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September 2017

# DEFENSE SUPPLY CHAIN

DOD Needs Complete  
Information on Single  
Sources of Supply to  
Proactively Manage  
the Risks

# GAO Highlights

Highlights of [GAO-17-768](#), a report to the Committee on Armed Services, House of Representatives

## Why GAO Did This Study

DOD has an extensive network of suppliers that provide millions of parts needed to sustain its weapon systems. Some parts are provided by a single source of supply (e.g., one manufacturing facility), and if that single source were no longer able to provide the part, DOD could face challenges in maintaining systems. Senate Report 114-49 directed DOD to report on risks associated with single sources of supply. DOD completed its report in October 2016.

House Report 114-102, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2016, included a provision that GAO review single sources of supply for major defense acquisition programs. This report evaluates the extent to which (1) DOD's 2016 report addressed the direction in the Senate report and (2) DOD's weapon systems program offices have information for identifying and managing single source of supply risks. GAO reviewed DOD policy and procedures, analyzed DOD's report, and interviewed officials from a non-generalizable selection sample of nine program offices.

## What GAO Recommends

GAO is recommending that DOD provide complete information to decision makers on risk mitigation plans and timeframes, potential effects from losses, and all critical facilities, commercial and organic, regarding risks from single sources of supply; share information on critical risks with program offices; develop a mechanism to ensure program offices obtain complete information; and issue a DMSMS policy. DOD concurred with GAO's six recommendations.

View [GAO-17-768](#). For more information, contact Zina D. Merritt at (202) 512-5257 or [merrittz@gao.gov](mailto:merrittz@gao.gov).

September 2017

## DEFENSE SUPPLY CHAIN

### DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks

## What GAO Found

The Department of Defense's (DOD) 2016 report on risks associated with single sources of supply did not fully address two of the four elements directed by a Senate report and did not include other information that would have provided further insight into those risks. DOD included information on major defense acquisition programs and supporting parts provided by each single source of supply. However, DOD did not include implementation plans and timelines for risk mitigation actions or information about the effects of the loss of suppliers, as directed. In addition, complete information about DOD organic facilities was not included. While DOD is not required to update its report, it regularly reports industrial base information to congressional committees. Without complete information about critical suppliers, congressional and DOD decision makers do not know all potential risks and effects associated with the loss of single sources of supply for weapon systems.

#### GAO Assessment of Department of Defense (DOD) 2016 Report on Single Source of Supply

Reporting element from Senate Report 114-49	Assessment
Identify major defense acquisition programs with operational implications.	●
Include a list of critical components provided by single-source and single-provider suppliers.	●
Identify risk management actions with associated implementation plans and time lines DOD will take to prevent negative operational impact in the event of a loss of such suppliers	◐
Identify severity of operational impact of the loss of such suppliers.	○

Legend: ● Addressed ◐ Partially Addressed ○ Did not address

Source: GAO analysis of DOD report. | [GAO-17-768](#)

Program offices do not have complete information to fully identify and manage single source of supply risks. First, program officials GAO spoke with were not aware of DOD's 2016 report, and thus did not have information about parts from single-source suppliers that are considered to be most critical, which could provide important focus for managing these risks. Second, program offices often rely on the prime contractor to identify single source of supply risks, among other types of risks, and GAO found that program offices in some instances had limited information to manage those risks because DOD does not have a mechanism to ensure program offices obtain complete information from contractors. Without such a mechanism, program offices may not be aware of risks early enough to take proactive actions to understand and, as appropriate, mitigate those risks. Third, DOD has a program intended to provide information regarding the loss of suppliers and shortages and to proactively manage these risks, called the Diminishing Manufacturing Sources and Material Shortages (DMSMS) program, but GAO found that DMSMS implementation varied at selected program offices. DOD is taking steps toward improving DMSMS management, but there is no department-wide policy that clearly defines the requirements for DMSMS implementation at the program office level throughout the acquisition life cycle. Without such a policy there is no clearly defined requirement for program managers to proactively manage DMSMS issues.

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## Abbreviations

CAIP	Critical Asset Identification Process
DCMA	Defense Contract Management Agency
DMSMS	Diminishing Manufacturing Sources and Material Shortages
DOD	Department of Defense
MIBP	Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy, Office of the Under Secretary of Defense for Acquisition, Technology and Logistics
TCA	Task Critical Asset

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September 28, 2017

The Honorable Mac Thornberry  
Chairman  
The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
House of Representatives

The Department of Defense (DOD) has an extensive network of suppliers that provide millions of the parts needed to sustain its weapon systems.<sup>1</sup> This supplier network, part of the defense industrial base, includes DOD organic facilities and many private-sector companies, ranging from some of the largest public companies to small businesses.<sup>2</sup> Due to costs, demand, and other reasons, some parts are provided by a single source of supply (e.g., one manufacturing facility). If that single source were no longer able to provide the part, DOD could face a disruption in the weapon system's supply chain and, over time, challenges in maintaining the weapon system at the needed level of availability. For example, a fire in February 2015 destroyed a factory that was the single source of propellers for the C-130J aircraft, which provides tactical airlift in support of military and peacetime missions. The Air Force was able to obtain propellers from various stocks and the other military services and develop alternative sources of supply for the propellers, but in the absence of a successful mitigation effort, a disruption in the supply of propellers could have caused manufacturing and repair delays.

Senate Report 114-49, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2016, directed DOD to provide a classified report to the congressional defense committees on matters related to the risks of having a single source of supply for a major defense

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<sup>1</sup>For purposes of this report, we use the term "parts" to refer to the various types of items, components, and materials used in weapon systems.

<sup>2</sup>Generally, DOD organic facilities in the defense industrial base include those owned and operated by the department and those that are owned by the department and operated by a contractor.

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acquisition program.<sup>3</sup> DOD completed its assessment and submitted its classified report to the congressional defense committees in October 2016. House Report 114-102, accompanying a bill for the National Defense Authorization Act for Fiscal Year 2016, included a provision that we review aspects of DOD's management of single sources of supply for major defense acquisition programs.<sup>4</sup> In conjunction with this provision, we were asked to review DOD's report on single source of supply risks. This report evaluates the extent to which (1) DOD's 2016 report on single source of supply risks addressed the direction in the Senate Report and (2) DOD's weapon systems program offices have information for identifying and managing risks from a single source of supply. This report specifically focuses on one type of risk that can affect supply chains within DOD's industrial base; GAO has ongoing work that will assess a broader array of risks that can affect the defense industrial base and associated risk mitigation strategies. That work is planned for completion in 2018.

For the first objective, we compared DOD's October 2016 report against the four elements directed by Senate Report 114-49. We assessed whether the information included in DOD's report addressed, partially addressed, or did not address each element. Two GAO analysts independently reviewed DOD's report and determined the degree to which each element was addressed. We also reviewed available DOD information and data on single sources of supply and compared the report and related information and data to criteria outlined in, *Standards for Internal Control in the Federal Government* such as those that state that agency management should obtain and use quality information to achieve the entity's objectives and should communicate the quality information internally and externally.<sup>5</sup> We discussed the report with DOD officials who

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<sup>3</sup>See S. Rep. No. 114-49, at 40 (2015). Major defense acquisition programs are defined by DOD as programs with a dollar value for all increments estimated to require eventual total expenditure for research, development, test, and evaluation of more than \$480 million, or for procurement of more than \$2.79 billion, in fiscal year 2014 constant dollars, or those designated as major defense acquisition programs. Department of Defense Instruction 5000.02, *Operation of the Defense Acquisition System* at 47 (Jan. 7, 2015) (incorporating change 3, Aug. 10, 2017). These programs include weapon systems such as ships, aircraft, ground vehicles, and missiles.

<sup>4</sup>H.R. Rep. No. 114-102, at 104 (2015).

<sup>5</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#), (Washington, D.C.: Sept. 10, 2014).

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have a role in identifying and assessing single source of supply risks in the defense industrial base.

For the second objective, we reviewed DOD and military department guidance related to weapon systems acquisition and program management, supply chain management, and risk mitigation.<sup>6</sup> We interviewed and obtained information from officials at relevant DOD, military department, and program executive offices. From the population of programs with single source of supply risks identified in DOD's October 2016 report, we identified three categories—air, missile, and other types of programs—and randomly selected nine programs across these categories. We interviewed relevant officials in those program offices about their risk identification and management processes. While not generalizable to all program offices, the results of our discussions at selected program offices provide insights into how they identify and manage risks. Appendix I provides further information on our scope and methodology.

We conducted this performance audit from June 2016 to September 2017 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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## Background

### Roles and Responsibilities for Programs and Their Supply Chains

DOD relies on a cadre of program managers to lead the development, delivery, and sustainment of individual weapon systems throughout their life cycles. The program managers are the designated individuals with responsibility for and authority to accomplish the program's development, production, and sustainment objectives to meet the users' operational

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<sup>6</sup>*E.g.*, DOD Directive 5000.01, *The Defense Acquisition System* (May 12, 2003) (certified current as of Nov. 20, 2007); DOD Instruction 5000.02, *Operation of the Defense Acquisition System* (Jan. 7, 2015) (incorporating change 3, Aug. 10, 2017); DOD Instruction 4140.01, *DOD Supply Chain Materiel Management Policy* (Dec. 14, 2011); Office of the Deputy Assistant Secretary of Defense for Systems Engineering, *Department of Defense Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs*, January 2017.

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needs. Additionally, along with certain other senior officials, the program manager is responsible for decision-making and program execution and is accountable for results.<sup>7</sup> Program offices include the program managers and other individuals who support the program. Product teams, comprised of program office staff and other relevant experts and contractor officials, as appropriate, also support the management of the program.

Generally, program managers or their designees interact with prime contractors who manage subcontractors to provide the final good or service to DOD. In addition, program executive officers within the military departments manage a portfolio of programs (e.g., aircraft, missiles, combat vehicles, and ships). Once delivered to DOD, weapon systems are sustained under various arrangements that may include contactors, DOD organic facilities, or some combination of the two. Materiel support commands in the military services, as well as the Defense Logistics Agency, manage inventories of spare parts, and individual weapon system programs are typically supported by a complex supplier network that includes a prime contractor, sub-contractors, and various tiers of parts suppliers.

Within the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, the Office of the Deputy Assistant Secretary of Defense for Supply Chain Integration describes its mission as establishing strategic supply chain governance and reporting and overseeing the integration of global logistics and supply chain performance. According to the office, its specific responsibilities include leading the development of DOD supply chain policies, reducing excess inventories, improving control of critical assets, and strengthening detection of counterfeit items, among others. Also within the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy (MIBP) is responsible for various industrial base matters, including developing DOD policy and providing guidance, oversight, and technical assistance on assessing or investing in defense industrial capabilities to the Under Secretary of Defense for Acquisition, Technology and Logistics. MIBP supports the Office of the Secretary of Defense and Service Acquisition Executives by providing analyses of

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<sup>7</sup>DOD Directive 5000.01, *The Defense Acquisition System*, paras. 3.5, E1.1.2 (May 12, 2003) (certified current as of Nov. 20, 2007).

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defense supply chains and recommendations for taking appropriate actions to maintain the health, integrity, and technical superiority of those supply chains.<sup>8</sup> MIBP reports annually to the Senate and House Armed Services Committees on DOD's industrial base assessments, actions initiated during the previous year to better understand or respond to risks, and investments planned for certain defense industrial base funding programs.<sup>9</sup> MIBP's assessments of the supply base are intended in part to identify and mitigate weaknesses stemming from fragile suppliers that are likely to be disrupted or from critical characteristics that make a part difficult to replace. MIBP typically analyzes supply base issues that jointly affect more than one DOD component. The military services also conduct supply base analyses that focus on their own programs.

DOD recognizes that there are potential risks to its supply chain, including risks associated with having single sources of supply, and DOD's policy is to identify and manage these risks. Specifically, DOD Instruction 4140.01 states that potential disruptions in the DOD supply chain shall be identified, monitored, and assessed to mitigate risk to supply chain operations. The instruction further indicates that supply chain risk management strategies shall be employed to address potential supply chain disruptions. Some examples of supply chain disruptions are unreliable suppliers, flooding, terrorism, labor strikes, and natural disasters.<sup>10</sup> While DOD has multiple sources of supply for some parts, it relies on a single source for many others. There are a number of reasons for using single sources of supply. For example, demand for parts may not be high enough to justify the cost of maintaining more than one production line, and limitations on DOD's access to technical data may also inhibit its ability to develop multiple sources of supply.

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<sup>8</sup>DOD's overarching guidance for industrial base assessments is described in DOD Instruction 5000.60, *Defense Industrial Base Assessments* (July 18, 2014).

<sup>9</sup>For DOD's most recent annual report on the defense industrial base, see Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics-Office of the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy, *Annual Industrial Capabilities Report to Congress for 2016, July 2017*.

<sup>10</sup>DOD Instruction 4140.01, *DOD Supply Chain Materiel Management Policy*, para. 4.a (Dec. 14, 2011); *id.* encl. 4, para. 1.d.

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## DOD's Critical Asset Identification Process

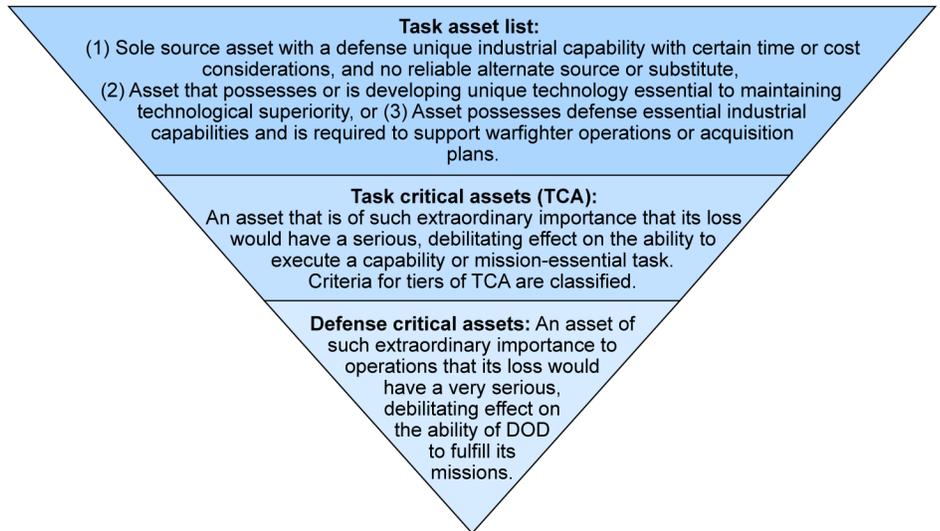
DOD has established a process for analyzing defense infrastructure called the Critical Asset Identification Process (CAIP). CAIP is intended to provide a common analytical framework that is consistent and repeatable to identify critical assets, such as facilities to protect against supply disruptions. This process is part of DOD's Mission Assurance program, which is intended to protect and ensure the continued functioning of capabilities and assets by securing, protecting, and managing the risks of programs that support DOD's mission.<sup>11</sup> The defense industrial base is one of several defense infrastructure sectors, and CAIP is repeated annually to identify critical facilities, or "assets," in the defense industrial base that must be protected. As the Defense Infrastructure Sector Lead Agent for the defense industrial base, the Defense Contract Management Agency (DCMA) leads this process for the defense industrial base, working in conjunction with MIBP. According to DOD, defense industrial base input into CAIP is supported by a continuous assessment process that includes fragility and criticality assessments, service industrial base assessments, data calls to the services and defense agencies, and direct information from industry.

According to its October 2016 report, in implementing the CAIP, DCMA evaluates assets in the defense industrial base against risk-based criteria. One of the key criteria it notes is whether an item has a single source of supply. From an initial list of important capabilities, the annual process results in three main lists of assets—task assets, task critical assets (TCA), and defense critical assets; each successive list is of more critical importance to DOD and national security. DOD officials stated that the assets on these lists remain relatively stable from year to year. Figure 1 shows how DOD describes different types of assets and the criteria for each type of asset list within CAIP.

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<sup>11</sup>Aspects of DOD's Mission Assurance program, which is described in DOD Directive 3020.40, *Mission Assurance (MA)* (Nov. 29, 2016), replace the department's prior Defense Critical Infrastructure Program.

**Figure 1: Critical Asset Identification Process and Criteria Described by the Department of Defense (DOD) Related to the Defense Industrial Base for Each List**



Source: GAO analysis of DOD information. | GAO-17-768

When the annual CAIP is completed, the TCA list for the defense industrial base (as well as assets from other defense infrastructure sectors) is submitted to the Joint Staff, which then is responsible for compiling DOD’s overall TCA list from across all defense sectors. From this list, Joint Staff officials also nominate assets for consideration as defense critical assets and provide them to the Assistant Secretary of Defense for Homeland Defense and Global Security for approval. Defense critical assets are the most critical type of asset, defined as assets of such extraordinary importance to operations in peace, crisis, and war that incapacitation or destruction would have a very serious, debilitating effect on the ability of DOD to fulfill its missions.

## DOD's 2016 Report Did Not Fully Address Two of Four Elements in the Senate Report Direction and Did Not Include Information That Would Have Provided Further Insight into Risks

### DOD's Report Fully Addressed Two Elements, Partially Addressed One Element, and Did Not Address One Element

DOD's October 2016 report on single source of supply risks fully addressed two elements of the direction in the Senate Report, partially addressed one element, and did not address one element. Table 1 summarizes our assessment of DOD's report against each element.

**Table 1: GAO Assessment of Department of Defense (DOD) 2016 Report on Single Sources of Supply**

Reporting element from Senate Report 114-49	Assessment
Identify major defense acquisition programs with operational implications.	●
Include a list of critical components of such programs provided by single-source and single-provider suppliers.	●
Identify risk management actions with associated implementation plans and time lines DOD will take to prevent negative operational impact in the event of the loss of such suppliers.	◐
Identify severity of operational impact of the loss of such suppliers.	○

Legend: ● Addressed ◐ Partially Addressed ○ Did not address

Source: GAO analysis of DOD's October 2016 report on single sources of supply. | GAO-17-768

### DOD's Report Fully Addressed Two Elements

DOD's report contained two classified appendixes, one that identified a list of more than 380 task assets and the other that identified a list of 33 TCAs. Based on our analysis of these appendixes, we found that the information they contained addressed two elements of the Senate Report's direction, identifying (1) major defense acquisition programs with operational implications and (2) a list of critical components of such programs that are provided by a single source of supply. The list of task

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assets includes information about each facility, such as the major defense acquisition programs that are supported by that facility and the part or parts it supplies. In many cases, a single facility on the list provides parts for numerous programs. While information on specific programs and parts is not included on the TCA list, it is possible through cross-referencing to identify the information that corresponds to that facility in the task asset list.

MIBP officials stated that when the Senate Report direction for a report on single source of supply risks was received, they believed the task would be difficult, as there was no one list of all single sources of supply. However, they determined that the existing CAIP could be used, because it relies on criteria that include whether a facility is a single source of supply. They therefore used information resulting from this process to develop the two appendixes. They noted that the decision to use CAIP to respond to the direction in the Senate Report was discussed with and approved by the Joint Industrial Base Working Group. The working group is a DOD forum to exchange information and collaborate on tasks relative to defense industrial base issues. Its membership includes representatives from the military departments' acquisition and industrial base assessment organizations.

**DOD Partially Addressed One Element, but Has Not Identified Plans for Mitigating the Risk of Supplier Loss**

DOD's report partially addressed the direction to identify risk mitigation actions—with associated implementation plans and time lines—that it would take to prevent negative operational impact in the event of the loss of single-source or single-provider suppliers. The report provided an overview of some of the risk mitigation strategies DOD can use to manage risks resulting from single sources of supply within the industrial base; however, DOD did not identify implementation plans and time lines for any risk mitigation actions pertaining to specific assets listed in the report, including the TCAs. The report listed four tools that DOD can use to mitigate risk in the defense industrial base—Titles I and III of the Defense Production Act, the Manufacturing Technology program, and the

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Industrial Base Analysis and Sustainment program.<sup>12</sup> Through these available tools, DOD can provide funding to address critical problems within a supply chain or to seek technological innovations as solutions to those problems. DOD's report did not describe other risk mitigation actions that, according to DOD and service officials, are routinely used by program offices to respond to and mitigate risks, such as life-of-need buys, development of a new source, or redesign of parts, among others.<sup>13</sup>

DOD officials have taken steps to mitigate risks or supply issues when they become aware of a loss or a pending loss of a single source of supply. We found that some of the parts supplied by the 33 TCAs have been the focus of funding projects associated with the Defense Production Act, the Manufacturing Technology program, or the Industrial Base Analysis and Sustainment program. For example, the Industrial Base Analysis and Sustainment program funded various projects on chemicals used as part of batteries or other parts associated with certain programs supported by TCAs.

However, DOD's report did not identify plans and time lines for risk mitigation actions associated with any specific facilities listed in the report. Further, for parts supplied by facilities that have not been the focus of the above funding programs, it is unclear what, if any, risk mitigation actions

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<sup>12</sup>Title I of the Defense Production Act generally authorizes the President to require acceptance and priority performance of contracts or orders to promote the national defense. See 50 U.S.C. § 4511. Title I also authorizes the President, using the authority of Title III of the Act or any other provision of law, to provide appropriate incentives to develop, maintain, modernize, restore, and expand the productive capacities of domestic sources for critical components, critical technology items, materials and industrial resources essential for the execution of the national security strategy of the United States. § 4517. Title III of the Defense Production Act generally authorizes the President to provide a variety of financial incentives to private entities in support of efforts to create, maintain, expand, protect, or restore production and deliveries, services, essential materials, technological processes, or domestic industrial base capabilities essential to the national defense. See §§ 4531-4533. DOD's October 2016 report notes that the mission of the DOD Title III Program is to create assured, affordable, and commercially viable production capabilities and capacities for items essential for national defense. As described by the report, the Manufacturing Technology program seeks to provide a link between technology invention and development and industrial applications, among other things. The Industrial Base Analysis and Sustainment program seeks to maintain or improve the health of essential parts of the defense industry by avoiding certain costs for capabilities at risk of being lost. These risk mitigation strategies are part of the focus of ongoing GAO work on the defense industrial base that is planned for completion in 2018.

<sup>13</sup>A life-of-need buy refers to the purchase of all available stock of a particular part. These purchases are typically carried out when a supplier stops or plans to stop production of the item.

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have been considered for those facilities. DOD officials stated that it would be exceedingly time and resource intensive to develop risk mitigation strategies for every supplier used by the department. DOD Instruction 4140.01, however, states that potential disruptions in the DOD supply chain shall be identified, monitored, and assessed to mitigate risk to supply chain operations and indicates that supply chain risk management strategies shall be employed to address potential supply chain disruptions.<sup>14</sup> DOD officials acknowledged that numerous TCA facilities or parts provided by those facilities have been the focus of risk mitigation funding projects, as discussed previously. Further, they stated that while it would not be feasible to develop risk mitigation strategies for every supplier, focusing on risk mitigation plans and timeframes for the most critical suppliers within the department, such as TCAs, would be more appropriate. While DOD is not required to update its 2016 report on single source of supply risks, the department regularly reports information to congressional committees on the defense industrial base, such as through an annual report. Without information on risk mitigation actions, to include implementation plans and time lines, congressional and DOD decision makers do not have reasonable assurance that it is prepared to mitigate the loss of a critical facility, such as a TCA.

Report Did Not Address Element on Operational Impacts, but DOD Has Data on Capabilities That Could Be Affected by the Loss of a Facility

DOD's report did not address the reporting element that the department identify the severity of operational impacts resulting from the loss of single source or single provider suppliers. DOD stated in its report that information on operational impacts was not included in the report, because the assessments, performed by the Joint Staff, are kept close-hold and are mission scenario-driven assessments. We found, however, that the Joint Staff has not performed such operational impact assessments. Joint Staff officials stated it would not be feasible due to resource constraints to assess the operational impacts resulting from the loss of all assets identified as critical within the industrial base. Moreover, they stated it is difficult to determine operational impacts because of stocked inventory or other strategies for mitigating the loss of an asset.

While DOD does not have information on operational impact assessments for the facilities included in its report, it does collect relevant data on the effects on defense capabilities that could result from the loss of a critical facility such as a TCA. Joint Staff officials stated that as part of

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<sup>14</sup>DOD Instruction 4140.01, *DOD Supply Chain Materiel Management Policy*, para. 4.a (Dec. 14, 2011); *id.* encl. 4, para. 1.d.

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CAIP, DCMA and other DOD components regularly submit data regarding the types of defense capabilities that are supported by TCAs. According to Joint Staff and other DOD officials, these defense capabilities allow DOD to carry out specific types of tasks, including the use of necessary equipment and supplies; this differs from operational impacts or the resulting effect on military operations. The officials stated that information on affected defense capabilities would be more relevant to understanding single source of supply risks than information on operational impacts.

Other officials from DOD and the services also stated that determining the effects on mission readiness resulting from the loss of a defense industrial base facility could be difficult and that a focus on effects on defense capabilities would be more relevant information for understanding the potential negative effects of a loss. We reviewed the Joint Staff's database containing TCA information and found numerous instances where potential effects on defense capabilities had been reported.<sup>15</sup> For example, a Navy official and a DCMA official both nominated a facility as a TCA, because its loss would affect the deployment and maintenance schedules for certain types of ships. *Standards for Internal Control in the Federal Government* states that agency management should obtain and use quality information to achieve the entity's objectives and should communicate the quality information internally and externally.<sup>16</sup> As discussed previously, while DOD is not required to update its 2016 report, the department does update its CAIP information annually, and it regularly reports information about the defense industrial base to congressional committees. In the absence of such information in DOD's report, congressional and DOD decision makers may not have a full understanding of single source of supply risks.

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### DOD's Report Did Not Include Information on DOD Organic Facilities That Could Have Provided Further Insight into Risks

DOD's report did not identify TCAs that are DOD organic facilities; we found that this information was available and could have provided additional insight into single source of supply risks. DOD's report included commercial TCA assets but did not include DOD organic facilities that have been designated as TCAs that support the major defense acquisition programs identified in the report. Examples of DOD organic facilities in the defense industrial base are maintenance depots,

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<sup>15</sup>The information is maintained in the Strategic Mission Assurance Data System.

<sup>16</sup>[GAO-14-704G](#).

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shipyards, and ammunition factories. We reviewed data provided by the Joint Staff and found more than 60 DOD organic facilities that have been assessed as TCAs but were not included in DOD's report. Further, Joint Staff officials stated that one facility within the industrial base sector has been identified as a defense critical asset and it is a DOD organic facility. As noted previously, defense critical assets are extraordinarily important to operations, and the loss of such an asset would have a very serious, debilitating effect on the ability of DOD to fulfill its missions. This DOD organic asset was not included in the October 2016 report.

*Standards for Internal Control in the Federal Government* states that agency management should obtain and use quality information to achieve the entity's objectives and should communicate this quality information internally and externally.<sup>17</sup> DOD officials stated that they did not include existing information on DOD organic facilities in the October 2016 report because, while DOD might not be aware of potential stoppages that could occur at commercial facilities, it would be well aware of any changes at its own facilities that could result in the loss of a production line. However, DOD organic facilities, like commercial facilities, are susceptible to natural disasters or other events that could disrupt a supply chain. As discussed previously, while DOD is not required to update its 2016 report, the department does update its CAIP information annually and it regularly reports information to congressional committees on the defense industrial base. Without information about DOD organic facilities that are critical single sources of supply, such as TCAs, including the potential effects on defense capabilities and risk mitigation actions, congressional and DOD decision makers may not be fully aware of, and prepared to address, potential risks associated with the loss of facilities that are single sources of supply for weapon systems.

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<sup>17</sup>[GAO-14-704G](#).

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## Program Offices May Not Have Complete Information for Identifying and Managing Risks Associated with a Single Source of Supply

Weapon systems program offices do not consistently receive complete information that would help them to identify and manage risks associated with a single source of supply. The selected program offices we contacted had procedures to manage risks, including known single source of supply risks. However, these program offices were not aware of results relevant to their programs that were generated by CAIP and included in DOD's October 2016 report. In addition, we found that program offices may have limited information from contractors on single sources of supply within the tiers of their supply chains, and they were inconsistent in implementing a DOD program that is intended to identify and manage risks associated with the loss of suppliers and material shortages, which may involve single sources of supply.

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## Selected Programs Had Procedures to Manage Single Source of Supply Risks

Program managers are responsible for managing risks to their weapon systems programs, and selected program offices we met with had procedures to manage such risks. DOD guidance indicates that program managers are the single point of accountability for accomplishing program objectives for total life-cycle systems management and are accountable for credible cost, schedule, and performance reporting to the Milestone Decision Authority.<sup>18</sup> DOD guidance also describes program manager responsibilities regarding risk management, including consideration of risk management techniques such as assessing industrial base availability and capabilities. It further states that program management is responsible for incorporating industrial base analysis, to include capacity and capability considerations, into acquisition planning and execution. As described by guidance, the objectives of industrial base analysis include ensuring that DOD can identify and mitigate industrial capability risks such as single points of failure and support resilience of critical defense industrial base capabilities.<sup>19</sup>

MIBP and service officials stated that, ultimately, it is the responsibility of program office management to identify and manage the risks affecting the program, including risks stemming from a single source of supply. To

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<sup>18</sup>DOD Directive 5000.01, *The Defense Acquisition System*, paras. E1.1.29, 3.5 (certified current as of Nov.20, 2007). The Milestone Decision Authority, in turn, is accountable for cost, schedule, and performance reporting to higher authority, including congressional reporting. *Id.* para 3.4.

<sup>19</sup>See DOD Instruction 5000.02, *Operation of the Defense Acquisition System*, encl. 2, paras. 6.d, 8 (Jan. 7, 2015) (incorporating change 3, Aug. 10, 2017).

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manage known risks from a single source of supply, the selected program offices we met with had procedures, such as risk management boards or meetings and integrated product teams, that focused on issues such as the program's industrial base or obsolete parts. A risk management board, serving as an advisory body to the program manager, reviews risk analysis results, risk mitigation plans, and associated resources, as well as progress associated with implemented risk mitigation plans. It includes relevant program management officials, subject matter experts, and contractor personnel, as appropriate. Integrated product teams, according to DOD, are composed of representatives from appropriate functional disciplines working together to build successful programs, identify and resolve issues, and make sound and timely recommendations to facilitate decision making.

An Air Force program office we met with had an internal risk management board comprised of government employees and a joint risk management board with representatives from both the program office and its main contractor. According to officials, both boards met monthly to discuss and address risks. Similarly, officials from a Navy program office stated that program officials and representatives from its contractor and suppliers participated in management and technical reviews to analyze performance metrics and prioritize any risks. They stated that while both program officials and contractor representatives discuss strategies to address risks, it is ultimately the program management that determines the severity of a risk and how to address it. Other program officials we contacted stated that the Program Executive Office played an important role in monitoring the industrial base for the portfolio of related programs. For example, officials from an Army program office stated that they conduct ongoing monitoring of the availability and production of needed items for their program and also participate in an integrated product team covering the Program Executive Office's entire portfolio that meets monthly to discuss risks. Officials also described risk management plans, including management plans that identify known risks and opportunities

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as well as potential obsolescence issues or material shortages or the loss of suppliers, for example, as well as single sources of supply.<sup>20</sup>

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### Selected Program Offices Were Not Aware of CAIP Results That Potentially Affected Their Weapon Systems

DOD used CAIP to generate the information for its October 2016 report on risks associated with single sources of supply, but program officials from the nine offices we spoke with from March to June 2017 said they were not familiar with the CAIP results in DOD's report, including those regarding TCAs. Although each selected program had at least one part supplied by a TCA listed in DOD's report, none of the officials from the nine program offices we spoke with were aware of this fact. In addition, service officials from the offices above for the nine selected programs were not aware that the program had an item supplied by a TCA.

Numerous service and program office officials stated that information about risks associated with certain suppliers, such as that generated through CAIP, would be beneficial to the management of their supply chain. Officials from program offices added that early identification of risks, when possible, provides additional options or opportunities for risk management. For example, with advance notice of a facility ceasing production of a part, a life of need buy can be made to ensure that parts are available until a substitute part or another source becomes available, which can prevent negative effects on a weapon system's availability and higher costs. Some officials we spoke with stated that they requested copies of DOD's October 2016 report after we brought it to their attention. In addition, we found that two of the programs in our sample were also supported by a DOD organic facility that was identified as a TCA in data

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<sup>20</sup>In the context of DOD's DMSMS process, an item is obsolete if it is out of date and superseded by something new. Obsolescence can be associated with materiel shortages and may or may not involve a single source of supply. The National Defense Authorization Act for Fiscal Year 2014 required DOD to implement a process for the expedited identification and replacement of obsolete electronic parts included in acquisition programs. Among other things, the process is to include a mechanism through which contractors or other sources of supply may provide DOD officials with information that identifies obsolete electronic parts included in the specifications for an acquisition program, as well as suitable replacements. The process must also require Product Support Managers for major weapon systems to work to identify obsolete electronic parts included in the specifications and approve suitable replacements. See Pub. L. No. 113-66, § 803 (2013). Under the provision, an electronic part is obsolete if the part is no longer in production and the original manufacturer and authorized dealers do not have sufficient parts in stock to meet the acquisition program requirements. § 803(c)(1). See also DOD Instruction 5000.02, *Operation of the Defense Acquisition System*, encl. 6, para. 2.a(2) (Jan. 7, 2015) (incorporating change 3, Aug. 10, 2017) (noting the responsibilities of the Program Manager and Product Support Manager associated with the provision).

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provided by the Joint Staff. As discussed earlier, DOD's report included only commercial TCAs and not DOD organic facilities.

DOD Instruction 4140.01 identifies potential supply chain disruptions as a factor to be considered as part of DOD supply chain operations, and DOD guidance regarding the defense acquisition system notes the importance of complete and current program information to the acquisition process. According to DOD policy regarding supply chain management, potential disruptions within and outside the DOD supply chain shall be identified, monitored, and assessed to mitigate risk to supply chain operations.<sup>21</sup> DOD policy on acquisition states that complete and current program information is essential to the acquisition process.<sup>22</sup> As discussed previously, DOD guidance on acquisition further discusses both the responsibility of program management and the importance of information in the context of industrial base analysis.<sup>23</sup> Further, *Standards for Internal Control in the Federal Government* states that agencies should use quality information that is complete and current and should internally communicate necessary information to achieve objectives.<sup>24</sup>

DOD officials involved in developing the October 2016 report stated that there is an existing information-sharing channel with the military services through the Joint Industrial Base Working Group. DOD officials additionally stated that it was at the discretion of military service representatives on the working group to share the information as needed. However, our interviews with program offices and program executive offices indicated that such information-sharing did not occur. DOD officials acknowledged that improved communication and sharing of information among the various offices that play a role in managing DOD's supply chains and responding to industrial base risks would be beneficial to the management of DOD's programs. Having relevant information generated through the annual CAIP, such as the type of information included in the October 2016 report, would help program managers to be aware of parts supplied by a single source that is considered to be a most

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<sup>21</sup>DOD Instruction 4140.01, *DOD Supply Chain Materiel Management Policy*, para. 4.a (Dec. 14, 2011); see also *id.*, encl. 4, para. 1.d.

<sup>22</sup>DOD Directive 5000.01, *The Defense Acquisition System*, para. E1.1.20 (May 12, 2003) (certified current Nov. 20, 2007).

<sup>23</sup>See DOD Instruction 5000.02, *Operation of the Defense Acquisition System*, encl. 2, paras. 6.d(2)(h), 8 (Jan. 7, 2015) (incorporating change 3, Aug. 10, 2017).

<sup>24</sup>[GAO-14-704G](#).

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critical risk (i.e., a TCA), and thus have complete and current information that could provide important focus for managing these risks.

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### Program Offices May Have Limited Information from Contractors on Single Source of Supply Risks

Program offices often rely heavily on the prime contractor to identify existing and potential single source of supply risks, among other types of risks, but in some cases they may have limited information from contractors to help them be aware of and manage those risks. DOD and service officials stated that risk identification is part of the activities that the federal government pays a prime contractor to manage as part of a contract, and that the prime contractor is to be aware of the health of the supply chain and any risks within the supply chain that supports the program. However, we found there have been several instances when a known risk was not communicated up through the tiers of suppliers to the government. For example, DOD officials stated that several years ago a supplier of a chemical compound that is a key component of a type of butane needed for certain missiles had planned for several years to stop production of the material, but this information was unknown by the government until the material was no longer available after production had stopped and a shortage of butane occurred. While DOD officials said such instances do not occur frequently, and they took steps to successfully resolve the issue, they stated that advance warning of risks can result in less costly and more efficient mitigation of those risks.

During our interviews at the selected program offices, numerous officials stated that they expect the prime contractor for their program to identify risks related to a single source of supply and to bring that information to the attention of the program office. However, they acknowledged that they do not have a way to ensure this information-sharing and that they are not fully aware of risks that exist in the sub-tiers of contracts. In contrast, officials from two programs, both of which manage older systems that have long been in the sustainment phase of their life cycle, told us they did not rely on contractors for information on supply risks.<sup>25</sup> Officials from one of these program offices stated that while a contractor can be an important partner, the government should not rely on a contractor to understand and manage risks to the federal government. Also, these officials stated that independent analysis is critical to appropriately manage risk. For example, an official from an Army program stated that

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<sup>25</sup>The phases of a weapon system's acquisition life cycle generally include research, development, test, and evaluation; production; deployment; operations and support (which includes sustainment); and disposal.

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detailed analysis performed by the Army found that certain targeted investments in critical parts, such as infrared technologies and transmissions, would ensure continued availability of the system and preserve the health of certain single sources of supply. The Army official stated that this kind of detailed analysis allows program offices to have the same or better information than the contractors and thus results in more informed decision making and negotiations with suppliers and more effective use of resources.

DOD has efforts under way to obtain better information from contractors on obsolescence risks but not for other types of related risks, such as those stemming from a single source of supply. For example, DOD officials said that the department and military services determined that contract language requiring certain contractors to notify program offices of certain obsolescence risks associated with electronic parts would benefit program offices' ability to manage risks proactively, and they are pursuing this type of requirement through proposed changes to the Defense Federal Acquisition Regulation Supplement.<sup>26</sup> However, DOD has not developed a mechanism to ensure the timely and comprehensive sharing of information on single-source risks from contractors to program offices. DOD officials stated that while departmental guidance directs program offices to obtain information about risks, this guidance could be improved with a mechanism to ensure that program offices can obtain information from contractors. High-quality and comprehensive information is the foundation for proper management and decision making at any program

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<sup>26</sup>DOD implementation and supplementation of the Federal Acquisition Regulation is issued in the Defense Federal Acquisition Regulation Supplement (DFARS), under authorization and subject to the authority, direction, and control of the Secretary of Defense. DFARS contains requirements of law, DOD-wide policies, delegations of Federal Acquisition Regulation authorities, deviations from Federal Acquisition Regulation requirements, and policies and procedures that have a significant effect beyond the internal operating procedures of DOD or a significant cost or administrative impact on contractors or offerors. As noted above, the National Defense Authorization Act for Fiscal Year 2014 required DOD to implement a process for the expedited identification and replacement of obsolete electronic parts included in acquisition programs. Among other things, the process is to include a mechanism through which contractors or other sources of supply may provide DOD officials with information that identifies obsolete electronic parts included in the specifications for an acquisition program, as well as suitable replacements. See Pub. L. No. 113-66, § 803. In addition to the requirement in section 803 and the proposed clause described by officials, a clause for use in certain types of contracts calls for a counterfeit electronic part detection and avoidance system that addresses, among other things, control of obsolete electronic parts in order to maximize the availability and use of authentic, originally designed, and qualified electronic parts throughout the product's life cycle. See 48 C.F.R. (DFARS) § 252.246-7007(c)(12) (Aug. 2016).

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or agency. *Standards for Internal Control in the Federal Government* states that agency management should obtain relevant data from both internal and external sources in a timely manner and that these data should be reliable and free from error and bias.<sup>27</sup> Timely and comprehensive information from contractors about single source of supply risks would help program offices be aware of risks early enough to take proactive steps to understand and, where necessary, mitigate those risks.

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### Selected Program Offices Varied in Implementing Efforts Aimed at Managing Loss of Suppliers and Parts Shortages

DOD has a program intended to provide information regarding the loss of suppliers and parts shortages and to proactively manage these risks, but program offices we met with varied in their implementation of this program. DOD's Diminishing Manufacturing Sources and Material Shortages (DMSMS) program is intended to predict and respond to the loss, or impending loss, of manufacturers or suppliers of items, raw materials, or software. In its DMSMS guidebook, DOD describes DMSMS management as a process to identify issues, assess the potential for negative effects, analyze potential mitigation strategies, and implement the most cost-effective strategy.<sup>28</sup> The guidebook provides best practices on how to conduct robust management of supply chain risks connected with DMSMS, which include the loss of suppliers and single source of supply risks. Proactive DMSMS management can mitigate risks, avoid costs, and prevent schedule delays resulting from the loss of a single source of supply.

DOD has reported cost savings from proactive DMSMS management. For example, by integrating DMSMS management into the design and build process, the Virginia-class submarine program resolved over 1,200 obsolescence issues and avoided over \$150 million in costs, according to DOD. Similarly, DOD reported that when the manufacturer indicated that an expensive system upgrade was required for the B-1 bomber due to an impending obsolescence issue, the program office used its DMSMS monitoring to determine that only minimal concerns existed and alternate parts were readily available. In this case, DOD estimated a cost avoidance of more than \$300 million over 10 years.<sup>29</sup> Further, according

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<sup>27</sup>[GAO-14-704G](#).

<sup>28</sup>Defense Standardization Program Office, DOD Guidebook SD-22, *Diminishing Manufacturing Sources and Material Shortages (DMSMS)* (January 2016).

<sup>29</sup>DOD Guidebook SD-22.

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to an official leading implementation of DMSMS across the department, when DMSMS is managed properly, there is typically more access to the data and information, which can speed other solutions. A Navy program official stated that, due to obsolete technologies identified through its DMSMS management, the program is switching to a new type of processor chip. The program was able to purchase enough of the current type of chip to maintain its systems until the supplier completed the lengthy redesign and requalification process for the new chip. If the program had not been aware of the obsolescence issue, the official stated, the program office would have had to pursue a costly solution.

Although DOD has reported positive results from DMSMS, we found through our interviews with officials at the nine program offices in our sample that their implementation of DMSMS practices varied. Six program offices had some type of DMSMS management strategy, and three did not. Of the six program offices that had some type of strategy, two offices relied primarily on their prime contractor to identify and manage supply chain risks, including DMSMS concerns; two offices retained DMSMS management within their program offices; and two used a combination of program office and contractor management. Of the three offices that did not have DMSMS management strategies, two were participating in a pilot for DMSMS management through an Army command-level program, and one was in the process of establishing but had not yet implemented DMSMS management. Officials from one of the offices participating in the Army pilot stated that next steps would be determined after the completion of evaluations of various methods for managing risks, including the pilot program.

In June 2017, a DOD official involved in leading DMSMS efforts estimated that between 50 and 75 percent of DOD program offices have effective DMSMS management and that most of the programs that do not have strong DMSMS management either rely heavily on contractors for information about risks to their programs or are very small programs. DOD reported in its most recent annual report to congressional committees on defense industrial base capabilities that DMSMS issues continue to be a concern for the department.<sup>30</sup> For example, DOD reported that 98 percent of suppliers within the missile and munitions sector are single sources of supply, it is not possible to find replacements for parts if a supplier stops production, and requalification for new parts or

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<sup>30</sup>DOD, *Report to Congress- Annual Industrial Capabilities*, June 13, 2017.

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materials can be very costly, especially for larger missile systems. Additionally, the report states that most programs do not plan or budget for obsolescence, and the department and industry do not have a coordinated mitigation approach for this issue. Further, different programs and companies operate independently, which leads to the services paying to solve the same issue multiple times, and a more coordinated approach would be more efficient and less costly to the department.

A key factor contributing to the variance in implementation of DMSMS is that DOD guidance regarding DMSMS management contains limited detail regarding actions required at the level of a weapon system's program office. DOD's DMSMS guidebook details strategies and best practices for effective DMSMS management, including that a program manager or product support manager should establish a DMSMS management team and that the program manager should develop and adopt a plan to carry out the DMSMS management strategy. However, higher-level DOD guidance containing requirements and procedures for DMSMS management across the department, such as the DOD manual regarding supply chain material management procedures, does not clearly detail requirements to be followed by program managers to implement DMSMS at the weapon system program level. Military department-level guidance varies. The Navy instruction on acquisition requires that program managers establish a DMSMS program to proactively identify, resolve, and eliminate any negative effects from DMSMS throughout all phases of a program's life cycle and requires the development of a DMSMS plan for certain programs.<sup>31</sup> The Air Force instruction on life-cycle management of weapon systems' programs also details some responsibilities of its program managers to consider and support DMSMS management.<sup>32</sup> Further, the Air Force has a command-level instruction regarding implementation of DMSMS, but it does not require a DMSMS plan during weapon system development or clearly describe the responsibilities at the program office level.<sup>33</sup> This guidance is currently under revision and an Air Force official stated that DMSMS

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<sup>31</sup>Secretary of the Navy Instruction 5000.2E, *Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System*, para. 6.1.1 (Sept. 1, 2011).

<sup>32</sup>See, e.g., Air Force Instruction 63-101/20-101, *Integrated Life Cycle Management*, paras. 4.27.2, 5.4.8 (May 9, 2017).

<sup>33</sup>See generally Air Force Materiel Command Instruction 23-103, *Diminishing Manufacturing Sources and Materiel Shortages (DMSMS) Program* (Oct. 13, 2000).

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requirements would be strengthened. The Army's industrial base process regulation requires that program managers consider DMSMS throughout the acquisition life cycle, including during design, redesign, and production, but direction specific to DMSMS planning largely focuses on post-production support planning activities.<sup>34</sup> *Standards for Internal Control in the Federal Government* states policy should be used to define the responsibilities that should be assigned to best achieve objectives and implement control activities.<sup>35</sup>

DOD officials are considering the need for improved DMSMS policies as part of their efforts to improve the DMSMS program and their efforts to address the associated risks. The improvement efforts are being led by the Defense Standardization Program Office and a department-wide DMSMS working group. The working group is pursuing 10 objectives, based on 23 DMSMS program gaps it has identified. Among these objectives is an effort to focus on improving DMSMS policies.<sup>36</sup> A DOD official leading DMSMS efforts stated in June 2017 that the working group is discussing changes to future versions of existing high-level DOD acquisition and supply chain policy that would provide more focus on obsolescence, a type of DMSMS issue. However, the official stated that none of these changes represent a specific, stand-alone policy that requires DMSMS implementation and management throughout a weapon system's acquisition life cycle. For example, DOD's supply chain management manual indicates that the military departments and DLA are to proactively take timely and effective actions to manage DMSMS issues and to proactively consider DMSMS through a system's life cycle. It also directs the military departments and DLA to designate a focal point to plan and coordinate actions, such as assessing DMSMS effects on new DOD weapon systems, including during design, redesign, or production.<sup>37</sup> However, DOD officials stated that this guidance is used primarily by inventory managers during the sustainment phase of the acquisition life cycle—as opposed to program managers during the earlier stages of

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<sup>34</sup>Army Regulation 700-90, *Army Industrial Base Process*, para. 3-9 (Jan. 27, 2014).

<sup>35</sup>[GAO-14-704G](#).

<sup>36</sup>Additional objectives underway within the DMSMS working group include the development of common metrics, standardizing data across the department, and identifying various best practices, among others.

<sup>37</sup>DOD Manual 4140.01, Volume 3, *DOD Supply Chain Materiel Management Procedures: Materiel Sourcing*, encl. 3, para. 6 (Feb. 10, 2014) (incorporating change effective Mar. 9, 2017).

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acquisition—and noted the utility of adding DMSMS procedures and requirements to other guidance documents used more directly by program managers, such as DOD Instruction 5000.02. Moreover, various members of the working group have acknowledged the need for department-wide policy to clarify DOD’s DMSMS strategy by defining roles and responsibilities and procedures to follow as part of DMSMS management at the program office level. The official leading DMSMS stated that a DMSMS policy could require a service-specific, dedicated lead for DMSMS, the development of a DMSMS plan for each program office throughout the acquisition life cycle, and the use of consistent metrics for monitoring the program.

While efforts are under way within DOD to improve DMSMS management, in the absence of a DMSMS policy—such as an instruction that clearly defines the requirements for DMSMS management at the individual program office level and details the responsibilities and procedures to be followed to implement that policy—DOD will continue to have inconsistent implementation of DMSMS management across program offices. Further, program offices may not have complete information to proactively identify and manage diminished manufacturing sources and material shortages, including those stemming from single source of supply risks, in order to reduce costs and prevent shortages.

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## Conclusions

DOD relies on many single sources of supply to provide needed parts for its weapon systems and has reported to congressional committees on facilities that represent risks associated with single sources of supply. In the case of the 33 TCAs listed in the October 2016 report, these are considered critical risks. DOD’s report contains important information for congressional and DOD decision makers. However, DOD’s report did not identify risk mitigation actions with associated implementation plans and time lines for the assets listed in its report, including the relatively small number of TCAs. In addition, DOD’s report did not identify the severity of operational impacts that could result from the loss of single source suppliers or include available information on the effects of such a loss on defense capabilities. Further, the report was limited to commercial TCAs and did not include DOD organic facilities. Without more complete information, such as the risks to and effects from potential losses of commercial and organic single sources, congressional and DOD decision makers do not have a full understanding of potential risks associated with the loss of facilities that are single sources of supply for weapon systems. Further, if DOD does not ensure that risk-mitigation actions have been considered for the most critical single sources of supply, it cannot assure

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that plans are in place to prevent costly delays or parts shortages that could affect mission readiness.

Program managers may not have complete information on single source of supply risks within the supply chain that are associated with their weapon systems programs. First, program offices may not be receiving the results from the annual CAIP for the defense industrial base, because existing channels of communication with the military services either have not been used or are not sufficient. Second, program offices often rely heavily on the prime contractor to identify single source of supply risks, but DOD does not have a mechanism to ensure that program offices obtain information on risks from contractors. Third, the DMSMS program is intended to provide information regarding the loss of suppliers and parts shortages and to proactively manage these risks, but program offices varied in their implementation of this program due to the lack of a department-wide policy, such as an instruction, that clearly defines requirements or procedures for DMSMS management by program offices. In the absence of information provided through CAIP assessments, reporting from contractors, and a better defined and consistent implementation of DMSMS, program offices may not have all of the information available to identify and manage supply chain risks for their weapon systems programs, including single source of supply risks.

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## Recommendations for Executive Action

We are making the following six recommendations to DOD:

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should assess whether risk mitigation actions have been identified in the event of a loss of each TCA facility in the defense industrial base and, based on this assessment, develop risk mitigation actions with associated implementation plans and time lines, and provide this information to congressional and DOD decision makers. (Recommendation 1)

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should provide congressional and DOD decision makers with information on potential effects on defense capabilities in the event of a loss of each TCA facility in the defense industrial base. (Recommendation 2)

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should provide congressional and DOD decision makers with information on

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DOD organic facilities that have been identified as TCAs, similar to the information provided previously on commercial facilities. This information also should include (1) the potential effects on defense capabilities in the event of a loss of the facility and (2) risk mitigation actions and associated implementation plans with time lines. (Recommendation 3)

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should take steps to share information on risks identified through the annual CAIP with relevant program managers or other designated service or program officials. At a minimum, relevant officials should receive information on the most critical facilities (such as TCAs) that produce parts supporting their programs. This information-sharing could occur through service-specific channels of communication or another method of internal communication deemed appropriate by DOD. (Recommendation 4)

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should develop a mechanism to ensure that program offices obtain information from contractors on single source of supply risks. (Recommendation 5)

The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should issue department-wide DMSMS policy, such as an instruction, that clearly defines requirements of DMSMS management and details responsibilities and procedures to be followed by program offices to implement the policy. (Recommendation 6)

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## Agency Comments and Our Evaluation

We provided a draft of this report to DOD for review and comment. In its written comments, which we received on September 20, 2017, DOD concurred with our six recommendations and noted planned actions to address each recommendation. DOD's comments are reprinted in their entirety in appendix II. DOD also provided technical comments, which we incorporated into the report as appropriate.

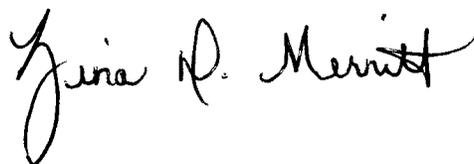
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We are sending copies of this report to the appropriate congressional committees; the Secretary of Defense; the Under Secretary of Defense for Acquisition, Technology and Logistics; the Secretaries of the Army, the Navy and the Air Force; the Commandant of the Marine Corps, and the Director of the Defense Contract Management Agency. In addition,

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the report is available at no charge on the GAO website at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-5257 or [merritt@gao.gov](mailto:merritt@gao.gov). Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff members who made key contributions to this report are listed in appendix III.

A handwritten signature in black ink that reads "Zina D. Merritt". The signature is written in a cursive style with a large, stylized initial "Z".

Zina D. Merritt  
Director  
Defense Capabilities & Management

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# Appendix I: Scope and Methodology

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To determine the extent to which the Department of Defense's (DOD) report on single source of supply risks addresses the direction in the Senate Report, we compared DOD's October 2016 report against the elements identified in the provision of Senate Report 114-49. The provision directed DOD to develop a classified report that addressed the following four elements:

1. Identify major defense acquisition programs with operational implications.
2. Include a list of critical components of such programs provided by single source and single provider suppliers.
3. Identify risk management actions with associated implementation plans and time lines DOD will take to prevent negative operational impact in the event of a loss of such suppliers.
4. Identify severity of the operational impact of the loss of such suppliers.<sup>1</sup>

DOD's report included unclassified information and two classified appendixes listing specific assets, or facilities. We assessed whether the information in DOD's report addressed, partially addressed, or did not address each element. Two GAO analysts independently reviewed DOD's report and discussed and resolved any disagreements regarding their assessments. They also discussed their assessment with a GAO attorney to ensure a common understanding regarding each element.

To obtain information on the process used to develop the report, we reviewed relevant DOD guidance and documents and interviewed officials from DOD's Manufacturing and Industrial Base Policy (MIBP) office and the Defense Contract Management Agency's (DCMA) Industrial Analysis Group. Specifically, we reviewed guidance on supply chain material management, the DOD acquisition system, industrial base capabilities, and the mission assurance program. In our interviews with MIBP and DMCA officials, we discussed the scope of the report, the methodology and data used to generate the information in the report, and their perspectives on how the report and associated information was to be used within the department. In those discussions and through a review of relevant documents and guidance that detail procedures to be followed when collecting and verifying data within the Critical Asset Identification

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<sup>1</sup>S. Rep. No. 114-49, at 40.

Process (CAIP), we assessed the reliability of the data used to generate lists contained in DOD's report. We concluded that the data submitted as part of CAIP by DCMA and the military services to be sufficiently reliable for the purposes of discussing the total numbers of facilities and critical facilities listed in DOD's report. We also met with Joint Staff officials to understand their role in CAIP and their perspectives on DOD's report based on CAIP information from the defense industrial base. We compared Joint Staff-provided data from a database used as part of CAIP against the data contained in DOD's report, and we identified any types of information contained in the Joint Staff database that was not included in DOD's report. We also compared DOD's report and related information and data to relevant criteria in *Standards for Internal Control in the Federal Government*, such as internal control principles related to using quality information and the communication of that information.<sup>2</sup>

To determine the extent to which DOD's weapon systems program offices have information for identifying and managing single source of supply risks, we reviewed DOD and military department guidance related to acquisitions, program management, and risk mitigation, as well as guidance regarding the Diminishing Manufacturing Source and Material Shortages (DMSMS) program. We interviewed, and obtained information from, officials at relevant DOD, military department, and program offices, including MIBP and Office of Supply Chain Integration, DCMA, and the Defense Logistics Agency. We also interviewed DOD's lead for the DMSMS program in the Defense Standardization Program Office. Within the military departments, we interviewed headquarters officials involved in logistics policy and oversight, as well as officials at materiel and sustainment commands. We also interviewed or contacted relevant officials within the DMSMS program from the military departments and defense agencies.

From the population of programs with single source of supply risks identified in DOD's report, we randomly selected nine major program offices from three categories—air, missile, and other types of programs. For the selection, we individually numbered assets listed in DOD's report, assigned them to a category, and then used a random generator to order the numbers. Using the generated number list, we created a list by category of programs corresponding to the numbered assets. From the

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<sup>2</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (September 2014).

random selection, we chose the first three programs with publicly-available information from each military department to ensure we included perspectives from Army, Navy, and Air Force program officials. We interviewed relevant officials in the nine selected offices about their risk identification and management processes.<sup>3</sup> We also interviewed or received responses to submitted questions from each program's higher program executive office on these topics. While not generalizable to all program offices, our discussions with officials from selected program offices provide insights into how they identify and manage risks.

We conducted this performance audit from June 2016 to September 2017 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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<sup>3</sup>The program offices randomly selected are the Army's Abrams tank, night vision equipment, and Javelin missile; the Air Force's A-10 aircraft, F-22 fighter aircraft, and Joint Air-to-Surface Standoff missile; and the Navy's DDG-51 Arleigh Burke Class Destroyer, Triton unmanned aerial vehicle, and AIM-9x Sidewinder missile.

# Appendix II: Comments from the Department of Defense



ACQUISITION,  
TECHNOLOGY,  
AND LOGISTICS

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

Ms. Zina Merritt  
Director, Defense Capabilities and Management  
U.S. Government Accountability Office  
441 G Street, NW  
Washington DC 20548

Dear Ms. Merritt:

This is the Department of Defense (DOD) response to the GAO Draft Report 100699, "DEFENSE SUPPLY CHAIN: DOD Needs Complete Information on Single Sources of Supply to Proactively Manage the Risks," dated September 13, 2017 (GAO Code-17-768).

The Department is providing official written comments for inclusion in the report.

Sincerely,

A handwritten signature in black ink, appearing to read "John G. McGinn".

John G. (Jerry) McGinn, Ph.D.  
Acting Deputy Assistant Secretary  
of Defense for Manufacturing &  
Industrial Base Policy

Attachment

GAO DRAFT REPORT DATED SEPTEMBER, 2017  
GAO-17-768 (GAO CODE 100699)

“DEFENSE SUPPLY CHAIN: DOD NEEDS COMPLETE INFORMATION ON SINGLE  
SOURCES OF SUPPLY TO PROACTIVELY MANAGE THE RISKS”

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATIONS

**RECOMMENDATION 1:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should assess whether risk mitigation actions have been identified in the event of a loss of each TCA facility in the defense industrial base and, based on this assessment, develop risk mitigation actions with associated implementation plans with timelines, and provide this information to congressional and DOD decision makers.

**DOD RESPONSE:** Concur. The Department is already addressing this recommendation in the mission assurance (MA) framework defined in the DOD Instruction 3020.45 and further explained in the DOD Manual 3020.45 V1. This information is provided to DOD decision-makers for necessary mitigation actions and DOD will establish a mechanism to provide to Congress.

**RECOMMENDATION 2:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should provide congressional and DOD decision makers with information on potential effects on defense capabilities in the event of a loss of each TCA facility in the defense industrial base.

**DOD RESPONSE:** Concur. DCMA already reports, through the USD/AT&L to decision makers, information on potential effects of a loss of each TCA facility in the defense industrial base. Loss impact statements for TCA facilities can be accessed in the Strategic Mission Assurance Data System (SMADS), which serves as the Joint Staff mission-assurance data system of record. DOD will establish a mechanism to provide to Congress.

**RECOMMENDATION 3:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should provide congressional and DOD decision-makers information on DOD organic facilities that have been identified as TCAs, similar to the information provided previously on commercial facilities. This information also should include (1) the potential effects on defense capabilities in the event of a loss of the facility and (2) risk mitigation actions with associated implementation plans with timelines.

**DOD RESPONSE:** Concur. DOD already provides decision-makers information on organic facilities that have been identified as TCAs on: (1) the potential effects in the event of a loss of the facility and (2) recommended risk mitigation actions. The Military Departments are the mission- and asset-owners for organic defense industrial base (DIB) facilities and therefore, responsible for identifying organic capabilities that are essential to their missions. This information is available in the SMADS.

**RECOMMENDATION 4:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with DCMA and the military departments, should take steps to share information on risks identified through the annual CAIP with relevant program managers, or other designated service or program officials. At a minimum, relevant officials should receive information on the most critical facilities (such as TCAs) that produce parts supporting their programs. This information-sharing could occur through service-specific channels of communication or another method of internal communication deemed appropriate by DOD.

**DOD RESPONSE:** Concur. The DOD will develop proactive steps to share information on risks identified through the annual CAIP with relevant program managers, or other designated service or program officials as necessary. Communication of DIB risk to stakeholders is addressed in the mission assurance framework as defined by the DOD Instruction 3020.45. The Military Departments have access to SMADS where they can view DIB TCAs that could impact their mission.

**RECOMMENDATION 5:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should develop a mechanism to ensure that program offices obtain information from contractors on single source of supply risks.

**DOD RESPONSE:** Concur. Perhaps modifications to current contractual regulations and the development of policy to authorize program offices to obtain information from contractors on single sources of supply risks will definitely be beneficial.

**RECOMMENDATION 6:** The Under Secretary of Defense for Acquisition, Technology and Logistics, in conjunction with the military departments, should issue department-wide DMSMS policy, such as an instruction, that clearly defines requirements of DMSMS management and details responsibilities and procedures to be followed by program offices to implement the policy.

**DOD RESPONSE:** Concur. The DMSMS Program Manager is working on a department-wide DMSMS policy to be followed by program offices.

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# Appendix III: GAO Contact and Staff Acknowledgments

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## GAO Contact

Zina D. Merritt, 202-512-5257 or [merrittz@gao.gov](mailto:merrittz@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, key contributors to this report were Thomas Gosling, Assistant Director, Rebekah Boone, Joshua Ormond, Suzanne Perkins, Richard Powelson, Michael Shaughnessy, and Andrew Stavisky.

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