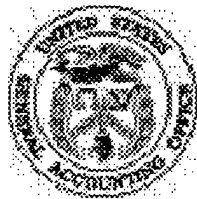


April 1999

DEFENSE INVENTORY

DOD Could Improve Total Asset Visibility Initiative With Results Act Framework



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**National Security and
International Affairs Division**

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April 12, 1999

The Honorable Christopher Shays
Chairman
The Honorable Rod R. Blagojevich
Ranking Minority Member
Subcommittee on National Security, Veterans Affairs, and
International Relations
Committee on Government Reform
House of Representatives

During Operations Desert Shield and Desert Storm the logistics pipeline was clogged by thousands of duplicate requisitions and inadequately identified cargo containers. Logisticians could not find information about the status of requisitions, and the contents of over half the 40,000 large containers of equipment shipped in theater could not be readily identified. As a result, the logistics presence was much larger than was needed; according to the Army Assistant Deputy Chief of Staff for Logistics, better asset tracking could have saved \$2 billion. In response to this problem, the Department of Defense (DOD) renewed its emphasis on implementing the Total Asset Visibility (TAV) initiative¹ for tracking equipment, supplies, and spare parts as well as requisitions on a continuous basis.

DOD expects the TAV initiative to (1) resolve wartime logistics management problems encountered in Operations Desert Shield and Desert Storm and (2) improve its inventory management by supporting transfers of assets within and across components. The initiative is to cover all DOD assets—including secondary inventory² and ammunition—that are in storage, in processing, and in transit, along with accurate information on the status of requisitions. The TAV initiative is expected to access information from over 100 component logistics systems, including component TAV systems such as the Army TAV, which are supplied data from many other lower level systems. Although several target dates for implementing TAV have been missed, DOD now expects to have timely and

¹In commenting on a draft of this report, DOD officials stated that TAV has been referred to as a program for convenience. In view of DOD's comments, we modified our report to describe TAV as an initiative, although TAV is described as a program in DOD's Government Performance and Results Act Performance Plan for fiscal year 2000 in the Secretary of Defense 1999 Annual Report to the President and the Congress.

²Secondary inventory includes spare parts, clothing, and medical supplies to support DOD operating forces worldwide.

accurate intraservice and interservice information on and access to 90 percent of its assets by 2000 and 100 percent of its assets by 2004.

As your Subcommittee requested, we reviewed DOD's implementation of its TAV initiative. This review is one in a series that we are doing to address high-risk inventory management problems at DOD.³ Specifically, this report discusses (1) the difficulty in determining the status of the initiative's implementation, (2) planning weaknesses that affect the initiative's implementation, and (3) strategies for addressing those weaknesses.

Results in Brief

DOD lacks an adequate Departmentwide management framework for providing information to clearly determine the progress made in realizing TAV initiative goals. While some component and theater-specific asset tracking capabilities are reported to be operating, Departmentwide information on progress in achieving TAV initiative goals is minimal. Consequently, although implementing improved asset visibility is a high priority objective, DOD cannot clearly understand the extent to which it is achieving the objectives of having timely, accurate information on requisitions and assets and access to DOD assets.

Along with the unclear picture of the initiative's status, planning is inadequate at the strategic and implementation levels. DOD does not have a Departmentwide TAV strategic plan to show how the various TAV initiatives contribute to DOD's goals for the initiative. Additionally, while DOD has an implementation plan, the plan has a number of key weaknesses. It does not describe how TAV will be integrated into Department work processes to realize the goals set for the TAV initiative. As a result, there is confusion over who is to use TAV and how it is to be used. At some locations the system is being installed but not used, according to a component manager. The plan also does not identify needed resources and does not address Departmentwide problems with systems that are critical to the successful implementation of the TAV initiative.

³In 1990, we began a special effort to review and report on the federal program areas that we identified as high risk because of vulnerabilities to waste, fraud, abuse, and mismanagement. This effort, which was supported by the Senate Committee on Government Affairs and the House Committee on Government Reform, brought a much-needed focus to problems that were costing the government billions of dollars. We identified DOD inventory management as high risk in our 1992, 1995, 1997, and 1999 high-risk reports.

The initiative's implementation problems have largely resulted from long-standing management issues that have hindered other major management initiatives. These issues include cultural resistance to change, service parochialism, the lack of outcome-oriented goals and performance measures, and the lack of management accountability. Resistance to changing from reliance on just-in-case inventory approaches to reliance on just-in-time inventory is a significant challenge for DOD in its approach to inventory management. This new way of doing business requires timely and accurate information about quantities and locations of items and a willingness by the item holders to transfer them to meet the priority needs of others.

To improve Department management and implementation of the TAV initiative, we are recommending that the Secretary of Defense develop a Departmentwide strategic plan and associated component implementation plans that would be based on the outcome-oriented principles of the Government Performance and Results Act of 1993 (the Results Act) and the Clinger-Cohen Act of 1996.

Background

The Deputy Under Secretary of Defense (Logistics) is responsible for the Departmentwide TAV initiative, and the Director, Defense Logistics Agency (DLA), is charged as Executive Agent to coordinate asset tracking initiatives across the services and DOD.⁴ The 1996 DOD-wide TAV implementation plan used for implementing TAV sets out initiative goals such as providing the capability to identify the location and status of assets and requisitions Departmentwide. The Joint TAV Office is responsible for providing useful data on assets to customers across the services. Two service components have formal TAV programs (the Army and the Navy), and other components are working to support the Departmentwide TAV initiative. (See app. III for detailed information on the roles and efforts of TAV offices.)

TAV has been cited in several Department planning documents as a critical initiative for improving logistics. The TAV initiative is cited as a requirement for satisfying the needs of logistics customers and fundamental to realizing the logistics vision in the 1998 DOD Logistics Strategic Plan. The TAV initiative is cited in DOD's Quadrennial Defense

⁴DLA's role as Executive Agent was transferred from the Army Deputy Chief of Staff for Logistics on June 1, 1998.

Review report for supporting logistics improvements. It is also referred to in the 1997 Defense Reform Initiative Report as committing DOD to provide total visibility of equipment, supplies, and spare parts on a continuous basis. In asset management plans, such as DOD's 1998 Logistics Strategic Plan and in Joint Vision 2010 (DOD's blueprint for future joint operations), TAV is identified as an enabling technology to support deployable supply and maintenance information systems. The TAV initiative is also prominent in DOD's 1998 Annual Report to the President and the Congress, and the Results Act Performance Plan in the 1999 Annual Report sets a goal of 90-percent visibility of and access to DOD materiel assets by 2000 while resupplying deployed troops and, at the same time, reducing the average order to receipt time of assets by 50 percent. This plan is required by the Results Act, which states that agencies' performance plans should generally include (1) performance goals; (2) an expression of the goals in an objective, quantifiable, and measurable form; (3) a description of the operational processes, skills, and technology and the resources required; (4) performance indicators; (5) a basis for comparing actual results with the performance goals; and (6) a description of the means used to verify and validate measured values.

Initiative Status in Realizing TAV Goals is Not Clear

While DOD has established some general measures for determining the status of TAV implementation, these measures do not account for critical elements needed to realize most TAV initiative goals. Additionally, the established measures are vague and provide only general indicators of the progress that is being made. Further, data collected for those measures that were established have a number of weaknesses and are likely not good indicators of progress toward meeting Department goals set for TAV. As a consequence there is insufficient data to precisely determine the status of the TAV initiative's progress toward meeting its Departmentwide goals.

The current overall goals of the TAV initiative are to provide (1) timely and accurate information on the location, condition, and identity of equipment and supplies at any point from asset origin to final destination, as well as the location of military personnel and units, and (2) the ability to use this information to improve the Department's logistics practices. To accomplish these high-level Departmentwide goals, the 1996 TAV implementation plan sets forth a number of areas TAV needed to address, including (1) the tracking of requisitions; (2) the ability to locate assets in process, in storage, and in transit; and (3) improvement to logistics management within theaters of operation. However, the plan did not identify specific ways to measure the progress being made or to determine

the status of efforts to realize the overall TAV goals and the areas that needed to be addressed.

Current Department baselines for assessing the status of the TAV initiative meeting Department goals do not account for the full range of targets defined in the 1996 TAV implementation plan. For the TAV initiative, DOD is not, on a Departmentwide basis, measuring progress or determining the status of most of the areas the 1996 TAV implementation plan was to address; areas not measured include the tracking of requisitions, assets in process and in transit, and the improvement of logistics management within theaters of operation. However, DOD officials have stated that progress was being made in these areas. Also, for the TAV initiative on a Departmentwide basis, DOD has reported that inventory managers were able to track 94 percent of their secondary inventories in storage and had the capability to access 80 percent of those assets. These results were reported as a National Performance Review (NPR) performance indicator to support streamlining the DOD infrastructure in DOD's Results Act Performance Plan for fiscal year 2000. However, these measures not only exclude those inventories in process and in transit (stated goals of the TAV initiative) but also do not account for critical initiative elements such as the timeliness and accuracy of the data. Components are also inconsistent in setting baselines for measuring progress toward improving the management of assets in storage. Components defined their own baselines by selecting in-storage inventories for measuring progress toward realizing TAV goals, and the in-storage inventories they selected varied by component, which made overall measurement of progress meaningless. For example, contrary to Department TAV goals, major quantities of in-storage inventory handled by weapons system managers were not included in one component's computation.

While the Department could provide examples of activities that supported TAV initiative goals and objectives, it was unable to aggregate component results in measures that show progress toward meeting TAV initiative goals. For example, DOD officials recognized that providing inventory managers the capability to redistribute assets using the TAV system was more important than only tracking assets, and components had examples of how they had redistributed some assets using TAV. However, there were no measures of how the TAV system was being used to support asset redistributions, and components lacked such measures. Agency officials stated that each component has the capability to redistribute assets within its own component and that the components were working jointly to use TAV to move toward redistributing assets across components. However,

agency officials could not provide reports or information indicating how TAV system benefits were being measured or reported within components.

Weaknesses in Planning Have Hindered TAV Implementation

Prior DOD efforts designed to achieve TAV have not been realized, and the TAV initiative continues to experience delays. Planning for the TAV initiative was inadequate at both the strategic and implementation levels. DOD did not develop a strategic plan for the TAV initiative, and although two implementation plans have been developed, with the most current being approved in 1996, they do not address all the planning elements that are necessary for ensuring the timely completion of the TAV initiative. DOD recognized the need for a TAV strategic plan and issued a Joint TAV strategic plan dated January 1999. However, the plan focuses only on TAV information-sharing within theaters of operation rather than on ensuring that components are meeting Department goals set for the TAV initiative, such as reducing the logistics presence in theaters of operation and inventory levels in component supply depots. Since a Departmentwide strategic plan did not exist at the time of our review, we focused our review of planning efforts on DOD's 1996 implementation plan.

DOD Did Not Realize Its Goals in Prior TAV Efforts

The TAV initiative has evolved from other DOD attempts to improve visibility over its assets, in recognition that such visibility is the foundation for improving inventory management and other logistics functions. In 1972, DOD set a goal to improve visibility over its inventories by 1980, but it did not achieve that goal. Later, during the Persian Gulf War, DOD's problems with inventory management were highlighted when thousands of duplicate orders were placed because operational units had inadequate visibility over the status of their requisitions, and large amounts of material shipped to the theater were unavailable to U.S. forces because the location of the material was unknown. As a result of the Persian Gulf War logistics problems, in 1992 DOD again started developing an initiative to improve asset visibility. This initiative's goal was to have total asset visibility by 1995, but this attempt was also unsuccessful. A new plan to realize TAV was started in 1995; the plan was approved by the Under Secretary of Defense (Acquisition and Technology) in May 1996. See appendix IV for a list of Department attempts to improve asset visibility since 1972.

Implementation Plan Lacks Key Elements

The implementation plan approved in 1996 is not a broadly focused Departmentwide plan for the TAV initiative. This most current

DOD Lacks a Plan for Guiding
the Integration of TAV Into Work
Processes

implementation plan does not address the integration of TAV in component work processes, describe resource requirements, or describe how systems issues will be addressed.

Critical elements describing how the TAV initiative will be used are lacking in the TAV implementation plan. The TAV plan does not set forth how the system will be used by the components in their day-to-day work processes, financial reporting, and the sharing of assets among commands and components.

The TAV implementation plan does not describe how the TAV system will be integrated into components' work processes to support DOD's inventory management improvement targets, such as reducing inventory levels and minimizing the logistics presence in theaters of operation by providing more accurate information about inventory levels. Component TAV officials expressed concern that the 1996 TAV plan does not satisfactorily define users or user requirements and does not describe why users need the system to include the information. For example, one component official stated that the TAV capability was installed at some sites to support theater operations, but it was not clear how the system was to be used after it had been installed. As a result, according to this official, the capability was not used. Component managers also stated that the plan should clearly define the information that is to be made available to the user, why the information is needed, how it should be used, and how often it should be updated. Further, personnel at the March 1998 TAV users' conference stated that DOD needs to develop user requirements, clarify those requirements, and tie those requirements to the data that is being requested from the components.

The plan also does not set forth how TAV systems will integrate with and/or support other management information systems, such as financial management systems and reporting. Accurate reporting of inventory assets has been a long-standing problem for DOD, and data from TAV systems could be used to support reporting systems in the Department. DOD will overlook an opportunity to address financial reporting requirements if it implements a TAV system without addressing financial reporting requirements, such as accounting for assets on ships.⁵ Aligning

⁵Navy Financial Management: Improved Management of Operating Materials and Supplies Could Yield Significant Savings (GAO/AIMD-96-94, Aug. 16, 1996) and Financial Reporting: DOD's Fiscal Year 1996 Financial Statements Inventory Reporting Does Not Meet Standards (GAO/AIMD-98-16, Dec. 24, 1997).

financial systems is required and a critical element in accounting for operating material and supplies. Such requirements have not been defined in the current TAV plan, nor have they been agreed to by components.

Further, the plan does not set forth how TAV systems would be used to support the sharing of assets within component commands and/or among components, even though asset sharing is an overall goal of the initiative. Some supporting component systems have been aligned to support limited asset transfers among components, and a procedure for managing reparable item transfers has been approved by relevant DOD organizations. However, DOD components have not made all componentwide system changes necessary so that TAV will support the improved management of all inventory items, including ammunition and medical supplies, and they had no clear time line for making those changes.

Resource Requirements Are Not Identified

The implementation plan does not provide an overall estimate of the funding necessary to accomplish TAV-related projects. Funding for the TAV initiative is contained in the components' and the Joint TAV Office's budgets. However, there is no estimate of the total resources expended thus far or future funding requirements. Without an estimate of required funding, it is impossible for DOD to determine the priority the components are giving to TAV requirements or how those requirements rank in relation to other funding priorities within the components' budgets.

According to agency officials, the components were giving important TAV-related work (such as maintenance on systems that support TAV) lower priority than other competing initiatives within components. For example, components are responsible for ensuring that information on their assets at lower level inventory sites is timely and accurate and that appropriate changes are made to systems to enable the provision of asset information to the TAV system. According to the Department's TAV implementation plan, this requirement was originally scheduled to be met by March 1997; however, the completion date of this important element of TAV is currently not clear. Although some systems maintenance, such as Year 2000 concerns, merits a high priority in Department resource allocations, component officials stated that funding commitments have slipped because component commands gave a lower priority to needed TAV system modifications, thus delaying the input of information into the TAV system. While these decisions may well have been appropriate, DOD managers lacked the information to understand how these priority decisions would ultimately affect TAV implementation. According to one component official, unless funds are provided specifically to support each

component's part in the TAV initiative, the Departmentwide TAV effort may fail because the components are giving funding priority to their own initiatives.

Departmentwide Systems Issues Are Not Addressed

The 1996 TAV implementation plan does not address how several key Departmentwide systems issues will be addressed as they relate to the TAV initiative. These issues relate to data quality, systems security, and the Year 2000 problem.⁶ While we recognize that responsibility for resolving these issues is outside of the TAV initiative management's responsibility (which is monitoring progress with Departmentwide TAV requirements and coordinating action with relevant components), we believe the plan should indicate how DOD will address problems that can affect the success of the initiative.

The 1996 TAV implementation plan describes data integrity as critical to the success of the initiative. The Defense In-transit Visibility Integration Plan, a part of the TAV initiative, also describes data quality and timeliness as a challenge in providing adequate information on in-transit assets. Data quality problems remain unresolved in TAV supporting systems. At a March 1998 TAV conference, TAV users reported that they lacked confidence in TAV data and recommended that Departmentwide TAV managers develop procedures to measure data accuracy and to provide such procedures to TAV users. Department TAV officials said that while they were considering the development of a data quality monitoring process, they would continue to rely on the components to ensure that data is of sufficient quality for TAV system users. Only the Army had implemented a data quality monitoring process for its TAV data sources, in response to concerns raised by users of Army asset data. Improving data quality is particularly important to TAV initiative users because they will be relying on this data to redistribute assets from one location to another. Departmentwide and component TAV initiatives were to be supplied data from many component logistics systems from worldwide DOD locations.

Security is another major issue for TAV users and data providers. We reported previously that DOD information indicated that hackers had gained access to its computer systems in 65 percent of 250,000 hacker

⁶The Year 2000 computer systems problem results from the inability of computer programs to interpret the correct century at the Year 2000 from a date that has only the last two digits to indicate the year.

attacks in 1995.⁷ These attacks included logistics systems that feed data to TAV systems. While DOD has taken some steps to address problems with systems security, its 1996 TAV plan does not include an approach or strategy for protecting computer systems that could be vulnerable to data loss, destruction, or unwanted browsing. The TAV system uses approaches that have known vulnerabilities, such as Internet-based applications. Users and TAV initiative managers have expressed concerns about possible breaches to security in TAV systems. Through security breaches, unauthorized users could gain access to critical aspects of component activities such as the type, quantity, and condition of weapon systems and ammunition in component locations. Moreover, DOD has not defined in its plan what information will be classified or how it will be restricted from unauthorized users. While we believe that creation of a systems security initiative only for TAV would not be appropriate, TAV plans should describe how components such as the Defense Information Systems Agency will address and resolve these TAV-related security problems and provide time frames for addressing and resolving them.

Agency officials have stated that the Year 2000 problem is serious, and they agreed that the problem is not addressed in TAV plans. For one element of the TAV initiative—the Joint TAV initiative—DOD developed a draft Joint TAV Year 2000 Contingency Plan dated January 29, 1999. However, the plan does not provide assurance that interim plans have been developed in the event of a problem with critical systems. For example, the plan states that Army TAV is the only TAV source for information on Army retail stocks; however, the plan does not describe any alternative plans for obtaining information on Army retail stocks. We have reported that interim plans are particularly important if an initiative such as TAV depends on the successful operation of other systems.⁸ The TAV system will access information from over 100 component logistics systems, which are built on many other lower-level systems. If a number of these systems were disabled by Year 2000 problems, the scope of information available in the TAV system could be dramatically affected. For example, according to an Air Force official, if the two automated systems containing most of the Air Force's asset information were to cease operations, the Air Force would still be able to track its assets through its lower level systems, but the TAV

⁷Information Security: Computer Attacks at Department of Defense Pose Increasing Risks (GAO/AIMD-96-84, May 22, 1996).

⁸Logistics Planning: Opportunities for Enhancing DOD's Logistics Strategic Plan (GAO/NSIAD-97-28, Dec. 18, 1996).

system would lose track of the assets. Air Force supply inventories were valued at over \$27 billion as of September 30, 1997.⁹

In prior work, we have reported that DOD lacks key management and oversight controls to enforce good management practices, direct resources, and establish a complete picture of its progress with fixing systems. We have also pointed out that DOD lacks assurance that components will be prepared should their systems miss the Year 2000 deadline or fail unexpectedly in operations.¹⁰ While DOD has since taken action to better address the Year 2000 challenge, the TAV implementation plan does not describe how the initiative will ensure that component systems will be Year 2000 compliant and describe alternatives for operating the TAV system in the event of a component system failure.

Strategies for Addressing Initiative Weaknesses

Our prior high-risk reports indicate that key underlying causes of inventory management problems have not been effectively addressed in the past. These causes include cultural resistance to change and service parochialism, the lack of outcome-oriented goals and performance measures, and the lack of management accountability for correcting problems and for following through to confirm performance results. These problems are the underlying causes of the TAV initiative management weaknesses. The Results Act offers a model for responding to the serious systemic challenges to realizing the goals that DOD set for the TAV initiative. The act provides DOD a framework for management that includes developing clear goals and performance measures for the TAV initiative that would show components' progress in realizing the culture changes necessary to support TAV goals. Components' involvement in a Departmentwide TAV strategic plan, along with measures to determine components' support for initiative goals, should improve accountability and cause components to better work together to meet the TAV initiative goals. The Clinger-Cohen Act, which emphasizes the need to analyze information technology investments, can also help the Department to assess whether TAV technology investments are commensurate with the benefits that will be gained.

⁹DOD's Materiel and Distribution Management Fact Book (fiscal year 1997).

¹⁰Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, Apr. 30, 1998).

Resistance to Change Limits Progress

As we noted in a prior report describing attempts to make Departmentwide changes in asset management practices,¹¹ cultural resistance to change and service parochialism have contributed to the difficulty of implementing corrective actions to improve DOD systems that are at risk. We pointed out that DOD believed that it was better to overbuy items (just in case) than to manage with the amount of stock needed (just in time). As a result of this attitude and other inventory management weaknesses, DOD has acquired and held too much inventory. This resistance, along with a reluctance to share assets across components and a lack of an appropriate system infrastructure to support and track such transfers, is a major cause of DOD's problems in realizing its Departmentwide TAV initiative goals.

Initiative and component managers cited the lack of willingness to transfer assets across the Department as a major obstacle to improving inventory management practices. They noted that this problem had led to conflicts about the sharing of data and providing funding to ensure that quality data was supplied to the Departmentwide TAV initiative. According to TAV representatives, components have been reluctant to transfer assets to the maximum extent and to make necessary policy and system changes because they had purchased assets with their funds, and their managers perceive such assets as belonging to the purchasing DOD component rather than the Department as a whole.

In prior work, we obtained views from experts in the academic field and officials from nine large private sector companies that were concerned about inventory management.¹² These experts indicated that a combination of many techniques is needed to bring about successful cultural change, but two are of prime importance. These techniques are (1) top management's commitment and support for desired values and beliefs and (2) training to convey desired values and beliefs and develop the skills needed to implement them. The TAV implementation plan does not describe how these elements will be addressed to achieve the needed changes. In addition, developing and implementing appropriate performance measures as a means to support needed cultural change, such as the dollar values of interdepartmental asset transfers, would create the

¹¹Organizational Culture: Use of Training to Help Change DOD Inventory Management Culture (GAO/NSIAD-94-193, Aug. 30, 1994).

¹²Organizational Culture: Techniques Companies Use to Perpetuate or Change Beliefs and Values (GAO/NSIAD-92-105, Feb. 27, 1992).

needed framework for tracking progress in diminishing components' parochialism.

Results Act and Clinger-Cohen Act Can Provide a Useful Management Framework for Change

DOD recognized that it was crucial to have outcome-oriented strategic and performance plans to guide implementation of the TAV initiative and help overcome major inventory management problems. In its 1998 Logistics Strategic Plan, the Deputy Under Secretary of Defense (Logistics) stated that executive agents and related components must develop and submit strategic and supporting plans for logistics areas under their responsibility and that the plans' content and format were to be governed by Results Act provisions. However, this has not yet been accomplished for the TAV initiative. DOD lacks a Departmentwide strategic plan with clear, outcome-oriented goals and performance measures to guide implementation of the TAV initiative.

The 1998 Logistics Strategic Plan guidance required that executive agents develop plans to include actions to be taken, completion dates, and resource requirements to satisfy Results Act requirements. These principles reflect the outcome-oriented principles of the Results Act, which the Congress anticipated would be institutionalized and practiced at all organizational levels in federal agencies. Outcome-oriented principles include (1) establishing broad general initiative goals and quantifiable, measurable, outcome-oriented performance goals and related measures; (2) developing strategies for achieving the goals, including strategies for overcoming or mitigating major impediments to goal achievement; (3) ensuring that goals at lower organizational levels align with and support broad initiative goals; and (4) identifying the resources that will be required to achieve goals. Such an approach could determine component progress with culture change by measuring inter-component asset sharing. Such an approach could also mitigate component parochialism and make the best use of Department resources.

DOD does not routinely link its performance measures to specific organizational units or individuals that have sufficient flexibility, discretion, and authority to accomplish desired results. In commenting on a draft of this report, DOD stated that TAV should not be managed as a stand-alone initiative. This position is inconsistent with its descriptions of the TAV initiative in DOD documents such as its Results Act reports to the President and the Congress, the 1998 Logistics Strategic Plan, and the Defense Reform Initiative. Furthermore, such a position has resulted in little centralized direction to move components toward meeting

Department goals set for the TAV initiative. We found no outcome-oriented goals or performance measures assigned to specific components to measure their progress in using the TAV capability. The lack of performance measures deters accountability for components. Improved accountability would help guarantee that component efforts remain focused on supporting Department goals set for the TAV initiative.

Without clear, hierarchically linked goals and performance measures that are supported by components, DOD cannot adequately motivate components to better work together to meet Departmentwide TAV goals. We found, for example, that components were developing and implementing their own TAV capabilities, but they believed that they owned the assets, and they would remain reluctant to transfer assets to other components unless DOD transferred ownership to a central DOD authority. The Results Act, with its strategic planning and reporting requirements, provides a framework for improving the management of the TAV initiative. Considering the significance of DOD's problems in improving its asset management through the TAV initiative, we believe modeling TAV planning against Results Act requirements would improve the chances of successful implementation of the initiative.

Furthermore, TAV initiative component accountability and performance would be improved by following Clinger-Cohen Act elements calling for investment analyses that focus on Department goals set for the TAV initiative. Although the TAV implementation plan states that an economic analysis of initiative costs and benefits would be done, the TAV initiative lacked investment analyses that are needed to support financial decisions and establish performance goals for investing in the TAV initiative. The Clinger-Cohen Act of 1996 requires performance-based and results-oriented decision-making for all major investments in information technology. The act requires agencies to establish goals for improving efficiency through the effective use of information technology and to develop performance measures to assess how well information technology investments support agency initiatives. The act also requires that major systems development initiatives have investment analyses.

Conclusions

It is uncertain whether DOD will ultimately achieve its TAV initiative goals. While DOD has achieved some successes through its current effort, it has minimal information for assessing the initiative's status overall, and the effort is weakened by inadequate strategic and implementation planning. Many of the initiative's problems have resulted from long-standing

management challenges that DOD encounters as it works to implement new initiatives that span components. These challenges include cultural resistance to change and service parochialism, the lack of outcome-oriented goals and performance measures, and the lack of management accountability. The Results Act and the Clinger-Cohen Act provide effective guidance for developing clear goals and performance measures that are linked to and supported by components and would allow DOD to address these challenges. Such an approach is also required in DOD's 1998 Logistics Strategic Plan for initiatives such as TAV.

Recommendations

We recommend that the Secretary of Defense direct that actions be taken to develop a Departmentwide TAV strategic plan and associated component implementation plans based on the outcome-oriented management principles embodied in the Results Act and the Clinger-Cohen Act; such plans must be agreed to and supported by relevant components. Specifically, all plans should

- describe a complete management structure and officials (including component officials) that will be accountable for ensuring the timely success of the TAV initiative;
- describe how the initiative will be incorporated into DOD work processes in support of DOD's TAV performance goals and how appropriate training will be put in place to support the new work processes and the related cultural change that must be made to support Departmentwide asset sharing;
- identify complete resource requirements for implementing the TAV initiative and include related investment analyses that show how the major information technology investments will support TAV initiative goals;
- identify how Departmentwide systems issues that affect implementation of TAV will be addressed; and
- establish outcome-oriented TAV initiative goals and performance measures for all relevant components and closely link the measures to improvement targets established in documents such as DOD's Logistics Strategic Plan and the Results Act Performance Plan in the Annual Report to the President and the Congress.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD agreed with our recommendation to follow the principles embodied in the Results Act and the Clinger-Cohen Act¹³ regarding the TAV initiative. However, DOD did not describe what action it planned to take on our recommendation to develop a Departmentwide TAV strategic plan to guide component implementation plans using the Results Act framework. DOD's comments are included in their entirety as appendix I.

DOD stated that it has not created a formal Departmentwide TAV program but that better asset management will be attained by each component through improvement to its business and inventory systems and databases. DOD stated that it plans to ensure that each component addresses increased asset visibility as part of its overall logistics supply chain modernization, but in the context of improved inventory management practices. DOD also stated that to the extent that the modernization of inventory management practices requires information technology investments, DOD will adhere to the principles of the Clinger-Cohen Act and that the appropriate management structures are in place for implementation. DOD also stated that it plans to continue to monitor progress in achieving the TAV goals in the Results Act Annual Performance Plan for fiscal year 2000 as part of its overall acquisition reform initiative.

DOD officials stated that TAV has been referred to as a program for convenience. Although TAV is described as a program in the Department's Results Act Performance Plan for fiscal year 2000 in its 1999 Annual Report to the President and the Congress, we modified our report to reflect DOD's comments and now describe TAV as an initiative.

Given the Department's approach to managing the TAV initiative, it is unclear how the goals, objectives, and time lines described in major Department documents such as its Results Act Performance Plan for the year 2000 will be met. Currently, components lack plans that explain how they would integrate TAV into their work processes to support transfers of assets to other components, and they did not provide time frames for realizing the goals set for TAV in Department planning documents. Therefore, we continue to believe that the Secretary of Defense should develop a Departmentwide strategic plan and associated component

¹³The Department refers to the Clinger-Cohen Act as the Information Technology Management Reform Act (ITMRA). The ITMRA was later renamed the Clinger-Cohen Act to honor the principals of the ITMRA.

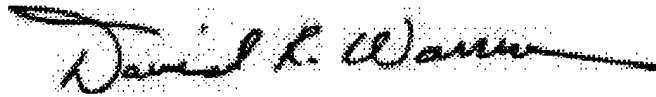
implementation plans based on the principles embodied in the Results Act and the Clinger-Cohen Act.

Appendix II describes our objectives, scope, and methodology for this report. Appendix III describes the TAV initiatives and programs under way in various components. Appendix IV describes Department plans that have been made to support asset-tracking efforts, with cited completion dates.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 10 days after its issue date. At that time, we will send copies of this report to Senator Pete V. Domenici, Senator Daniel K. Inouye, Senator Frank R. Lautenberg, Senator Carl Levin, Senator Joseph I. Lieberman, Senator Ted Stevens, Senator Fred Thompson, and Senator John Warner and to Representative Dan Burton, Representative John R. Kasich, Representative Jerry Lewis, Representative John P. Murtha, Representative David Obey, Representative Ike Skelton, Representative Floyd Spence, Representative John M. Spratt, Jr., Representative Henry A. Waxman, and Representative C.W. Bill Young in their capacities as Chair or Ranking Member of Senate and House Committees and Subcommittees. We are also sending copies of this report to the Honorable William S. Cohen, Secretary of Defense; the Honorable Louis Caldera, Secretary of the Army; the Honorable Richard Danzig, Secretary of the Navy; General Charles C. Krulak, Commandant of the Marine Corps; F. Whitten Peters, Acting Secretary of the Air Force; Air Force General Charles Robertson, Commander in Chief, U.S. Transportation Command; Army Lieutenant General Henry T. Glisson, Director, DLA; and the Honorable Jacob J. Lew, Director, Office of Management and Budget. Copies will also be made available to others upon request.

Please contact me at (202) 512-8412 if you or your staff have any questions about this report. The major contributors to this report are listed in appendix V.

Sincerely yours,

A handwritten signature in black ink that reads "David R. Warren". The signature is written in a cursive style with a long horizontal stroke at the end.

David R. Warren
Director
Defense Management Issues

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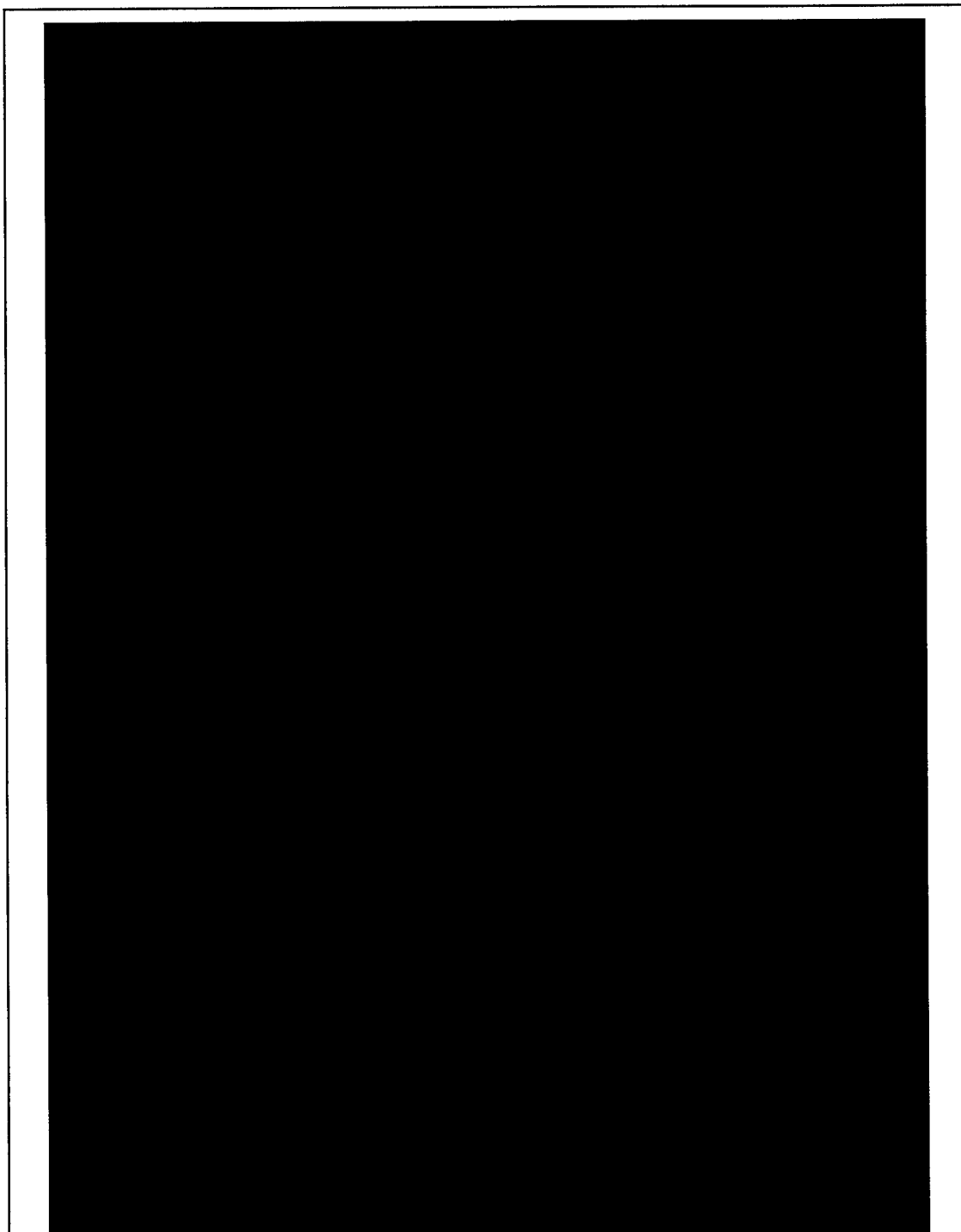
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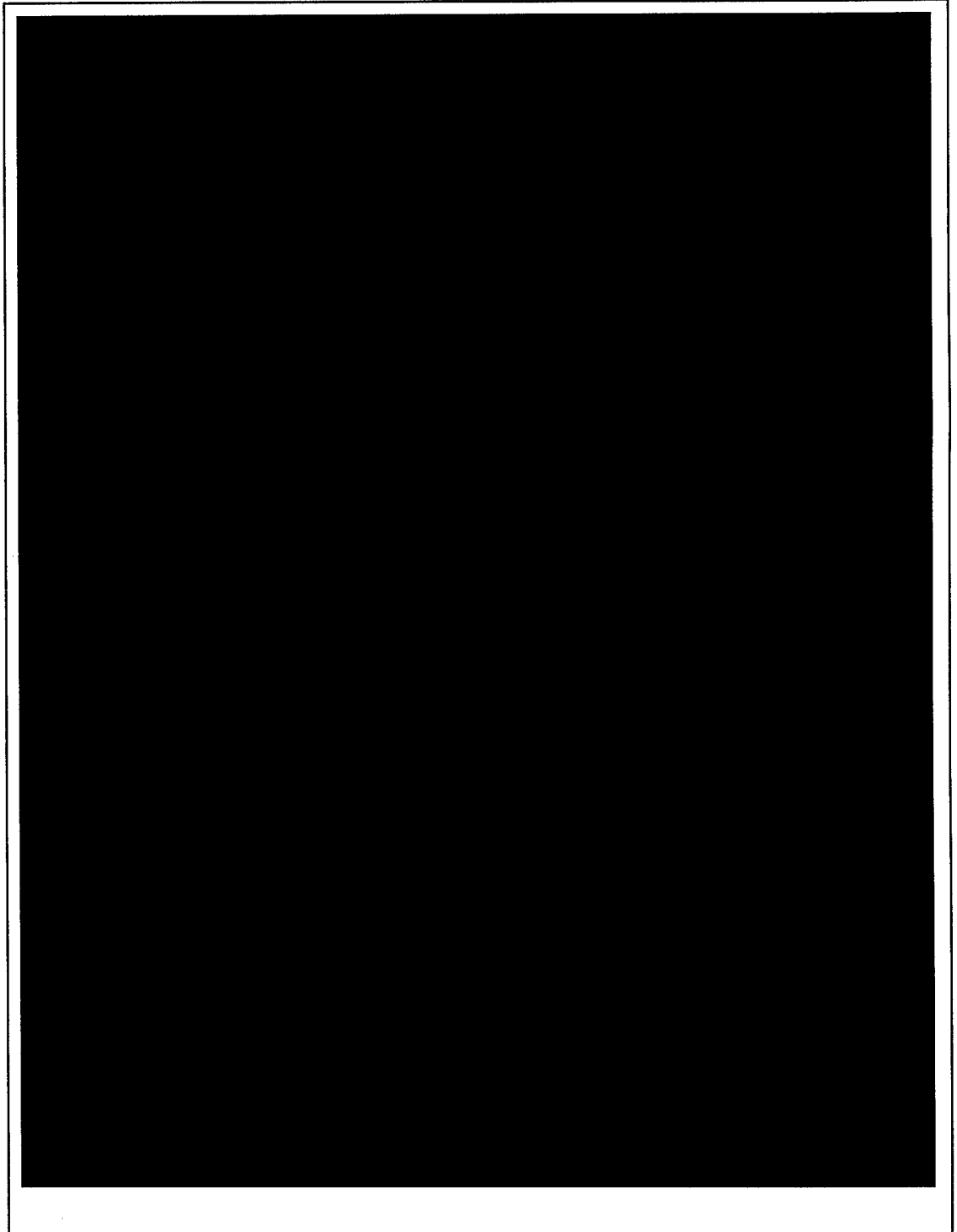
Abbreviations

DLA	Defense Logistics Agency
DOD	Department of Defense
NPR	National Performance Review
TAV	Total Asset Visibility

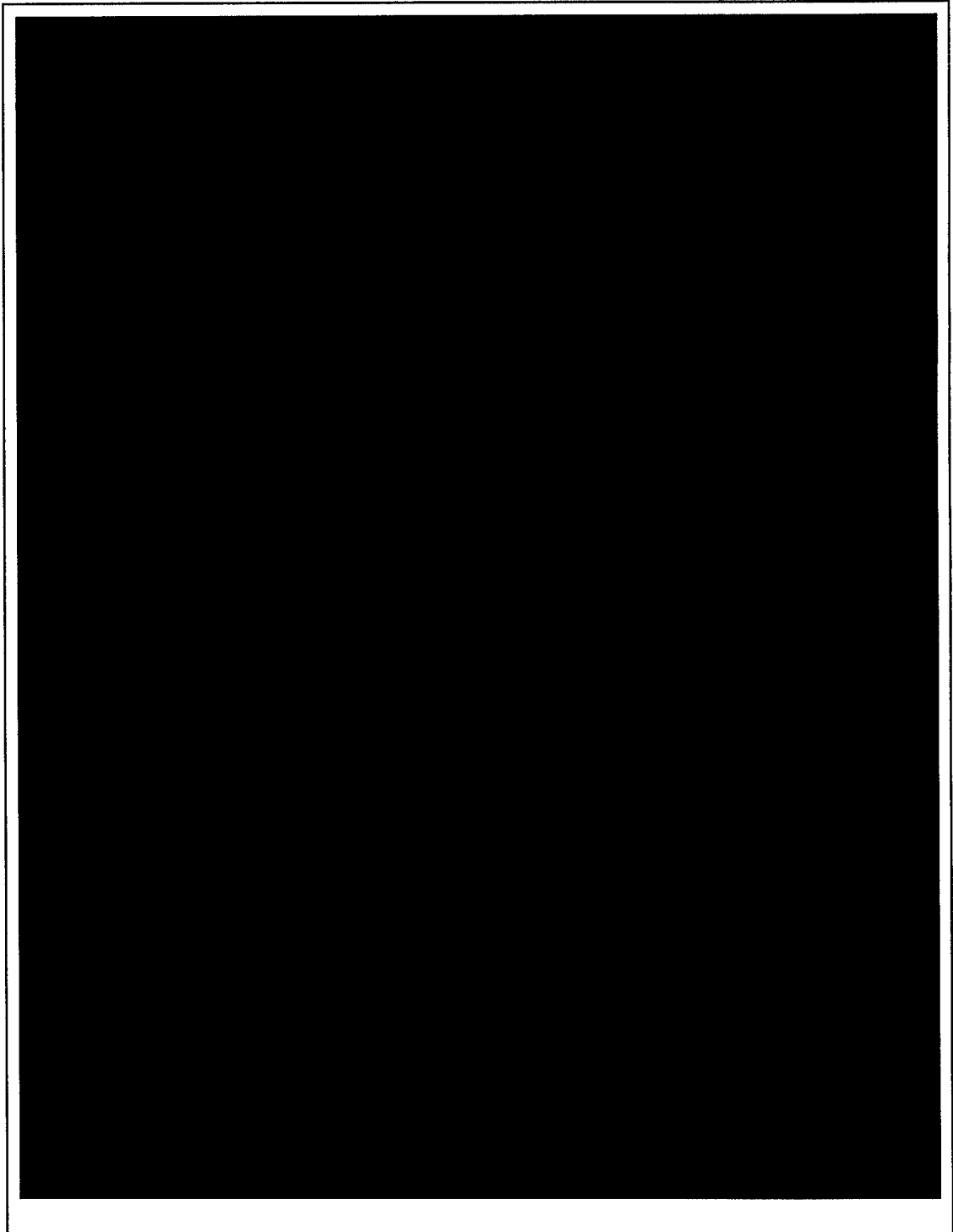
Comments From the Department of Defense



Appendix I
Comments From the Department of Defense



Now on pp. 3, 15.



Objectives, Scope, and Methodology

As your Subcommittee requested, we reviewed the Department of Defense's (DOD) implementation of its Total Asset Visibility (TAV) initiative. Specifically, we reviewed (1) the difficulty in determining the status of the initiative's implementation, (2) planning weaknesses that are affecting initiative implementation, and (3) strategies for addressing those weaknesses.

We interviewed and reviewed documents from DOD officials and contractors that are implementing TAV across DOD and within the military components; officials that are implementing initiatives supporting TAV; and officials responsible for logistics modernization initiatives within the military components. Additionally, we reviewed progress reports and briefings on TAV implementation and other related information. We did not independently verify the accuracy of this information. We also did not validate the actual fielding of the TAV capability in theaters of operation as described by agency officials for this report. However, we observed demonstrations of the Joint TAV, the Army, and the Navy TAV capabilities. We also attended portions of the 5-day TAV users' conference held at the Xerox Document University in Virginia in March 1998.

We interviewed officials and gathered relevant documentation for our review at the following locations:

- Joint TAV Office within the Office of the Deputy Under Secretary of Defense (Logistics), Alexandria, Virginia;
- Navy TAV initiative within the Office of the Deputy Chief of Naval Operations for Logistics, Supply Programs and Policy Division, Arlington, Virginia;
- Army TAV initiative within the Army's Office of the Deputy Chief of Staff for Logistics, Logistics Integration Agency, Alexandria, Virginia;
- Army TAV System Development Group, Logistics Support Activity, Huntsville, Alabama;
- Navy TAV Systems Development Group, Naval Inventory Control Point, Mechanicsburg, Pennsylvania;
- Transportation Command Directorate of Operations and Logistics, Scott Air Force Base, Illinois;
- Defense Logistics Agency (DLA) Office of Materiel Management and the Air Force Supply, Fuels, and Procurement Division, Fort Belvoir, Virginia; and
- Office of the Joint Chiefs of Staff, Washington, D.C.

Appendix II
Objectives, Scope, and Methodology

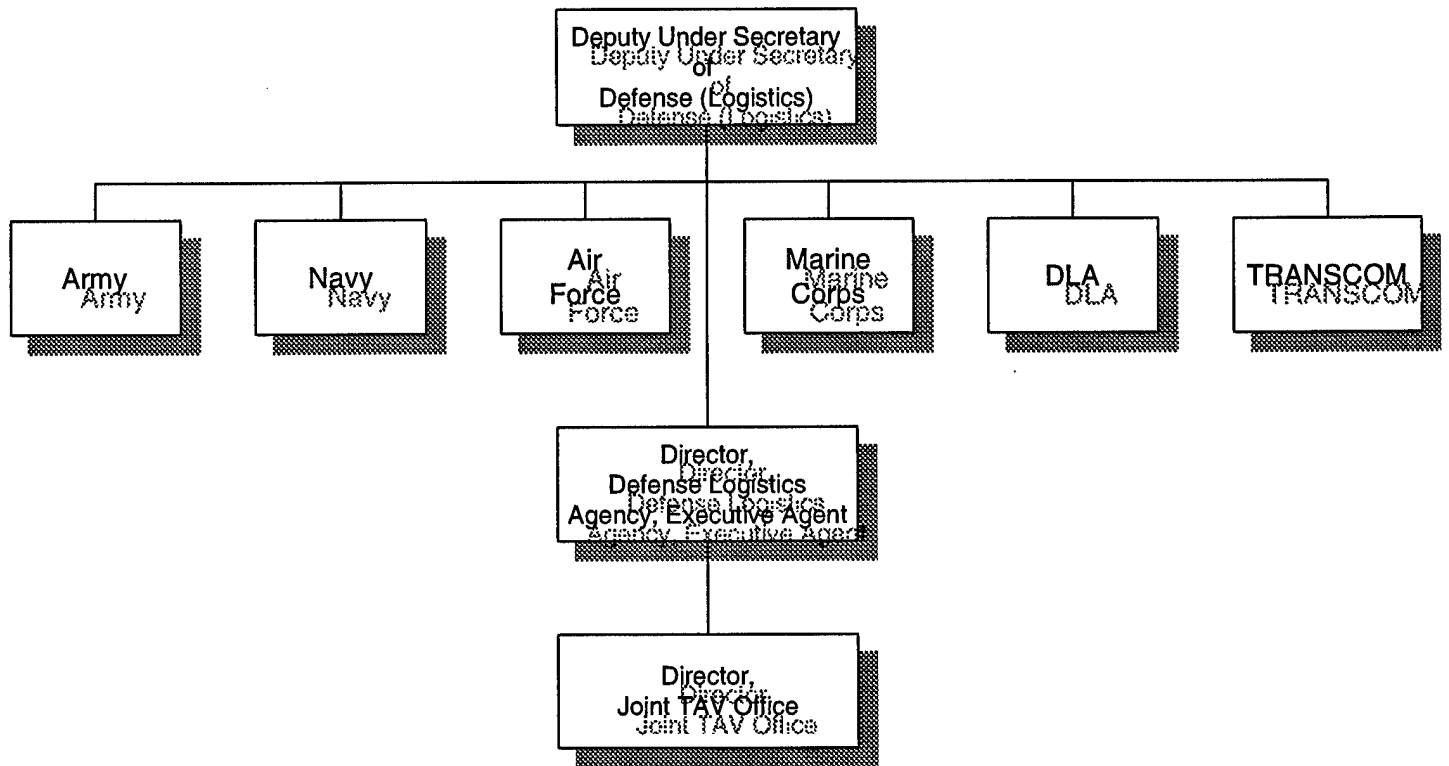
To identify strategies for improving the TAV initiative's implementation, we reviewed and analyzed DOD and component strategic and implementation plans maintained in the Joint TAV Office, the U.S. Transportation Command, and the military components. In analyzing the plans, we applied fundamental strategic planning practices identified in our prior work on this topic, including our prior reports that addressed the implementation of strategic management processes in government agencies, including approaches to the Results Act. DOD recognizes the need for a TAV strategic plan and finalized a Joint TAV plan in January 1999. However, since the Joint TAV strategic plan was oriented on theater asset visibility, we focused our review of planning efforts on DOD's 1996 implementation plan, which claimed to be a Departmentwide TAV implementation plan.

We conducted our work between July 1997 and January 1999 in accordance with generally accepted government auditing standards.

TAV Initiatives Across DOD

The Deputy Under Secretary of Defense (Logistics) is responsible for the TAV initiative. The Director, DLA, is the Executive Agent charged with coordinating asset-tracking initiatives across the services and DOD. The Executive Agent role was transferred to the DLA Director from the Army Deputy Chief of Staff for Logistics effective June 1, 1998. The transfer was done, according to the Acting Deputy Under Secretary of Defense (Logistics), because DLA was better positioned to create work processes and supporting systems that meet DOD logistics requirements. The Executive Agent is supported by a Joint TAV Office, which is led by a Director and supported by representatives from each major component. The Joint TAV Office monitors execution of the TAV implementation plan and advises key component executives on the implementation status.

Figure III.1: Departmentwide TAV Organization



Source: DOD.

Several related initiatives and programs support the development of TAV across the Department. The Army TAV program is led by the Army Deputy Chief of Staff for Logistics, and the Navy TAV program is led by the Deputy Chief of Naval Operations for Logistics. According to TAV officials, each component is also working with the Joint TAV Office to facilitate access to assets for Departmentwide use. The Departmentwide TAV initiative is supported by a number of component efforts. Those major efforts are described in the following sections.

Joint Total Asset Visibility

The Joint TAV program is led by the Joint TAV Office. The Office is to provide users with timely and accurate information on the location, status, and identity of units, personnel, equipment, and supplies. The Office's role is to obtain access to data from component systems, convert the data into useful information, and present the information to customers across all components. The Office's program involves major subinitiatives for tracking the status of personnel, medical assets, ammunition, and supplies.

Global Transportation Network

The Global Transportation Network is led by the U.S. Transportation Command. The network is the principal tool for tracking DOD's in-transit assets. It provides the ability to track the identity, status, and location of DOD unit and nonunit cargo, passengers, patients, forces, and military and commercial airlift, sealift, and surface assets from origin to destination during peace, contingencies, and war. The network is to collect, integrate, and distribute transportation information to commanders in chief, the services, and other DOD customers, giving visibility of a requirement when it is initiated and providing continuous visibility as it moves through the transportation system.

Automatic Identification Technology

The automatic identification technology effort is led by DLA. The effort involves using many technologies, including bar codes, magnetic stripes, integrated circuit boards, optical memory cards, radio frequency identification tags, and orbiting satellites, to track the location of assets. The effort also includes the hardware and software required to read information from the technologies and integrate that information with other logistics data.

Army Total Asset Visibility

The Army TAV capability is an automated tool that is managed by the Deputy Chief of Staff for Logistics. It is designed to improve the ability of soldiers, logisticians, and managers to obtain and act on the information about the location, quantity, condition, and movement of assets through the Army logistics pipeline. Fielding of the tool, completed in 1996, provides visibility of 99 percent of Army inventories across all classes of supply, according to the Army. Prototypes of the tool were used in Somalia, Rwanda, and Haiti and were also being used to support military operations in Bosnia. According to the Army, some of the key benefits of the tool include easier distribution of assets, reduced inventories and receipt processing times, and fewer duplicate requisitions due to improved asset tracking.

Navy Total Asset Visibility

The Navy TAV program is led by the Deputy Chief of Naval Operations for Logistics. In 1992, the Navy piloted TAV through its Virtual Master Stock Item Record Program. This program consolidated Navy assets into one database that enabled item managers to use and redistribute assets efficiently. The Navy later partnered with DLA to provide the Agency access to Navy assets. The program is designed to provide the Navy the ability to track and access primarily secondary inventory, including ammunition. According to the Navy, it has targeted numerous TAV capabilities, including visibility of assets on ships and inventory control point/defense reutilization and marketing service linkage to assets categorized for disposal.

Air Force Total Asset Visibility

The Air Force TAV efforts are coordinated through the Air Force Supply, Fuels, and Procurement Division and involve refining its two servicewide asset visibility systems dealing with wholesale and retail assets. The Air Force also redistributes excess consumable assets both internally and to other services within the same theater of operation. According to the Air Force, it has visibility and access to Air Force-managed assets at its wholesale and retail activities and at repair contractor facilities and storage distribution points.

Marine Corps Total Asset Visibility

The Marine Corps TAV effort is led by the Installations and Logistics Department. The Corps is creating a logistics information data warehouse to share data and provide an overall TAV capability within the Corps. The

Marine Corps describes in its fiscal year 1998 Installations and Logistics Campaign Plan the concepts for acquiring TAV capabilities in the future. TAV is also a required operational capability within the Marine Corps Master Plan.

Defense Logistics Agency TAV

The Defense Logistics Agency coordinates TAV efforts through its Office of Materiel Management. The Agency uses data generated by some component facilities to support its lateral redistribution and procurement offset initiatives by providing its item managers access to these cross component asset-tracking capabilities. DLA is also the Executive Agent for the Joint TAV initiative and the Department's overall automated identification technology effort.

History of Department Plans to Realize TAV

Obtaining total asset visibility has been a DOD goal since at least 1972. Attempts at reaching this goal have repeatedly failed and deadlines have slipped. In 1972 DOD expected to implement an early version of TAV by 1980, but did not. DOD again developed a plan in 1992 with the target of

realizing TAV by 1995; this attempt at TAV was again not fulfilled. The current plan—the May 1996 Defense TAV Implementation Plan—contains completion dates for several project elements but no target date for achieving total asset visibility. However, the 1998 DOD Logistics Strategic Plan does state that timely, accurate information for 90 percent of Department assets would be available on the TAV system by 2000 and for 100 percent of Department assets by 2004.

Name/date of plan	Plan objectives	Target completion date
Logistics Systems Plan (1972)	Eliminate unnecessary duplication of inventories and establish common use of inventories wherever operationally acceptable and economically beneficial. Material managers will exercise the capability to effectively and comprehensively track and control inventories. These changes were to be realized through improvements to interservicing and materiel management planning.	1980
DOD Total Asset Visibility Plan (1992)	Provide managers the capability to have access to and act on timely and accurate information about the location, quantity, condition, movement, and status of DOD materiel assets.	1995
DOD TAV Implementation Plan (1996)	Expands the scope of the 1992 plan to include personnel and medical inventories, but the core targets for asset tracking remained the same.	No clear completion date
1998 DOD Logistics Strategic Plan	Meet total asset tracking requirements established in DOD regulation on asset management. ^a	2004

^aDOD Regulation 4140.1-R, chapter 4, "Asset Management."

**Appendix IV
History of Department Plans to Realize TAV**

Major Contributors to This Report

National Security and
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**Appendix V
Major Contributors to This Report**

Related GAO Products

Navy Inventory Management: Improvements Needed to Prevent Excess Purchases (GAO/NSIAD-98-86, Apr. 30, 1998).

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, Apr. 30, 1998).

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