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January 27, 2010

The Honorable Sherrod Brown
Chairman
Subcommittee on Economic Policy
Committee on Banking, Housing, and Urban Affairs
United States Senate

The Honorable Evan Bayh
Chairman
Subcommittee on Security and International Trade and Finance
Committee on Banking, Housing, and Urban Affairs
United States Senate

Subject: *DOD Assessments of Supplier-Base Availability for Future Defense Needs*

The Department of Defense (DOD) relies on thousands of suppliers to ensure it has the weapons and supporting equipment needed to meet U.S. national security objectives. Congress has provided DOD with a variety of authorities to allow it to maintain information on its suppliers and to take actions to ensure that its suppliers can deliver needed items. In October 2008, we reported on our assessment of DOD's efforts to monitor the health of its supplier base and identify and address gaps and recommended that DOD develop a departmentwide framework and consistent approach, which DOD has begun to implement.¹ In light of increased globalization in the defense industry and consolidation of the defense supplier base into a few prime contractors, you requested that we review DOD's efforts to assess supplier-base availability for future defense needs. On October 27, 2009, we briefed your staff on the results of our work. This report transmits that briefing (see enclosure).

To evaluate DOD's efforts, we reviewed documents related to supplier-base issues and interviewed a variety of U.S. government officials, including representatives of the Air Force, Army, Navy, Missile Defense Agency, Office of the Secretary of Defense, and Department of Commerce's Bureau of Industry and Security, Office of Technology Evaluation. We also spoke with representatives of the Aerospace Industries Association and the National Research Council, which recently released reports on defense supplier-base concerns. We conducted this performance audit from January 2009 through October 2009 in accordance with generally accepted

¹ GAO, *Department of Defense: A Departmentwide Framework to Identify and Report Gaps in the Defense Supplier Base Is Needed*, GAO-09-5 (Washington, D.C.: Oct. 7, 2008).

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government auditing standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Summary

Both DOD and Commerce conduct assessments of supplier-base availability for defense needs that generally focus on the next 5 years. Several offices within DOD and Commerce's Office of Technology Evaluation have a role in assessing supplier-base availability, primarily conducting short-term assessments of selected sectors² or existing weapon programs. In 2004, DOD's Office of Industrial Policy conducted a one-time series of comprehensive DOD-wide assessments of supplier-base availability that forecasted 10-20 years into the future. According to DOD and Commerce officials, assessments of future supplier-base availability for defense needs beyond a 5-year time frame can have limitations, in part, because it can be difficult to predict technologies and whether investment in the supplier base will be needed to support these technologies. Recently, the National Research Council and an industry association recommended that DOD continually assess the supplier base from a more strategic perspective to include its availability for long-term defense needs. DOD has not acted on these recommendations; however, DOD plans to incorporate industrial-base considerations into its 2010 Quadrennial Defense Review to raise awareness of long-term, future, supplier-base availability for defense needs.

Agency Comments

We provided a draft of this report to DOD and Commerce. DOD reviewed the draft report and had no comments. Commerce concurred with our findings and provided technical comments, which we have incorporated.

As arranged with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution of it until 30 days from the date of this letter. At that time, we will send copies of this report to appropriate congressional committees; the Secretaries of Defense and Commerce, as well as other interested parties. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report.

² DOD categorizes its supplier base into seven sectors: aircraft; command, control, communication, computers, and intelligence; ground vehicles; missiles; services; shipbuilding; and space.

If you have questions or need additional information, please contact me at (202) 512-4841 or martinb@gao.gov. Key contributors to this report were John Neumann, Assistant Director; Lisa Gardner; Josie Sigl; Sylvia Schatz; and Art James.

A handwritten signature in black ink, reading "Belva M. Martin". The signature is written in a cursive style with a large initial "B" and "M".

Belva M. Martin
Acting Director
Acquisition and Sourcing Management

Enclosure



**Briefing to the Senate Committee on Banking,
Housing, and Urban Affairs, Subcommittee on
Security and International Trade and Finance**

October 27, 2009

**DOD Assessments of
Supplier-Base Availability for
Future Defense Needs**

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Introduction

- The Department of Defense (DOD) relies on thousands of suppliers to provide weapons, equipment, and raw materials to meet U.S. national security objectives. Yet, increased globalization in the defense industry and consolidation of the defense supplier base into a few prime contractors has reduced competition and single-source suppliers have become more common for components and subsystems.
 - In response to your interest in DOD's ability to maintain U.S. defense manufacturing capabilities, we determined how DOD assesses supplier-base availability for future defense needs.
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Scope of Work

Obtained documentation and interviewed officials to determine how DOD assesses supplier-base availability. We did not evaluate any of the prior assessments. Offices contacted included:

- Air Force
 - Secretary of the Air Force, Acquisitions, Arlington, Virginia
 - Air Force Research Lab, Dayton, Ohio
 - Army Acquisitions, Logistics, and Technology Office, Washington, D.C.
 - Office of Naval Research, Technology Warning Division, Washington, D.C.
 - Missile Defense Agency, Arlington, Virginia
 - Deputy Under Secretary of Defense for Industrial Policy, Washington, D.C.
 - Director, Defense Research and Engineering, Washington, D.C.
 - Department of Commerce
 - Bureau of Industry and Security's Office of Technology Evaluation, Washington, D.C.
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Scope of Work (cont.)

- We also interviewed officials from the National Research Council, Washington, D.C., and the Aerospace Industries Association, Arlington, VA, to discuss their recent reports highlighting the need for DOD to assess future technology and supplier-base availability.
 - We found, during our review of DOD assessments and discussions with DOD officials, that DOD generally defines short-term forecasts as up to 5 years in the future and long-term forecasts as 10-20 years into the future. For the purposes of this briefing we used these definitions.
 - We conducted this performance audit from January 2009 through October 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.
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Summary

- In general, DOD and Commerce assess supplier-base availability for defense needs with a focus on the next 5 years.
 - In 2004 and 2005, DOD conducted a one-time series of DOD-wide assessments of supplier-base availability for long-term defense needs.
 - According to DOD and Commerce officials, assessments beyond 5 years are not sufficiently reliable to accurately project supplier-base availability.
 - The National Research Council and an industry association recently recommended that DOD continually assess the supplier base from a more strategic perspective to include its availability for long-term defense needs.
 - DOD plans to include the Office of Industrial Policy in its Quadrennial Defense Review process for fiscal year 2010 to raise awareness of long-term, future, supplier-base availability for defense needs.
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Background

- DOD has a variety of authorities available to maintain information on its suppliers within the U.S. industrial base as well as to ensure a domestic capability for certain items.
 - Defense Production Act of 1950, as amended: Title VII provides for investigative authority to collect information on the U.S. industrial base.
 - Title 10, U.S. Code: Sections 2501 through 2506 relate to the national technology and industrial base and include a requirement that DOD provide the House and Senate Armed Services Committees with annual industrial capability assessments.
 - Several DOD Directives and a National Security Space Acquisition Policy direct program officials to complete Industrial Capability Assessments before weapon systems can move from the design to development acquisition phase and from the development to production phase.
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GAO Highlighted the Need for Improved Visibility to Oversee the Defense Supplier Base

- In Oct. 2008, GAO assessed DOD's efforts to monitor the health of its supplier base and identify and address gaps and found that DOD's efforts lacked a departmentwide framework and consistent approach.¹ DOD's efforts generally responded to individual program supplier-base concerns or were broader assessments of selected sectors. GAO recommended that DOD
 - leverage existing DOD efforts to identify criteria for supplier-base problems and use them to guide the identification and monitoring of supplier-base concerns throughout DOD, and
 - create and disseminate DOD-wide written requirements for reporting potential concerns about supplier-base gaps.
- In June 2009, DOD updated its "Defense Acquisition Guidebook" to include criteria to identify critical supplier-base issues and establish a reporting structure for program managers to elevate supplier-base concerns.

¹ GAO, *A Department wide Framework to Identify and Report Gaps in the Defense Supplier Base is Needed*, GAO-09-5 (Washington, D.C.: Oct. 7, 2008).



DOD and Commerce Generally Conduct Short-Term Supplier-Base Assessments

- In general, DOD and Commerce assess supplier-base availability for defense needs with a focus on the next 5 years.
- Several offices within DOD have a role in assessing either defense capabilities or supplier base needs:
 - Industrial Policy
 - Defense Research and Engineering
 - Military services industrial base planners
 - Other DOD components, such as Missile Defense Agency industrial base planners
- In addition, the Commerce Department conducts defense supplier-base assessments at DOD's request.



DOD and Commerce Assessments

Agency or DOD component	Type of assessment	Scope of assessments
DOD—Industrial Policy	Addresses supplier-base gaps when an issue spans more than one military service or DOD component.	DOD-wide short-term, supplier-base program and sector assessments with some long-term, sector-specific assessments.
DOD—DDR&E and ManTech	Focuses on identifying and advancing future technologies to support warfighter mission.	Primarily long-term defense technology needs. In general these needs are not matched with supplier-base availability.
DOD—Military Services and Missile Defense Agency	Assesses supplier-base issues for existing weapon programs or sectors.	Primarily short-term with some long-term assessments of military service program or sector needs.
Commerce—Office of Technology Evaluation	Conducts supplier-base assessments for selected sectors or technology areas at DOD's request.	Primarily short-term, but can perform long-term assessments if requested by DOD.

Source: GAO



Assessments: Industrial Policy

- Industrial Policy is DOD's primary representative for supplier-base issues. Its mission is to sustain an environment that ensures DOD's supplier-base is reliable, cost-effective, and sufficient.
 - Routinely identifies and works to mitigate short-term supplier-base gaps when these gaps span multiple DOD components.
 - Industrial Policy's Annual Industrial Capabilities report provides a broad analysis of supplier trends, and summarizes DOD components' studies of short-term supplier-base concerns.
 - Periodically performs long-term supplier-base assessments, for example:
 - Updated Vertical Lift Study (June 2009)
 - Solid Rocket Motors Industrial Capabilities (June 2009)
 - Infrastructure Rationalization in the U.S. Naval Ship Industrial Base (January 2009)
 - Steel and Specialty Metals Trend Analysis (December 2008)



Assessments: Director, Defense Research and Engineering (DDR&E)

- DDR&E is DOD's primary representative for identifying and advancing future technologies to support the warfighter mission.
- DDR&E focuses on identifying long-term defense needs and associated technology to determine investment areas for its technology portfolio. Its efforts include:
 - "horizon scanning" assessments to determine the direction of future technology, as well as identifying capabilities acquired by adversaries and determining mitigation strategies,
 - a forecasting experiment with academia and industry called the X2 project that seeks to identify future "disruptive" technologies, such as radar, satellites, and antisatellite technologies, and
 - targeting companies that typically do not work with the government through its Open Business Cell project to foster future collaboration.
- According to DDR&E officials, its efforts to identify long-term defense needs and associated technology generally do not include forecasting long-term supplier-base availability to meet these needs.



Assessments: Air Force

- The Air Force generally assesses supplier-base issues for existing weapon programs as needed to address supplier gaps. For example:
 - **Infrared Focal Plane Array Substrate Industrial Base Assessment (Aug. 2008):** Validated current DOD efforts to develop a domestic source and to continue funding research for next-generation materials and technologies to address two concerns: (1) domestic manufacturers of certain infrared focal plane arrays depend on a foreign supplier with increased delivery lead times, and (2) next-generation materials and technologies are not anticipated to be available for military applications for decades.
 - **Solid Rocket Motor Industrial Base Assessment (Aug. 2008):** Evaluated potential risks to domestic manufacturing capabilities associated with consolidation and declining demand that could jeopardize the industry's ability to maintain the necessary skill set for casting motors. The report called for further monitoring and for adopting alternative technologies, materials, and qualification methods.
- Air Force officials—responsible for planning and executing the science and technology program—stated that their supplier-base assessments generally focus on improving the manufacturing process for current programs and platforms for the short term.



Assessments: Army

- The Army generally assesses supplier-base issues for existing weapon programs as needed to address supplier gaps. Recent examples include:
 - **Army Communications Sector Assessment (Nov. 2008):** The Army examined the capability of the Transmission and Communications Sector industrial base to develop, manufacture, and support legacy and future weapon systems. The study concluded that the supplier-base is fiscally healthy.
 - **Power Sources and Products Sector Assessment (Nov. 2008):** The Army found the supplier-base supporting this sector to be fiscally healthy, but suggested further monitoring of power source and products supplier-base issues.
- The Army Acquisition, Logistics, and Technology Office—whose mission is to acquire and develop technology to meet the Army's current and future service requirements—primarily focuses on improving current and short-term manufacturing processes for existing technologies.



Assessments: Navy

- The Navy generally assesses supplier-base issues for existing weapon programs and as needed to address supplier gaps. For example:
 - **Advanced Anti-Radiation Guided Missile Assessment (Aug. 2008):** Provided a baseline of industrial capabilities, financial stability, and risks, as well as identified potential alternate suppliers for the critical contractors for the program. Concluded that all 10 of the program's contractors were considered to be a 'moderate' industrial risk and six were a 'moderate' financial risk. Recommended that companies rated as moderate financial risk be monitored every 6 to 12 months.
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Assessments: Missile Defense Agency (MDA)

- According to MDA officials, priority is given to supplier-base assessments for items that are in danger of diminishing or vanishing rather than hypothetical future industrial base needs. Examples include:
 - **Infrared Sensor Assessment (Feb. 2008):** Identified sole/single sources, foreign sources/dependencies, business, and financial risks at infrared sensor developers and component manufacturers. Recommended assessing an alternative source for certain materials that are critical to the production of infrared sensors—including consideration of developing a domestic supplier.
 - **Divert and Attitude Control System (DACS) Industrial Capability Assessment (Sept. 2008):** Recommended monitoring the financial viability of the prime contractor—the only suitable source—and monitoring the production of high-temperature DACS nozzle material as it requires an expensive, difficult-to-process material only available from Kazakhstan.



Assessments: Commerce's Office of Technology Evaluation

- Commerce's Office of Technology Evaluation regularly conducts supplier-base assessments, typically when requested by an agency, to address concerns about meeting short-term technology or production needs. For example, it has conducted numerous supplier-base studies for DOD of defense-related industries and technologies.
- Recent assessments include:
 - Defense Industrial Base Assessment—Counterfeit Electronics (Jan. 2010)
 - Technology Assessment of 5-Axis Machine Tools (July 2009)
 - Domestic Industrial Base Capabilities for Defense Mission-Critical Microchips (May 2009)
 - Defense Industrial Base Assessment of the U.S. Space Industry (Aug. 2007)
 - Technology Assessment of Certain Aromatic Polyimides (July 2007)
- Although Commerce officials stated they have not conducted long-term assessments on the supplier base, they can do so at DOD's request.



DOD Conducted a Series of Special Assessments of Future Supplier-Base Availability

- In 2004 and 2005, Industrial Policy issued five comprehensive DOD-wide assessments of critical technologies and industrial capabilities needed in the 21st century in five concept areas: (1) Battlespace Awareness, (2) Command and Control, (3) Focused Logistics, (4) Force Applications, and (5) Protection.
 - The reports noted technology areas where DOD needed to obtain or sustain an industrial capability and made recommendations to DOD components. According to Industrial Policy officials, they did not monitor the implementation of the recommendations and, therefore, do not know whether they were implemented.
 - According to Industrial Policy officials, these reports were the first and only comprehensive DOD-wide assessments conducted to assess supplier-base availability for long-term defense needs across all major sectors.



Capability Assessments That Look Past 5 Years May Not Be Reliable

- According to DOD and Commerce officials, supplier-base assessments that look beyond 5 years may not be reliable predictors of future needs. According to these officials, it is difficult to predict the technologies that will be available to DOD and if it will need to invest in the supplier base to support the technology.
- DOD officials cited two examples of efforts to assess future supplier base needs that were unsuccessful:
 - DOD was unsuccessful in establishing a domestic supplier base for liquid crystal displays after investing millions of dollars, in part because this technology was developed more rapidly by other sources.
 - A 1992 Army study that looked 30 years into the future for Army technology failed to predict certain infrastructure advances. However, a 2008 DOD assessment of the study concluded that this was too far into the future to have reliable predictions especially for some rapidly moving technologies. The 2008 assessment suggested that the period between studies not exceed 10 years.



Two Groups Highlight Need for DOD to Assess Future Technology and Supplier-Base Availability

- The Aerospace Industries Association and a committee formed by the National Research Council have raised concerns on future availability of the supplier base for defense needs.
 - In July 2009, the Aerospace Industries Association (AIA) released a study discussing the current gap between DOD's defense strategies and the supplier-base capability. The study recommendations included:
 - DOD continually assess the supplier base from a more strategic perspective instead of relying on prime contractors to identify and address potential loss of critical capabilities on a program-by-program basis, and
 - Congress reinvigorate its oversight/review of defense supplier-base issues to see how well DOD is meeting the goals set out in Section 2501 of Title 10, U.S. Code.
 - According to AIA officials, they have spoken with the Under Secretary of Defense for AT&L, the Director of Industrial Policy, and the Deputy Under Secretary for Policy to seek ways to address the recommendations. According to Industrial Policy officials, they are reviewing the report and assessing what actions, if any, they would take in response to these recommendations.



Two Groups Highlight Need for DOD to Assess Future Technology and Supplier-Base Availability (cont.)

- In 2006, the National Research Council's Critical Technology Accessibility Committee report made recommendations to DOD, including that the
 - Under Secretary of Defense for AT&L in collaboration with the Defense Intelligence Agency, develop a system for monitoring the risks of component unavailability and regularly assess their vulnerabilities and recommend mitigation action, and
 - Under Secretary of Defense for AT&L, in collaboration with the Defense Intelligence Agency, develop a system for monitoring U.S. industrial health in strategically important global commercial market sectors that are critical to the availability of components for DOD.
- According to the Committee Chair, DOD has not acted on the report recommendations. Industrial Policy officials noted that actions on these recommendations would require higher-level DOD consideration as multiple offices of DOD would be involved.



Recent DOD Initiative to Incorporate Long-Term View of Supplier Base into Its Annual Review Process

- According to an official from the Office of Industrial Policy, the Deputy Secretary of Defense requested that the Under Secretary of Defense for Acquisition, Technology, and Logistics incorporate industrial-base considerations into DOD's fiscal year 2010 Quadrennial Defense Review. As a result, the Office of Industrial Policy has been fully participating in this review.
 - Industrial Policy is also working closely with the Office of the Under Secretary of Defense for Policy to ensure that the final report of the Quadrennial Defense Review includes a section on industrial-base issues.
- The House Armed Services Committee report, H.R. 111-166—for the National Defense Authorization Act for Fiscal Year 2010—directed that a National Defense Panel be formed to review the Quadrennial Defense Review's effectiveness, which according to the Committee Chairman would include an elevation of the industrial-base issues in this process.

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