner countries where contract awards to date have not met expectations. While there are predetermined cost goals under these strategic awards, there are concerns from some partners that this is a departure from the competitive approach and, in fact, a move toward prescribed work share.

Because Lockheed Martin makes the subcontracting decisions, it bears the primary responsibility for managing partner expectations—in addition to duties associated with designing, developing, and producing the aircraft. Lockheed Martin's actions seem to indicate a response to partner concerns about return-on-investment expectations and a desire to ensure continued partner participation. Most partners have a clause in their agreements that allow for withdrawal from this phase of the program if industrial participation is not satisfactory. If a partner decided to leave the program, DOD would be deprived of the additional development funding expected from that partner. Lockheed Martin could be faced with lower than projected international sales, resulting in fewer units sold. At the same time, directed work share often results in less than optimal program results. For example, other coproduction programs such as the F-16 Multinational Fighter, which employ the traditional work share approach, often pay cost premiums in terms of increased manufacturing costs associated with use of foreign suppliers.[6]

[6] U.S. General Accounting Office, *F-16 Program: Reasonably Competitive Premiums for European Coproduction*, GAO/NSIAD-90-181 (Washington, D.C.: May 14, 1990).

JSF Stretches Disclosure Boundaries

The United States has committed to design, develop, and qualify aircraft for partners that fulfill the JSF operational requirements document and are as common to the U.S. JSF configuration as possible within National Disclosure Policy.[7] DOD and the JSF Program Office must balance partner expectations for commonality against the transfer of U.S. military technology. Decisions in this area will be critical because the extent of technology transfers necessary to achieve program goals will push the boundaries of U.S. disclosure policy for some of the most sensitive U.S. military technology. To address these issues, Lockheed Martin has a contract requirement to conduct a study to develop a partner JSF specification that fulfills commonality goals. Due to issues related to the disclosure review process, the contractor expects to deliver the study to the program office in August 2003, 5 months later than originally planned. According to DOD, the program has requested exceptions from National Disclosure Policy in some cases to achieve aircraft commonality goals and avoid additional development costs. Some DOD officials told us that technology transfer decisions have been influenced by JSF program goals, rather than adjusting program goals to meet current disclosure policy.

DOD, JSF Program Office, and Lockheed Martin officials agreed that technology transfer issues should be resolved as early as possible in order to meet program schedules without placing undue pressure on the release process. The program has taken steps to address potential concerns, including chartering a working group to review how past export decisions apply to the JSF program; identify contentious items in advance; and provide workable resolutions that minimize the impact to the program cost, schedule, or performance. However, partners have expressed concern about the pace of information sharing and decision making related to the JSF support concept. For example, according to several partners, greater access to technical data is needed so that they can plan for and develop a sovereign support infrastructure as expressed in formal exchanges of letters with the United States. The JSF program is conducting trade studies to further define the concept for how the JSF will be maintained and supported worldwide so that it can start to address these issues. According to program officials, this strategy will identify the best approach for maintaining JSF aircraft, and it may include logistics

[7] Releasability reviews, such as the low observable/counter low observable review process for stealth technology, are necessary to transfer certain sensitive technologies and related design and manufacturing data to foreign countries and suppliers.

centers in partner countries. Follow-on trade studies would determine the cost of developing additional maintenance locations. The implementation of the global support solution and the options identified in follow-on trade studies will have to be in full compliance with the National Disclosure Policy, or the program will need to request exceptions.

Export Control Process Presents Challenges for JSF Program

Authorization for export of JSF information to partners and international suppliers also present challenges for the program. In addition to the U.S. government determining the level of disclosure for partners and technology areas, JSF contractors must receive authorization to transfer data and technology through the export control process. Due to the degree of international participation at both a government and an industry level, a large number of export authorizations are necessary to share project information with governments, solicit bids from partner suppliers, and execute contracts. The JSF Program Office and Lockheed Martin told us that there were over 400 export authorizations and amendments granted during the JSF concept demonstration phase, and they expect that the number of export authorizations required for the current phase could exceed 1,000. Lockheed Martin officials told us that an increased level of resources has been required to address licensing and other export concerns for the program.

Export authorizations for critical suppliers need to have timely planning, preparation, and disposition to help avoid schedule delays and cost increases in the program. Without proper planning, there could be pressure to expedite reviews and approvals of export authorizations to support program goals and schedules. In addition, advanced identification of potential alternative sources for critical contracts could be an appropriate action to prevent schedule delays in the event of unfavorable approval decisions. Although it is required to do so, Lockheed Martin has not completed a long-term industrial participation plan that provides information on JSF subcontracting. Such a plan could be used to anticipate export authorizations needed for international suppliers and identify potential licensing concerns far enough in advance to avoid program disruption or accelerated licensing reviews. Our work has shown that past cooperative programs have experienced cost and schedule problems as a result of poor planning for licenses. For example, like the JSF, the Army's Medium Extended Air Defense System program involves several sensitive technologies critical to preserving the U.S. military advantage. That program failed to adequately plan for release requirements related to those technologies and saw dramatic increases in

approval times, which affected contractors' ability to use existing missile technology and pursue the cheapest technical solution.[8]

Timely disposition of export authorizations is also necessary to avoid excluding partner industries from competitions. While Lockheed Martin has stated that no foreign supplier has been excluded from any of its competitions or denied a contract because of fear of export authorization processing times or the conditions that might be placed on an authorization, the company is concerned this could happen. In fact, one partner told us that export license delays have had a negative effect on the participation of its companies because some U.S. subcontractors have been reluctant to take on the added burden of the license process. The U.S. subcontractors must apply for the export authorization on behalf of the foreign supplier, which can add time and expense to their contracts. Further, we were told that some partner companies have been unable to bid due to the time constraints involved in securing an export license.

The JSF program has attempted to address the additional administrative tasks associated with export authorizations by adding resources to help prepare applications and exploring ways to streamline the process. For example, Lockheed Martin received a global project authorization (GPA)—an "umbrella" export authorization that allows Lockheed Martin and other U.S. suppliers on the program to enter into agreements with over 200 partner suppliers to transfer certain technical data—from the Department of State. Approved in October 2002, implementation of the GPA was delayed until March 2003 because of supplier concerns related to liability and compliance requirements. In March 2003, the first GPA implementing agreement between Lockheed Martin and a company in a partner country was submitted and approved in 4 business days. JSF partners have expressed dissatisfaction with the time it has taken to finalize the conditions under which the GPA can be used and disappointment that the authorization may not realize their expectations in terms of reducing the licensing burdens of the program. As currently structured, the GPA does not cover the transfer of any classified information or certain unclassified, export-controlled information in sensitive technology areas such as stealth, radar, and propulsion.

[8] U.S. General Accounting Office, *Defense Acquisition: Decision Nears on Medium Extended Air Defense System*, GAO/NSIAD-98-145 (Washington, D.C.: June 9, 1998).

Technical Concerns Could Affect Program Costs and Partner Participation

The Joint Strike Fighter program, and its implications for acquisition reform and cooperative development, is a good test of whether the desire for better outcomes can outweigh traditional management pressures. In our 2001 review of JSF technical maturity, we employed knowledge standards consistent with best practices and DOD acquisition reforms and found that several technologies critical to meeting requirements were not sufficiently mature.[9] The best practice for such a decision is to have a match between technologies and weapon requirements. At its recent preliminary design review, the JSF program uncovered significant problems with regard to various issues, including aircraft weight, design maturity, and weapons integration. Such problems have historically resulted in increased program costs, longer development schedules, or a reduction in system capabilities. While such actions can negatively affect the U.S. military services, the impact may be more substantial for partners because they have less control over program decisions and less ability to adjust to these changes. This may affect partners' participation in the program in a variety of ways.

First, the continued affordability of the development program and the final purchase price are important for partners—both of which could be affected by recent technical problems. There is no guarantee that partners will automatically contribute to cost overruns, especially if the increase is attributable to factors outside their control. Therefore, future cost increases in the JSF program may fall almost entirely on the United States because there are no provisions in the negotiated agreements requiring partners to share these increases. Partner representatives indicated that they intend to cooperate with the JSF Program Office and Lockheed Martin in terms of sharing increased program costs when justified. However, some partner officials expressed concern over the tendency of U.S. weapon system requirements to increase over time, which results in greater risk and higher costs. While some partners could fund portions of cost overruns from military budgets if requested, others told us that even if they were willing to support such increases, these decisions would have to be made through their parliamentary process.

DOD has not required any of the partners to share cost program increases to date. For example, cost estimates for the system development and demonstration phase have increased on multiple occasions since the

[9] *Joint Strike Fighter Acquisition: Mature Critical Technologies Needed to Reduce Risks*, GAO-02-39 (Washington, D.C.: Oct. 19, 2001).

program started in 1996. During that time, the expected cost for this phase went from $21.2 billion to $33.1 billion as a result of scope changes and increased knowledge about cost. According to DOD, partners have not been required to share any of these costs because the changes were DOD directed and unrelated to partner actions or requirements. To encourage partners to share costs where appropriate, the United States has said it will consider past cost sharing behavior when negotiating MOUs for future phases of the program. If a partner refuses to share legitimate costs during the system development and demonstration phase, the United States can use future phase negotiations to recoup all or part of those costs. In these instances, the United States could reduce levies from future sales, refuse to waive portions of the nonrecurring cost charges for Level III partners, or in a worst case, choose not to allow further participation in the program. However, DOD officials have not committed to using these mechanisms to encourage cost sharing. Therefore, DOD may be forced to choose between accepting the additional cost burden and asking for additional partner contributions—which could jeopardize partner support for the program.

Conclusion

The JSF program is not immune to unpredictable cost growth, schedule delays, and other management challenges that have historically plagued DOD's systems acquisition programs. International participation in the program, while providing benefits, makes managing these challenges more difficult and places additional risk on DOD and the prime contractor. While DOD expects international cooperation in systems acquisition to benefit future military coalition engagements, this may come at the expense of U.S. technological and industrial advantages or the overall affordability of the JSF aircraft. Over the next 2 years, DOD will make decisions that critically affect the cost, schedule, and performance of the program. Because Lockheed Martin bears the responsibility for managing partner industrial expectations, it will be forced to balance its ability to meet program milestones and collect program award fees against meeting these expectations—which could be key to securing future sales of the JSF for the company. In turn, DOD must be prepared to assess and mitigate any risks resulting from these contractor decisions as it fulfills national obligations set forth in agreements with partner governments. While some steps have been taken to position the JSF program for success, given its size and importance, additional attention from DOD and the program office would help decrease the risks associated with implementing the international program.

In the report we are releasing today, we recommend that DOD ensure that the JSF Program Office and its prime contractors have sufficient information on international supplier planning to fully anticipate and mitigate risk associated with technology transfer and that information concerning the selection and management of suppliers is available, closely monitored, and used to improve program outcomes. Toward this end, DOD and the JSF Program Office need to maintain a significant knowledge base to enable adequate oversight and control over an acquisition strategy that effectively designs, develops, and produces the aircraft while ensuring that the strategy is carried out to the satisfaction of the U.S. services and the international partners. Tools are in place to provide this oversight and management, but they must be fully utilized to achieve program goals.

DOD concurred with our report recommendations, agreeing to (1) ensure that Lockheed Martin's JSF international industrial plans are continually reviewed for technology control, export control, and risk mitigation issues and (2) work with Lockheed Martin to achieve effective program oversight when it comes to partner expectations and program goals. While we commend this proactive response, we note that DOD did not provide any detail as to the criteria to be employed for reviewing industrial plans. In addition, DOD did not specify how it plans to collect and monitor information in suppliers or elaborate on other steps the JSF Program Office would take to identify and resolve potential conflicts between partner expectations and program goals.

Through decisions made on the Joint Strike Fighter program today, DOD will also influence other acquisition programs like the Missile Defense Agency's suite of land, sea, air, and space defense systems and the Army's Future Combat System. These programs will potentially shape budgetary and strategic military policy for the long term, and as such, need to use every tool available for success. Adopting knowledge-based policies and practices with regard to these critical acquisition programs is an important first step to ensuring that success.

Mr. Chairman, that concludes my statement. I will be happy to respond to any questions you or other Members of the Subcommittee may have.

Contacts and Acknowledgments

For future questions regarding this testimony, please contact Katherine Schinasi, (202) 512-4841. Individuals making key contributions to this testimony include Tom Denomme, Brian Mullins, and Ron Schwenn.

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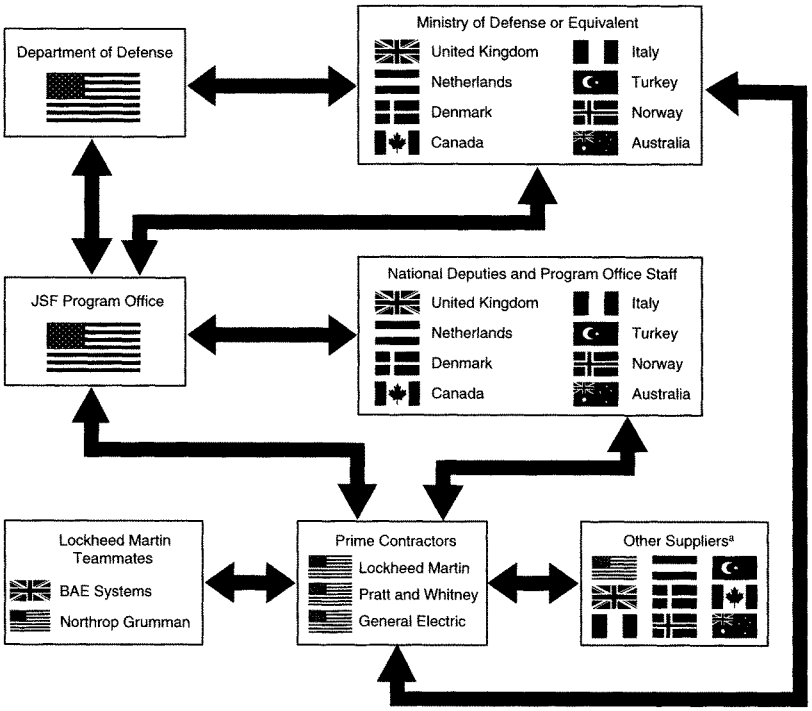
Joint Strike Fighter Program Relationships



[a]Figure does not reflect relationships that the prime contractors may have with suppliers in nonpartner countries.

Source: GAO analysis of JSF program documents.

Mr. TURNER. Thank you very much.
Mr. Volkman.

STATEMENT OF AL VOLKMAN, DIRECTOR, ACQUISITION, TECHNOLOGY AND LOGISTICS (INTERNATIONAL COOPERATION), DEPARTMENT OF DEFENSE

Mr. VOLKMAN. Mr. Chairman, members of the panel, thank you for this opportunity to share my views regarding the Joint Strike Fighter program. The Joint Strike Fighter program is a new benchmark for cooperative research, development, and production between the Department of Defense and our allies. DOD concurs with the GAO report, agrees with the report's recommendations, and will work closely with the Joint Strike Fighter Program Office, our partner nations, and JSF contractors to achieve effective program oversight.

The core objectives of armament cooperation for programs like JSF are to increase military effectiveness through standardization and interoperability, and to reduce weapon acquisition costs by avoiding duplication of development efforts with our allies. The United States will benefit from sharing JSF program costs, improving interoperability with key allies, gaining access to selected foreign industrial capabilities, and increasing international sales potential. Our Joint Strike Fighter partners will benefit from cooperatively developing and acquiring an affordable next generation strike fighter weapons capability, participating in the day-to-day management of the program, and building long-term industrial relationships with U.S. aerospace companies.

The JSF international program structure is based on a complex set of relationships involving both government and industry from the United States and our eight partner nations. Foreign and domestic suppliers compete for JSF work under a best value approach implemented through the three prime contractors, Lockheed Martin, Pratt and Whitney, and General Electric. The benefits obtained through the JSF international program are substantial. However, DOD recognizes that successfully implementing JSF cooperation will be challenging.

Three challenges are mentioned in the GAO report: Possible future program cost increases. The JSF Program Director has and will continue to use various program management tools, frequent partner meetings and discussions, and contract incentives to keep the system development and demonstration effort under the cost ceiling of $33.23 billion. DOD's experience indicates that international cooperative system development programs such as JSF have usually been successful in equitably sharing proposed cost ceiling increases if DOD is able to make a good case to Congress and the partners that the additional funds provided will result in the fielding of a needed defense capability.

Technology transfer. DOD is using available NATO exemptions in expediting and precoordinating reviews of individual export licenses to ensure timely, comprehensive JSF export authorizations take place. Additionally, in October 2002, the Department of State approved Lockheed Martin's global project authorization request to accelerate export approvals for nonsensitive, unclassified, technical data associated with JSF subcontracting activities. None of our ex-

port control mechanisms have been compromised, but rather have been streamlined and transformed into a more workable process that all JSF stakeholders have agreed to follow.

Participant return on investment expectations. If partner industrial expectations conflict with program costs, schedule, and performance goals, the JSF Program Director and the Under Secretary of Defense for Acquisition, Technology, and Logistics in concert with prime contractors will employ their best efforts to identify, assess, and resolve partner industrial participation issues.

DOD's leadership is fully committed to ensuring the success of the Joint Strike Fighter. The Joint Strike Fighter is DOD's largest international cooperative program by any measure, and has the full support of the Secretary of Defense and my boss, Mike Wynne, our Acting Under Secretary of Defense for Acquisition, Technology, and Logistics. Mr. Wynne, Ms. Patrick, and I will continue to work closely with Major General Hudson and his program team as well as other key U.S. Government stakeholders to ensure that the GAO's recommendations are implemented and that the program meets or exceeds DOD and partner objectives.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Volkman follows:]

Testimony of

Alfred D. Volkman

Director, International Cooperation
OUSD(AT&L)

Before the United States House Subcommittee on National Security, Emerging Threats, and International Relations
of the
Committee on Government Reform

July 21, 2003

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Statement of
Alfred G. Volkman
Director for International Cooperation
Office of the Under Secretary of Defense
(Acquisition, Technology and Logistics)
on the
Joint Strike Fighter (JSF) International Cooperative Program
before the
Subcommittee on National Security, Emerging Threats, and International Relations
of the
Committee on Government Reform
House of Representatives
July 21, 2003, 1300 hours

Mr. Chairman and other distinguished members of the panel, I'd like to thank you for this opportunity to share my views with you regarding the Joint Strike Fighter (JSF) Program; a model acquisition program and a new benchmark for cooperative research, development and production between the Department of Defense (DoD) and our U.S. allies. Let me state at the outset that the DoD concurs with the GAO Report entitled, "JSF Acquisition – Cooperative Program Needs Greater Oversight to Ensure Goals Are Met," agrees with the report's recommendations, and will work closely with the JSF Program Office, our partner nations, and the contractors to achieve effective program oversight.

According to DoD policy, the core objectives of armaments cooperation are to increase military effectiveness through standardization and interoperability and to reduce weapons acquisition cost by avoiding duplication of development efforts with our allies. Ongoing JSF cooperative System Development and Demonstration (SDD) activities with partner nations accomplish these objectives and national security interests in four specific areas:

- Political/military – enhanced defense relationships with key allies;
- Economic – decreased JSF program costs from partner contributions;
- Technical – increased access to the best technologies of foreign partners; and
- Operational – improved mission capabilities through interoperability with allied forces in future coalition operations.

Specifically, let me address both the U.S. and partner benefits of participating in this premiere international program. The U.S. will benefit from sharing program costs, improving interoperability with key allies, gaining access to selected foreign industrial capabilities, and increasing international sales potential. Our JSF partners will benefit through:

- Participation in the day-to-day management of the program as part of the JSF Program Office to ensure the JSF meets the performance, affordability, and

schedule requirements defined in the JSF Framework Memorandum of Understanding (MOU) and associated MOU Supplements

- Establishing a cooperative relationship that will lead to future acquisition and support of an affordable next-generation strike fighter weapon system to meet their warfighters' future needs.
- Enhanced long-term, best value (rather than offset-driven) industrial relationships between U.S. and partner nation aerospace companies.

The JSF international program structure is based on a complex set of relationships involving both government and industry from the U.S. and our eight partners – the UK, Italy, the Netherlands, Australia, Canada, Denmark, Norway, and Turkey. Arms Export Control Act Section 27 provides DoD the authority to enter into cooperative programs with U.S. allies. In the case of the JSF program, DoD consulted with the Department of State, Department of Commerce, and Congressional stakeholders in 1999 to validate that the proposed cooperative SDD effort would be in the U.S.'s best interest. DoD then commenced informal discussions with prospective partner nations to verify their interest in SDD cooperation, followed by MOU negotiations and legally required 30 day Congressional notifications prior to MOU signature. This effort culminated in the signing of the JSF Framework MOU and associated MOU Supplements with the eight JSF partner nations between January 2001 and October 2002. Unlike some past DoD cooperative programs, the JSF international program enabled U.S. allies to become JSF SDD partners at one of three participation levels based on financial contribution without guaranteeing a predetermined level of work based solely on their financial contribution. Instead foreign and domestic suppliers compete for JSF work under a "best value" approach implemented through the three JSF SDD prime contractors, Lockheed-Martin, Pratt and Whitney, and General Electric.

The JSF SDD Framework MOU and individual MOU Supplements negotiated and signed by DoD and the partner nations' equivalent defense organizations establish the key roles, responsibilities, and benefits for all participants. Additional documents such as Exchanges of Letters, Financial Management Procedures Documents, Position Descriptions -- all of which were made available to the GAO -- provide greater detail in selected areas concerning our SDD partnership arrangements and future production and support plans. Representatives from the U.S. and partner governments participate in a variety of senior level management groups, all providing executive level oversight to guarantee the success of the JSF international program.

Realizing that the benefits U.S. and partner nations obtain from the JSF international program are substantial, and that we have structured our MOUs and business arrangements with success in mind, the DoD recognizes the challenges of successfully implementing JSF SDD cooperation. Let me address a few of these challenges that were mentioned in the Committee's request and the GAO Report; and how we in DoD plan to address these areas of concern.

- **Possible future program cost increases.** While we can ask our partners to share any future program cost increases, neither DoD nor the partner nations are

required to do so by the MOU and Supplements. I wish to emphasize that this approach is not unique to JSF – all system development MOUs negotiated and signed by DoD must establish legally-required, equitable cost ceilings that define the financial and non-financial contributions to be provided by the partners. If a DoD program manager believes the cost target or cost ceiling will be breached, he or she notifies key officials, and DoD and the partner nations decide upon the appropriate course of action based on the facts and circumstances associated with the cost growth. From a JSF perspective, program management tools, frequent partner meetings and discussions, and contract incentives have been and will be used to keep the SDD effort under the cost ceiling of $33.23B; but if costs still increase, the DoD and our partners always have the option of requesting additional funding through their respective national budget processes. DoD's experience indicates that international cooperative system development programs such as JSF have usually been successful in equitably sharing proposed cost ceiling increases if DoD is able to make a good case to Congress and the partners that the additional funds provided will result in the fielding of a needed defense capability.

- **Technology transfer**. Because of the magnitude of the JSF international program at both government and industry levels, DoD performed an extensive evaluation of potential technology transfer risks, and obtained necessary foreign disclosure approvals from the National Disclosure Policy Committee (NDPC) prior to entering into the SDD phase MOU negotiations. Due to the dynamic nature of defense systems development, the initial NDPC authorizations have been reviewed and updated several times to take into account the need for revised foreign disclosure guidance in selected areas as the program matures. Both the House International Relations Committee and Senate Foreign Relations Committee staffs were provided extensive briefings concerning DoD's JSF-related foreign disclosure decisions prior to MOU signature. In addition, DoD and the Department of State have also explored ways to improve both the quality and timeliness of export authorizations for JSF-related efforts. DoD is using available NATO exemptions and expediting and pre-coordinating reviews of individual export licenses. Additionally, in October 2002, after detailed interagency review, the Department of State approved Lockheed-Martin's Global Project Authorization (GPA) request to accelerate export approvals for technical data associated with JSF SDD industry-to-industry subcontracting activities involving non-sensitive, unclassified transfers. Let me assure you that none of our export control mechanisms have been compromised or short-circuited, but rather have been streamlined and transformed into a more workable process that all JSF stakeholders have agreed to follow.

- **Participant return-on-investment expectations**. Our partners have identified industrial return as vital to their participation in the program, and if expectations are not met, domestic political support could suffer. But since DoD would not accept government guaranteed workshare as an element of JSF SDD international cooperation, partner industry must win JSF contracts through "best value"

competition. The three prime contractors are responsible under the terms of their contracts with DoD to make sure that the playing field remains level for prospective U.S. and foreign subcontractors. The JSF Program Director's and JSF Program Office's primarily responsibility is to meet SDD affordability, performance and schedule objectives. If partner government or industry industrial participation expectations conflict with program cost, schedule, and performance goals, the JSF Program Director and USD(AT&L) – in concert with the prime contractors – employ their best efforts to identify, assess, and (if possible) resolve partner industrial participation issues.

In summary, Mr. Chairman and Committee members, DoD's leadership is fully committed to ensuring the success of the JSF, including its international cooperative program dimension. JSF is DoD's largest international cooperative program by any measure, and it has the full support of the Secretary of Defense and Mike Wynne, our Acting Under Secretary for Acquisition, Technology, and Logistics. In our view, Major General Hudson and his team are implementing JSF international cooperation effectively and efficiently based on a comprehensive approach that has, and will continue to, involve key U.S Government and industry stakeholders. DoD also agrees with the GAO's recommendation that continuing, top-level Office of the Secretary of Defense oversight is needed to ensure JSF SDD international cooperative program goals are met in the coming years. Mr. Wynne, Ms. Patrick, and I will continue to work closely with Major General Hudson and his government and industry program team and other key U.S. Government stakeholders to ensure that affordability, technology transfer, export control, and risk mitigation issues are addressed in a manner consistent with the interests of DoD and the JSF partner nations. Thank you, Mr. Chairman.

Mr. TURNER. Thank you, Mr. Volkman.

I want to acknowledge that our chairman, Chris Shays, has joined us. We will now move on to Ms. Patrick.

STATEMENT OF SUZANNE PATRICK, DEPUTY UNDER SECRETARY, ACQUISITION, TECHNOLOGY AND LOGISTICS (INDUSTRIAL POLICY), DEPARTMENT OF DEFENSE

Ms. PATRICK. Good afternoon, Mr. Chairman, and members of the committee. I appreciate the opportunity to share with you my assessment of international industrial participation in the JSF program as well as my thoughts on the importance of this program for the global defense industrial base and coalition warfare.

As you highlighted in your letter asking us to testify, Mr. Chairman, the Joint Strike Fighter program was conceived as an international cooperative development and acquisition program in order to attract financial investment to share the cost burden, to enhance interoperability with allies, to leverage technological innovation from partner countries, and to promote the eventual foreign sales of the aircraft.

With affordability as the linchpin of the program, it was critical at the outset to take extraordinary and unprecedented measures to control costs. This program's international contracting strategy is a fundamental departure from offsets. Its best value sourcing strategy where foreign companies have to compete their way on to the program on an equal basis with U.S. companies has in fact elicited complaints by foreign governments and defense firms. That said, we believe that this program is providing appropriate access and great potential to partner countries.

The JSF international acquisition strategy is unprecedented in the program investment it was able to attract from partner countries, and companies in the case of Denmark, and in the opportunity it presents for partner companies to participate in the global industrial base supporting a state-of-the-art, cost effective, and well-funded program. This program provides the opportunity for participating companies to produce components of JSF not only for their own or consortia operational requirements, the F–16 model, but also near-term, for the much larger United States and United Kingdom JSF inventories with the promise of content on all worldwide JSF inventories produced well into the first half of this century.

Our assessment of the impact of the JSF program on the partner countries and companies has made clear some of the challenges associated with its revolutionary international acquisition strategy. Partner countries that had early active and far-reaching government involvement in structuring an in-country industrial strategy for the JSF program have had the most success in gaining program content to date, Canada and the United Kingdom. The extent to which partner countries were committed to purchasing JSF for their own forces also made for better results. Countries committed to purchasing the aircraft for themselves have greater incentive in helping to market the aircraft elsewhere for reasons of investment recoupment, return levies from nonpartner sales, and larger incremental revenues for their participating companies. In addition, in the cases where a mix of JSF and Eurofighter aircraft are envi-

sioned, countries with clear plans such as Italy were better able to referee industrial interests attached to the two platforms.

Finally, in these countries, the government, the military services, and the industry were able to most effectively lobby their parliamentary bodies on behalf of the program.

That said, the program is still bedeviled by the strategies of industrial interests that would be better served by the purchases of the Eurofighter which has made for something less than a level playing field for the JSF program. In discussions with partner countries and their companies, they complain that the single most important factor to develop the playing field has been the lateness and ineffectiveness of the global project authorization. This had the greatest impact on those suppliers that did not have well-established relationships pre-existing with U.S. primes and first tier suppliers. Even Canada's statutory advantage of exemption from U.S. ITAR regulations did not eliminate their need for TAAs. Export control issues have indeed plagued virtually all of the JSF international partners, but in no case have these issues caused program schedule delays or cost increases.

However, I hasten to point out that some of the strategies used by partner countries and companies in their approaches to JSF indicate that their strategies are no less revolutionary. The Netherlands identified the JSF program as one of two pillars on which it expects to build a world class aerospace industry. Danish industry was so impressed with the opportunities the program affords, that it invested in the Systems Development and Demonstration Phase along with the Danish government. Canada provides prized quality and business certifications to JSF contractors, and Canadian company bids on program opportunities will surpass 100 in its first year or so as an SDD partner. Major Italian companies are sending about 100 of their engineers to be part of six Lockheed integrated product teams in Dallas-Fort Worth and El Segundo. The Danish firm Systematic has stationed several of its engineers at Lockheed to demonstrate their expertise.

JSF Canada surveyed the U.S. JSF industrial base, visiting the primes as well as second and third tier suppliers. The U.K. Department of Trade and Industry surveyed its own potential supplier base early in the program, as did Australia's JSF Industry Advisory Council. In addition, Australia established integrated capability teams to parallel Lockheed's IPTs for maximum program conductivity.

To oversee industrial participation in the program, the United Kingdom, Canada, and the Netherlands established JSF organizations in their countries. Many partner countries have also sponsored or cosponsored JSF industry base for their suppliers.

The massive return potential to partner countries and coalition warfighters from the program is already apparent. Surely, a time traveler to 2030 would report back to present government and corporate decisionmakers their successors' disbelief that the international opportunities for the JSF program were not clearly seen early in the program's history. We also believe that some of the JSF programs' most important disciples will be other U.S. program managers who refine their international acquisition strategies based on the JSF program's early lessons learned.

Evidence already abounds that the program is reshaping the global defense industrial base. U.K. industry is undoubtedly already reaping benefits from the substantive role they had in some of the most challenging aspects of the JSF development. Countries that chose to fund and focus discretionary R&D investments on the program and have done well speak volumes about the importance of R&D investment for innovation and competitiveness. Transnational links are already being forged among the partner countries and their companies which will yield untold international defense industrial alliances, market access, and technology spin-offs.

Finally, the program will dramatically increase the scale of many small and mid-sized companies in the global defense industrial base.

Above all, however, it is imperative to remember the promise and importance of the JSF program to the American, British, and other partner country warfighters. If we stay the course with minor rudder adjustments, JSF will provide great benefits to the U.S. and global defense industrial base and warfighters alike. Not to do so would undermine U.S. credibility in the global marketplace and among our most important friends and allies.

Thank you, Mr. Chairman.

[The prepared statement of Ms. Patrick follows:]

Testimony of

Suzanne D. Patrick

Deputy Under Secretary of Defense
(Industrial Policy)

Before the United States House Subcommittee on National Security,
Emerging Threats, and International Relations
of the
Committee on Government Reform

July 21, 2003

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SUBCOMMITTEE ON NATIONAL SECURITY, EMERGING THREATS, AND INTERNATIONAL
RELATIONS

Statement of
Suzanne D. Patrick
Deputy Under Secretary of Defense (Industrial Policy)
on
Joint Strike Fighter (JSF) International Industrial Participation
before the
Subcommittee on National Security, Emerging Threats, and International Relations
of the
Committee on Government Reform
House of Representatives
July 21, 2003, 1300 hours

Good afternoon Mr. Chairman and members of the committee. I appreciate the opportunity to share with you my assessment of international industrial participation on the Joint Strike Fighter (JSF) program, as well as my thoughts on the importance of this program for the global defense industrial base and coalition warfare.

As you highlighted in your letter inviting us testify, Mr. Chairman, the Joint Strike Fighter (JSF) program was conceived as an international cooperative development and acquisition program in order to attract financial investment to share the cost burden, to enhance interoperability with allies, to leverage technological innovation from partner countries, and to promote the eventual foreign sales of the aircraft. With affordability as a lynchpin of the program, it was critical at the outset to take extraordinary and unprecedented measures to control costs.

This program's international contracting strategy is a fundamental departure from offsets. Its "best value" sourcing strategy -- where foreign companies have to compete their way on to the program on an equal basis with U.S. companies -- has in fact elicited complaints by foreign governments and defense firms. That said, we believe that with 18% of the contracts awarded to date going to foreign firms ($2.2 billion), this program is providing appropriate access – and great potential – to partner countries.

Program Assessment

The JSF international acquisition strategy is unprecedented in the program investment it was able to attract from partner countries (and companies in the case of Denmark!) and in the opportunity it presents for partner companies to participate in the global industrial base supporting a state-of-the-art, cost-effective, and well-funded platform. This program provides the opportunity for participating companies to produce components of JSF not only for their own or consortia operational requirements (the F-16 model) but also, near term, for the much larger United States and United Kingdom JSF inventories – with the promise of content on all worldwide JSF inventories produced well into the first half of this century.

While a bold departure from previous models of international participation on U.S. military platforms, the JSF international strategy extends the foundation built over decades with friends and allies on co-production and consortia programs, as well as through key international

industrial agreements and statutes. By statute, Canada is considered part of the national defense industrial base -- an important cornerstone for the security of our shared North American continent. Declaration of Principles agreements with allies and friends such as the United Kingdom and Australia, and then the Netherlands, Spain, Sweden, and Norway in this Administration, built on Defense Equipment Cooperation Agreements signed in the 1990s. These Declaration of Principles agreements address key areas of interest such as the harmonization of military requirements, security of supply, export procedures, security, foreign ownership and corporate governance, research and development, and promoting defense trade. In recognition of the importance of security of supply, DoD has signed a bilateral security of supply arrangement with the United Kingdom, and is negotiating similar arrangements with Sweden, the Netherlands, Norway, Italy, and Spain. Individually and collectively, these arrangements encourage allies to acquire defense goods from US suppliers, promote interoperability, and provide increased assurance that the Department's non-US suppliers will be in a position to provide timely deliveries to DoD during peacetime, crisis, emergency, or armed conflict.

Our assessment of the impact of the JSF program on the partner countries and companies has made clear some of the challenges associated with its revolutionary international acquisition strategy. Partner countries that had early, active, and far-reaching government involvement in structuring an in-country industrial strategy for the JSF program have had the most success in gaining program content to date: Canada and the U.K.

The extent to which partner countries were committed to purchasing JSF for their own forces also made for better results. Countries committed to purchasing the aircraft for themselves have greater incentive in helping to market the aircraft elsewhere for reasons of investment recoupment via price reduction, return levies from non-partner sales, and larger incremental revenues for their participating companies. In addition, in the cases where a mix of JSF and Eurofighter aircraft are envisioned, countries with clear plans such as Italy were better able to "referee" industrial interests attached to the two platforms. Finally, in these countries, the government, the military services, and the industry were able to most effectively lobby their paramilitary bodies on behalf of the program. That said the program is still bedeviled by the strategies of industrial interests that would be better served by purchases of the Eurofighter – which has made for something less than a level playing field for the JSF program.

In discussions with partner countries and their companies, they complained that the single most important factor to de-level the playing field has been the lateness and ineffectiveness of the Global Project Authorization (GPA). This had the greatest impact on those suppliers that did not have well-established relationships pre-existing with U.S. primes and first-tier suppliers. Even Canada's statutory advantage of exemption from some U.S. International Traffic in Arms Regulations (ITAR) did not eliminate their need for Technical Assistance Agreements (TAAs). Export control issues have plagued virtually all of the JSF international partners.

However, some of the strategies used by partner countries and companies in *their* approaches to JSF indicate that those strategies are no less revolutionary. The Netherlands identified the JSF program as one of two pillars on which it expects to build a world-class aerospace industry. Danish industry was so impressed with the opportunities the program affords that it invested in

the System Development and Demonstration (SDD) phase alongside the Danish government. Canada provides prized quality and business certifications to JSF contractors, and Canadian company bids on program opportunities will surpass 100 in its first year or so as a SDD partner. Major Italian companies are sending about 100 of their engineers to be part of six Lockheed Integrated Product Teams (IPTs) in Dallas-Fort Worth and El Segundo. The Danish firm Systematic has stationed several of its engineers at Lockheed to demonstrate their expertise.

JSF Canada surveyed the US JSF industrial base, visiting the primes as well as second- and third-tier suppliers. The UK Department of Trade and Industry surveyed its own potential supplier base early in the program, as did Australia's JSF Industry Advisory Council. In addition, Australia established Integrated Capability Teams to parallel Lockheed's IPTs for maximum program connectivity. To oversee industrial participation in the program, the United Kingdom, Canada, and the Netherlands established JSF organizations in their countries. Many partner countries have also sponsored or co-sponsored "JSF Industry Days" for their suppliers.

Lockheed Martin and Pratt & Whitney have also been worthy quarterbacks to their global partners. Industrial surveys were conducted in all partner countries to assess competitive opportunities and better understand industrial capabilities. In tribute to the English motto that it is the exception that makes the rule, the best value acquisition strategy yielded to commitment to international industrial participation, as in the cases of the early award to Alenia of its wing contract, Lockheed's Letters of Intent and Memorandum of Understanding with the Italian government and industries, and the strategic sourcing approach.

Conclusion

The massive return potential to partner countries and coalition warfighters from the program is already apparent. Surely, a time traveler to 2030 would report back to present government and corporate decision makers their successors' disbelief that the international opportunities from the JSF program were not clearly seen early in the program's history. We also believe that some of the JSF program's most important disciples will be other US program managers who refine their international acquisition strategies based on early lessons learned.

Evidence already abounds that the program is reshaping the global defense industrial base. UK industry is undoubtedly already reaping benefits from the substantive role they had in some of the most challenging aspects of the JSF development. And the short takeoff and vertical landing (STOVL) variant will give our own Marines a truly expeditionary multi-mission/multi-role aircraft. Countries that chose to fund and focus discretionary R&D investments on the program and have done well speak volumes about the importance of R&D investment for innovation and competitiveness. Transnational links are already being forged among the partner countries and their companies which will yield untold international defense industrial alliances, market access, and technology spin-offs. Finally, the program will dramatically increase the scale of many small and mid-size companies in the global defense industrial base. A Canadian specialty semiconductor chip manufacturer grew from 12 to 15 employees because of its position on the JSF program. Another 40-employee company, which develops decision support software, is forecast to source average annual JSF revenues in System Development and Demonstration/Low Rate Initial Production (SDD/LRIP) in line with its average total corporate revenues in the 2001-

2002 timeframe. In Full Rate Production (FRP), this company's revenues from JSF could average over ten times 2002 revenue. At these growth rates, some of the smallest JSF suppliers could find themselves shoulder-to-shoulder with the blue chip giants of the industry as a result of being part of this program!

Above all, however, it is imperative to remember the promise and importance of the JSF program to the American, British, and other partner country war fighters. If we stay the course with minor rudder adjustments, JSF will provide great benefits to the US and global defense industrial base and war fighters alike. Not to do so would undermine US credibility in the global market place and among our important friends and allies.

Mr. TURNER. Thank you, Ms. Patrick.

Major General John L. Hudson. General.

STATEMENT OF MAJOR GENERAL JOHN L. "JACK" HUDSON, PROGRAM MANAGER, JOINT STRIKE FIGHTER [JSF] PROGRAM, DEPARTMENT OF DEFENSE

General HUDSON. Mr. Chairman and other distinguished members of the panel, I would like to thank you for inviting me here today to share with you my views on the international aspects of the Joint Strike Fighter program. I will give you a brief summary of my statement, which will be entered into the record.

Joint Strike Fighter will field, affordably, a weapons system for the United States and our allied warfighters that will be highly interoperable and enhance our future ability to conduct coalition warfare in a highly effective manner. The Joint Strike Fighter program has been international since the concept demonstration phase of the program. As we entered the current system development and demonstration phase of the program in October 2001 by awarding of contracts to Lockheed and Pratt and Whitney and the ongoing General Electric program, we have continued that relationship with our close allies. International cooperation has brought foreign investment to the program which has saved U.S. taxpayers approximately $4.5 billion.

The international strategy we employed for the Joint Strike Fighter program was vetted by the executive branch of our government and coordinated with the Congress. We had as a result a coordinated effort for the System, Development and Demonstration phase which we are currently in. We have eight cooperative partners on board, which includes the United Kingdom, Italy, the Netherlands, Turkey, Australia, Canada, Denmark, and Norway. These countries have invested their scarce R&D resources into our program. We broke the old traditional paradigm, and instead of offsets we are using a best value approach so the weapons system will truly be affordable to develop, procure, own, and operate.

Integrating our partners is indeed challenging. It started out to be and will continue to be a win-win proposition for both sides. Although complex, I can assure you that we have found a proper balance between the benefits that our partners derive from the program and the benefits that we incur as a result of the relationship.

We are in full compliance with national disclosure policy, and have arrangements in place that protects sensitive U.S. technology while at the same time allowing prudent levels of technology transfer to occur. A global project authorization is in place. This allows a streamlined approval process for unclassified and nonsensitive technology transfer. Department of Defense and Department of State still fully focus on requests for transfer of sensitive, unclassified and classified information through the TAA process. Technology transfer is a two-way street, and we the United States have been the beneficiaries of these transfers by affording our companies the opportunity to seek innovative and affordable technologies anywhere in the world. We are working within the global marketplace, and it has paid dividends for us.

An example of this reversion technology transfer is the technology that our U.K. partner industries have brought to the table

in the form of short takeoff and vertical landing expertise and know-how. Unlike most past cooperative development programs, the Joint Strike Fighter Program Director makes all final decisions on the program. The Program Director consults with partner countries and ensures they have good situational awareness of the program environment and appropriate decision processes. The international agreements provide a good balance of responsibilities and obligations.

A key enabler of affordability is the high commonality designed into the Joint Strike Fighter weapons system between the conventional short takeoff and landing, short takeoff and vertical landing, and carrier variance. Another key enabler of the affordability is the active, ongoing process to use cost as an independent variable [CAIV], as a means to control cost. A third is our well-founded requirements document in a joint configuration steering board within DOD which manages and controls Joint Strike Fighter requirements.

In summary, I would like to say that we are currently meeting our international commitments utilizing a well-structured international strategy that has found a proper balance between national disclosure policy, affordability, interoperability, and transformation for future coalition warfare. We have a good understanding of the risks associated with technology transfer, and we have risk mitigation plans in place. We have implemented security agreements with our partners on a government-to-government basis, and we are in full compliance with national disclosure policy. We have a full-time export compliance officer as well. It is a complex arrangement, but our partnership is working and benefiting the collective group.

I look forward to your questions and your continued support of this superb weapons system.

[The prepared statement of General Hudson follows:]

Statement of
Maj Gen John L. Hudson
Program Executive Officer and Program Director
Joint Strike Fighter Program
Office of the Assistant Secretary of the Navy
(Research, Development, and Acquisition)
on the
Joint Strike Fighter (JSF) International Cooperative Program
before the
Subcommittee on National Security, Emerging Threats, and International Relations
of the
Committee on Government Reform
House of Representatives
July 21, 2003, 1300 hours

Mr. Chairman and other distinguished members of the subcommittee I want to thank you for this opportunity to share my views with you regarding the Joint Strike Fighter (JSF) Program and specifically the international aspects of the JSF System Development and Demonstration (SDD) phase. Our forces and those of our allies will obtain a quantum leap in coalition combat capability and interoperability as a result of participation in the JSF program.

The JSF program at its inception was designed to be a fully integrated international development program. International participation in the JSF program was determined to be in the best interest of the United States and our allies. Six of the eight SDD partner nations participated in the JSF Concept Demonstration Phase (CDP) co-development activities. Prior to commencement of the SDD phase, an SDD international cooperation strategy was approved by DoD, State Department, and Commerce Department and briefed to key Congressional staff in the Spring and Summer of 1999. As a result of this fully coordinated effort there was a comprehensive arms export transfer policy agreed to by both the Executive and Legislative Branches of our Government for JSF before it entered its SDD phase.

International participation was actively sought and negotiations conducted that culminated in the signing of the U.S./partner Memorandum of Understanding (MOU) and eight associated Supplements. Congressional notifications, as required by Section 27 of the Arms Export Control Act, were forwarded to the Hill for review prior to the Department signing the agreements. The agreements bring more than $4 billion in SDD contributions from our partner countries. We have a golden opportunity with JSF to significantly improve future interoperability and coalition warfighting capability and to be in a position to capture the majority share of the large tactical aircraft export market.

As the strategy evolved, past cooperative development programs were carefully reviewed and evaluated and lessons learned carefully documented. The JSF strategy has taken advantage of these lessons learned and is now viewed by many as the model

cooperative development program that others should emulate. We have broken the old traditional paradigm of guaranteed work share as it applies to the industrial component of the program. Unlike past programs in which a dollar invested secured at least a dollar returned in a guaranteed work-share arrangement the JSF international agreements make no such guarantees. Instead, our government-to-government JSF SDD Framework MOU and country-specific MOU Supplements establish the principle that companies from the partner nations who seek work will do so on a competitive, best value basis. Our partners bought into this philosophy and convinced their respective governmental bodies that this is a better approach than the previous way of doing business.

Since the cornerstone of the JSF program is affordability, government guaranteed work share percentages would not have resulted in the most affordable solution or most affordable weapon system. To obtain JSF industrial work, our partners' industries must be competitive in today's global marketplace and must earn their way onto the program. Our strategy of exploiting competition on a global basis, versus the previous guaranteed work share philosophy, has paid dividends in the form of cost reductions and technology insertion. International participation in the JSF SDD program brings foreign investment into the program that might have otherwise been channeled to a foreign competitor. Since this was a new way of doing business for both the U.S. and our international partners, the challenge was to create an environment in which best value competition could take place. While the government negotiating teams were conducting MOU negotiations the industry teams, led by Lockheed Martin, Pratt and Whitney and General Electric ., were performing market analysis in prospective partner countries to ascertain their ability to meet the JSF affordability objectives with leading edge technology and products. U.S. industry determined that selected companies in all eight of the partner countries possessed the requisite skills to meet the technology challenge in a worldwide competitive environment.

To compete for work the JSF program recognized that the export control process would need to be streamlined so that bid and proposal discussions could take place at the earliest possible stage, thereby permitting timely award of foreign subcontracts to meet program schedule and cost. To facilitate this process the JSF program office worked in close conjunction with Lockheed Martin, the State Department, and the Defense Technology Security Administration to establish a Global Project Authorization (GPA) to permit rapid review and approval of export licenses needed during the course of the SDD phase. The GPA, which addresses unclassified, non-sensitive technologies, was notified to Congress and approved by the State Department in October 2002. The GPA, which became functional in March 2003, with State Department approval of Lockheed Martin's compliance plan, enables the State Department to approve GPA Implementing Ageements for unclassified and non-sensitive technologies within five days of submittal versus the more traditional export license approval process, which can take as much as 60 to 90 days. The GPA also frees up manpower within the Department of Defense and State Department to more carefully evaluate export license approval requests that address areas related to sensitive unclassified or classified technologies. The GPA is an enabler that allows JSF contractors to take full advantage of the global marketplace.

Unlike most past cooperative development programs, the JSF Program Director makes all final decisions regarding the program. The Program Director consults with the partners on all major decisions regarding cost, schedule and performance and is ultimately responsible for those decisions. Due to the partners' significant investments in the program, and the fact that the partner nations do not possess veto authority on major program decisions, the international agreements we established provide both the U.S. and partner nations with an appropriate balance of responsibilities and obligations. For example, the MOU cost sharing provisions require the JSF Program Director to notify the partners if there is a program cost increase beyond the MOU target cost. The rationale for the proposed increase is discussed and, in certain circumstances, we would ask the partners to pay their fair share of the increase beyond the previously agreed upon target cost. However, they are not obligated to do so. We anticipate that, upon DoD's request, the partners will use their best efforts to share in target cost increases since the health and future success of the program is critical to achieve the force structure updates the JSF partners need to meet and defeat the threat in the year 2010 and beyond. The SDD target cost recently increased due to a further refinement of the cost estimate of the G.E. engine development program and further refinement of the cost estimate for insuring we develop, produce, and deploy a superior weapon system that is fully compliant with National Disclosure Policy. DoD elected not to ask the partners to share in this target cost increase since the cost increases were considered to be within the scope of the existing agreement. .

A key enabler to allow the JSF program to meet its affordability objectives is the high degree of design commonality among the three variants of the aircraft (Conventional Take Off and Landing or CTOL, Short Take Off and Vertical Landing or STOVL, and Carrier Variant or CV). The U.S. plans to procure 2443 JSF aircraft composed of these three variants. An additional enabler is the procurement envisioned by other countries, and the commonality between the U.S. and partner country aircraft. It is anticipated that our partners will procure nearly another 700 aircraft. There is also the large potential export market, other than our current partners, that could generate additional sales for a total of approximately 1500 to 3000 aircraft other than the U.S. aircraft. The Department has worked very diligently to insure that partner country JSF aircraft comply with National Disclosure Policy and simultaneously provide the U.S. and our allies with a superior JSF weapon system that can interoperate and transform coalition warfare. Adherence with National Disclosure Policy protects the most sensitive U.S. technology while minimizing design differences. We have defined configurations of the JSF that are fully compliant with National Disclosure Policy and are as highly common as possible. This will be positive for affordability and will enhance the coalitions' future ability to be highly interoperable and highly effective in peacetime training and in combat operations. This was accomplished with a full appreciation of technology transfer issues and we have taken the necessary measures to protect the most sensitive U.S. technology. We have risk mitigation plans in place, we have implemented security agreements with our existing international partners, and we are in full compliance with National Disclosure Policy. We have also established a position within the JSF program office that functions as a fulltime export compliance officer. This individual is responsible to ensure that export

license requests are in full compliance with existing National Disclosure Policy in order to avoid any potential disconnects between policy and the export authorization.

In summary, we are currently meeting our international commitments, and, the benefits that our partners and we expected, upfront, are being realized. We are working closely with our industrial team to manage this very complex relationship and are confident that we have found the proper balance between National Disclosure Policy, affordability, interoperability, and the transformation of coalition warfare. Lockheed is developing a long-term road map that will define future needs for the transfer of sensitive data and technology to partner suppliers. This will facilitate the early identification of program needs and allow us to collectively address tech transfer issues and make sound decisions on the appropriate course of action. The JSF international strategy represents a major shift in the way we manage and execute international cooperative programs. To date, that strategy has been fully implemented and the partnership is working.

That concludes my written statement. I want to thank you again for giving me the opportunity to discuss with you the status of the Joint Strike Fighter program.

Mr. TURNER. General, thank you very much.

We will now proceed with a 5-minute round of questions. And we will go first to Mr. Schrock, who in addition to being a member of this Subcommittee on National Security is also a member of the Armed Services Committee.

Mr. SCHROCK. Thank you, Mr. Chairman. Thank you all for being here. I am very interested in the Joint Strike Fighter because I believe the finished product will no doubt be sited in the district that I'm privileged to represent. And I know nothing about airplanes, except when I get on them I fasten my seat belt and get off at the end. But I was privileged to sit in the simulator over in Crystal City, and I think even an idiot like me who knows nothing about flying could fly that thing. It is an absolutely amazing machine.

I read some of the information that was sent to us before we came in here, and on page 5 of one of the statements it said: U.S. policymakers have become increasingly interested in pursuing acquisition and procurement programs with allies.

Help me understand that. I'm guessing some of the parts that are going to go into the Joint Strike Fighter can only be produced in a certain country, and they aren't produced here. Why can't—I'm not trying to be isolationist, but why can't producers in our country provide all the parts and systems that are going to be needed in this new aircraft? I guess that would be for the DOD folks.

Mr. VOLKMAN. We are interested in cooperating with our allies, because one of the benefits of cooperation with allies is that we acquire the same equipment and we expect that in the future that we will be operating in conflicts around the world with allies, with our closest allies. And by acquiring—by cooperating together, of course a major advantage of that is that we have interoperability with our allies by result of having the same equipment.

Certainly, another factor that goes into our desire to cooperate in the development and production of equipment with allies is the fact that in fact we would like our allies to have a high military capability. One of the things that came out of President Bush's NATO summit last November was an agreement on the part of allies to engage in something called the Prague Capabilities Commitment, which essentially is a commitment on the part of our allies to try to increase—our European allies, to try to increase their military capability. And, clearly, programs like the Joint Strike Fighter will contribute to a very high level of military capability with our allies. And, as I said, the interoperability of equipment is important.

And I could go on, but just to briefly finish, clearly the fact that our allies contribute to the cost of an expensive development program has been recognized by the General Accounting Office as a major benefit of the Joint Strike Fighter program, and the technology that comes from our allies is very important. As General Hudson said in his statement, much of the vertical takeoff and landing technology that will be used for that aspect of the Joint Strike Fighter program in fact originated in the United Kingdom and still resides there. So these are all reasons why we believe it is important to have cooperative programs with our allies.

Mr. SCHROCK. And I completely agree with that. And I agree with the cost sharing, but I think Mr. Kucinich mentioned some of

the cost overruns. And as I read some of the information here—and correct me if I'm wrong—if there are cost overruns, the United States is the one—the United States company is the one who bears the burden of that cost increase. Is that true? And how do we assure ourselves that technology—we are not going to be transferring technology that we don't want some bad guy to get somewhere because our friend today could be our enemy tomorrow? How do we balance that to make sure that doesn't happen? The cost overruns concern me, too. Why aren't the other countries and those companies sharing in the burden of that as well?

Mr. VOLKMAN. I think I would like General Hudson to share in my answer. But I will just answer briefly by saying that regarding cost overruns, we will make a decision in consultation with the other partner nations. We will try to avoid cost overruns. That cost overruns would not be borne by the contractors who are participating in the program, so far as I know, but would be governments would have to decide whether to fund those cost overruns. We would try to minimize the opportunity for a cost overrun. Clearly, if we had to fund an overrun or thought it was the right thing to do, we would have to come to the Congress; then Congress would have to approve the funding of the overrun for the U.S. share. And then, of course, we would consult with our allies and come to some determination as to whether they would fund their share of the cost overrun just as the United States will have to make a decision as to whether to share—to fund a share of the cost overrun.

Technology transfer. We are being extremely thorough in working with the Department of State who has, in most cases, the final say in what technologies are transferred. So we have gone through a very deliberative process in deciding which technology should be transferred, and we will in the future.

Mr. SCHROCK. Answer me if I am correct or wrong on this one. I'm guessing the overruns are created because, from the time somebody has the concept, the thought in their brain about the Joint Strike Fighter, to the time it lands at a base somewhere is many, many, many years because of all the technology increases that occur. Why put an old piece of technology in something that is going to be flying in eight or 9 or 10 or 11 years. And isn't that the reason for a lot of those cost overruns?

General HUDSON. Yes, sir. If I may, I would like to followup on Mr. Volkman's answer.

Mr. SCHROCK. Sure.

General HUDSON. In terms of the development cost, what the GAO reported about is accurate. The partner countries are not obliged to share with us any potential future cost overruns. However, we have the option to go to them, DOD can go to them and ask for their sharing in this. It is——

Mr. SCHROCK. Why would they do that?

General HUDSON. Well, it would be to their benefit, sir, to ensure that we indeed have an affordable effective weapons system to be able to be deployed to the fleet. There are a couple other things that we bring to the table here to help control costs. One of them is, the application of cost is an independent variable. For example, if we are going through the development program and we see that we can meet 90 percent of one of our 430 specification points with

a certain amount of costs and that the last 10 percent is really expensive, we would look at the operational analysis there and maybe we wouldn't go for that last 10 percent and that helps us avoid excessive cost on the program.

Mr. SCHROCK. I see.

General HUDSON. The other is, we have a joint and international configuration steering board that meets several times each year. We look at evolving requirements and study their potential cost impact on the program. That gives us a very disciplined and rigorous method to control requirements on the program, and we ensure that we are doing the right thing in terms of transmitting those requirements to our prime contractors.

I would also like to mention that both Lockheed and Pratt and Whitney and General Electric conducted market surveys if capabilities exist in other countries in order to figure out where the world class capabilities are that exist in companies outside the United States. For example, the short takeoff and vertical landing technology that comes from the United Kingdom, the lift fan technology that powers the Marine Corps variant are examples of things that come to the table from companies in other countries. We find that there are indeed niche capabilities out there in other countries. I hold Lockheed, Pratt and Whitney, and General Electric accountable for their cost, schedule, and technical performance on the programs. So it is to their advantage to indeed find the companies out there that help them provide the best value to the United States and our coalition allies.

Mr. SCHROCK. Thank you, very much.

Thank you, Mr. Chairman.

Mr. TURNER. Mr. Kucinich.

Mr. KUCINICH. Question to Ms. Schinasi. In GAO's opinion, is it likely that costs will rise in the JSF program?

Ms. SCHINASI. Yes.

Mr. KUCINICH. And then, based on GAO's past experience with this and other aircraft development and production programs, how good is the Pentagon's record on predicting and controlling cost increases?

Ms. SCHINASI. We have reported on many occasions that the Department continually underestimates the costs associated with its major systems acquisition.

Mr. KUCINICH. How much are we talking about in terms of increased costs over the long run? Billions of dollars?

Ms. SCHINASI. I cannot predict that.

Mr. SHAYS. If you could move your mic closer.

Ms. SCHINASI. Move your mic closer.

Mr. TURNER. We are looking for proximity.

Ms. SCHINASI. Right. In terms of the order of magnitude, I can't address that on this program. There have been some things done for cost control purposes on the Joint Strike Fighter program that we have not seen in other programs. At the same time, however, in a report that we issued to this subcommittee in October 2001 I believe, we recommended that the program not go forward into its current phase because a number of the critical technologies needed to get, not just the performance, but the costs—many of the technologies were not mature.

Mr. KUCINICH. Recognizing the virtual certainty of cost increases, why did the Defense Department negotiate cost sharing agreements that ignored these realities?

Ms. SCHINASI. That question may be better addressed to the DOD witnesses to answer.

Mr. KUCINICH. Well, then let me ask the Defense Department then. I will ask General Hudson. Would you like to respond? Do you agree with GAO's finding that foreign partners are currently not required to submit additional funding when costs increase for the program?

General HUDSON. Yes, sir. I agree, they are not required to do that.

Mr. KUCINICH. So what is the Department's justification for completely exempting foreign partners from sharing in these increased costs? And what's the rationale for giving them this wholesale exemption?

General HUDSON. Sir, they actually are not exempt from it. While they do not have to provide additional funds, if we were to ask them, they have the same interests in providing an effective and affordable system to their warfighters. And depending on what the nature of the cost issue is, it might be greatly in their benefit to help us share the costs for the capability in the airplane.

Mr. KUCINICH. Well, it seems that we have a condition here where U.S. taxpayers may be sharing a disproportionate cost burden.

Now, Ms. Schinasi, DOD claims it can manage costs and therefore alleviate the need to ask partner countries for additional funds by using a variety of tools. These include program management tools, frequent partner meetings and discussions, and contract incentives. Do you believe these measures will guarantee that costs will not increase?

Ms. SCHINASI. We have found consistently that when programs move forward on a schedule-driven basis rather than a knowledge-driven basis, that the risk mitigation and other plans that are always in place on these programs are not sufficient to control costs.

Mr. KUCINICH. That was very well put.

Now, with foreign countries contributing to the program, do they require offsets, Ms. Schinasi?

Ms. SCHINASI. This can be seen as another type of offset, actually, this program.

Mr. KUCINICH. Jobs, technology transfer?

Ms. SCHINASI. Yes. And we have seen trends in the offset arrangements that defense companies enter into expand over time to include many of the same kinds of arrangements that we will see in these cooperative programs.

Mr. KUCINICH. You know, Mr. Chairman, and Mr. Shays, I think it would be useful for this committee to be able to probe ever more deeply into this issue of offsets, because it may be that the peculiarities of the structure of this system result in loss of jobs in our country; and as we transfer technology, it then enables manufacturers like Lockheed Martin to push forward with the development of even newer models to be able to be more competitive with the models that they just transferred to other countries. And I think it would be useful to be able to see if we are not setting in place

here a system which guarantees ever escalating expenditures for ever evolving technologies.

I thank the Chair. Thank you.

Mr. TURNER. Thank you.

Our chairman, Chairman Shays.

Mr. SHAYS. Thank you. It is nice to be here. I appreciate that we are discussing what I think is a very important, obviously a very important issue for a country. I was told when I was first elected 16 years ago that the decisions I make for the Defense Department won't show up for 10 years. And so as well as I thought about how we had conducted the first Gulf war and all the equipment that we had and so on, I mentally gave credit to those who voted in 1980, not 1990.

Having said that, I want to just understand a few things. And I realize some of this you have already said, but I am not quite sure what we are saying here. First off, it is my understanding we have the Joint Strike Fighter, the Air Force F–22 Raptor, and the Navy FA–18EF Super Hornet. Those are the planes that we are going to develop in the future. And, that when we are talking about the Joint Strike Fighter, we are looking in current dollars at a cost of $1.197 trillion. Is that an accurate cost?

General HUDSON. Sir, I would have to take that one for the record. I don't know where that figure comes from.

Mr. SHAYS. What is the cost of the Joint Strike Fighter going to be when we do our 200,457 aircraft?

General HUDSON. Sir, in today's dollars, what we submitted to Congress with the most recent select acquisition report which came in at the start of this year was it is in the high 30's for the—high $30 million per copy. That's an average unit recurring fly away cost for the conventional takeoff and landing variant. And it is between the high $40 and low $50 million per copy figure for the short takeoff and vertical landing variant.

Mr. SHAYS. Isn't that based on 1994 dollars?

General HUDSON. That's today's dollars. It's actually 2002 dollars.

Mr. SHAYS. So, please do the math for me. How many planes are we ordering, and what is it going to cost us?

General HUDSON. Sir, those averages are based on 2,953—2,593, which is 1,763 for the U.S. Air Force, 150 for the United Kingdom, and the balance for the U.S. Navy and the U.S. Marine Corps. The final split between the short takeoff and vertical landing variant, the carrier variant——

Mr. SHAYS. You're telling me a little more than what? I'm just going to start basic and then we are going to go out with the details. What is this program going to cost? How many planes are we going to order? And what is this program going to cost in today's dollars?

General HUDSON. The number of planes that the U.S. currently intends to order is 2,443.

Mr. SHAYS. And what is it going to cost?

General HUDSON. It's in the high 30's. It's about——

Mr. SHAYS. No, I don't want to know per plane. What is this program going to cost us?

General HUDSON. Sir, I don't have the grand total of that procurement figure.

Mr. SHAYS. Why not? I mean, this isn't a strange question to ask. I want to know what the program is going to cost.

General HUDSON. Yes, sir.

Mr. SHAYS. Can anybody tell me what the program is going to cost? Is there anyone behind you who can tell me what the program is going to cost?

General HUDSON. Well, sir, I can give you in rough terms. The total procurement figure is approximately $200 billion.

Mr. SHAYS. Will GAO answer this? I'm just a little—Mr. Volkman, you can't tell me what this program is going to cost?

Mr. VOLKMAN. [Shaking head.]

Mr. SHAYS. Why not?

Mr. VOLKMAN. We could get the information for the record, Mr. Chairman. But off the top of my head, I don't know what this is.

Mr. SHAYS. This is a hearing on the Joint Strike Fighter. Correct? I am asking the basic questions: What does the program cost us? Why would I have a difficult time getting a question answered like that? And why would someone have to come back to me? Why is that not important?

General HUDSON. Sir, I can give you that figure. It is roughly——

Mr. SHAYS. I know what it is says there.

General HUDSON. It is roughly $200 billion for the entire procurement program for that 2,443 number.

Mr. SHAYS. I will tell you what. Before this hearing ends, I want someone to tell me what the program is going to cost—I want you to do that—because I have a document that tells me and I want to know if it is right or not. But I am not going to tell you, because you are the people that are doing it. Would GAO tell me what this program is going to cost?

Ms. SCHINASI. The number—the support costs have not yet been defined. But for R&D and procurement, for the numbers that the General mentioned, we have said about $200 billion.

Mr. SHAYS. I am going to ask GAO: Do you know what this program is supposed to cost when we build how many planes and do we know what it is supposed to cost? I feel like I'm going through a game here. I mean, if you tell me the F–22, you tell me we are going to build this many planes and it's going to cost us this amount of dollars. And then the next hearing we have, you tell me it's going to cost us more dollars and we're going to build less planes. And the next hearing we have after that, they say it's going to even cost more and we're going to build less planes. It strikes me that the reason why you don't want to tell me is we don't want to put a number to it is because we don't want to be held accountable to it.

Basic question: What is this going to cost?

General HUDSON. Sir, I have the answer for you here in my documents. For the 2,443 number, it is $162 billion. And that's consistent with the Select Acquisition Report that came over early this year.

Mr. SHAYS. General, I'm sorry, I want to know what the program is going to cost us, total, when we are all done, when we have or-

dered all our planes, when we've ordered—what my briefing paper tells me is that we estimate we are going to order 2,457 aircraft. I'm told its estimated cost in current dollars for those aircraft is going to be $1.197 trillion.

General HUDSON. Sir, the figures I have immediately available here are the cost of the development program, which is baselined at $33 billion, plus the $162 procurement. That is $195. The large figure that you cite would include some assumptions about the operating and support costs over the lifetime of the airplane, and I don't have those immediately with me.

Ms. SCHINASI. The information that we rely on——

Mr. SHAYS. A little louder, please.

Ms. SCHINASI. The information that we rely on is in the December 2002 Selective Acquisition Report. Those are the most current dollars that we have.

Mr. SHAYS. What does that mean?

Ms. SCHINASI. The 2002 base-year dollars. It means the costs change, I won't say continually, but change frequently.

Mr. SHAYS. Well, unless we are willing to state the numbers, it is kind of hard to know how things change. Does GAO have a—have they looked at the total number of planes we want to build and the total cost that we anticipate it is going to require us to spend?

I had lots of questions, but I want to get by this one first. I mean, I am looking at people looking at me like I am asking something I shouldn't be asking. I am, like, mystified by it. It is a hearing on the Joint Strike Fighter. We don't have a lot of hearings on it. It would seem to me that this would be like, this is what it is costing now, and then we may have to change it later and so on. And these are the reasons why we are changing it.

So before the hearing is over, I would like DOD to ask someone to call someone to tell me how much these planes are all going to cost and have a sense of it. That is what I would like.

Why don't we do this. While that is being done——

Mr. TURNER. Mr. Chairman, would you like to even recess for a few minutes?

Mr. SHAYS. No. You can ask them your questions second. They have someone else that can get the answer. Someone can get up and make a phone call or something. I don't mean to sound arrogant, I am kind of amazed.

Let me ask you this: How much has the program increased since we locked in prices with our allies, and which allies did we lock in the prices with? Mr. Volkman, maybe you can answer. Which allies have we locked in the price with so far?

Mr. VOLKMAN. The allies who are participating in the systems design and demonstration phase of the program are the UK, Australia, Netherlands, Italy, Norway, Denmark, Turkey and Canada.

Mr. SHAYS. I must have old data. I have that we have three tiers. We have UK is one tier. The two tiers, Italy and Netherlands, and three tiers, Turkey, Norway, Australia, Canada and Denmark. Is that correct?

Mr. VOLKMAN. That is correct.

Mr. SHAYS. So we have three tiers, correct?

Mr. VOLKMAN. Yes, sir.

Mr. SHAYS. Are we locked into the price with the UK?

Mr. VOLKMAN. The UK has agreed to a contribution of $2 billion to the systems design and development demonstration phase.

Mr. SHAYS. Is that a yes? Are we locked into a price? If the price goes up, do they have to pay the increased price?

Mr. VOLKMAN. There is no agreement on—as the GAO report mentions, there is no agreement that if the program exceeds the current estimate for systems design and development, of about $33 billion, there is no obligation for the UK to fund a share of the—of any overruns.

However, we expect that they would if it was necessary.

Mr. SHAYS. So the bottom line is, they have agreed to a price, but we are hoping that the price—if it costs more, that they will pay their share. Is that correct?

Mr. VOLKMAN. They have agreed to contribute $2 billion. In the event that there is an overrun to this phase of the program, we would negotiate with them to share in the costs of that overrun.

Mr. SHAYS. How about with Italy and the Netherlands?

Mr. VOLKMAN. It is the same.

Mr. SHAYS. How about with Turkey, Norway, Australia, Canada and Denmark?

Mr. VOLKMAN. We would do the same thing.

Mr. SHAYS. Explain to me the difference of these three tiers.

Mr. VOLKMAN. Well, the differences in the three tiers have, of course, to do with the amount of money that is contributed to the program by the particular partner. So in the case of the UK, it is a $2 billion contribution to the program, in the case—which is Tier 1. In the case of Italy and the Netherlands, who are at Tier 2, it is approximately—it is $1 billion on the part of Italy, over $800 million on the part of the Netherlands. And then the remaining Tier 3 partners have contributed approximately $150 million each to the program.

Mr. SHAYS. Let me just follow this one point up, Mr. Chairman, if I could. Let me understand. What does being a one tier versus a two versus a three tier give you? What do you buy when you are a one tier versus a three tier?

Mr. VOLKMAN. What the partners will receive as a result of their participation in the program is a voice in the conduct of the program. So they will have—each of the partners has representation in the program office. In the case of the United Kingdom, they have a National Deputy. They will have 10 staff who are fully integrated into the Joint Strike Fighter Program office.

In the case of—I mean, I can go through all of them if you like.

Mr. SHAYS. No. Is it basically if you are one tier, you get to have a little bit more say how this plane turns out? If you are third tier you basically buy whatever was made? Is that the difference?

Mr. VOLKMAN. Well, all of the partner nations have some voice in the management of the program. And, in fact, I mean General Hudson would probably be better able to answer the specific role that they have in the program.

Mr. SHAYS. Let me just tell you then, I will come back for the second round. General, if you can just write this down, or someone on your staff. This is information I have. I would like to know if it is true. I have that the cost of the program in current dollars is

estimated ultimately to be $1.197 trillion, that it amounts to $81 million per aircraft, that we are anticipating building 2,457 of these aircraft, that the Air Force is going to ultimately have 1,763, that the Navy and the Marines ultimately will have about 680, and that adds up to 2,443. And the difference—I basically made an assumption, was prototype—between the 2,457 total aircraft that I had originally said versus adding up the Air Force, the Navy and Marines at 2,443 as prototypes.

Now, if what I have is bad, we can blame it on bad staffwork. But, if it is not wrong, I want to know. And so before we adjourn, in fact, we are not adjourning today, Mr. Chairman, with your permission, until we get this information. We may recess. But—and we will go from there for me. Thank you.

Mr. TURNER. I am assuming, although I have not seen a whole lot of activity occur behind the table where you are all sitting, that someone is currently working to get this done for our chairman?

General HUDSON. Yes, sir. That is correct.

Mr. TURNER. Great. Obviously, there were two focuses of this hearing. The first being the issue of cost sharing with our international partners. The second being technology transfer. We are all aware of the overall arching issues of the cost overruns of the program and the issues of the management of the program.

Obviously, there are some positives to the program. This is a learning program. And there has never been anything of this size in a program, both in international partners and DOD cross services that has been done before. And certainly the lessons that are learned here are going to be very valuable.

But, what is obviously important is as we go through the process of learning is implementing and incorporating what we are learning into what we are doing as we are moving forward.

With that, GAO's comments are certainly very important and have been very helpful. I am very much intrigued by the issue of the foreign partners not being required to share in cost overruns while also having an opportunity to participate in the program during the phases where we have already experienced cost overruns.

And my understanding in this program, is that in addition to the United States companies and contractors, that there are also foreign companies and contractors that are participating in this. Is that correct, Mr. Volkman?

Mr. VOLKMAN. Yes, sir, that is correct.

Mr. TURNER. Could you please tell me what percentage of the overall cost overruns can be attributed to the foreign companies and the foreign participation? Obviously, there is a breakdown as to where those dollars go. Do we know to what extent the foreign companies are enjoying the benefits of the cost overrun, while at the same time those foreign countries are not being burdened with the cost overruns?

General HUDSON. To my knowledge, sir, international industrial participation has not caused any change in the program or our cost estimate, either for development or for production.

Mr. TURNER. Now, that is really interesting. Why is that? Where are the cost overruns coming from then?

General HUDSON. Well, sir, I believe that you are referring to the change in the estimate for the development program between the

Milestone B cost, which was from October 2001, submitted to the Congress in early 2002, and the estimate that was submitted early this year. That was a change from the $30 billion baseline to $33 that accounted for two items.

One was the cost to do the nonrecurring work on the weapons system, to ensure that we were technically—that is on the airplane and its associated elements—in full compliance with national disclosure policy for procurement of airplanes by international partners.

And the other was a change in the estimate to do the development work on the General Electric engine program. Back at the Milestone B in October 2001, the estimate for the General Electric engine work was for a limited interchangeability qualification of that engine. By interchangeability, I mean the ability of either the General Electric or the Pratt engine to operate within the airplane on an equivalent basis without any change in common hardware or interfaces between the engine and the airplane.

Since that point, DOD decided that the qualification program would be for the full GE engine. So there was some additional design work, ground test and flight-test work that would be required to ensure that the full GE and Pratt engine were interchangeable within the JSF. So those two things were the reason for the change in the development price from the Milestone B to the SAR that was submitted earlier this year. Almost nothing else changed.

Mr. SHAYS. Can I just ask I question? Do you agree with what was just said?

Ms. SCHINASI. I would only note that GE is partnered with——

Mr. SHAYS. But the cost numbers and the increases. Your numbers were different than his numbers, the General's numbers.

Ms. SCHINASI. No. Ours are the same for that period of time.

Mr. SHAYS. From what period of time?

Ms. SCHINASI. From October 2001, when the estimate was submitted, until today.

Mr. SHAYS. Thank you, Mr. Chairman.

Mr. TURNER. OK. Well, let's take one aspect of the positive. In this process there are lessons that are being learned in managing programs that are across DOD departments and then also internal. In addition to the Joint Strike Fighter, there is an opportunity for these lessons learned, both in management procurement and also in relations, that—and policies that might be helpful.

Could you tell us some of the things that have been learned that may have not been known before, since this is an enormous undertaking that can be applied to future systems for all of our benefit?

General HUDSON. Yes, sir. A couple of those lessons would be in the area of requirements. A little over 3 years ago, the U.S. Air Force, the U.S. Navy, the U.S. Marines Corps and the United Kingdom signed a joint operational requirements document. This has been one of the real success stories in the program. That is one that, I believe, that would be a good lesson learned for other programs in the sense that we worked for about 5 years on that requirements document.

We got a good solid set of requirements that looked at not only combat capability that was needed in the post-2010-threat environment, but also considered affordability for development, for pro-

curement and for owning and operating the airplane. So that was a very positive one. The other lesson I would provide is in the area of looking forward in terms of technology transfer. We have done a great deal of work over the last almost 2 years now to look at technology transfer and the risk and benefits associated with that, not only from government-to-government perspective but from industry-to-industry perspective.

As you know, the first global project authorization was approved by Congress at the end of this past year. This was the first global project authorization. It did take some time to implement, but it is working successfully and State Department is working the implementing agreements in less than or equal to the 5-day goal that they signed up for.

So although that one took a good while and much work was put into that, that is a very, very positive lesson learned for programs of this type in the future.

Mr. TURNER. Thank you, General. Mr. Schrock.

Mr. SCHROCK. I am not sure that I have any questions as much as a comment. I guess I kind of understand where they are all coming from. I was, in my two and a half decades in the Navy, I saw every program that ever hit the street had cost overruns. I guess I asked why then, and I ask even more so now.

I don't know how we get our hands around it, unless, as I said earlier, from the time a concept is put on the table, until the time it hits the water in the case of the Navy, or in the air in the case of the Air Force, so much happens, so much technology changes, so many ideas flow into the process, look into your office, General, that that is what causes the cost overruns. Is that right? Am I way offbase on that?

General HUDSON. One of the things we know, sir, as you have pointed out, is that technology can change over time. And if requirements, that is new requirements, are allowed to flow unabated into a program, that that does indeed drive cost. That is why we have had, since the start of the development program here, what we call a Configuration Steering Board, which is in charge of working with the DOD acquisition communities and the warfighter representatives who set the requirements.

Those two together work to ensure that we have a disciplined approach to any potential changes that we might entertain in the program, because it will drive costs.

Mr. SCHROCK. I am just wondering if there are ways to shorten the time lines. I know Admiral Vern Clark, Chief of Naval Operations, is trying to get the LCS, the Littoral Combat Ship, in the water in just a couple of years to hopefully prevent some of this, but to have a system that is plug and play, so if there are technology changes, you unplug one thing and plug in another.

I think that is a unique concept, and I think it is going to work. Is that a possibility for some of the new aircraft coming down the pike?

General HUDSON. Yes, sir, it is. And, in fact, we designed that exact capability into this airplane in terms of the avionics and software. We did it from the ground up. We worked about 5 years in what we call an open architecture, because we know that, just as we see in personal computers at home, we see fast changes in tech-

nology where the technology gets better, and in fact cheaper, and it works better. We know the same thing happens within avionics that go into military airplanes.

So what we designed into the backbone of the Joint Strike Fighter was what we call this open architecture. And what that does is it gives us a capability to cope with obsolescent parts. It gives us the capability to insert technology into this airplane in a way that we have to do an absolute minimum of regression testing, and we have the capability to change software modules, and, in fact, complete those modules if we like, due to the way the architecture is designed and implemented within the airplane.

And in many ways, the avionics and software on this airplane, that is the sensors, how the data from the sensors is processed and displayed to the pilot and used in combat is the heart and soul of lethality and survivability. So the open architecture is something new for us for the complete system within a tactical jet. It will provide us tremendous flexibility in the long term and cut down the cost to insert new technology, and to play it into the field.

Mr. SCHROCK. This may be an unfair question, but I can understand how you can shorten the time to land on a ship, to get it in the water. Why can't we do that—when was the—when did the Joint Strike Fighter—when did somebody first say Joint Strike Fighter? I should know the year? How long ago was that?

General HUDSON. I am sorry, sir. I didn't understand the question.

Mr. SCHROCK. When the Joint Strike Fighter concept first went to paper and people started developing that, how long ago was that?

General HUDSON. The concept demonstration phase, which was the competitive phase between Boeing and Lockheed, started in November 1996. There was a very short competition before that, but that was the main competitive phase.

Mr. SCHROCK. And then, I guess, they will be in the Fleet and your squadrons in the Air Force in 2008? That is 12 years. That is what I am talking about. I am not criticizing or complaining, but I am saying in ships now, you can do it in a few years. Why can't that same concept, why can't that same mentality be put into the development of some of those new air systems? There may be a totally logical reason.

General HUDSON. Yes, sir. Well, we have done some things to cut down the cycle time and ensure that we don't overrun this time line that we have now. For example, when Lockheed and Boeing competed for the contract award for Joint Strike Fighter, each company had to fly and demonstrate a conventional takeoff and landing variant, short take off and landing and carrier variant. They did that. And those—each company built two airframes that flew the three variants and proved that.

Those were not prototypes, however, they were just concept demonstrators. So they didn't have a representative set of avionics or low-observable coatings or things like that on the airplane. So the fact that we flew those concept demonstrators helps us tremendously for understanding what capability we have and being able to have confidence in the time line that we have now.

And, in fact, 2 years from this fall, we will fly the first of our full-up developmental airplanes that will have the required 8,000 hours of structural life; these airlines will have the representative avionics in them, the weapons bays and everything that the operational airplane will have.

In 2008, our first production airplanes hit the ramp, and we begin testing and getting them ready for full-up operational capability in the Marine Corps in 2010, the Air Force in 2011, and the Navy and the UK in 2012. This fall we have our first engine in the test cell. So it does take a few years to put all of the piece parts together to bring the airplane into the field and ensure it is correct.

But, with the time lines that we have, it all fits together and it is not too far away.

Mr. SCHROCK. The first demonstration phase, I guess, was to prove that it wouldn't fall out of the air?

General HUDSON. Yes, sir. It was designed to prove that, whether or not the competing companies had the ability to design and fly an airplane that would meet the fundamental needs of the services.

Mr. SCHROCK. My time has expired.

Thank you, Mr. Chairman.

Mr. TURNER. Mr. Chairman.

Mr. SHAYS. I am pretty much a fan of this program. It may not seem evident from the way I feel right now. But, I think it makes sense to try to have three branches use the same plane. I think there is logic, that if you can use 80 percent of the same part in a plane, that makes sense.

But, in the chairman's statement, he pointed out that this could be a model for 21st century weaponry acquisition or it could fall prey to the same cost growth, scheduling delays, and interservice bickering that has plagued so much in the cold war. That is one thing he pointed out. That is one thing we want to get a handle on.

Then he said, today we ask whether international participation and technology sharing are being managed so as to maximize benefits and minimize risks to the Department of Defense, DOD's larger program. That is one thing we also want to have a sense of.

And he pointed out, at the request of GAO's Accounting Office, at our request, we asked them to examine the complex set of relationships between the Joint Strike Fighter Program and its eight international partners? We want to know about the cost-sharing benefits that go in this program.

He pointed out in their report, and I would like GAO to speak to this, released today finds the JSF Program is strongly in need of management and oversight because the international participants currently have no requirement or incentive to share in cost growth.

Now, I am not sure how that has been answered. And then, he pointed out the level of collaboration also demands greater access to sensitive defense technologies than we are accustomed to, and we are trying to sort that out. So that is kind of our objective. I mean, it would have been nice, and we will get it, to know what this program is supposed to cost based on our numbers today. We know it will be different, but it gives us a target to then begin to

say, well, why is it going to cost more, why it is going to cost less? What are all of those new things that have changed?

So I would like to know from GAO, what are you saying about this program? Am I to feel good about it? Bad about it? Or somewhere in between?

Ms. SCHINASI. As you know, Mr. Chairman, we believe that the program went forward into this phase before it was ready to do that, because its technologies were not mature. That time has already passed.

Mr. SHAYS. That is a criticism that you have also had with the F–22.

Ms. SCHINASI. That is correct.

Mr. SHAYS. Your point is that we are actually starting to produce before we have the technology? That is one criticism. I would like that addressed by the rest here. So what is the answer to that issue? Did you hear her point or were you talking about something else? The first criticism and concern was, both with the F–22 and the Joint Strike Fighter, we are going into production before the technology is there to support the production. What is the response that we have in that regard?

General HUDSON. Well, sir, the Department of Defense, prior to the Milestone B, which is in October 2001, as part of the requirements to go through the Defense acquisition board review, which Mr. Aldridge chaired at that time, we did a report that looked at the readiness of the system to enter the system development and demonstration phase.

And the review of the documents and the work that DOD did showed that it was ready to go. I know that——

Mr. SHAYS. OK. So the answer is, you disagree that you think that your production, the technology was there to support the production based on this study. Is that your answer?

General HUDSON. Yes, sir.

Mr. SHAYS. OK. What is the second one?

Ms. SCHINASI. You are back to me. The issues that we raised in this report are more of a prospective nature than they are of something that has actually happened. But, what we are looking at, first the—the basis upon which you enter into a cooperative program has to do with equitable sharing, which is not defined very well, but it is still is a concept that underlies——

Mr. SHAYS. You are concerned about who is going to ultimately pay, and will they pay the full cost of the program?

Ms. SCHINASI. We think it should be recognized that the financial contribution that was part of the basis for having a cooperative program will change over time. There are percentages that have been established. It was originally established in a percentage range. So for example, a Level 1 partner was going to contribute roughly 10 percent. A Level 2 partner, roughly 3 to 5 percent. A Level 3 partner, roughly 1 to 2 percent. These were the guidelines that were laid down as we started into this program.

Mr. SHAYS. OK. In my way of looking at it, and maybe Mr. Volkman you can respond to this. I would just think, and tell me why there is a reason, or that I just don't know it, I would think you would basically figure out the cost to produce this plane, and then you would set the price based on the cost, and then whoever

wanted this plane, would pay this cost. I mean, that is kind of the way that I would like at it. But, I mean, there is a reason we are not doing it that way because——

Mr. VOLKMAN. Well, I am not really sure how to answer the question. We arranged—our goals at the outset were to have a Level 1 partner contribute 10 percent to the systems design and demonstration costs as we knew it at the time. Obviously, as a result of our negotiations, not all of our partners or prospective partners were able to meet a strict 10 percent goal. So we——

Mr. SHAYS. How did we come up with that 10 percent?

Mr. VOLKMAN. Maybe I should explain that. It was recommended I explain this. The phase of the program we are in right now, is to develop the airplane and demonstrate that it is ready to go into production. So it is a very lengthy part of the program where we are designing the plane so it is ready to be manufactured.

Mr. SHAYS. We have seen both planes. We saw them both together before they were chosen. I mean, I am talking about the Boeing plane versus Lockheed. So we have had a little bit of knowledge on the contest that has taken place. But, what I am trying to understand, there is a reason, and it may be a very good reason, that you went out on the hearing.

Was there the thought that somehow we might develop this plane, but never ultimately produce it? I mean, in other words, that we would go through this process and decide we couldn't afford it. We ultimately figured we were going to build this plane. Is that correct?

Mr. VOLKMAN. That is correct.

Mr. SHAYS. So just get me by this hurdle. Why wouldn't we say to whoever wants to buy this plane, you have to pay this cost? And why did we decide we wanted someone to pay 10 percent? There is a reason, but we don't know it.

Mr. VOLKMAN. I think it was a judgment at the time as to what the likely participation would be among various partner nations who might be interested in participating with us in the program. I mean, clearly, most nations cannot afford to join as partners in a program at the—at the same extent that the United States can.

So I think, you know, we made a judgment that a Level 1 partner would likely to be able to contribute the approximately $2 billion into the program that the United Kingdom has agreed to pay. We made some other judgments as to what——

Mr. SHAYS. Does that give them the right to buy the plane less than a third tier would pay?

Ms. PATRICK. No. I have been listening to this, and maybe I can help with this. The condition for being a Level 1, 2 or 3 partner has to do with the level of contribution those countries want to make to the SDT phase. It does not at all require them to buy aircraft. And it also does not stipulate anything about the price at which they will buy aircraft if they come to decide to buy aircraft later on.

Mr. SHAYS. Tell me why would they do it. Why even bother to participate? I am trying to see what both sides get here. I don't know what people get out of this.

Ms. PATRICK. A number of the countries were interested, because they do think that they will buy the Joint Strike Fighter aircraft.

So they wanted to be present at the creation, as it were. The UK is probably the very best example of that. Where the UK decided that it was willing to forego developing its own tactical fighter industry to the extent that would be required if they had to develop this aircraft on their own, and they would partner with us instead.

A very early, very robust, tight working relationship, and the most funding into SDD. Also, perhaps not surprisingly, one of the most important features of the technological innovation of the Joint Strike Fighter came from the UK, the lift-fan technology, a lot of the work that has to do with the Marine Corps variant.

Other countries saw this program as an opportunity to learn about tactical aviation, whether they decided to buy the airplane or not. The Netherlands, for instance, decided that their knowledge and insight based on this investment in the program, would help allow their aerospace industry to be a major pillar in their own country. So they wanted to learn, to the maximum extent available, keeping in mind the foreign disclosure requirements, etc., about this program.

Mr. SHAYS. Do you understand why we are asking these questions? I mean, what you are describing now raises good questions for us to ask. And it raises, you know, some real concerns as well. I mean, we are trying to have a sense of, our partners, are they going to be paying the costs that that they should be paying? And what do they get out of this? What do we get out of it?

Well, one of the things they get out, it seems to me, is they get our technology. One of the things you are suggesting to me is that we have gained and learned some technologies from them.

Ms. PATRICK. Correct.

Mr. SHAYS. I think that needs to be put on the table. But, I am still—it seems to me what you are saying, is if you are either 1, 2 or 3, you get to participate in the program, and you get to have some influence as to how the program goes.

So now I am going to ask a logical question. Does being 1 give you more ability to influence the program than being 3?

Ms. PATRICK. I think, General Hudson, you can answer that because you have worked that day to day.

General HUDSON. Yes, sir, it does. The primary way that it does that is that in the joint operation requirements document that I mentioned earlier, there are four signatories on it. That was signed in the spring time of the year 2000. The signatories are the U.S. Air Force, the Marine Corps, and the United Kingdom. So there is an advantage to being a signatory on the requirements document.

They also have, the UK has 10 people that work for me in my office. So they have people spread throughout my team, working various jobs on the team.

Mr. SHAYS. OK. Now, Mr. Chairman, do you mind if I keep going?

Mr. TURNER. Please, proceed.

General HUDSON. Sir, I have the numbers that you asked for earlier.

Mr. SHAYS. Why don't we hold off on them. I am not going to forget about them. So what you have said is they get to have some say. If you are one tier, you got to have a little more say than 2 or 3. Correct?

General HUDSON. Yes, sir.

Mr. SHAYS. Now, does that allow them to be able to have an aircraft sooner than some other countries? In other words, are they first—do they get to jump us? The number I gave you of 2,443, do we get all our airplanes and then they get theirs? Or do we do a kind cost sharing, not cost sharing, but they get so many if we get so many? How does that work?

General HUDSON. The United States buys the first production airplanes, sir, planned now for 2006. The U.S. procurement profile will go probably for about 20 years past that. What will happen is that, as the United States buys airplanes and deploys them into the fleet, there will be enough production capacity to allow for airplanes to be built for partner nations.

Mr. SHAYS. You are missing my question. You gave me a long answer, I think with all respect, to what can be shorter. I am just simply asking, do the Brits, basically because of their participation, get to be able to say, well you get the first 100, then we get 10, you get the next and so on.

Is it that kind of arrangement? Otherwise, I am wondering why they would participate.

General HUDSON. Well, it goes by priority. They, as the Level 1 partner, they are able to procure first amongst the partner countries. And they start in 2008.

Mr. SHAYS. I understand the United States comes first. I understand that. We are putting up most of the cost, with all due respect. And I just wanted to know, this has to be something that has been talked about. Is this classified information?

General HUDSON. Well, they do have an advantage in procurement, because they are earlier——

Mr. SHAYS. Is there an agreement in writing that says how many planes they get at a certain time, or is this still to be decided?

General HUDSON. It is still to be decided, sir. The UK has a—they have a goal which they have stated of 150 Joint Strike Fighters. We know that they intend to begin procurement in 2008. The exact number of airplanes year by year, over the life of their procurement, is yet to be determined.

Mr. SHAYS. OK. Why don't you give me those numbers.

General HUDSON. These are the numbers that I have here. You were correct, 1,763 for the Air Force, and 680 for the Navy and the Marine Corps. That makes the 2,443 that you cited earlier.

Now, there are 14 jets that will be flown in a development program.

Mr. SHAYS. Right.

General HUDSON. At one time, there used to be 13. This goes back about 3 or 4 years——

Mr. SHAYS. So it is 14?

General HUDSON. Yes.

Mr. SHAYS. What are we looking at now? What are we looking at the cost of this?

General HUDSON. For the SOD development program here, $33 billion. For the production program, this is just the U.S. Airplanes, $162 billion. And our estimate for the operating and support costs for the U.S. airplanes is $332 billion.

Mr. SHAYS. So this number that I have of $1.1 is way off, $1.1 trillion is just totally off.

General HUDSON. Yes, sir. I don't know what the basis for that is. I would love to see those numbers and try to figure out where they come from, but these are the numbers that we carry in my office.

Mr. SHAYS. OK. If I add up all of those numbers, what did you get to? I need it in your words, not mine. So I don't want to add it up and put it the on the record. I want you to put it on the record.

General HUDSON. Yes, sir. I get $527, sir.

Mr. SHAYS. OK. So you are saying $527 buys 2,457 aircraft.

General HUDSON. Yes, sir. It does the development, it buys them, and it supports them over the life of the fleet.

Mr. SHAYS. Supports them. You mean, it is not just the cost of them, it is the operation? I just want to know the cost of this plane.

General HUDSON. Yes, sir. The $33 billion does the development work.

Mr. SHAYS. The $162 is production?

General HUDSON. Yes, sir.

Mr. SHAYS. I will take those two. So that is—basically, that is the cost of the aircraft?

General JUDSON. Yes, sir. The $33 and $162.

Mr. SHAYS. Do you want to put it on the record?

General HUDSON. Yes, sir. To do the ongoing development and to procure the airplanes.

Mr. SHAYS. It is $195 billion.

General HUDSON. Yes, sir.

Mr. SHAYS. For 2,457 aircraft?

General HUDSON. Yes, sir.

Mr. SHAYS. Maybe one of your folks could put on the cost per aircraft from that, just division. There is an average. Could I ask one last question?

Mr. TURNER. Certainly.

Mr. SHAYS. I would just like to clarify a question I asked earlier to GAO. When you were giving me costs, General, I seem surprised by your number versus GAO. I am looking at page 13. Maybe I misunderstood you, because I wasn't listening as well as I should have. But, on page 13 in the second paragraph, it says DOD—this is in the Joint Strike Fighter acquisition report. It says, DOD and the program office officials told us there could be instances where the partners would not be expected to share cost increases. For example, cost estimates for the system development and demonstration phase have increased on multiple occasions since the program started in 1996.

During that time, the expected cost for this phase went from $21.2 billion to $33.1 billion. And I get a difference of $12.9 billion. And I thought you gave me a $3 billion. I am just—that is why I asked GAO if those numbers—and you said you agreed with the $3 billion.

General HUDSON. Sir, the $3 billion number I gave was from the Milestone B in October 2001, to the report that came over here early this year.

Mr. SHAYS. So I used a different timeframe?

General HUDSON. Yes, sir.

Mr. SHAYS. So you agree with GAO that it is $12.9 since?

General HUDSON. Yes.

Mr. SHAYS. OK. Thank you.

Ms. SCHINASI. Mr. Chairman, could I add something to that? We came up with, instead of the $195, the roughly $200 billion for the total cost, because we added the additional development of about $4 billion that was in the concept demonstration phase.

Mr. SHAYS. So you added the $5 billion more. Do you concur with that number?

Ms. SCHINASI. Well, it was $4 something.

General HUDSON. Yes, sir. That is correct, if you count the competitive phase.

Mr. SHAYS. OK. Thank you. Appreciate it. Thank you for getting those numbers to me, General. Thank you.

Mr. TURNER. Well, Chairman Shays said that he is a fan of this program, and certainly I can tell you that I am also. And I think in looking at this, the Joint Strike Fighter people are very excited about its capabilities and what it is going to be able to do for the military.

And I have a series of questions, but first I would like to pause for a second, General. If you could highlight some of these for us, as to the Joint Strike Fighter, what are we talking about in trying to achieve here?

General HUDSON. Well, sir, there are several very important things that I would like to highlight for you briefly. First off is the ability to design, develop and deploy an airplane that is highly common between a variant that not only works off the U.S. aircraft carrier, but off an expeditionary airfield, such as the Marine Corps might use, and have from a conventional runway that the Air Force might use.

This gives us, by means of high commonalty within the airframe and within the avionics and software in the airplane, a very affordable airplane to buy and also to operate. Within any system, the largest expense in the life-cycle cost is a cost of owning and operating the airplane. With high commonality, we can certainly make inroads into what we know is the high cost of operating and owning most systems.

The other thing is that we will be able to do is, we have an airplane that is multi-role in nature, that is, can accomplish both the air-to-ground mission, and it has inherent air-to-air capability. And we have been able to design that such that it is highly common, which also gives us a broad base of operations to cut into operating and support costs.

And we have interoperability as one of our key performance parameters. We know that in coalition warfare, we want to have this plane to be able to interoperate, in other words, pass voice and data information with ships at sea, with the facilities on the ground, with other airplanes in the air and with spaceborne assets. So we designed this capability up front.

Mr. TURNER. This weekend, I led a congressional delegation of 11 Members that went to Wright-Patterson Air Force Base. It included the chairman of the Armed Services, Duncan Hunter, the chairman of Airland, who is also the vice chairman of the overall Armed

Services Committee, Kurt Weldon, to look at the development of science and technologies and research and development.

We had a focus of the technology of tomorrow that is going to be for the battlefields of tomorrow. One of the phrases that we heard from Ms. Schinasi, is that the technology has not been mature, but yet you moved forward into different phases. And one of the things that I find in this whole process is that to some extent, when you are talking about research and development, you are talking about inventions, you are talking about creativity, you are talking about doing something that someone hasn't done before, we don't want to go buy something that is yesterday's technology, we don't even want to buy today's technology, we want to buy tomorrow's technology.

And managing how we incorporate tomorrow's technology into a process that is being managed today is a difficult one financially. The phrase mature technology, though, is one that I would like you to respond to, General, in that it does seem to me that this is a process, specifically of the Joint Strike Fighter, which is one at the same time that we want to manage costs, we are talking about innovation, and we are talking about projecting toward the technology of tomorrow in this and the inherent impact that that is going to have on cost.

General HUDSON. Yes, sir. One of the significant challenges that we have in this development program is to integrate the technologies that we identified the last phase of the program into our design. So, I would like to give you a couple of examples of work that we did in the last phase of the program that we are now integrating into the design.

The first one is in the radar. We did some work in the last phase of the program on technology maturation, so that we could build a high-performing radar in a very affordable fashion. That technology demonstration work we did in the last phase has paid off handsomely. In fact, approximately next April, we will have our first radar hit the test bench.

So that is a good example of technology maturation work that was done in that last phase. We are building that now. And we will begin testing it next year. But it gives us the capability to put the technology we need in the airplane in an affordable manner. There is an example in the subsystems in the airplane. We did a project where we took an F–16, and tore out the traditional hydraulic flight controls in the airplane and replaced it with what we call—it is actually a system that runs by digital control to actuators located at the flight control services, eliminating the usual lines and hydraulic requirements in an airplane.

We demonstrated this. This it is now part of our baseline design. It is brand new technology that was never used like this in a fighter before. So we have captured that in our design process. So we have attempted to focus in this phase on the integration of those technologies, which we know need to be in airplane to make sure that it is survivable, lethal, supportable and affordable, but yet allow us to keep ourselves on track for schedule and performance and cost in this phase of development.

Mr. TURNER. In the materials that we have for this hearing from the staff of the committee, they highlight some of the costs savings

that we will experience, or have experienced, as a result of the Joint Strike Fighter Program's structure. And its goals being one, that the services anticipate that the size of their order will hold down production costs because a common base or common craft that is being designed, that the acquisition program's affordability is impacted by reducing the development production and ownership costs of the program, relative to other fighter procurements and that you have incorporated various DOD and commercial best practices in the Joint Strike Fighter program.

Still, obviously that is not enough to have warded off the cost increases that everyone wants to avoid. And the program can be open to criticism as we have looked to others that have not shared in those cost increases. But I think that, I would like you to clear this up for me, because as we have had this discussion, the—when we talk about costs and the different phases and what the partners will pay for their various portion of costs, once this plane actually gets into production, the full cost of production of the plane will be paid by anyone non-United States who purchases that plane, correct?

General HUDSON. Yes, sir. That is correct.

Mr. TURNER. So that the concern, though, is that the initial cost, the development costs, the invention costs are not at a 100 percent basis going to be placed or burden onto that purchase price cost of a copy. That is what I am getting from this hearing. So there will not be a recovery of the overall expectation of what we are going to have spent to come up to the level of production?

General HUDSON. Yes, sir. It is correct that partner countries are not required. We have the option of going to them for additional funds, but they are not required to share in development cost increases.

Mr. TURNER. And I guess that is where it begins to defy what people's normal common sense expectation would be of how cost and prices are set. Because, you know, generally if someone is going to go set about doing research and development for a product that they are going to put in production, they include those costs, as to what it took them to get to that point. I think that that is where people are struggling here is that not only are they not going to be included, but they are also, even though they shared in a portion of those, other countries, they are not sharing in the escalation of those costs as we get to the production point.

Now, is that correct? Is that a correct description of basically what people are struggling with?

General HUDSON. Yes, sir. I think you have described that correctly. It is correct that when we come to the production of the airplanes, the partner countries or whoever else would procure the airplane, they pay the full price of the airplane. And also for operating and support, they would pay the costs of spare parts and the cost of training and so on and so forth, just like the United States would.

Mr. TURNER. But they will not be paying the costs that have been expended prior, in research and development that takes it up to the point of production?

General HUDSON. No, sir. Not unless, if there are cost overruns in the development phase that the United States went to them for

additional funds, and if they produced those additional funds, they would, of course, share in an increase in the cost of development. If they did not, they would not.

Mr. TURNER. So then the sharing of those costs, though, does not bear a relationship to the per unit number that they will be acquiring?

General HUDSON. That is correct, sir.

Mr. TURNER. Let's shift just a second, Mr. Chairman, if you don't mind, to the issue of technology transfer. We are almost coming to the planned ending point of the hearing, although I understand from the chairman that we may continue it.

General, could you speak about the issue of technology transfer. Here you are in a partnership where you are sharing technology internationally, and you are sharing in technology because you want your product to be responsive to your customers, which also may be your partners on battle fields. So you also want the sharing of knowledge there in technology as this is developed, so that as a team, when these countries get together, they will be more effective.

I think one of the concerns that was raised, of course, is that your friend today may be your foe tomorrow. But in the group that you have put together, perhaps the degree of concern is not as high of those individuals. But, there may be in the next level of that, you know our friends may not necessarily be our friends. And could you talk about that, expanding on distribution of technology transfer and what—how that might be being addressed in this program?

General HUDSON. Yes, sir. We spent some years developing and working on the process for Joint Strike Fighter. There is a rigorous process in place to determine which technologies can be transferred on an industry-to-industry basis, let's say for example from Lockheed Martin or one of their subs or suppliers to a company who would be performing Joint Strike Fighter work from another country.

So that process is in place. We adhere to it very carefully. There are measures in place to ensure that that technology is appropriate for transfer. We worked that through the national disclosure policy community. And it is defined by what kind of authorizations exist for that technology transfer, either within the global project authorization, or the various TAAs that might be put in place for this program.

There are also equivalent agreements in place between the government of the United States and other participating governments as there would be for any type of cooperative development program. These security agreements are in place. They are carefully structured within each one of our partner countries to ensure that any information that might be provided to these countries is carefully protected, and that the individuals who get access to that information are properly vetted within their own systems as they are in ours.

So we have that disciplined system in place for government-to-government as well as industry-to-industry. And the importance of the technology transfer, I think, is illustrated very well by the time that it took to get the global project authorization in place. It was very carefully done.

It covers only unclassified information, and only unclassified information that is not very sensitive. The rest is all done by the normal TAA process. So there is agreements and procedures in place to govern the transfer of this information on both sides.

Ms. SCHINASI. Mr. Turner, can I add to that?

Mr. TURNER. Yes, please.

Ms. SCHINASI. I think one of the things that we tried to raise in our report is the concept of expectations, and how there may be differing expectations on this program. What we have seen and heard from some of the partner countries in here is that there is an expectation that they will have access to certain technology that they believe they need, to not just develop and produce, but also to support this airplane.

And that those expectations are probably, if not certainly, going to run into conflict with previous decisions that the United States has made on transferring technology.

The partner expectations for what technology they will have access to are not always going to be in accord with what the United States has certainly not done in the past, and maybe is not willing to do right now. So one of the issues that we have looked at is this idea of supportability of this aircraft.

Many of the partner countries want the ability to maintain and support the aircraft. There are significant technology transfer issues associated with that. And we have not yet determined what the support plan is going to look like. So what we have tried to do is say this is—the General described a set of safeguards in place—but, there will continue to be pressure pushing on the policy level about how much technology we are going to transfer.

I would say the GPA that has been referred to, the Global Project Authorization, is more a matter of process, how quickly can we get it through, not what the decision should be as to whether or not to release it.

Mr. TURNER. Very good. That is a good point as to how we operationally do this and that being overly restrictive may impact our overall goals. I appreciate you making that point, Mr. Chairman.

Mr. SHAYS. Thank you. We are getting toward the end here. But let me go through a few questions as it relates to the issue of strategic best value sourcing, as some call it.

I am going to read you the explanation before I read you the questions. Because I want to make sure the explanation is accurate. DOD and the Joint Strike Fighter Program Office have said that the use of competitive contracting is central to meeting partner expectations for industrial return and will assist in controlling program costs. Two things. In other words, one advantage is controlling program costs. Another is we participate, and we get to have our industry make some of the product that goes into making the airplane.

Joint Strike Fighter officials use the term "best value" to describe this approach, which is a departure from other cooperative development programs that guarantee predetermined levels of work based on contribution.

I guess I was kind of in the old world. I figure you contribute so much, then you get to make so much. Partner representatives generally agree with the Joint Strike Fighter competitive approach to

contracting, but some emphasize that their industry's ability to win Joint Strike Fighter contracts whose total value approaches or exceeds their financial contributions for the Joint Strike Fighter's system development and demonstration phase is important for their continued involvement in the program.

So I would like to ask Mr. Volkman and General Hudson to describe the relationship between the strategic best value sourcing, as described in the DOD Industrial Impact Study, and the best value concept that has been promoted since the beginning of the system development and demonstration phase.

Mr. VOLKMAN. Well, I think what we do in the award of subcontracts, generally, is we expect our prime contractors to make subcontract decisions on a best value basis.

Mr. SHAYS. So if they can make it overseas, you make it overseas.

Mr. VOLKMAN. Well, what I am trying to do initially is to say that we ordinarily expect our contractors to make a decision as to who they subcontract with on what would be characterized as a best value basis.

Mr. SHAYS. I am trying to understand it. Maybe I jumped in too quick. But since I already jumped in, what I am hearing you say to me is, wherever they can make the project the best at the lowest cost, you want them to make it there.

Mr. VOLKMAN. Right. So if there were foreign sources that can make it at the best value, at the best cost, we would expect that they would go to foreign sources. Now, of course, it is a lot more complicated than that, because of limitations on certain foreign sourcing that are contained in laws and regulations. But as a general rule yes, we would expect that they would do that.

Mr. SHAYS. Conceptually, I understand that. Now what?

Mr. VOLKMAN. So in the case of the Joint Strike Fighter Program, clearly, one of the things that we would like to see is our partner countries who are participating in the program, for their industries to benefit on a best value basis.

Mr. SHAYS. Right.

Mr. VOLKMAN. So there is—I am now going to the strategic sourcing concept. There is some value in the prime contractors making decisions to award work in a particular country on a best value basis.

Mr. SHAYS. Is it accurate to say that if you are 10 percent of the total production—excuse me, of the development costs, that you don't—aren't guaranteed that you will have 10 percent of the production contracting? That is not—you won't.

Mr. VOLKMAN. Well, at this phase of the program, we are not making any commitments as far as——

Mr. SHAYS. But the answer to the question is really yes? I am repeating what I think you told me. And tell me if I am wrong. You are going to, wherever you can make the product the best, the best product at the lowest cost, as a general rule that is the concept that guides you. So if the Brits contribute 10 percent of the development cost, if they did, they are not guaranteed that they get 10 percent of the production?

Mr. VOLKMAN. That is correct.

Mr. SHAYS. OK. Now, in a helicopter that Sikorski makes in my district, as I was viewing the plant, the frame was built by the Japanese, the tanks that are going to be on the outside of this aircraft are built by the Brazilians. And the arguement to me now is, but the value added, the real, you know, expensive value-added stuff is still going to be done in the United States. And so it was intriguing to see this case brought in and these various parts coming in from all over the world.

I make an assumption that the Joint Strike Fighter is going to be made all over the world and that we hope that more than eight countries buy it. Is that an accurate statement?

Mr. VOLKMAN. That is correct.

Mr. SHAYS. OK. Ms. Patrick, do you want to add anything? You are nodding your head. It doesn't get on the transcript.

Ms. PATRICK. No. I do agree with all that you have said.

Mr. SHAYS. OK.

Ms. PATRICK. It is really a very radical departure from the offset paradigm, in that really never before have countries made investments in the SDT phase of a program, in the way that the Joint Strike Fighter is structured. And they make those investments without any guarantee of a proportionate amount of business in return for that.

And so it could be more, it could be less than their proportion.

Mr. SHAYS. I think you kind of sense where I am going. Conceivably, first off, I would in a chauvinistic way, like to think that Americans would make the best no matter what part it is. We wouldn't necessarily make the cheapest, but I would also make an assumption that we would make the best. Now, maybe that is an assumption that I shouldn't make.

Having said that, I also make an assumption that when we are making a plane, that it is my obligation to make sure the best part is in every place, so that if for instance the Brazilians can do something that makes the plane lighter and safer or whatever, I owe it to the men and women and to our country to make sure that that is what we buy. I would like to think again, though, that we can do it ourselves.

But I know that in some cases it might be built at less cost and maybe even superior in some instances. What I am wondering, though, is now I am back to where I was in the beginning. I don't understand—you have to explain to me in a way that I can understand why we are seeing a 1-percent investment in production with the Phase 3.

Ms. SCHINASI. Level 3 was originally roughly 1 to 2 percent.

Mr. SHAYS. OK. I don't understand that. Unless it is to say, I mean, I can understand wanting to buy it at 1 percent. That is a pretty good deal. I like that part of the deal. I can understand why they want it. I don't quite—it seems to me that it gives them a plane before someone else who hasn't participated, logically, though, you are saying that hasn't been resolved yet. Is that true, Ms. Patrick?

Mr. VOLKMAN. I think your questions earlier were, do partner nations have some priority in receiving airplanes? I think that is what you asked earlier. The answer is yes.

Mr. SHAYS. What you told me hasn't been resolved is, how we phase in our 2,400 plus planes with what the Brits want and the others. So before we get our final 2,400, the Brits are going to get some along the way. And what I am hearing you say under oath in this committee is there is no agreement yet as to when they start to get their planes. That still has to be resolved. Is that correct, Ms. Patrick?

Ms. PATRICK. That is correct, as well. The final quantities or intents of the partner countries have not been set yet.

Mr. SHAYS. But have the phase-ins of when they start to get planes been? This is a digression, but I want to clear the record for that.

General? This is a trick question. What is on the record right now is there is no agreement, which is a little hard for me to accept, because it would seem to me that there would be some general agreement, that, you know, you don't get 2,000 planes before we get 50. If I were the Brits, I would want to make sure that somewhere—I was going to get my planes when I wanted them.

General HUDSON. Sir, the only firm time we have is from the UK, which would start in 2008. That would be their first procurement of an airplane.

Mr. SHAYS. We don't know how many planes—in 2008 is when we get our planes too?

General HUDSON. Yes, sir. Our first delivery is in 2008. The UK will procure their first airplane planes in 2008, with the first delivery in 2010.

Mr. SHAYS. How many will they get?

General HUDSON. Nominally, 150 total over a certain number of years.

Mr. SHAYS. Has that been determined? I am not asking what it is. I am not asking you to tell me what that is, but has that been determined?

General HUDSON. The number per year in each and every year? No.

Mr. SHAYS. OK. That was somewhat of a digression, but we seemed to be on that topic. I want to come back to the issue of best value. Tell me what we get having the Turks, the Norwegians, the Australians, the Canadians and Denmark with their 1 percent participation. What do we get for that?

Mr. VOLKMAN. Well——

Mr. SHAYS. In each case.

Mr. VOLKMAN. Well, first of all, we get a financial contribution from those nations to participate in the development phase. And they share in the risks associated with developing the airplane. They are putting money up with no guarantee that the product that comes out the other end is going to be an airplane that is usable. Now, we have high confidence that that is the case.

But since development of high performance airplanes are risky, what we have asked, and what our partners have agreed to do, is to share in that risk by putting up costs.

Mr. SHAYS. I guess if I was in Turkey, I would want to be able to explain why I invested $150 million into this. Tell me what they tell their constituents.

Mr. VOLKMAN. Well, I mean the reason why these countries are interested in investing $150 million or $2 billion into this program is because they will be in a position at some point in the future, like us, to have a high performance aircraft. They also believe that——

Mr. SHAYS. Let me just—it relates to my question, so allow me to do this. But based on the way we are going to develop the plane, there is no promise that they get to make any part of the production, because their investment does not guarantee them any production. Is that correct for the record?

Mr. VOLKMAN. Their investment in the systems design and demonstration program does not guarantee them any portion of the production program.

Mr. SHAYS. Because we are going to go to the strategic best value sourcing, correct?

Mr. VOLKMAN. We have—the way in which contracts will be awarded for the present phase of the program, systems design and demonstration——

Mr. SHAYS. I am not talking about buying the plane contracts. I am talking about the production. I asked the question, that their participation in the $150 million does not guarantee them any production contracts.

Mr. VOLKMAN. No, it does not.

Mr. SHAYS. So the only thing it seems to me that they have bought is that if there are 12 countries in line, these 1, 2, 3, 4, 5, Tier 3 comes before those who didn't participate at all. I am not fishing around. I just want some logic here.

Ms. PATRICK. Well, let me see if I can take a shot at this. For all of the countries who have made partnership investments, in addition to some of the motivations having to do with the spot in line for buying airplanes if they decide to do it, their hope is that by learning more about the aircraft, learning more about which contracts are going to be let, being closer, having closer ties to the program office and to the contractor team, their industries will be in a better position to bid effectively on a best value basis.

We call it best value, not low cost. Best value. In other words, best technology at, you know, the appropriate cost.

On components on this aircraft program. And your example of Turkey was very much to the point, in that for a number of the companies, a number of the countries rather, they are having trouble explaining this to their parliamentarians because they have not been sourcing a proportionate return yet on their investment. And so——

Mr. SHAYS. And the fact is——

Ms. PATRICK. And that shows that the best-value principle is in fact working as advertised.

Mr. SHAYS. OK. Thank you for putting it in the record. I mean it's very logical to me. For 150 million, you're—and this is not a bad thing—you're on the inside track. You are there as the plane is being developed. You begin to know where the needs are. You make contacts. So all things being equal, you've got a better shot at knowing, to say—you know, you can point out to the people, to Lockheed in particular, we can make that for you. You can go to

your people back home and say, we can do it for you. OK. That makes sense.

So I guess the last thing that I would want to do—thank you. I think I should have asked you first, why did you keep that a secret in any way? Is there anything else you want to tell me that you——

Ms. PATRICK. Well, I think the other—I mean, since you asked.

Mr. SHAYS. I mean, you know, what I've been wrestling with; if you can end my agony here, we could have the hearing end a lot sooner.

Ms. PATRICK. I would be delighted to do that, sir. But I think it's very important to understand how these contracts have actually worked and how the competitions have worked.

Mr. SHAYS. I would like to understand.

Ms. PATRICK. Because it really has worked as a level playing field in that, you know, the RFPs go out and all bidders bid: numerous U.S. companies, some foreign companies. And it's not as if there's any direction to a foreign supplier or if, you know, there's anything other than full and open competition. And as I said earlier, a number of the foreign countries and companies have been very disappointed that they haven't won each time; that at the current stage of the program, their return is not equal to their investment.

But in my office we studied some of those issues pretty carefully because we wanted to learn those lessons quickly. And there were instances where companies submitted their bids late, you know, foreign companies. Well, that's a noncompliant bid. There were issues where they bid in terms of ship sets instead of units. You know, the contracting system is working on a best-value basis. So, you know, I think that——

Mr. SHAYS. Are you going to have anything to do with the purchase of the Presidential helicopter? Because if so, I'd like to put in a good word for Sikorsky.

Let me end with this, if I could. There are three different numbers now—two different numbers on the record. One I put on the record, which was 1.1—I put in the record $1.1 trillion for total cost of these planes. General, you put on the record 3 point—excuse me, $332 million, billion, or $332 trillion. And I misspoke, because where we got the number—and help me out here. We got the number from the "CRS Report for Congress Joint Strike Fighter, JSF, Program Background Status" and issues updated June 16, 2003. And in that report I'll read you this first paragraph, because the numbers there, unless I'm just missing something and deserve to be embarrassed here, this is what I'm reading: "It's under funding and project cost. The Defense Department's quarterly Select Acquisition Report, SAR, of December 30, 2002 estimated the Joint Strike Fighter program at $1.997 trillion." So it wasn't $1.1; they had $1.9 in current year dollars for 2,457 aircraft, which equates to a program unit acquisition cost of $81 billion per aircraft. So am I adding some other number? Are they adding other numbers that are not—or are they just way off the chart?

General HUDSON. I don't know sir. I'm going to have to go back and look at that and figure it out. What you said earlier about the

$332, that was the cost of owning and operating the airplanes over the fleet life.

Mr. SHAYS. Oh I'm sorry. Right. It's $195. I'm sorry.

General HUDSON. Yes, sir. I gave you $145; and the GAO is correct, if you count the $4 billion that was spent on the——

Mr. SHAYS. I understand. But you understand my problem is when I'm looking at a document from the congressional report—and I just read it to you—and we are at this unbelievable number of $1.9 trillion versus your $195 billion, you can understand—I like the Library of Congress you know. So they're way off or I'm just reading it wrong.

So anyway, that's on the record, we need to clarify. OK. I just wanted you to know where staff got our information from. Does anybody need to speak to that issue at all?

Ms. SCHINASI. Do you want to say something, Brian?

Mr. SHAYS. Yes, thank you.

Mr. MULLINS. Yes, sir. I have a copy of the Selected Acquisition Report that you referenced from your report, and I haven't seen the CRS report so I don't want to comment on anything they've done. But in the SAR it says that the total cost for the quantity you mention was $199 billion, like we referenced before, you may have.

Mr. SHAYS. Which is your number with the—and it's your number, General, with the 4. OK.

Mr. MULLINS. I think you might have a decimal, or comma, in the wrong place there.

Mr. SHAYS. Who might?

Mr. MULLINS. Somebody might. I'm sorry. Not you. They might have. But I haven't seen their report so I don't know.

Mr. SHAYS. Could we—and by the way, if they're doing a report that's so inaccurate, I hope they show them to you and I hope you review them because it needs to be straightened out. Would you get back to us as to the dialog with the Library of Congress? I'll ask the GAO to do that.

Ms. SCHINASI. Yes.

Mr. SHAYS. I appreciate, Mr. Chairman, the time you have given me. I think I've asked the questions I've wanted to ask. Do you have others?

Mr. TURNER [presiding]. No, Mr. Chairman and I'm assuming at this point, not at this instant, but that we would proceed to adjourn rather than just continue.

Mr. SHAYS. Right. Now we would definitely adjourn. But if you could do the question that you and I both ask—if I could ask it.

Is there anything that you were prepared to answer that we should have asked you? Is there anything that we should have asked that you didn't want to answer but I'd still like you to answer? No, bottom line is I learn a lot from the something that we left out that you put on the record.

I'll give you an example. At one of the hearings we had on biological warfare, we were about to adjourn and one of our witnesses said, well, I just want to tell you what weighs on my mind a lot. He said—and this was an editor of a major medical magazine. He said, My biggest fear is that a small group of dedicated scientists will create an altered biological agent that will wipe out humanity as we know it.

Now, I'm not asking for a show stopper like that, but that was important he put on the record. Is there anything that needs to be put on the record? And, Mr. Mullins and Ms. Schinasi, is there anything that was said that was not the way you view it? Otherwise I'm going to assume that everything we've learned from DOD has basically been as you see it. Is there anything, any disagreement?

Ms. SCHINASI. I don't know about a disagreement, but I would like to restate what I see is the issue. I'm not sure it's been stated exactly this way. We went into this program with a certain set of assumptions. One of those is that we would have increased interoperability with our allies. You can get interoperability in ways that don't require them to have the same kind of equipment we do. That's one.

But the other is that there are a set of expectations that the partner governments have here and the partner industries that will continue to push most heavily on Lockheed Martin as the prime supplier. They are the ones who have to look at future sales and profitability, and so the decisions that they make now will be geared, you know, obviously toward their continued well-being.

And so I would just like to caution that there are places where their well-being may in fact deviate from the well-being of the Department of Defense in terms of its own goals and the broader U.S. technology base in terms of what we would pay to develop the technologies that we provide to the military. And so I would just like to say that the pressures are going to be on Lockheed Martin, and I think it is important, even though our work was prospective, to continue to look at the decisions that get made in this program to make sure that we stay on track with our original goals.

Mr. SHAYS. I'll tell you my concern. My concern is that in the process of their—of all of us looking at cost, that conclusions are made that too much of this plane can be made overseas, and that in fact we make too much of it overseas in spite of the fact that the United States is the major purchaser of it. You could argue, well, we're getting a cheaper plane; but the problem is we're not getting our men and women making this plane.

And I'm not supporting the requirement that 75 percent of something or 50 percent has to be U.S. content. But I hope that somehow, General, you have the ability to say, you know, no, this product, this part of the plane is going to be made in the United States. I don't know, ultimately, I mean is it conceivable that—well, I—you know, I'm opening up another door. But the bottom line is I'm looking at three people looking at me, and I'm thinking, what were they thinking? The bottom line to this, is there a danger that too much of this plane will be made overseas if it's based on price and quality, but price? Yes.

Mr. VOLKMAN. Well, I'll ask Ms. Patrick to address that. But one of the things that I would like to say before the hearing closes is it seems to me that the Joint Strike Fighter is a program that we in the Department of Defense should be proud of and in fact are proud of.

Mr. SHAYS. Right.

Mr. VOLKMAN. I think we've done and General Hudson has done a remarkable job of putting together what so far is a highly suc-

cessful international program. And my hope is that in the future, more of our major programs are conducted with partners like we're doing on the Joint Strike Fighter program, where we share the benefits and share the risks and the costs associated with developing a complex piece of military equipment with partners, so that in fact they will also have the military capability that we feel is essential for our allies to have so that they can participate with us as equal partners in military operations around the world.

In the final analysis, the Department of Defense is about military capability, and we want our allies to have similar military capabilities to ours so that we can operate effectively with them. I think that our allies are not concerned about having too much of the airplane built overseas. They're concerned that in fact they will get a fair—what they consider to be a fair amount of aircraft in their countries. And I think that that's really going to be the balancing act.

Mr. SHAYS. But there is some irony if they never buy the plane but they get to make a lot of it. It does raise some questions.

But I do want to agree with Mr. Volkman. I've had a number of hearings and I've been much more comfortable with the Joint Strike Fighter program than I have been on a number of other our defense programs, which I think some have been quite good. So I think so far I have a view that we're doing pretty well. And I do want to thank you, General, and Ms. Patrick as well. I think it is a program that is working fairly well.

Anything, Ms. Patrick. General.

General HUDSON. Yes, sir. Just a point for clarification. Three of our eight key performance parameters are in this area of supportability. We talked a little bit about that, but that was done up front to have the right emphasis on design such that the airplane would be affordable to own and operate. The production MOUs that we expect to sign starting with the U.K., that's an ongoing process that will take another year to 2 years before we get all that in place. There's much discussion about that timing, but that's work yet to come.

This program has all the potential to give us the advantages we need in coalition warfare with interoperability and other things so that our sons and daughters can fly and fight in the future and win successfully.

So thank you for the additional time, sir.

Mr. SHAYS. I thought you were going to close by saying that you think it's very important that an American President be flown in an American-built helicopter. Thank you very much.

Mr. TURNER. Thank you, Mr. Chairman. Well, I know one thing for certain, that both—for the chairman, myself as vice chairman, Mr. Schrock, and other members of this committee, the committee certainly supports this program regardless of what other individual members might say. The purpose of this hearing is in the aspect of oversight by this committee, is not a position of opposition to the program. And in that process of oversight, what we're looking at is, you know, what are we doing? What are we learning? Are our policies correct? Are our past policy decisions correct? Is there anything that needs to be modified?

We know that that is a very difficult program, both technologically, the relationships internal to DOD and the joint services and the foreign partnerships, and certainly the financial issues and the staggering numbers of the actual costs that we're dealing with both in research and development and ultimately in production. We appreciate your participation.

Mr. SHAYS. Mr. Chairman, just one last thing. I'm going to save GAO the trouble of verifying with the Library of Congress. They've called us and they said a decimal point was in the wrong place. So therefore it wasn't, you know, 1.997 billion. And they also said therefore the 81 is wrong. So to their credit, they're allowing us to say that. A wrong decimal point, amazing what it can do. Thank you all very much.

Mr. TURNER. Excellent. Which illustrates that as we go through this process——

Mr. SHAYS. At least someone was watching.

Mr. TURNER. As we go through this process of oversight, making certain that the information that everyone has is correct, and that was occurring is occurring. We do know that there are a tremendous amount of successes and we certainly look forward to your success. And with that we'll be adjourned. Thank you.

[Whereupon, at 1:20 p.m., the subcommittee was adjourned.]

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