United States General Accounting Office

GAO

Report to the Chairman, Committee on Small Business, House of Representatives

May 2004

# JOINT STRIKE FIGHTER ACQUISITION

# Observations on the Supplier Base

GAO-04-554

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# Highlights

Highlights of GAO-04-554, a report to the Chairman, Committee on Small Business, House of Representatives

May 2004

# JOINT STRIKE FIGHTER ACQUISITION

## Observations on the Supplier Base

### Why GAO Did This Study

As the Department of Defense's (DOD) most expensive aircraft program, and its largest international program, the Joint Strike Fighter (JSF) has the potential to significantly affect the worldwide defense industrial base. As currently planned, it will cost an estimated $245 billion for DOD to develop and procure about 2,400 JSF aircraft and related support equipment by 2027. In addition, the program expects international sales of 2,000 to 3,500 aircraft. If the JSF comes to dominate the market for tactical aircraft as DOD expects, companies that are not part of the program could see their tactical aircraft business decline. Although full rate production of the JSF is not projected to start until 2013, contracts awarded at this point in the program will provide the basis for future awards.

GAO was asked to determine the limits on and extent of foreign involvement in the JSF supplier base. To do this, GAO (1) determined how the Buy American Act and the Preference for Domestic Specialty Metals clause apply to the JSF development phase and the extent of foreign subcontracting on the program and (2) identified the data available to the JSF Program Office to manage its supplier base, including information on suppliers of critical technologies.

DOD provided technical comments on a draft of this report, which GAO incorporated as appropriate.

www.gao.gov/cgi-bin/getrpt?GAO-04-554.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Katherine V. Schinasi at (202) 512-4841 or schinasik@gao.gov.

### What GAO Found

The Buy American Act and Preference for Domestic Specialty Metals clause implementing Berry Amendment provisions apply to the government's purchase of manufactured end products for the JSF program. Currently, only one of the three JSF prime contractors is under contract to deliver manufactured end products to the government in this phase of the program. The Buy American Act will apply to manufactured end products delivered to DOD during subsequent phases, but it will have little impact on the selection of suppliers because of DOD's use of the law's public interest exception. DOD, using this exception, has determined that it would be inconsistent with the public interest to apply domestic preference restrictions to countries that have signed reciprocal procurement agreements with the department. All of the JSF partners have signed such agreements. DOD must also apply the Preference for Domestic Specialty Metals clause to articles delivered under JSF contracts. All three prime contractors have indicated that they will meet these Specialty Metals requirements.

While the JSF Program Office maintains more information on subcontractors than required by acquisition regulations, this information does not provide the program with a complete picture of the supplier base. The program office collects data on subcontract awards for international suppliers and U.S. small businesses. In addition, it maintains lists of the companies responsible for developing key or critical technologies. However, the lists do not provide visibility into the lower-tier subcontracts that have been issued for developing or supplying these technologies.

**JSF Development Phase Subcontract Awards to the United States and Other Partner and Nonpartner Countries**

| Countries | Subcontract awards | Percentage |
|---|---|---|
| United States | $10,361,670,423 | 73.9 |
| Partner countries: United Kingdom, Italy, Netherlands, Turkey, Australia, Norway, Denmark, Canada | $3,620,103,309 | 25.8 |
| Nonpartner countries: France, Germany, India, Israel, Poland, Russia, Spain, Switzerland | $44,586,392 | 0.3 |
| **Total subcontract awards** | **$14,026,360,123[a]** | **100.0** |

Sources: JSF prime contractors—Lockheed Martin, Pratt & Whitney, and General Electric—and their self-identified teammates—BAE Systems, Northrop Grumman, Rolls Royce plc, Hamilton Sundstrand, and Rolls Royce Corporation (data); GAO (analysis).

Note: Information is based on subcontracts awarded for the System Development and Demonstration phase between October 26, 2001 and December 31, 2003. These awards include the first-tier of the JSF supplier base and portions of the second-tier.

[a]Total does not add because of rounding.

# Contents

**Abbreviations**

| | |
|---|---|
| DCMA | Defense Contract Management Agency |
| DFARS | Defense Federal Acquisition Regulation Supplement |
| DOD | Department of Defense |
| FAR | Federal Acquisition Regulation |
| GAO | General Accounting Office |
| JSF | Joint Strike Fighter |

United States General Accounting Office
Washington, DC 20548

May 3, 2004

The Honorable Donald A. Manzullo
Chairman
Committee on Small Business
House of Representatives

Dear Mr. Chairman:

As the Department of Defense's (DOD) most expensive aircraft program, and its largest international program, the Joint Strike Fighter (JSF) has the potential to significantly affect the worldwide defense industrial base. As currently planned, it will cost an estimated $245 billion for DOD to develop and procure about 2,400 JSF aircraft and related support equipment by 2027. In addition, the program expects international sales of 2,000 to 3,500 aircraft. If the JSF comes to dominate the market for tactical aircraft as DOD expects, companies that are not part of the program could see their tactical aircraft business decline. Although full-rate production of the JSF is not projected to start until 2013, contracts awarded at this point in the program will provide the basis for future awards, if companies continue to meet cost and schedule goals.

The JSF program is viewed by many within DOD as a model for cooperative development and production between DOD and U.S. allies. The eight foreign countries participating in the program are contributing over $4.5 billion in the development phase. These countries expect to realize a significant return on their investment in the form of JSF contract awards to their defense industries. To meet these expectations, the JSF program office has encouraged the three JSF prime contractors—Lockheed Martin, Pratt & Whitney, and General Electric—and their suppliers to provide opportunities for companies from partner countries to bid on contracts. In our July 2003 report on the JSF international program, we recommended that the program office collect and monitor information on the prime contractors' selection and management of suppliers to identify and address any potential conflicts between partner expectations and program goals.[1]

In July 2003 you requested that we review the extent of foreign supplier involvement in the JSF program and its effect on the U.S. defense industrial base. To do this, we (1) determined how the Buy American Act[2] and the Preference for Domestic Specialty Metals clause[3] implementing Berry Amendment[4] provisions apply to the development phase of the JSF program and the extent of foreign subcontracting on the program; and (2) identified the data available to the JSF Program Office to manage its supplier base, including information on the suppliers of critical technologies. On February 12, 2004, we briefed you and your staff on our work.[5] This report summarizes that briefing and provides updated data on JSF subcontract awards. We performed our review from August 2003 to March 2004 in accordance with generally accepted government auditing standards.

## Results in Brief

The Buy American Act and Preference for Domestic Specialty Metals clause implementing Berry Amendment provisions apply to the government's purchase of manufactured end products for the JSF program. Currently, only one of three JSF prime contractors is under contract to deliver manufactured end products to the government in this phase of the program. The Buy American Act will apply to manufactured end products delivered to DOD during subsequent phases, but its domestic preference restrictions will have little impact on the selection of suppliers because of DOD's use of the law's public interest exception. DOD, using this exception, has determined that it would be inconsistent with the public interest to apply domestic preference restrictions to countries that

[1] U.S. General Accounting Office, *Joint Strike Fighter Acquisition: Cooperative Program Needs Greater Oversight to Ensure Goals Are Met*, GAO-03-775 (Washington, D.C.: July 21, 2003).

[2] 41 U.S.C. sections 10a–10d.

[3] Defense Federal Acquisition Regulation Supplement (DFARS) 252.225-7014, Alternate I.

[4] 10 U.S.C. section 2533a.

[5] The February 12 briefing reported on four questions: (1) How do the Buy American Act and Berry Amendment apply to the development phase of the JSF program? (2) How does DOD oversee JSF subcontracting? (3) What JSF subcontracts have been awarded? (4) What foreign technologies are critical to the JSF program? These four questions have been consolidated into two objectives for this report.

have signed reciprocal procurement agreements with the department. All of the JSF partners have signed such agreements. DOD must also apply the Preference for Domestic Specialty Metals clause to articles delivered under JSF contracts. All three prime contractors have indicated that they will meet these Specialty Metals requirements. Although the Buy American Act will have little impact on the selection of suppliers, the large majority of subcontracts (in dollar terms) that we obtained data on have been placed with U.S. firms.

While the JSF program office maintains more information on subcontractors than is required by acquisition regulations, this information does not provide the program with a complete picture of the supplier base. The JSF Program Office collects and maintains data on subcontract awards for two specific areas of interest—international suppliers and U.S. small businesses. In addition, the program office maintains lists of the companies responsible for developing the JSF's key or critical technologies. The program office is required to compile these lists as part of its program protection strategy. However, the lists do not provide visibility into the lower-tier subcontracts that have been issued for developing or supplying these technologies.

DOD has recognized the need for the JSF Program Office to assume a more active role in collecting information on and monitoring the prime contractors' selection of suppliers. The Department concurred with a recommendation in our July 2003 JSF report that stated this information could help the program office identify and address potential conflicts between the international program and other program goals. Increased visibility into the supplier base could also aid the program office's management of other areas and provide DOD with the means to monitor the effects of the JSF program on the defense industrial base.

DOD provided only technical comments on a draft of this report, which we incorporated as appropriate.

## Background

The JSF program is a joint program between the Air Force, Navy, and Marine Corps for developing and producing next-generation fighter aircraft to replace aging inventories. The program is currently in year 3 of an estimated 11-year development phase. The current estimated cost for this phase is about $40.5 billion. In October 2001 Lockheed Martin was awarded the air system development contract now valued at over $19 billion.[6] Lockheed Martin subsequently awarded multi-billion-dollar subcontracts to its development teammates—Northrop Grumman and BAE Systems—for work on the center and aft fuselage, respectively. Lockheed Martin has also subcontracted for the development of major subsystems of the aircraft, such as the landing gear system. This is a departure from past Lockheed Martin aircraft programs, where the company subcontracted for components (tires, brakes, etc.) and integrated them into major assemblies and subsystems (the landing gear system).

In addition to the Lockheed Martin contract, DOD has prime contracts with both Pratt & Whitney and General Electric to develop two interchangeable aircraft engines.[7] Pratt & Whitney's development contract is valued at over $4.8 billion. Rolls Royce plc (located in the United Kingdom) and Hamilton Sundstrand are major subcontractors to Pratt & Whitney for this effort. General Electric is currently in an early phase of development and has a contract valued at $453 million. Rolls Royce Corporation (located in Indianapolis, Ind.) is a teammate and 40 percent partner for the General Electric engine program. The General Electric/Rolls Royce team is expected to receive a follow-on development contract in fiscal year 2005 worth an estimated $2.3 billion.

All the prime contracts include award fee structures that permit the JSF Program Office to establish criteria applicable to specific evaluation periods. If, during its regular monitoring of contract execution, the program office identifies the need for more emphasis in a certain area—such as providing opportunities for international suppliers or reducing aircraft weight—it can establish related criteria against which the contractor will be evaluated to determine the extent of its award fee.

[6] Lockheed Martin's development contract has been modified multiple times since it was signed in October 2001. These modifications have increased the value of the base contract by hundreds of millions of dollars.

[7] The F135 (Pratt & Whitney) and F136 (General Electric/Rolls Royce Corporation) engines integrate with common propulsion system components to form the complete JSF propulsion systems. In addition to the F135 engine, Pratt & Whitney is also responsible for developing certain common propulsion system components that will interface with both engine cores. These include the lift fan system, roll posts, three bearing swivel duct, conventional exhaust duct, and exhaust nozzles, among other components.

## Buy American Act and Specialty Metals Requirements Apply but Will Have Little Effect on JSF Subcontracting Decisions

The Buy American Act and Preference for Domestic Specialty Metals clause implementing Berry Amendment provisions apply to the government's purchase of manufactured end products for the JSF program. Currently, only one JSF prime contractor—Pratt & Whitney—will deliver manufactured end products to the government in this phase of the program. Under its current contract, Pratt & Whitney is to deliver 20 flight test engines, 10 sets of common engine hardware, and certain other equipment. The other engine prime contractor, General Electric, will not deliver manufactured end products under its current contract. However, its anticipated follow-on development contract will include the delivery of test engines that will be subject to Buy American Act and Specialty Metals requirements. Finally, Lockheed Martin will not deliver any manufactured end products under its development contract. The company is required to deliver plans, studies, designs, and data. Lockheed Martin will produce 22 test articles (14 flight test aircraft and 8 ground test articles) during this phase of the program, but these are not among the items to be delivered.[8]

Although the Buy American Act will apply to manufactured end products delivered to DOD during the JSF program, its restrictions will have little impact on the selection of suppliers because of DOD's use of the law's public interest exception.[9] This exception allows the head of an agency to determine that applying the domestic preference restrictions would be inconsistent with the public interest. DOD has determined that countries that sign reciprocal procurement agreements with the department to promote defense cooperation and open up defense markets qualify for this exception.[10] The eight JSF partners have all signed these agreements and are considered "qualifying countries." Under defense acquisition regulations implementing the Buy American Act, over 50 percent of the cost of all the components in an end product must be mined, produced, or manufactured in the United States or "qualifying countries" for a product

[8] According to program officials, the 22 test articles acquired under the Lockheed Martin development contract are government-owned assets in possession of the contractor. Under a cost-type contract, the government acquires ownership as it pays the contractor.

[9] 41 U.S.C. section 10d.

[10] "Qualifying countries" include Australia, Belgium, Canada, Denmark, Egypt, France, Germany, Greece, Israel, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. Acquisitions from Austria and Finland may also be exempted from the Buy American Act on a case-by-case basis. DFARS 225.872-1.

to qualify as domestic.[11] Our analysis of JSF development subcontracts awarded by prime contractors and their teammates showed that nearly 100 percent of contract dollars awarded by the end of 2003 went to companies in the United States or qualifying countries. (See appendix II for Joint Strike Fighter System Development and Demonstration Subcontract Awards to the United States, Qualifying Countries, and Nonqualifying Countries).

The Preference for Domestic Specialty Metals clause applies to articles delivered by Lockheed Martin, Pratt & Whitney, and General Electric under JSF contracts. Generally, this clause requires U.S. or qualifying country sources for any specialty metals,[12] such as titanium, that are incorporated into articles delivered under the contract. This restriction must also be included in any subcontract awarded for the program. To meet Specialty Metals requirements, Lockheed Martin and Pratt & Whitney have awarded subcontracts to domestic suppliers for titanium; and Lockheed Martin has also extended to its subcontractors the right to buy titanium from its domestic supplier at the price negotiated for Lockheed Martin. General Electric does not exclusively use domestic titanium in its defense products. However, in 1996, the company received a class deviation from the clause that allows it to use both domestic and foreign titanium in its defense products, as long as it buys sufficient domestic quantities to meet DOD contract requirements.[13] For instance, if 25 percent of the General Electric's business in a given year comes from DOD

[11] To comply with the Buy American Act, companies must certify in their contract proposals that the manufactured end products they are offering to the U.S. government qualify as domestic end products. To qualify as a domestic end product, the product must meet two criteria. The end product must be manufactured in the United States, and the cost of its U.S. and qualifying country components must exceed 50 percent of the cost of all its components. DFARS 225.101.

[12] Specialty metals are defined as certain metal alloys, steel alloys, titanium and titanium alloys, and zirconium and zirconium base alloys produced in the United States, U.S. possessions, or Puerto Rico. U.S. possessions include American Samoa, the Commonwealth of Northern Mariana Islands, Guam, and the U.S. Virgin Islands, among other areas.

[13] Class deviations are deviations from the Federal Acquisition Regulation or the Defense Federal Acquisition Regulation Supplement that affect more than one contract action. FAR 1.404.

contracts, then at least 25 percent of its titanium purchases must be procured from domestic sources.[14]

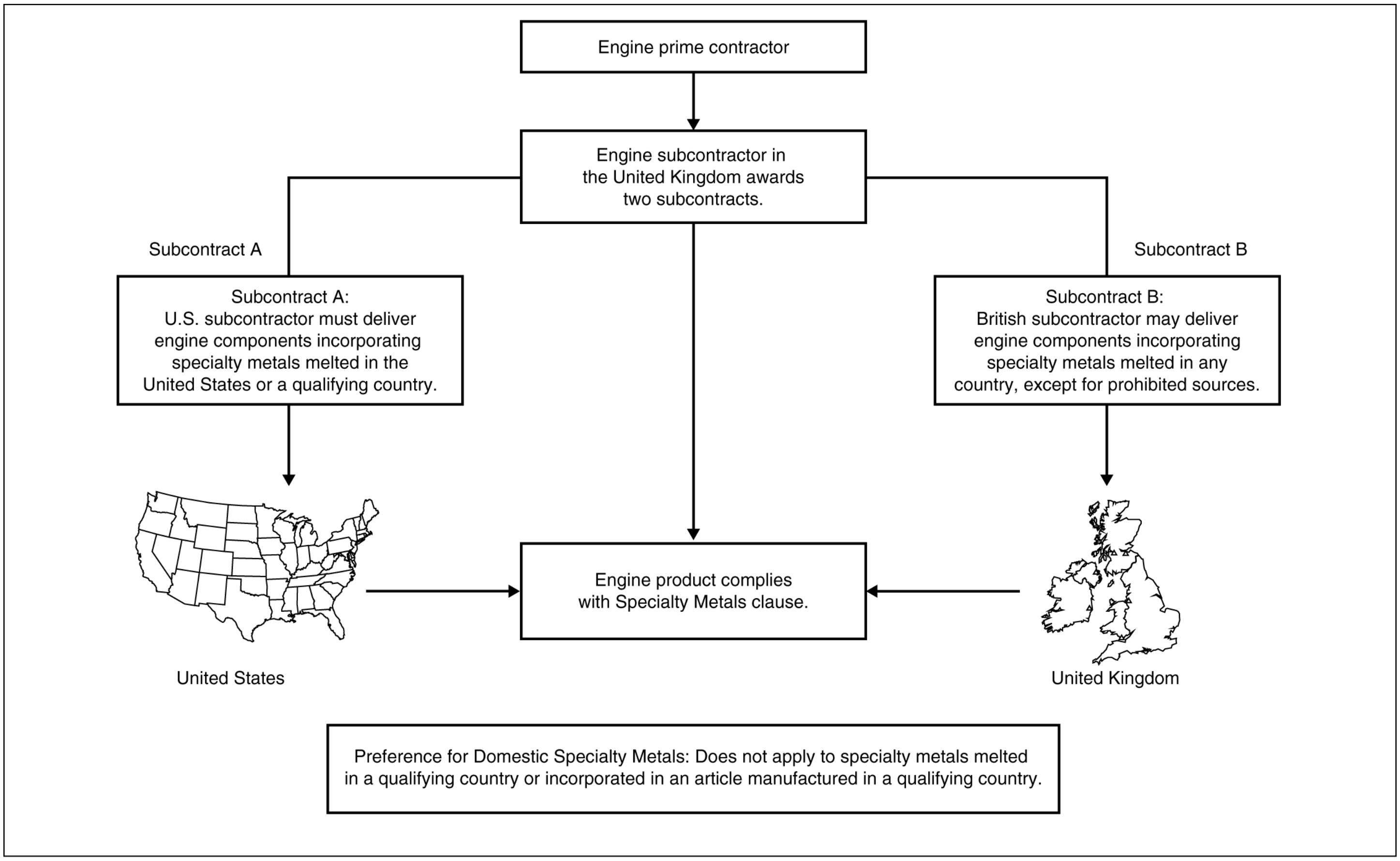
Similar to the Buy American Act, the Specialty Metals clause contains a provision related to "qualifying country" suppliers. It provides that the clause does not apply to specialty metals melted in a qualifying country or incorporated in products or components manufactured in a qualifying country.[15] As a result, a qualifying country subcontractor would have greater latitude under the clause than a U.S. subcontractor. Specifically, the specialty metals incorporated into an article manufactured by a qualifying country may be from any source,[16] while an article manufactured by a U.S. subcontractor must incorporate specialty metals from a domestic or qualifying country source. (See fig. 1.)

[14] According to the Defense Contract Management Agency (DCMA), in granting this class deviation, it determined that the DFARS specialty metals clause was more stringent than the statute it implements. DCMA granted this class deviation on a "permanent" basis and is responsible for monitoring General Electric's compliance with its terms.

[15] These are the same qualifying countries that are mentioned in reference to the Buy American Act. (See footnote 10.)

[16] Potential sources would not include those prohibited under FAR 52.225-13, *Restrictions on Certain Foreign Purchases*. Such prohibited sources would include, for example, Cuba and North Korea.

**Figure 1: Example of Specialty Metals Clause Application**




Sources: Defense Acquisition Regulation Supplement (data); GAO (presentation).

The data we collected on JSF subcontracts show that by December 31, 2003, the prime contractors and their teammates had awarded over $14 billion in subcontracts for the development phase of the program. These subcontracts were for everything from the development of subsystems—such as radar, landing gear, and communications systems—to engine hardware, engineering services, machine tooling, and raw materials. The recipients of these contracts included suppliers in 16 foreign countries and the United States; 73.9 percent of the subcontracts by dollar value went to U.S. companies and 24.2 percent went to companies in the United Kingdom (the largest foreign financial contributor to the JSF program). (See appendix I for Joint Strike Fighter Partner Financial Contributions and Estimated Aircraft Purchases and appendix II for Joint Strike Fighter System Development and Demonstration Subcontract Awards). Finally, 2,597 of 4,488 subcontracts or purchase orders we obtained information on went to U.S. small businesses. Although these businesses received only 2.1 percent of the total dollar value of the subcontracts awarded, DOD and contractor officials have indicated that all companies in the development phase are in good position to receive production contracts, provided that cost and schedule goals are met.[17]

The gathering of these data, which most of the contractors have made available to the JSF Program Office and DCMA, has increased the breadth of knowledge available to DOD and the program office on the JSF supplier base. Neither DOD nor the JSF program office previously collected this information because, according to program officials, this information is not necessary in order to manage the program. At least one major subcontractor, on its own initiative, is now separately tracking JSF subcontracts on a monthly basis.

## JSF Program Office Maintains Subcontract Information on Specific Areas of Interest

While the JSF Program Office maintains more information on subcontractors than required by acquisition regulations, this information does not provide the program with a complete picture of the supplier base. The JSF Program Office collects and maintains data on subcontract awards for specific areas of interest—international suppliers and U.S. small businesses. The program office has used the award fee process to incentivize the prime contractors to report on both small business awards through the third tier and subcontract opportunities and awards to international suppliers.[18] In addition, the program office has some visibility over certain subcontracts through mechanisms such as monthly supplier teleconferences, integrated product teams, informal notifications of subcontract awards, and DCMA reports on the performance of major

[17] The JSF Program Office has requested that the prime contractors strive for 20-30 percent small business participation through the third tier of the supplier base for the life of the JSF program (including the development phase and production). This small business participation percentage is based on “eligible subcontract dollars” and does not include certain subcontracts, such as those awarded to or awarded by international suppliers, in its calculations. We included all the subcontracts and purchase orders we obtained information on in our small business calculations.

[18] This small business reporting includes information on six small business categories and subcategories—small disadvantaged businesses, woman-owned small businesses, historically underutilized business zones, historically black colleges and universities/minority institutions, veteran-owned small businesses, and service-disabled veteran-owned small businesses.

suppliers. Finally, the JSF Program Office maintains limited information on the companies responsible for supplying critical technologies.

The JSF Program Office's information on the suppliers of key or critical technologies is based on lists that the prime contractors compile as part of the program protection strategy. These program protection requirements—not the supplier base—are the focus of DOD's and the JSF Program Office's approach toward critical technologies. DOD acquisition regulations require program managers to maintain lists of a program's key technologies or capabilities to prevent the unauthorized disclosure or inadvertent transfer of leading-edge technologies and sensitive data or systems. The lists include the names of key technologies and capabilities, the reason the technology is sensitive and requires protection, and the location where the technology resides. The lists do not provide visibility into the lower-tier subcontracts that have been issued for developing or supplying these technologies. Given the limited supplier information these lists provide, the JSF Program Office is aware of two instances where a foreign company is the developer or supplier of an unclassified critical technology for the program.[19] In both cases, a U.S. company is listed as a codeveloper of the technology.

## Conclusions

The JSF program has the potential to significantly impact the U.S. defense industrial base. Suppliers chosen during the JSF development phase will likely remain on the program through production, if they meet cost and schedule targets, and will reap the benefits of contracts potentially worth over $100 billion. Therefore, contracts awarded now will likely affect the future shape of the defense industrial base.

The JSF supplier base information currently maintained by the JSF Program Office is focused on specific areas of interest and does not provide a broad view of the industrial base serving the program. In our July 2003 report, we recommended that the JSF Program Office assume a more active role in collecting information on and monitoring the prime contractors' selection of suppliers to address potential conflicts between the international program and other program goals. DOD concurred with our recommendation, but did not specify how it plans to collect and monitor this information. Collecting this information will be an important

[19] We did not obtain information on classified critical technologies as part of this review.

first step for providing DOD with the knowledge base it needs to assess the impact of the program on the industrial base.

## Agency Comments and Our Evaluation

We provided DOD a draft of this report for review. DOD provided only technical comments, which we incorporated as appropriate.

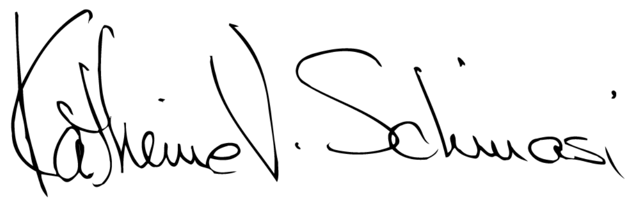
## Scope and Methodology

To obtain information on the Buy American Act and the Preference for Domestic Specialty Metals clause implementing Berry Amendment provisions, we reviewed applicable laws and regulations. We interviewed DOD officials in the JSF Program Office, the Office of the Deputy Under Secretary of Defense (Industrial Policy), the Office of the Director of Defense Procurement and Acquisition Policy, and the Defense Contract Management Agency to obtain information on the applicability of the Buy American Act and other domestic source restrictions, critical foreign technologies, and DOD oversight of subcontracts. We reviewed prime contracts for the JSF program and met with JSF prime contractors, including Lockheed Martin and the engine contractors, Pratt & Whitney and General Electric, to discuss the applicability of the Buy American Act and other domestic source restrictions and to collect data on first-tier subcontract awards for the System Development and Demonstration phase. Furthermore, we collected data on subcontract awards for the JSF System Development and Demonstration phase from companies that were identified as partners or teammates by Lockheed Martin, Pratt & Whitney, and General Electric. These companies included Northrop Grumman, BAE Systems, Rolls Royce plc, Hamilton Sundstrand, and Rolls Royce Corporation. We did not independently verify subcontract data but, instead, relied on DCMA's reviews of contractors' reporting systems to assure data accuracy and completeness. We performed our review from August 2003 to March 2004 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this report. We will then send copies of this report to interested congressional committees; the Secretary of Defense; the Secretaries of the Navy and the Air Force; the Commandant of the Marine Corps; and the Director, Office of Management and Budget. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions regarding this report, please contact me at (202) 512-4841; or Thomas J. Denomme, Assistant Director, at 202-512-4287. Major contributors to this report were Robert L. Ackley, Shelby S. Oakley, Sylvia Schatz, and Ronald E. Schwenn.

Sincerely yours,



Katherine V. Schinasi, Managing Director
Acquisition and Sourcing Management

# Appendix I: Joint Strike Fighter Partner Financial Contributions and Estimated Aircraft Purchases

**Table 1: Joint Strike Fighter Partner Financial Contributions and Estimated Aircraft Purchases**

Dollars in millions

| | System development and demonstration | | | Production | |
|---|---|---|---|---|---|
| **Partner country** | **Partner level** | **Financial contributions[a]** | **Percentage of total costs** | **Projected quantities[b]** | **Percentage of total quantities** |
| United Kingdom | Level I | $2,056 | 5.1 | 150 | 4.7 |
| Italy | Level II | $1,028 | 2.5 | 131 | 4.1 |
| Netherlands | Level II | $800 | 2.0 | 85 | 2.7 |
| Turkey | Level III | $175 | 0.4 | 100 | 3.2 |
| Australia | Level III | $144 | 0.4 | 100 | 3.2 |
| Norway | Level III | $122 | 0.3 | 48 | 1.5 |
| Denmark | Level III | $110 | 0.3 | 48 | 1.5 |
| Canada | Level III | $100 | 0.2 | 60 | 1.9 |
| **Total partner** | | **$4,535** | **11.2** | **722** | **22.8** |
| United States | | $35,965 | 88.8 | 2,443 | 77.2 |

Sources: DOD and JSF Program Office.

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

[b]Partner quantities are preliminary and were developed for U.S. planning purposes. The estimates were developed by the United States in collaboration with partner countries, but no specific national agreements or arrangements have been established with partner countries for production; therefore, these projected production quantities are subject to change.

# Appendix II: Joint Strike Fighter System Development and Demonstration Subcontract Awards

**Table 2: JSF Development Phase Subcontract Awards to the United States, Qualifying Countries, and Nonqualifying Countries**

| Countries | Subcontract awards | Percentage |
|---|---|---|
| United States | $10,361,670,423 | 73.9 |
| Qualifying countries: | $3,664,193,630 | 26.1 |
| United Kingdom, Italy, Netherlands, Turkey, Australia, Norway, Denmark, Canada, France, Germany, Israel, Spain, Switzerland | | |
| Nonqualifying countries: | $496,071 | 0 |
| India, Poland, Russia | | |
| **Total subcontract awards** | **$14,026,360,123[a]** | **100.0** |

Sources: JSF prime contractors—Lockheed Martin, Pratt & Whitney, and General Electric—and their self-identified teammates—BAE Systems, Northrop Grumman, Rolls Royce plc, Hamilton Sundstrand, and Rolls Royce Corporation (data); GAO (analysis).

Note: Information is based on subcontracts awarded for the System Development and Demonstration phase between October 26, 2001 and December 31, 2003. These awards include the first-tier of the JSF supplier base and portions of the second-tier.

[a]Total does not add due to rounding.

**Table 3: JSF Development Phase Subcontract Awards to the United States and Other Partner and Nonpartner Countries**

| Countries | Subcontract awards | Percentage |
|---|---|---|
| United States | $10,361,670,423 | 73.9 |
| Partner countries: | $3,620,103,309 | 25.8 |
| United Kingdom, Italy, Netherlands, Turkey, Australia, Norway, Denmark, Canada | | |
| Nonpartner countries: | $44,586,392 | 0.3 |
| France, Germany, India, Israel, Poland, Russia, Spain, Switzerland | | |
| **Total subcontract awards** | **$14,026,360,123[a]** | **100.0** |

Sources: JSF prime contractors—Lockheed Martin, Pratt & Whitney, and General Electric—and their self-identified teammates—BAE Systems, Northrop Grumman, Rolls Royce plc, Hamilton Sundstrand, and Rolls Royce Corporation (data); GAO (analysis).

Note: Information is based on subcontracts awarded for the System Development and Demonstration phase between October 26, 2001 and December 31, 2003. These awards include the first-tier of the JSF supplier base and portions of the second-tier.

[a]Total does not add due to rounding.

(120275)

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