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Report to the Secretary of Defense

April 1995

DEFENSE INVENTORY

Extent of Diminishing Manufacturing Sources Problems Still Unknown

GAO/NSIAD-95-85

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-260177

April 21, 1995

The Honorable William J. Perry
The Secretary of Defense

Dear Mr. Secretary:

We have completed our survey of the Department of Defense's (DOD) Diminishing Manufacturing Sources and Material Shortages (DMSMS) program. Our objectives were to determine (1) what progress DOD had made since our 1990 report[1] toward implementing a DMSMS program and (2) whether DOD had determined the cost-effectiveness of the actions taken to resolve DMSMS situations.

DOD has indicated that diminishing manufacturing sources is a major potential problem, particularly in the electronics and microcircuit areas. According to industry sources and DOD officials, because of rapidly changing technology in the electronics and microcircuit industry, decreasing demands due to the downsizing of DOD, and the emphasis on DOD using commercial off-the-shelf items, the private sector is increasingly more sensitive to its commercial customers rather than DOD. As a result, DOD expects the availability of DOD specification items to decrease and the number of DMSMS situations to increase. DOD officials have also asserted that DMSMS situations may affect the availability of parts to DOD in areas other than electronics and microcircuits.

Background

The DMSMS program is intended as a management tool for the early identification and resolution of situations when there is a loss or an impending loss of manufacturers of items or suppliers of raw materials. Such situations can occur when manufacturers and suppliers cease production, discontinue distribution, or move to a foreign country. Additionally, DMSMS situations can be caused by rapidly changing technology and low demand for the items or materials. The loss of item manufacturers and material suppliers can affect weapon systems and equipment during initial design, development, production, and life-cycle support.

When the services are notified that a manufacturer or supplier plans to discontinue production or distribution, they can (1) try to encourage the

[1]Defense Inventory: DOD Could Better Manage Parts With Limited Manufacturing Sources (GAO/NSIAD-90-126, Aug. 16, 1990).

existing source to continue production, (2) try to find another manufacturer or supplier, (3) attempt to identify a substitute item, (4) redesign the system so it does not require the problem part, (5) redefine the military specifications and consider buying the item from commercial sources, or (6) make life-of-type buys.[2] Because the services are often not aware of the discontinuance of an item until the manufacturer has made the decision, the services may be in a reactive mode with limited options for addressing the problem.

An alternative to the reactive mode of operation is a predictive analysis in which the services try to predict which items are likely to be discontinued due to changing technology, declining demands, and other causes. To the extent that the services can anticipate which items may be discontinued, they have more flexibility in designing a course of action to address DMSMS situations.

In our 1990 report, we pointed out that the services had not fully implemented the DMSMS program. At that time, the services were developing program policies and plans, had not developed adequate guidance for computing life-of-type buys, and did not have the data necessary to monitor and measure the effects of DMSMS.

Results in Brief

Data is not collected on a DOD-wide basis concerning what the total number of DMSMS situations were, how the situations were resolved, whether the most cost-effective solutions were selected, or how DMSMS affects the capability of the forces. As a result, the services do not have oversight and monitoring systems that provide quantitative information on the magnitude and extent of the DMSMS problem. According to DOD officials, these systems are still in the planning stage and will not be available for at least a year.

To date, most of the services' DMSMS efforts have been reactive. However, the Navy and, to a lesser extent, the Army have made some progress toward developing predictive analysis systems. These systems, however, do not provide a servicewide approach, and analyses have not been performed to evaluate the cost-effectiveness of the actions taken in response to DMSMS situations. Consequently, DOD does not know whether and under what circumstances a reactive or predictive approach is the preferred course of action for dealing with DMSMS problem parts.

[2]A life-of-type buy is the procurement of sufficient items to meet anticipated demands throughout the system's life or until another solution can be found to resolve the DMSMS situation.

Oversight on DMSMS Is Inadequate

DOD issued regulations in January 1993 requiring each service and the Defense Logistics Agency to designate a focal point for planning and coordinating DMSMS actions. Part of the focal point's responsibility is to ensure a continuous source of supply for parts used in the design, redesign, or production of weapon systems by screening the parts for current and near-term obsolescence (1 year to 5 years). Another key aspect of the regulations is to ensure effective communication and exchange of DMSMS information between industry and the government.

DOD directed the services to use the Government/Industry Data Exchange Program (GIDEP) as the central repository for discontinuance notices so that all affected parties can have access to the information. DOD believed that the new GIDEP database would provide the information needed for oversight and effectively manage the DMSMS program. DOD also directed the establishment of DMSMS management information systems that would show (1) the dollar value of the DMSMS inventory, (2) the number of managed DMSMS items, and (3) the dollar value of life-of-type buys.

In June 1993, the DOD Inspector General, however, issued a memorandum that pointed out that the services continued to have inadequate oversight of the program and had not established mechanisms or developed databases to monitor program effectiveness.

DMSMS Program Development Is Sporadic

The Defense Electronics Supply Center (DESC) has had a management focus on DMSMS since the mid-1970s, and it continues to play a major role in the piece part management of DMSMS. The reason for this is that electronic parts have been most affected by manufacturers' production discontinuances. However, DESC's efforts are primarily reactive in nature in that it notifies the services when it receives a discontinuance notice. DESC then identifies the best alternative for addressing the DMSMS problem to include emulation, flexible computer integrated manufacturing, aftermarket manufacturing, and/or life-of-type buys.

The Air Force, in April 1994, issued draft DMSMS policy guidance and in August 1994 established an Integrated Process Team to determine the magnitude of DMSMS problems in the Air Force. Another objective of the team was to develop requirements for an efficient and cost-effective DMSMS program. The Air Force views this as a necessary first step before committing resources to a program where the seriousness and magnitude of the problem are not known. Air Force officials told us that they expect to receive the team's report about August 1995.

Cost-Effectiveness of a Predictive Analysis Is Not Known

The Navy and the Army have established entities to provide predictive analyses to other service entities to minimize the impact of DMSMS in designing, redesigning, and supporting systems. However, these entities do not provide servicewide coverage for all affected parts. Furthermore, the Navy and the Army do not routinely track the cost-benefit effectiveness of their predictive analyses to demonstrate whether they are more cost-effective than the routine reactive actions being taken in cases where discontinuance notices are received.

The Naval Air Warfare Center and the Surface Warfare Center have a Diminishing Manufacturing Source Technology Center that attempts to predict future obsolescence problems for electronics. According to Navy officials, the Center's predictive analyses cover many of the Navy's major weapon systems but still account for about 70 percent of the total electronic parts used in Navy systems. The Navy provides such analyses to Navy program offices that are willing to fund them.

The Army's Missile Command also performs predictive obsolescence analyses for a limited number of Army program offices. The Command's predictive analyses involve about 8 percent of the electronic parts that are used in Army missile weapon systems.

DOD officials told us that they are studying the feasibility of developing a predictive analysis model that would be owned by DOD and would be available to the services and the Defense Logistics Agency. At the time of our review, the research phase of the feasibility study had just been completed. According to DOD officials, if DOD had its own model, it would not have to depend on private sector contractors for much of the information that the Army and the Navy currently use in performing their predictive analyses. The main reason for the limited predictive analysis efforts in both the Army and the Navy is that the program offices have to pay for the predictive analyses and that many program offices rely on the manufacturers to advise them of emerging material shortages or plans to diminish manufacturing efforts, rather than spend their funds on predictive analyses.

From a theoretical perspective, predictive analyses should aid DOD and the services in minimizing the impact of DMSMS situations. However, the service entities engaged in predictive analyses have not clearly demonstrated on a wide-ranging basis that predictive analyses are a cost-effective way of dealing with DMSMS problems.

We held discussions with service entities who do predictive analyses and several manufacturers about the cost-effectiveness of such analyses. The Navy's Technology Center has tracked the cost avoidances achieved by predictive analyses, and it could only identify 10 such examples. In total, these examples accounted for about $8 million in cost avoidances over an 18-month period. In addition, GIDEP identified cost avoidances of about $7.2 million in 1993. These cost avoidances, however, were not related to predictive analyses but rather to savings as a result of GIDEP notifying users of the discontinuance of certain electronic and microcircuit items.

Recommendations

Because DOD does not have information on the extent of DMSMS problems in DOD and does not know whether predictive analyses are a cost-effective means to address DMSMS problems, DOD cannot make an accurate assessment of the current DMSMS actions being taken or planned. Before DOD makes any decisions concerning the future scope of the DMSMS program or the need for additional program funds, we recommend that the Secretary of Defense ensure that, at a minimum, DOD has

- quantitative data on the extent of the DMSMS problem,
- information to determine the effectiveness of ongoing and planned actions for minimizing the impact of DMSMS, and
- supporting analyses for the cost-effectiveness of DMSMS predictive analyses versus other alternatives for dealing with DMSMS problems.

Agency Comments

In commenting on a draft of this report, DOD generally concurred with the report and its recommendations. DOD said that it recognized the need to improve service oversight of DMSMS and indicated that in conjunction with GIDEP, it and the services were working to develop a database that will collect information on the number of stock numbers and manufacturer part numbers that are being discontinued. Information will also be collected on which alternative was used to address the discontinuance problem.

DOD said that, by April 30, 1995, it will prepare a memorandum to the services and the Defense Logistics Agency that emphasizes the need to collect cost data associated with handling DMSMS problems and to report the data to GIDEP. DOD also said that it recognizes the need to identify and retain data on the cost-effectiveness of predictive analyses. As such, it will prepare a memorandum to the services, by April 30, 1995, emphasizing the need to routinely track the cost-effectiveness of their predictive analyses

to demonstrate whether they are more cost-effective than the routine reactive approaches that are now being taken. DOD comments are presented in their entirety in appendix I.

Scope and Methodology

We reviewed DOD and the services' policies and procedures for managing DMSMS and met with DOD and service officials to understand how the policies and procedures are implemented. We obtained and reviewed studies, reports, and documentation that addressed the DMSMS problem and various actions being taken and planned by government and industry to deal with the problem.

To determine how DMSMS was being managed, we visited the Defense Electronic Supply Center, the Navy's DMSMS Technology Center, the Air Force Materiel Command, the U.S. Army Tank-Automotive and Armaments Command, and the U.S. Army Missile Command. We also interviewed officials from Army, Navy, and Air Force inventory control points, engineering activities, and Army and Navy program offices. We also held telephone interviews with representatives from GIDEP and private sector companies who sell electronic components and/or build weapon systems and components for DOD and the services.

At these organizations, we discussed the pros and cons of using a predictive analysis versus reacting to the problem after it happens. We also asked for examples that showed the cost-effectiveness of the DMSMS actions being taken or planned.

Our review was conducted from August 1994 to January 1995 in accordance with generally accepted government auditing standards.

As you know, the head of a federal agency is required by 31 U.S.C. 720 to submit a written statement on actions taken on our recommendations to the House Committee on Government Reform and Oversight and the Senate Committee on Governmental Affairs not later than 60 days after the date of this report. A written statement must also be submitted to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are also sending copies of this report to the Chairmen and Ranking Minority Members, House and Senate Committees on Appropriations,

House Committee on National Security, Senate Committee on Armed Services, Senate Committee on Governmental Affairs, House Committee on Government Reform and Oversight; the Secretaries of the Army, Navy, and Air Force; and the Directors, Defense Logistics Agency and Office of Management and Budget.

If you or members of your staff have any questions or would like to discuss the matters in this report in further detail, please call me at (202)512-5140. Other major contributors to this report are Robert J. Lane, Gilbert W. Kruper, and Michael J. Jones.

Sincerely yours,

Mark E. Gebicke
Director, Military Operations
and Capabilities Issues

Comments From the Department of Defense

ACQUISITION AND TECHNOLOGY

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
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30 MAR 1995

(L/MDM)

Mr. Henry L. Hinton, Jr.
Assistant Comptroller General
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Hinton:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "DEFENSE INVENTORY: Extent of Diminishing Manufacturing Sources Problems Still Unknown," dated February 8, 1995 (GAO Code 703076, OSD Case 9860). The DoD generally concurs with the report.

The Department recognizes the need to improve Service oversight of the Diminishing Manufacturing Sources and Material Shortages (DMSMS) Program. The Defense Electronics Supply Center (DESC) has had a formal DMSMS program since 1975. The role of the DESC is to ensure on-going support of weapon systems by selecting the most cost effective alternatives.

The DESC takes a proactive role through its parts control program by reviewing parts lists for new or modified systems to ensure that discontinued or obsolete parts are not included. However, the DESC is in a reactive mode in responding to contractor's notices and reviewing existing systems for impact. Forecasting the demise of technologies has only limited value, using current predictive technology. However, the DoD recognizes there may be benefits to predictive analyses within specific applications. As the technology for prediction capability improves, there may be more application for its use at the DESC.

The Department also concurs with the GAO draft report recommendations. Actions are currently underway or planned that will improve the DMSMS Program data collection and track cost avoidance savings associated with program actions.

The DoD detailed comments on the GAO recommendations are provided in the Enclosure. The Department appreciates the opportunity to comment on the draft report.

Sincerely,

James R. Klugh
Deputy Under Secretary
of Defense (Logistics)

Enclosure

Now on p. 5.

**GAO DRAFT REPORT - - DATED FEBRUARY 8, 1995
(GAO CODE 703076) OSD CASE 9860**

"DEFENSE INVENTORY: EXTENT OF DIMINISHING MANUFACTURING SOURCES PROBLEMS STILL UNKNOWN"

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DEPARTMENT OF DEFENSE COMMENTS ON THE GAO RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense ensure that, at a minimum, the DoD has quantitative data on the extent of the Diminishing Manufacturing Sources and Material Shortages (DMSMS) program. (p. 7/GAO Draft Report)

DOD RESPONSE: Concur. The DoD Diminishing Manufacturing Sources and Material Shortages (DMSMS) Working Group is developing a DoD DMSMS data base, in conjunction with the Government/Industry Data Exchange Program (GIDEP). The data base should be established by October 1, 1995, and will provide usage and oversight information on the DMSMS Program. In addition, the DoD DMSMS Working Group has developed a set of program indicators that are being reviewed by the Services and the Defense Logistics Agency (DLA). The Air Force has included the indicators in the Air Force Materiel Command Instruction 23-103, "Diminishing Manufacturing Sources and Materiel Shortages (DMSMS) Program," dated September 30, 1994. The DLA and the Army have agreed with the indicators and it is anticipated that the Navy will provide its concurrence by April 30, 1995.

The cost to collect the data versus the benefits of collecting the data is an issue. Instructions contained in DoD Directive 8910.1, "Management and Control of Information Requirements," dated June 11, 1993, are being followed. The DoD will resolve the cost issue by the fourth quarter of 1995. The intent of the indicators is to collect information on the number of national stock numbers or manufacturer part numbers received as a result of discontinuance notices or alerts and track which of eight possible solutions was selected. The collection of that data, in addition to the development and use of the DMSMS data base, will assist the Services in their oversight of the program.

Enclosure

Now on p. 5.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense ensure that, at a minimum, the DoD has information to determine the effectiveness of on-going and planned actions for minimizing the impact of the DMSMS program. (p. 7/GAO Draft Report)

DOD RESPONSE: Concur. The Government/Industry Data Exchange Program (GIDEP) is the vehicle used to disseminate discontinuance notices to both industry and the Government. Industry reacts to the GIDEP notices by removing parts no longer procurable for new designs and major modifications. This action precludes the need for redesign. Industry reports their redesign cost avoidance to the GIDEP. The Services and the DLA do not routinely capture and retain information on redesign cost avoidance. However, by April 30, 1995, the Office of the Secretary of Defense (OSD) will issue a memorandum to the Services and the DLA emphasizing the need to collect cost avoidance data associated with their handling of DMSMS cases. The memorandum will also instruct the Services and the DLA to report the savings through the GIDEP Annual Utilization Report.

Now on p. 5.

RECOMMENDATION 3: The GAO recommended that the Secretary of Defense ensure that, at a minimum, the DoD has supporting analysis for the cost-effectiveness of the DMSMS program predictive analyses versus other alternatives for dealing with DMSMS problems. (p. 7/GAO Draft Report)

DOD RESPONSE: Concur. The DoD recognizes the need to identify and retain the cost-effectiveness of predictive analyses. As the GAO mentioned in the report, the Navy Technology Center is tracking cost avoidances associated with predictive analyses and has identified $8.4 million in savings over an 18-month period. The DMSMS point of contact at the Army Missile Command is planning to collect cost avoidance savings once use of the new predictive analysis tool begins. The DoD recognizes that predictive analysis efforts are limited because program offices have to pay for the predictive analyses and that many program offices rely on the manufacturers to advise them of emerging material shortages, rather than spend their funds on the analyses. Accordingly, the Navy has awarded two contracts to study the feasibility of developing a DoD wide predictive analysis capability. The two contracts were awarded to Transition Analysis of Component Technology, Inc. on May 9, 1994, and to Stottler Henke Associates, Inc. on April 13, 1994. If

these efforts are successful, they will serve to increase the availability and use of predictive analyses by all the Services. In addition, by April 30, 1995, the OSD will issue a memorandum to the Services emphasizing the need to routinely track the cost-benefit effectiveness of their predictive analyses versus routine reactive actions.

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