

GAO

Report to the Chairman, Subcommittee
on Readiness, Committee on Armed
Services, House of Representatives

November 2010

DEFENSE LOGISTICS

Additional Oversight and Reporting for the Army Logistics Modernization Program Are Needed



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Highlights of [GAO-11-139](#), a report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, House of Representatives

Why GAO Did This Study

The Logistics Modernization Program (LMP) is an Army business system that is intended to replace the aging Army systems that manage inventory and depot repair operations. From 1999 through 2009, the Army expended more than \$1 billion for LMP. LMP was originally scheduled to be completed by 2005, but after the first deployment in July 2003, the Army delayed fielding because of significant problems. The Army later decided to field the system in two additional deployments: the second in May 2009 and the third in October 2010. GAO was asked to evaluate the extent to which the Army will achieve the intended functionality (e.g., supply chain management and materiel maintenance) from LMP for the commands, depots, and arsenals participating in the third deployment. To do this, GAO reviewed Army plans and policies related to LMP and met with Army officials at three Army commands and several third deployment sites.

What GAO Recommends

GAO previously recommended that the Army address issues related to its implementation of LMP. GAO recommends further that the Army periodically report to Congress on the progress of LMP, including its progress in ensuring that the data used in LMP can support the system, timelines for the delivery of software necessary to achieve full benefits, and the costs and time frames of its mitigation strategies. DOD agreed with GAO's findings and recommendation.

View [GAO-11-139](#) or key components. For more information, contact William M. Solis at (202) 512-8365 or solisw@gao.gov, Asif A. Khan at (202) 512-9869 or khana@gao.gov, or Nabajyoti Barkakati at (202) 512-4499 or barkakatin@gao.gov.

DEFENSE LOGISTICS

Additional Oversight and Reporting for the Army Logistics Modernization Program Are Needed

What GAO Found

The Army has made improvements to its LMP implementation strategy, but it may not fully achieve the intended LMP functionality in its third deployment, which began in October 2010, because it has not corrected long-standing data inaccuracies and has not fully developed the software and systems needed to support critical functionality. Specifically:

- GAO previously recommended that the Army improve testing activities to obtain reasonable assurance that the data used by LMP can support the LMP processes. The Army implemented data audits and new testing activities to improve data accuracy, but data issues persist, which could impede LMP functionality. According to Army officials, these new testing activities were designed to assess how well the LMP software functions but not how well the data work in LMP. Third deployment locations were also able to perform individual tests on the data, but these activities were not coordinated or managed by the Army. As a result, the audits and new testing activities did not provide the Army reasonable assurance that the data in LMP are of sufficient quality to achieve the intended LMP functionality once the system has been deployed. Without this assurance, the Army may experience the same data-related problems during the third deployment that were experienced during the second deployment, which prevented Corpus Christi and Letterkenny Army Depots from using LMP functionality as intended.
- The Army's software development schedule and subsequent testing of capabilities needed by several locations are not expected to be delivered until after September 2010, but costly mitigations may be required if delivery is delayed. Unlike the previous deployments of LMP, the operations at some of the third deployment locations require additional capabilities. For example, the Army Sustainment Command and the Joint Munitions and Lethality Life Cycle Management Command perform missions that require LMP to interface with existing systems in order to perform day-to-day missions. If the software capabilities are not operating as intended, several sites will not have the necessary LMP functionality to perform their missions. The Army has mitigation plans to address this functionality gap. For example, the Joint Munitions and Lethality Life Cycle Management Command plans to hire 172 additional personnel, and the Tank-automotive and Armaments Command expects to hire 95 additional personnel to perform manual data entry until the capability is delivered. The Army expects that these mitigation plans will increase costs.

Prior to transitioning to LMP, the Army is directed to certify that it is prepared to make the transition, but it is not required to regularly report to Congress specifically on LMP implementation. Congress therefore lacks complete and ongoing information to aid in its oversight of this program characterized by implementation delays and long-standing problems that have precluded LMP functionality at the sites included in the first two LMP deployments.

Contents

Letter		1
	Background	3
	The Army Has Improved Its Implementation of LMP but May Not Fully Achieve the Intended LMP Functionality at Its Third Deployment Locations	5
	Conclusion	16
	Recommendation for Executive Action	17
	Agency Comments	17
Appendix I	Comments from the Department of Defense	19
Appendix II	GAO Contacts and Staff Acknowledgments	20

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Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

November 18, 2010

The Honorable Solomon P. Ortiz
Chairman
Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

In 1999, the Army initiated the Logistics Modernization Program (LMP) with the intent of replacing two aging Army systems used to manage its inventory and its repair operations. LMP, which is an enterprise resource planning system,¹ is also intended to reduce redundant and stovepiped information technology investments and assist in driving business transformation across the Army, which is ultimately envisioned to enable the Army to supply and service the warfighter more quickly and cost effectively. As of December 2009, the Army has expended more than \$1 billion for LMP implementation and estimates a total life cycle cost in excess of \$2.6 billion to procure and operate the system. The Army originally intended for LMP to be fully deployed by 2005, but the Army delayed fielding of LMP after the first deployment sites—the Communications-Electronics Command and Tobyhanna Army Depot—experienced significant problems when they deployed LMP in July 2003, which we detailed in several previous reports.² Because of these challenges, the Army modified its deployment schedule for LMP, and determined that implementation of LMP would occur in two additional phases: at the Aviation and Missile Command and its respective Army depots in May 2009, and at the Army Sustainment Command, the Joint Munitions and Lethality Life Cycle Management Command, and the Tank-

¹ An enterprise resource planning system is an automated system using commercial off-the-shelf software consisting of multiple, integrated functional modules that perform a variety of business-related tasks such as general ledger accounting, payroll, and supply chain management.

² GAO, *DOD Business Systems Modernization: Billions Continue to Be Invested with Inadequate Management Oversight and Accountability*, [GAO-04-615](#) (Washington, D.C.: May 27, 2004); *Army Depot Maintenance: Ineffective Oversight of Depot Maintenance Operations and System Implementation Efforts*, [GAO-05-441](#) (Washington, D.C.: June 30, 2005); and *DOD Business Transformation: Lack of an Integrated Strategy Puts the Army's Asset Visibility System Investments at Risk*, [GAO-07-860](#) (Washington, D.C.: July 27, 2007).

automotive and Armaments Command and their respective depots and industrial activities on October 21, 2010.³

In 2009, we observed the Army's preparation for and implementation of LMP at the Aviation and Missile Command, Corpus Christi Army Depot, and Letterkenny Army Depot.⁴ We reported that the Army was successful in mitigating some of the previous issues experienced during the first deployment of LMP and that the second deployment sites were able to demonstrate the potential for LMP to provide some benefits for the Army; however, the second deployment sites faced challenges related to data quality and training that limited their ability to use LMP as intended. We also reported that the Army did not have a comprehensive set of performance metrics to enable it to measure whether the intended LMP functionality had been achieved at the depots. Because the Army's preparation for the third deployment of LMP began in 2009, we shared our initial observations with Army officials beginning in June 2009 and throughout the course of our audit, and in April 2010, to assist the Army as it prepared for the third deployment of LMP, we made several recommendations related to improving data quality and training and establishing performance measures. The Army concurred with all of these recommendations.

You asked us to continue monitoring the Army's efforts to deploy LMP and evaluate the Army's progress in addressing the issues that are critical to successful implementation. Accordingly, the objective of this review was to evaluate the extent to which the Army will achieve the intended functionality of LMP during the third deployment.

To address this objective, we reviewed and analyzed the Army plans and policies that governed LMP implementation. We met with officials at the LMP program management office in Marlton, New Jersey, to discuss their plans to assist the sites in preparing for the third deployment of LMP. We also met with officials at the Army Materiel Command to discuss how they were managing the third deployment, as well as with officials at the Army

³ The scheduled deployment date for LMP was originally October 13, 2010. However, according to Army officials, the Army intended to deploy LMP to the third deployment locations on October 21, 2010.

⁴ GAO, *Defense Logistics: Observations on Army's Implementation of the Logistics Modernization Program*, [GAO-09-852R](#) (Washington, D.C.: July 8, 2009), and *Defense Logistics: Actions Needed to Improve Implementation of the Army Logistics Modernization Program*, [GAO-10-461](#) (Washington, D.C.: Apr. 30, 2010).

Logistics Support Activity to discuss their role in monitoring the data. To assess what steps the third deployment sites were taking with respect to preparing for LMP, we met with officials at the Army Sustainment Command, the Joint Munitions and Lethality Life Cycle Management Command, and the Tank-automotive and Armaments Command. We also visited eight sites that are scheduled to deploy LMP during the third deployment, specifically, two Army depots, three Army arsenals, two ammunition storage locations, and an Army location that manages the Army's pre-positioned stocks. In order to determine the extent to which the intended functionality of LMP was being achieved at the sites that deployed LMP in May 2009, we also visited the Aviation and Missile Command, Corpus Christi Army Depot, and Letterkenny Army Depot. In addition, because of their role in providing oversight of the Army's LMP implementation, we provided our preliminary observations to the Director of the Army's Office of Business Transformation and the Department of Defense (DOD) Deputy Chief Management Officer, as well as to officials from the Office of the Deputy Chief of Staff of the Army for Logistics and the Deputy Commanding General of the Army Materiel Command. We conducted this performance audit from May 2010 through November 2010 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 objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Background

The Army Materiel Command initiated an effort in 1999 to replace its existing materiel management systems—the Commodity Command Standard System and the Standard Depot System—with LMP. In addition to replacing these systems, which have been used for over 30 years to manage inventory and depot maintenance operations, the Army intended for LMP to transform logistics operations in six core processes: order fulfillment, demand and supply planning, procurement, asset management, materiel maintenance, and financial management. According to the Army, the implementation of LMP is intended to help the Army reduce inventory, improve supply and demand forecast planning, and provide a single source of data for decision making. When LMP is fully implemented, it is expected to include approximately 21,000 users at 104 locations and will be used to manage more than \$40 billion worth of goods and services.

LMP became operational at the Army Communications-Electronics Command and Tobyhanna Army Depot in July 2003 and was originally

expected to be fully deployed by fiscal year 2005. However, because of problems experienced during the deployment, the Army decided to delay implementation until the problems were resolved. In May 2009, LMP became operational at the Army Aviation and Missile Command and Corpus Christi and Letterkenny Army Depots. The third and final deployment of LMP began on October 1, 2010, at depots, arsenals, and sites within the Army Sustainment Command, the Joint Munitions and Lethality Life Cycle Management Command, and the Tank-automotive and Armaments Command. Preparations for the third and final deployment of LMP began in December 2008, and it is the largest of the three deployments, affecting approximately 11,000 users at 83 sites across the globe. LMP program management officials told us that 29 of these sites will significantly use LMP.

The Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 indicates that the executive-level oversight of business systems modernization and overall business transformation—including defining and measuring success in enterprise resource planning—is the responsibility of a military department-level chief management officer.⁵ In the case of the Army, the Under Secretary of the Army serves as the Chief Management Officer. In this capacity, the Under Secretary of the Army provides oversight for business systems modernization, such as LMP.

Prior to transitioning to LMP, the Army is directed to certify that each Army depot is prepared to transition. Specifically, in House Armed Services Committee Report 110-652 accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, the committee directed the Secretary of the Army to certify to the Senate Committee on Armed Services and the House Committee on Armed Services that each Army depot is prepared for the transition to LMP.⁶ On September 20, 2010, the Secretary of the Army certified to the chairmen and ranking members of the committees that the Tank-automotive and Armaments Command, the Joint Munitions and Lethality Life Cycle Management Command, their subordinate industrial sites, and the Army Sustainment Command were prepared for transition to the LMP automated information system. According to Army officials, based on the timing of this memorandum, the Army intended to begin using the system at the third deployment locations

⁵ See Duncan Hunter National Defense Authorization Act for Fiscal Year 2009, Pub. L. No. 110-417, § 908 (2008).

⁶ See H.R. Rep. No. 110-652, at 336 (2008).

on October 21, 2010, to manage operations for fiscal year 2011. With the exception of this certification, the Army is not presently required to report to Congress other information specifically focused on LMP implementation on a regular basis.

The Army Has Improved Its Implementation of LMP but May Not Fully Achieve the Intended LMP Functionality at Its Third Deployment Locations

The Army has improved its LMP implementation strategy from the previous two deployments, but continues to face several problems that may prevent LMP from fully providing its intended functionality at each of the third deployment locations. While the Army has improved its data testing strategy for the third deployment, data quality problems continue to persist at locations that previously deployed LMP, which prevent these locations from using LMP as intended. Furthermore, the Army has yet to develop fully the software capabilities needed to achieve the intended LMP functionality for some sites, which may limit their ability to perform certain tasks, such as maintaining accountability of ammunition. Although the Army has mitigation plans in place if the software capabilities are not delivered on time or as intended, these mitigation plans will increase costs.

The Army Has Achieved Some Improvements to Its LMP Implementation Strategy

Our prior reviews of LMP identified weaknesses in the Army's efforts to effectively implement the processes needed to reduce risks to acceptable levels. During our current review, we found that the Army had taken action on some of these areas. For example, we previously recommended that the Army use system testers that are independent of the LMP system developers to help ensure that the system is providing its users the intended capabilities.⁷ Based on our observations of the third deployment, the Army implemented this recommendation and testing activities were being conducted by LMP users as opposed to the LMP system developers. Additionally, to assist in the preparation for the third deployment of LMP, we previously recommended that the Army establish performance metrics that will enable the Army to assess whether the deployment sites are able to use LMP as intended.⁸ The Army developed performance measures to monitor the progress of LMP implementation and finalized these measures on September 30, 2010. These measures, if effectively implemented, should enable the Army to determine the extent to which the third deployment sites are able to use LMP as intended.

⁷ GAO-07-860.

⁸ GAO-10-461.

Long-Standing Data Inaccuracies Remain in the LMP System

The Army does not have reasonable assurance that the data used by LMP are of sufficient quality to enable the commands, depots, and arsenals to perform their day-to-day missions using LMP as intended. The Army initiated a testing strategy to determine data accuracy, but it has not provided reasonable assurance that the data used by LMP can support the LMP processes. As we have previously reported, testing is a critical process utilized by organizations with the intent of finding errors before a system is implemented.⁹ Although the Army implemented new testing activities to support the third deployment of LMP, these activities were designed to assess whether the sites could use the software but did not evaluate whether the data loaded into LMP are of sufficient quality to support the LMP processes. LMP program management officials told us that these testing activities were not designed to assess data quality. Instead, the Army conducted data quality audits to determine whether select data elements were accurate. Based on our observations, the data quality audits did not effectively assess whether the data would work in the LMP system.

Army Testing Activities Do Not Assess Data Quality

Based on our observations during the second deployment of LMP, we previously recommended that the Army direct the Army Materiel Command to improve its testing activities to obtain reasonable assurance that the data are of a quality that can be used by LMP to support the LMP processes. The Army concurred with our recommendation and stated that the third deployment would involve improved testing as well as additional efforts to enhance the quality of the data. The Army implemented two new test activities—the Process and Data Integration Test and the Business Operations Test—for the third deployment of LMP. According to Army officials, these test activities incorporated some lessons learned from the second deployment of LMP. The Process and Data Integration Test, which was conducted from April 2010 through June 2010, was intended to test an end-to-end business process using migrated, validated business data from critical weapons systems. The Business Operations Test, which was conducted from July 2010 through September 2010, was intended to be an activity where users would perform transactions in the LMP system using local data, from their home stations, which would bring data, business processes, standard operating procedures, and end user training materials together to ensure success. LMP program management officials told us in January 2010 that these tests were an improvement over the tests used during the second deployment of LMP. Specifically, LMP program

⁹ [GAO-04-615](#).

management officials stated that the Process and Data Integration Test was an improvement because the test activity would assess the compatibility of the migrated data to support LMP processes, such as verifying that invoices and goods receipts can be processed against purchase orders. Also, LMP program management officials stated that the Business Operations Test was an improvement because the sites would select commodities at their sites and then execute an end-to-end process to ensure that the LMP processes work. According to LMP program management officials, the two testing activities were linked because the test scripts used during the Process and Data Integration Test would be used to develop the test scripts for the Business Operations Test.¹⁰ LMP program management officials also told us in June 2010 that both tests would be used to determine whether the software is meeting the operational requirements of the third deployment locations, and that the Business Operations Test, in particular, would evaluate whether the data used by LMP can support the envisioned LMP processes.

Based on our observations at the third deployment sites, the Army's tests were not effective in evaluating whether the quality of the data used in LMP could support the LMP processes. Specifically, officials at several of the sites we visited stated that they had observed shortcomings in the Process and Data Integration Test. For example, officials at the Army Sustainment Command told us that at the time the Process and Data Integration Test activity was conducted, their data had yet to be loaded into LMP. Accordingly, these officials stated that the Process and Data Integration Test activity used data from the second deployment of LMP. Officials at sites from the Joint Munitions and Lethality Life Cycle Management Command also identified other problems with the Process and Data Integration Test activity, such as test scripts that were incorrect or not reflective of their business processes because the software necessary to support their operations was still being developed. Officials at a Tank-automotive and Armaments Command site expressed similar sentiments, noting that the test scripts used during the Process and Data Integration Test activity did not reflect some of their business processes, such as building items in support of foreign military sales. Similarly, officials at several other sites told us that the test scripts used were out of

¹⁰ A test script is a list of sequential actions that users follow when executing a test. If a test requires that special setup activities be performed, these actions are identified in the test script.

sequence, so the test scripts had to be corrected in order to reflect how the location conducted its business.

We also observed challenges related to the Army's Business Operations Test activity. Specifically, officials at several sites told us in July and August 2010 that some of the test scripts they executed during the Business Operations Test activity were not reflective of their business processes. For example, during our site visits in August, officials at one site told us that although manufacturing represented more than 90 percent of their workload, they spent the first 5 weeks of the Business Operations Test activity evaluating whether they could perform repair operations. Additionally, the officials stated that during the course of this testing, some of the data necessary to conduct the test were missing and other data did not load correctly into LMP and had to be generated for the test. For example, officials told us that in order to test whether they were able to conduct materiel requirements planning, which is the process used to determine the number of parts needed to support a repair, the test managers had to create the data that listed the component parts for the item so that the test scripts could be executed. At another site, officials told us that the data that were necessary to assign a production order to their location were not in LMP, and that in order to conduct the tests, the test managers directed them to use the data from a different command.

Site officials also told us that they were limited in the number of commodities that they could test. For example, officials at one site told us that they manage more than a thousand different items. However, because of time constraints, they were only able to test one item. Furthermore, the Business Operations Test activity did not exercise the full range of data. For example, officials at one site told us that an item they tested contained multiple levels of data; however, the test script directed them to evaluate only the first and second levels of data. Accordingly, the Business Operations Test activity did not assess whether the data could support the actual functions that the site would need to perform once LMP was deployed.

On August 13, 2010, we shared our observations with LMP program management officials, and on August 18, 2010, LMP program management officials told us that the Business Operations Test activity was intended to test the software using the data from the sites and that this test would identify and document data and training issues. However, they noted that while the test would provide indicators related to data issues, it would not provide an overall data accuracy assessment.

Data Audits Do Not Assess
Whether Data Can Work in
LMP

LMP program management officials stated that the data audits being conducted by the Army Logistics Support Activity were the best indicator for data accuracy. According to Army officials, these audits were intended to provide an initial assessment of data accuracy and then serve as an ongoing measurement as part of the Army's strategy to ensure the accuracy of the data. LMP program management officials stated that in response to our observations, the Army would accelerate the time frame for the data accuracy audits. LMP program management officials stated that these data accuracy audits were completed on September 30, 2010. Additionally, LMP program management officials stated that these audits were not designed to be an automated data test, but rather an inspection by subject matter experts to ensure that the data were accurate.

Although an important step, based on our observations at the third deployment sites, the Army's data audits do not provide reasonable assurance that the data are of sufficient quality to support the LMP processes. According to Army officials, the data audits do not include all data elements. Consequently, when the sites conducted simulations, they identified data errors that had not been identified by the audits. Officials at one of the sites we visited told us that they had conducted an extensive process to build and validate their data, including having subject matter experts review individual data elements and compare the data elements against the technical data for that item. However, the officials stated that they had discovered through simulations that some of the data that had transferred into LMP from the legacy systems—and had undergone audits—still contained errors. The officials stated that these errors, which were related to an incorrect unit of measure, would have prevented them from using LMP as intended. Officials at another site we visited in June 2010 told us that during a simulation they conducted in between the planned testing activities, they discovered that an item that takes 5 days to repair was projected to take 5 years to repair. Officials at this site stated that after they visually inspected and corrected the data elements, they conducted another simulation, and the projected time to complete repairs dropped from 5 years to 3 years.

Simulation Testing Has
Limitations in Assuring Data
Quality

According to LMP program management officials, the sites would have the opportunity to conduct simulations to assess their data upon completion of testing activities. We observed simulations being conducted at Anniston Army Depot on September 22, 2010, and Red River Army Depot on September 23, 2010. These simulations were useful, in part, but also had weaknesses. For example, depot officials told us that the simulations enabled the depots to identify data errors and develop processes to correct data errors after LMP is deployed and provided an opportunity to

perform actual tasks in LMP. While these simulations and the innovative actions taken at both depots—such as developing mitigation strategies to correct data errors—reduce the risk that data problems will adversely affect the depots after LMP is deployed, these simulations also revealed weaknesses in the Army-wide testing activities. For example, depot officials told us that the simulations revealed problems with the data audits being conducted by the Army Logistics Support Activity. Specifically, depot officials told us that the data reviewed by the Army Logistics Support Activity were generally considered to be accurate in over 90 percent of the cases. However, when conducting simulations, depot officials stated that they found data errors that would have prevented the LMP processes from being exercised. Additionally, depot officials told us that the data audits identified data errors that would affect their ability to use LMP but were also beyond their ability to correct because the data elements were managed by other Army or DOD organizations.

While the simulations we observed at Anniston Army Depot and Red River Army Depot are a positive step, they may not be representative of the Army's actions. During our visit to these depots in June 2010, officials at both depots told us that they intended to conduct simulations as soon as practicable. In contrast, according to the LMP program management office, other locations would not be able to begin simulations until October 4, 2010. Additionally, the strategies used to conduct simulations at both depots we visited were site specific and different from each other. Depot officials told us that they had developed their simulation strategy internally and without direction from the Army or the LMP program management office, and LMP program management officials told us that there was not a formal requirement to conduct simulations. As a result, there was likely to be variation in how the 29 sites conducted simulations, if at all.

Depot officials told us that the simulations did not mirror all of the functions in LMP that would be used in performing their day-to-day mission of repairing and overhauling items that were needed by the warfighter and were not representative of the LMP environment. Moreover, depot officials told us that they did not expect that the corrections they made to fix data errors identified during the simulations would transfer correctly into LMP because based on their experience the process of migrating data between systems introduces errors. However, depot officials told us that on September 23, 2010, officials from the LMP program management office told them that the depots would have access to the actual LMP environment on October 14, 2010. Depot officials stated

Data Problems Persist at
Second Deployment Locations

that they intended to conduct additional simulations using LMP until the system was deployed on October 21, 2010. Depot officials also stated that they would continue to correct the data in LMP after the system was deployed.

Persistent data issues have prevented Corpus Christi Army Depot and Letterkenny Army Depot—the two depots that deployed LMP in May 2009—from achieving the intended benefits from LMP. Although officials at both locations acknowledged that the system is an improvement over the previous legacy systems, officials also told us that they are unable to always use the system as intended. For example, as we previously reported, one of the intended benefits that LMP was expected to provide the depots was the ability to automatically calculate the materiel requirements for a repair project. According to an Army regulation,¹¹ this process—known as materiel requirements planning—works to ensure that repair parts and components are available to meet the maintenance, repair, overhaul, or fabrication schedule while maintaining the lowest possible level of inventory. Officials at both locations told us that while the LMP software was capable of automatically conducting materiel requirements planning, the data that LMP uses to conduct the calculations are inaccurate. Accordingly, officials at both depots told us that they must either adjust the settings within LMP to ensure that each calculation matches the planned delivery time or manually input the specific requirements. Officials at both locations told us that they have developed strategies and are conducting reviews to address data quality problems. For example, officials at Letterkenny Army Depot told us that they have completed addressing data issues for about half of their major systems since May 2009. Similarly, officials at Corpus Christi Army Depot told us that they were continuing to address data quality problems, and that this was a long-term process that could take years.

Inaccurate data are also affecting the Army's ability to use other management systems. For example, the Army uses the Army Workload and Performance System to determine, among other things, whether the workforce at a depot matches the projected workload. Army officials told us that because the Army Workload and Performance System relies on data from LMP in order to generate the reports, inaccurate data in LMP will result in inaccurate reports. For example, Army officials showed us a report from the Army Workload and Performance System that compared

¹¹ Army Regulation 750-1, *Army Materiel Maintenance Policy* (Sept. 20, 2007).

the projected workload at Corpus Christi Army Depot and Letterkenny Army Depot against the planned workforce and, according to that report, the workforce needed to accomplish the projected workload was higher than previous levels. Specifically, Letterkenny Army Depot, which normally requires approximately 1,800 resources per day,¹² was projected to need 6,000 resources per day to address the projected workload. Similarly, Corpus Christi Army Depot, which normally requires approximately 2,900 resources per day, was projected to need nearly 14,500 resources per day. Army officials stated that these incorrect reports were related, in part, to incorrect data that had been loaded into LMP. Army officials at the depots also told us that their ability to use the Army Workload and Performance System was directly related to the quality of the data in LMP, and that until the data in LMP are corrected, they do not expect the reports to be accurate.

Despite the data issues, depot officials at both Corpus Christi Army Depot and Letterkenny Army Depot stated that LMP is an improvement over the previous legacy systems because it has increased visibility over assets and provided a single source of data for decision making. For example, officials at Corpus Christi Army Depot told us that LMP has enhanced their ability to share information and interact with original equipment manufacturers, and that they now have increased visibility over contractor-managed inventories compared to that under the legacy systems. Similarly, Letterkenny Army Depot officials told us that LMP provides the Army increased visibility over items they maintain in inventory, and depot officials told us that a unit in Afghanistan was able to identify and requisition an item from the depot's inventory that was not available in the supply system. As we previously reported, these capabilities were not available in legacy systems.¹³ Additionally, Letterkenny Army Depot officials told us that as they improve the quality of their data, they expect to be able to improve their ability to use LMP for evaluating repair overhaul factors as well as forecasting workloads and parts requirements.

¹² The resource per day calculation is based on an 8-hour workday, and is determined by dividing the amount of work scheduled for a month by the number of work days in that month.

¹³ [GAO-10-461](#).

The Army Has Yet to Fully Develop Software to Achieve Intended LMP Benefits but Has Mitigations Plans That May Be Costly

The Army's software development schedule and subsequent testing of capabilities needed by several locations was not expected to be delivered until after September 2010. Unlike operations under the previous deployments of LMP, the operations at some of the third deployment locations are unique and therefore require additional capabilities. For example, the Army Sustainment Command and the Joint Munitions and Lethality Life Cycle Management Command require LMP to interface with existing systems in order to perform their day-to-day missions. In contrast, some sites within the Tank-automotive and Armaments Command use existing systems to collect manufacturing data that will no longer be available once LMP is deployed. The Army has developed mitigation plans to address the shortfalls in capability, but those plans often involve hiring additional staff or employing time-consuming manual processes.

Software Interface for the Army Sustainment Command Still Being Developed

The Army has yet to develop the software functionality needed by the Army Sustainment Command to perform its mission under LMP, but Army officials expect the functionality to be delivered prior to LMP deployment. The Army Sustainment Command uses an automated information system called the Army War Reserve Deployment System (AWRDS) to track inventory and transfer accountability of pre-positioned stocks to units. In a briefing to the Army Materiel Command in December 2009, officials at the Army Sustainment Command stated that the interface between LMP and AWRDS was critical to a go-live decision and a key to the success of Army Sustainment Command operations in Southwest Asia. During that briefing, officials at the Army Sustainment Command also stated that full development of the interface between LMP and AWRDS was scheduled for completion and testing in March 2010, and that the functionality was scheduled for release in May 2010. However, development and delivery of the LMP and AWRDS interface was delayed and, according to LMP program management officials, the Business Operations Test activity for this interface occurred from August 30, 2010, through September 3, 2010. During the Business Operations Test activity, LMP program management officials told us that all but one of the test cases passed, and that this issue is currently under review.

The Army Sustainment Command also requires additional software functionality to conduct a mass upload—which is the automated movement of thousands of items of inventory between the Army Sustainment Command and the warfighter. Army officials stated that LMP provides this capability, but only through the use of manual processes that Army officials said are time consuming and staffing resource intensive. The expected delivery date of this functionality was October 11, 2010; however, Army officials stated on October 14, 2010, that testing on the

Functionality for the Joint Munitions and Lethality Life Cycle Management Command Still Being Developed

functionality was still in process. Army Sustainment Command officials stated that without this capability, users would have to enter information manually into LMP, which would require certain locations to hire additional staff to accommodate the workload and mitigate the effects of the missing capability. On August 27, 2010, the Commander of the Army Sustainment Command endorsed the recommendation to deploy LMP on October 13, 2010, but noted that AWRDS/LMP interface testing would not be completed until September and that training materials for the new software had yet to be made available for end users.

The Army is continuing to develop the software functionality that the Joint Munitions and Lethality Life Cycle Management Command needs to perform its mission using LMP, but Army officials said that full functionality will not be available until after LMP has been deployed. The Joint Munitions and Lethality Life Cycle Management Command conducts operations related to the production, management, and maintenance of ammunition. Officials at Joint Munitions and Lethality Life Cycle Management Command sites told us that LMP—unlike the systems that they currently have in place that will be replaced once LMP is deployed—did not enable them to ship, receive, inventory, and perform stock movements for ammunition. LMP program management officials told us that this missing functionality was identified in 2009, and that development of this functionality began in January 2010. The Army plans to deliver the ammunition-specific functionality and interfaces in phases through March 2011.

Joint Munitions and Lethality Life Cycle Management Command officials stated that they have developed strategies to enable them to conduct operations in the event that the new software functionality is not delivered on time or does not provide the intended capability. For example, in the event that this functionality is not delivered or does not operate as expected, the Joint Munitions and Lethality Life Cycle Management Command expects to hire 172 additional personnel to perform manual data entry until the software can provide the required and agreed-upon functionality. Joint Munitions and Lethality Life Cycle Management Command officials stated that this mitigation plan would enable them to deliver ammunition to the warfighter. However, they also stated that this mitigation strategy will remove efficiencies associated with automation of these activities that are present in the legacy systems being replaced by LMP and lead to a degradation of data integrity and inventory accuracy.

During our visits to the Joint Munitions and Lethality Life Cycle Management Command sites, officials provided examples of the effect of

lost visibility and accountability of ammunition on their operations. Officials at one site told us that the intended benefit from LMP usage was to provide a common data set and real-time visibility over ammunition. However, in the event that the software capability is not delivered, the officials stated that their mitigation strategy would be to track ammunition using “pencils and index cards.” While this strategy would enable some accountability over ammunition, the site would not be able to achieve the intended benefit of real-time visibility over ammunition.

Officials at another site told us that their mitigation strategy would enable them to continue to ship ammunition to the warfighter. However, manually entering data into LMP would also reduce their ability to track ammunition. For example, officials told us that the existing systems are capable of tracking the serial numbers assigned to missiles, as well as the serial numbers of a missile’s component parts—such as the warhead and the guidance system—and that the software necessary for LMP to be able to provide this capability was expected to be delivered on October 12, 2010. However, as of October 14, 2010, development of this capability was only partially completed. The officials stated that without this capability, their mitigation strategy of manually entering data into LMP would cause delays in their ability to track the individual serial numbers and, in the event that a missile component needed to be recalled, would make finding missiles that have components that are being recalled difficult, especially if those missiles had been shipped to a customer.

On August 20, 2010, the Executive Director of the Joint Munitions and Lethality Life Cycle Management Command signed a memorandum that stated that the command was prepared for the deployment of LMP. The memorandum also stated that the tasks that had yet to be completed, upon which deployment was contingent, were development of, training on, and testing of the ammunition functionality. The memorandum also stated that in the event that all ammunition functionality is not in place by the go-live date, the Joint Munitions and Lethality Life Cycle Management Command is prepared to exercise its documented mitigation strategy until such time as the functionality is available in LMP, with the understanding that the use of the mitigation strategy will increase costs and decrease inventory accuracy.

Capabilities Missing at Tank-automotive and Armaments Command Arsenals

Certain functionality that the arsenals under the Tank-automotive and Armaments Command need to perform their missions will not be deployed until after LMP is deployed. These arsenals currently have systems—commonly referred to as manufacturing and execution systems—in place to report manufacturing data and track the status of items being

manufactured. According to Tank-automotive and Armaments Command officials, the arsenals will lose this capability once LMP is deployed until a replacement system is fielded. According to LMP program management officials, LMP was never intended to provide this capability. Instead, the Army has another project to develop this capability and integrate it with LMP. According to Army officials, this project is expected to provide the needed functionality and be deployed to the LMP locations that need it in phases. The first phase of this system improvement effort is expected to occur in February 2011 with the final delivery to occur in July 2011. In order to compensate for this lost capability, officials at the Tank-automotive and Armaments Command developed a mitigation strategy that includes hiring an estimated 95 additional people in order to manually perform the actions in LMP that were once handled by the legacy systems. Tank-automotive and Armaments Command officials stated that these personnel will be needed until the manufacturing and execution system is fielded and effectively implemented.

In an August 30, 2010, memorandum, the Commander of the Tank-automotive and Armaments Command confirmed the command's preparedness to deploy LMP on October 13, 2010, with minimal impact to mission accomplishment. The memorandum, however, identified a number of the Commander's concerns, such as the potential requirement to hire an estimated 95 additional people to manage the manual efforts required to address the lack of a manufacturing and execution solution, as well as potential out-of-pocket costs that could approach an unbudgeted \$300 million in the near term.

Conclusion

The intention behind an enterprise resource planning system, like LMP, is to enhance the effectiveness and efficiency of an organization. Implementation of these types of systems is a complex endeavor, and the ability to gain these efficiencies depends on the quality of the data in the system. As illustrated by the experiences at the locations that deployed LMP in May 2009, data quality continues to be a challenge. The Army, however, has not adopted a testing strategy that provides adequate insight on whether the data loaded into LMP can support the LMP processes. Moreover, the functionality that is required to support some of the locations is still being developed, so the Army does not have reasonable assurance that the system is meeting its needs before LMP is deployed. Without software that is working and data of sufficient quality to use in the system, the Army's ability to gain the anticipated increase in its effectiveness and efficiency for its \$1 billion investment remains unclear. Although the Army has mitigation strategies in place that are expected to

address potential shortcomings, the Army expects that these strategies will increase costs and decrease accuracy of inventory, which are the opposite effects of what LMP functionality was intended to provide. Accordingly, given the delays in implementing LMP and the long-standing problems that have precluded the Army from realizing LMP functionality, additional oversight and reporting is needed to better inform Congress of the Army's progress in addressing these problems and the status and costs of the mitigation strategies the Army is employing.

Recommendation for Executive Action

Given the long-standing challenges associated with the Army's implementation of LMP and the need for mitigation strategies that may result in increased costs until LMP is fully functional, we are recommending that the Secretary of Defense direct the Under Secretary of the Army as the Army's Chief Management Officer to report to Congress within 90 days of the beginning of the LMP third deployment on the progress of LMP implementation at the Army depots, arsenals, and life cycle commands, and provide periodic updates to Congress until such time as the mitigation strategies are no longer necessary. This report should identify the extent to which the third deployment sites are able to use LMP as intended, the benefits that LMP is providing, an assessment of the Army's progress in ensuring that data used in LMP can support the LMP processes, timelines for the delivery of software and additional capabilities necessary to achieve the full benefits of LMP, and the costs and time frames of the mitigation strategies.

Agency Comments

In written comments on a draft of this report, DOD agreed with our findings with respect to data, software development, and systems, and also agreed on the need to implement prior LMP recommendations with which the department has previously concurred. DOD stated that the Army has established additional oversight of the third deployment of LMP and has no issues with GAO's facts, observations, or recommendations, as stated in this report. DOD also stated that the Army Materiel Command is working closely with the LMP Project Office and third deployment sites to establish appropriate management controls. With respect to our recommendation, DOD stated that the department fully understands Congress's interest in this deployment and that the Army will comply with GAO's recommendation and the prescribed reporting timetable and conditions. The department's written comments are reprinted in appendix I.

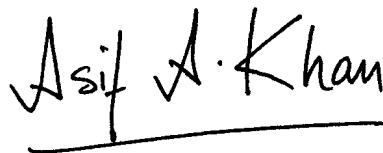
We are sending copies of this report to interested congressional committees; the Secretary of Defense; the Secretary of the Army; and the Director, Office of Management and Budget. The report also is available at no charge on the GAO Web site at <http://www.gao.gov>.

Please contact William M. Solis at (202) 512-8365 or solisw@gao.gov, Asif A. Khan at (202) 512-9869 or khana@gao.gov, or Nabajyoti Barkakati at (202) 512-4499 or barkakatin@gao.gov if you or your staff have questions on matters discussed in this report. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix II.

Sincerely yours,



William M. Solis
Director, Defense Capabilities and Management



Asif A. Khan
Director, Financial Management and Assurance



Nabajyoti Barkakati
Chief Technologist
Applied Research and Methods
Center for Technology and Engineering

Appendix I: Comments from the Department of Defense



DEPUTY CHIEF MANAGEMENT OFFICER
9010 DEFENSE PENTAGON
WASHINGTON, DC 20301-9010

NOV 5 2010

Mr. William M. Solis
Director, Defense Capabilities and Management
Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Solis:

This is the Department of Defense (DoD) response to the Government Accountability Office's (GAO) draft report GAO-11-139, "DEFENSE LOGISTICS: Additional Oversight and Reporting for the Army Logistics Modernization Program (LMP) is Needed," dated October 15, 2010 (GAO Code 351493). We agree with the findings developed by your audit team with respect to data, software development and systems. Further, we agree on the need to implement prior LMP recommendations on which the Department previously concurred.

The Army, in concert with my staff, established additional oversight of the third deployment of LMP and has no issue with the facts, observations or recommendations in the above referenced report. Army Materiel Command is working closely with the LMP Project Office and third deployment sites to establish appropriate management controls which will ensure success of LMP.

The Department fully understands Congress' interest in this deployment and Army will comply with the prescribed reporting timetable and conditions, as identified in the "Recommendation for Executive Action." Please contact Ms. Amy Bruins, at amy.bruins@osd.mil, if additional information is required.

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth A. McGrath", is positioned above the printed name.

Elizabeth A. McGrath



Appendix II: GAO Contacts and Staff Acknowledgments

GAO Contacts

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Staff Acknowledgments

In addition to the contacts named above, J. Chris Martin, Senior-Level Technologist; David Schmitt, Assistant Director; Darby Smith, Assistant Director; Jim Melton; Gilbert Kim; Grace Coleman; and Michael Shaughnessy made key contributions to this report.

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