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BY THE US GENERAL ACCOUNTING OFFICE

Report To The Secretary Of Defense

The Services Should Improve Their Processes For Determining Requirements For Supplies And Spare Parts

This report contains recommendations to the Secretary of Defense for improving the services' requirements determination processes for secondary reparable and expendable items

GAO found numerous inconsistencies in the ways the services approach the process of determining requirements Furthermore, the data used in the requirements computations often require extensive adjustments before they can be used These inconsistencies and inaccurate data can result in invalid requirements and procurement actions

GAO believes that through better supervision and training of personnel responsible for sys tems operations and more consistent require ments determination methods, the services can make more prudent decisions concerning the use of limited resources and thereby enhance equipment availability and avoid invest ments in stock levels beyond real needs

UNITED STATES GENERAL ACCOUNTING OFFICE

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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D C. 20548

PROCUREMENT, LOGISTICS, AND READINESS DIVISION

B-205309

The Honorable Caspar W. Weinberger
The Secretary of Defense

Dear Mr. Secretary:

This report discusses our evaluation of the services' requirements determination systems and recommends ways to make the processes more accurate and credible.

This report contains recommendations to you for improving the validity of the requirements computations. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Director, Office of Management and Budget; the Chairmen, House Committee on Government Operations, Senate Committee on Governmental Affairs, House and Senate Committees on Appropriations and on Armed Services; and the Secretaries of the Army, Navy, and Air Force.

Sincerely yours,

Donald J. Horan
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE SECRETARY
OF DEFENSE

THE SERVICES SHOULD IMPROVE THEIR PROCESSES FOR DETERMINING REQUIREMENTS FOR SUPPLIES AND SPARE PARTS

D I G E S T

WHY THE REVIEW WAS MADE

GAO made this review as part of its continuing efforts to evaluate the validity of the services' requirements determination processes and to determine whether beneficial techniques used by one service could be applied by the other services to best use finite resources. In prior reviews dealing with a particular aspect of the requirements process, GAO reported that, often, requirements were based on inaccurate information or that alternatives which would reduce inventory investment without jeopardizing supply responsiveness or impairing readiness were not considered.

WHAT THE REVIEW SHOWED

GAO found little consistency and coordination among the services on the best way to determine requirements. Thus, techniques developed by one service which seem to have merit and offer potential for doing something a better way are not made available to the other services. Consequently, opportunities to refine and improve the requirements determination process are lost. Furthermore, with better supervision and training, the services could make better use of limited resources and thereby enhance equipment availability and avoid investments in stock levels beyond real needs.

GAO selected a statistical sample of items in a buy position during a requirements determination cycle at three locations--one location in each service--and tested the validity of the data elements used in the requirements determination processes. GAO found that, oftentimes, the computed requirements were not based on accurate data. As a result, the requirements were overstated and understated by millions of dollars.

GAO noted that the problems could be widespread and significant. The misstated requirements were due to

--inaccurate data in the automated requirements determination systems,

--incorrect adjustments to the data, and

--the failure to follow prescribed leadtime forecasting policies and procedures.

LACK OF CONSISTENCY AND COORDINATION AMONG THE SERVICES

When leadtime ends

There are major differences among the services' procedures for determining when the procurement leadtime ends. The Army terminates the procurement leadtime when a cumulative total of one-third of the ordered items are received; the Air Force terminates procurement leadtime when 10 percent of the items are received; and the Navy terminates the leadtime based on the average date of initial receipt by all consignees. Therefore, depending on the service, items ordered on the same date and received on an incremental basis in like quantities could have significantly different procurement leadtimes.

GAO could not determine the impact of the different leadtimes on the activities' operating requirements because sufficient information was not available to associate receipt quantities and receipt days for each of the three methods. However, the impact on leadtime requirements would be significant since each day of leadtime has a dollar value, in terms of requirements, ranging from several hundred thousand to over a million dollars.

Excessive delivery leadtime

The Army, unlike the other services, adds 30 days to an item's procurement leadtime to compensate for the delivery time from a contractor's plant to the storage location. GAO found that this additive exceeds the actual delivery leadtime. Since each day of leadtime at the Army Missile Command has a requirements value of about $870,000, the resulting requirements are substantially overstated.

First article testing requirements

To qualify a new contractor and assure that the contractor can provide a quality product, the services may require that an item be tested and approved--first article testing--before the contractor is authorized to proceed with production. It is assumed that an additional leadtime will be required for a new contractor to produce and receive production approval.

For these type items, the Army doubles the production leadtime and associated requirements. The Air Force does not increase the leadtime but instead reviews an item's asset position at the time of contract award and determines whether interim support may be required. The Navy uses yet a third method for determining first article testing leadtime. It splits the contract award between a proven source of supply and a new contractor under certain specified conditions.

Additional leadtime means added requirements because the first article test is normally waived after contract award, but the leadtime requirements are not reduced.

Differing forecasting techniques

The services also have widely varying techniques for forecasting what will be needed and how long it will take to get the needed items. These techniques range from the Army's fairly simple approach to the Navy's comprehensive and complex approach.

The Navy's forecasting techniques filter out atypical recurring data from the forecast and smooths the data that are within the filter limits; whereas, the other services would include the same data in their forecasts.

GAO believes that the Navy's technique is better than the other two services' because it recognizes and excludes certain demand and leadtime observations that are atypical and can unduly influence forecasts.

DEVIATION FROM PRESCRIBED PROCEDURES

The Army's Missile Command did not follow prescribed Army leadtime forecasting procedures and, as a result, overstated its leadtime requirements.

Army regulations provide that the production leadtime will be forecasted on the basis of the last representative buy or the estimated leadtime value in the last signed but undelivered contract. The Missile Command interpreted this to mean that leadtime forecasting should be based on the larger leadtime of either the last representative buy or the last signed, undelivered contract. Additional overstated and understated leadtimes occurred at the Missile Command because of the Command's practice of using standards, rather than actual leadtimes, in the requirements determination process.

INACCURATE SYSTEM DATA REQUIRE EXTENSIVE ADJUSTMENTS

The data in the services' automated requirements determination systems require extensive manual adjustments to update and correct before a buy decision can be made. In some cases the manual adjustments compensated for errors in the system data. However, GAO found that many of the manual adjustments are in error and, as a result, requirements are frequently misstated.

GAO reported on the use of inaccurate system data in the requirements computation process about 9 years ago. However, many of the same problems exist today, such as

--an incomplete understanding of how the requirements system operates,

--an incomplete knowledge of where to obtain needed data,

--an incorrect interpretation of requirements policies and procedures, and

--inadequate supervision.

The need to correct erroneous data is not restricted to the requirements determination process. This need also extends to the budget formulation process since requirements data are the basis for the budget requests

RECOMMENDATIONS

GAO recommends that the Secretary of Defense:

--Issue guidance to the services which specifically states (1) when a production leadtime should be terminated and (2) how leadtime requirements should be determined for items requiring first article testing.

--Direct the Army and Air Force to develop demand and leadtime forecasting techniques which identify and exclude atypical data that could unduly influence the forecasts and recognize item trends.

--Emphasize to the services the need to provide training to personnel responsible for supervising, operating, and maintaining the automated requirements determination systems so as to enhance the validity of the data base.

Other specific recommendations to the Secretary are on pages 17, 28, and 38.

AGENCY COMMENTS

The Department of Defense (DOD) agreed with the major recommendations (see app. IV) and pointed out that:

--Increased leadtimes have resulted in a need for a more uniform DOD-wide policy for measuring these leadtimes, and policy changes will be made during the course of DOD's long-range materiel stockage policy analysis.

--A research contract recently has been awarded to identify and determine a uniform DOD-wide forecasting technique.

--DOD has long recognized the need for improving the training of personnel responsible for operating the materiel requirements process.

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ABBREVIATIONS

ASO	Navy Aviation Supply Office
DOD	Department of Defense
GAO	General Accounting Office
MICOM	U.S. Army Missile Command
WRALC	Warner Robins Air Logistics Center

CHAPTER 1

INTRODUCTION

The Department of Defense (DOD) issues overall policy guidance to the services for determining secondary spare parts requirements. 1/ However, the individual services have considerable flexibility and latitude for implementing the guidance, setting requirements priorities, and determining how requirements will be met. In the Army, the requirements determination process is primarily the responsibility of the various readiness commands. In the Air Force, this responsibility rests with the Air Force Logistics Command and the five air logistics centers, and in the Navy, this responsibility rests with the Aviation Supply Office and Ships Parts Control Center

The Army, Navy, and Air Force spend billions of dollars for replenishment and repair of secondary items to meet operating requirements, as shown in the following table.

Planned Procurement and Repair of Secondary Items--Fiscal Year 1981

Service	Planned procurement	Planned repair	Total
	(millions)		
Army	$1,414.2	$ 330.0	$1,744.2
Navy	2,415.0	755.7	3,170.7
Air Force	2,638.5	1,069.7	3,708.2
Total	$6,467.7	$2,155,4	$8,623.1

Determining what, when, and how much to buy--the requirements determination process--is the responsibility of inventory control activities. Making these determinations is no easy task and involves hundreds of people, sophisticated computers, and vast amounts of data. This task is made more difficult by the fact that requirements are ever changing due to fluctuating demands, systems being phased into and out of the inventory, the time required to receive ordered items, and the emphasis on certain systems and missions. As a result, personnel responsible for making requirements decisions have the difficult task of predicting, with a degree of certainty, what the future requirements will be for a particular item based on historical data and known or anticipated future needs.

1/Consists of reparables, consumables, assemblies, and subassemblies as opposed to end items.

In times of limited resources, the responsibility for making proper decisions regarding how these resources are to be spent can be awesome. Improper decisions can quickly lead to unneeded items being bought or equipment needed for U.S. defense being deadlined for lack of parts. In either case, resources are not optimally utilized. Thus, the objective of good inventory management is to buy the proper items, in the proper amounts and at the proper time, so that the items will be available when needed while also minimizing investment costs.

OBJECTIVES, SCOPE, AND METHODOLOGY

We made this review to determine the validity and reasonableness of the data elements the Army, Navy, and Air Force used in their requirements determination processes. Also, we wanted to determine the similarities and dissimilarities, and reasons therefore, in the policies and procedures the services used to compute secondary reparable and expendable item requirements.

The review was performed at the Army Missile Command (MICOM) in Huntsville, Alabama, the Navy Aviation Supply Office (ASO) in Philadelphia, Pennsylvania, and the Warner Robins Air Logistics Center (WRALC) in Warner Robins, Georgia.

In addition to this overall report, we are issuing separate reports to the Secretaries of the services which point out those matters that can be addressed by the individual services.

We selected a statistical sample of items from the universe of items in a buy position during May 1980 at ASO, August 1980 at MICOM, and June 1980 at WRALC. (See app. I for the number and dollar value of items managed by each activity, the number and dollar value of the recommended buys for the items in the universe from which the sample was selected, and the dollar value of the recommended buys of the sampled items.) We reviewed the validity of the essential data elements used in the requirements computation. Specific item attributes that were tested included leadtimes, safety levels, repair cycle times, special levels, planned program requirements, and first article testing requirements. All items did not have all of the above attributes; therefore, our testing was limited to the specific attributes of particular items. In addition, we determined how the activities forecasted demands and leadtimes and why the activities made manual changes to the computer-generated buy recommendations.

At WRALC, our review was limited to 65 of the 100 sample items because of time constraints. At ASO, supporting documentation was not maintained when the computer-generated recommendation was not bought, and thus we were not able to verify the reasons for about 50 percent of the sample items.

We reviewed agency directives and regulations and discussed the requirements determination process with agency officials in the materiel management and procurement directorates. We also reviewed studies performed by the cognizant service audit agencies, DOD, and Army Inventory Research Office. Upon completion of the audit work at each location, we briefed the officials on our results. Their comments have been incorporated in the appropriate sections of the report.

The results of our statistical sample projections at a 95-percent confidence level are presented in appendix II. We could not statistically project the results to the total items managed by the activity or on a service-wide basis. However, in view of the type and magnitude of findings, the overall effect could be quite significant and widespread.

CHAPTER 2

THE REQUIREMENTS DETERMINATION PROCESS--

A SYSTEM WITH MANY PROBLEMS

Determining logistics support requirements in the services is a complex, comprehensive business, involving billions of dollars annually. How well the services perform this task depends largely on the (1) adequacy and accuracy of the basic data used in the requirements determination process, (2) suitability of the logistics management policies and procedures, and (3) "front-end" planning process for identifying logistics support requirements. Otherwise, the services may find themselves in a situation where they have too little, too much, or an improper mix of stock on hand. In any case, expensive and time-consuming actions must be taken to correct the above situation.

If there is insufficient stock on hand, the logistics support activities cannot meet customer demands, and such actions as expedited procurement, redistribution of stock from other locations, and expedited transportation may be required to recover from out-of-stock positions. On the other hand, if too much stock is maintained, resources have been spent on an inventory that may never be required. This, in turn, sets in motion a whole train of unnecessary expenditures for more storage space, transportation, and personnel, not to mention the fact that large excesses are generated which must be purged eventually from the system, usually at a severe financial loss.

As previously discussed, the Army, Navy, and Air Force activities reviewed annually procure hundreds of millions of dollars of secondary items in support of billions of dollars of requirements. However, as shown in appendix III, the activities also annually dispose of millions of dollars of excess stock, and continue to maintain additional millions of dollars of stock over and above their requirements objectives. This does not mean that the same items procured during a period are the same items disposed of during that interval. However, such actions do raise concerns about the validity of requirements.

The question that immediately comes to mind is: "What is wrong with the logistical support system which allows such a situation to take place?" Unfortunately, there is no single answer to the question, and the causes are numerous. Major contributors may include inaccurate requirements data and a lack of trust in the largely automated requirements determination system.

In addition, there is little consistency and coordination among the services on the best way to determine requirements. Thus, techniques which seem to have merit or offer potential for doing something a better way are not exchanged with the other services and, as a result, opportunities to refine the requirements determination process are lost.

LACK OF REQUIREMENTS SYSTEM INTEGRITY

Determining the total requirement for an item is a complex matter, requiring consideration of numerous data elements. For this reason, the requirements determination process has been automated and the computer prints out, on a cyclical basis, buy recommendations when an item's asset position is below the reorder point. The item manager is responsible for monitoring the item, reviewing the recommendations and, within certain constraints, deciding to increase, decrease, delete, or purchase the recommended buy quantity.

The item manager is given considerable latitude in deciding what course of action should be taken. Factors which influence the decision may be historical knowledge of the item, funding constraints, or questions about the validity of the data used for computing the requirement.

One would normally think that in the absence of funding constraints, which would preclude buying the recommended amount, manual adjustments would be the exception rather than the rule. However, this is not the case. Adjustments to the recommended buy quantity are the general rule because the data used in the computation are inaccurate or out-of-date, or the item manager does not have trust in the system.

Although it is well recognized that the information in the data base must be continuously updated, questions arise when manual adjustments are made because the system is not trusted. Questions that become evident are "Why is the system distrusted?" and "If the distrust is warranted, what is needed to make the system creditable and workable?"

The intricacies of the requirements determination process, the sources of the needed data, and the numerous data systems that must interface to result in a requirements computation are complex and are difficult factors to comprehend. As a result, inventory managers may feel compelled to maintain separate manual records on asset receipts, issues, and due-ins. When these manual records do not agree with the computerized data, the natural tendency is to rely on the manual records. Additionally, managers may be aware that factors affecting an item's requirement are not in the system at the time they must make a requirement decision or they may believe that, based on experience, the computed requirements will not adequately meet future needs for a particular item. In such cases, managers may adjust leadtimes, safety levels, or demand forecast factors to produce a requirement which satisfies perceived needs. In more cases than not, managers, because of an ingrained philosophy to always have sufficient stock on hand, may adjust the requirement in a manner which reinforces this philosophy. For example, managers at one of the activities in our review followed a practice of using a standard leadtime which exceeded the actual leadtime in the requirements computation. As a result, leadtime requirements were overstated. The same activity also routinely added 30 days to the leadtime to compensate for the time required to ship items from contractors' plants to storage locations, even though actual data showed that the transportation time was about 11 days.

These actions not only result in overstated requirements and possible procurement of unneeded stock, but they also have a long-term effect from a budgetary standpoint. As discussed in chapter 5, the activities perform elaborate and comprehensive processes to eliminate unneeded requirements from the budget proposal. However, there is no real assurance that all unneeded requirements are eliminated, and the proposal may include millions of dollars of overstated requirements.

The lack of accurate requirements data has been the subject of various reports issued by GAO and the services' internal audit groups; however, many of the previously identified problems continue to exist. If the system is ever going to be creditable and if it is to work as it was intended, certain actions are necessary. Paramount among these actions is the need to

--purify the existing system data to ensure accuracy,

--provide procedures and systems to continuously update the data, and

--restrict manual intervention to those actions necessary to accomplish the above.

Taking these actions could improve requirements data, as well as reduce systems' operation costs.

In the absence of these actions, the requirements determination process will continue to be one that requires extensive manual adjustments and it may not be fully trusted by those responsible for making inventory management decisions.

WHAT ARE THE BEST WAYS TO DETERMINE ITEM REQUIREMENTS?

The services have different philosophies on how the factors used in computing requirements should be determined. These differences include when leadtimes begin and end and how demands and leadtimes should be forecasted. They also include initiatives undertaken to develop more accurate and realistic requirements.

The fact that there are differences does not mean that the method used by any one service is necessarily the best. However, the lack of uniformity does mean that items with like demand and leadtime characteristics would have different computed requirements. Also, because one service's methods or techniques may offer the potential for refining the requirements determination process, the other services may be missing opportunities for making similar advancements.

The following illustrates some of the differences used in computing requirements. Greater detail is provided in chapters 3 and 4.

When procurement leadtime begins

In general terms, the procurement leadtime is that period from the initiation of procurement action until the ordered items are received. Therefore, holding the leadtime to a minimum sufficient amount reduces requirements and inventory investment costs.

The Air Force, unlike the Army and Navy, does not have a near-real-time item requirements computation system. Significant time is required from the date of the initial requirements computation until a final decision is made on the amount to be procured or repaired. For example, about 30 days is required for field activities to report asset positions to the air logistics centers and another 30 days is reserved for item managers to manually update and review the requirements data base. This means that the system may contain inaccurate, outdated, or incomplete information which could be corrected if the data base and the computational process were updated promptly to ensure use of the latest available information.

These problems could be significantly reduced or eliminated if the Air Force had a near-real-time requirements system. Although we could not project the results Air Force-wide, it is reasonable to assume, and DOD agreed, that the lack of a near-real-time system causes the Air Force to inaccurately compute millions of dollars of reparable item requirements.

When leadtime is terminated

The Army terminates the leadtime when a contractor has shipped one-third of the ordered items. The Air Force terminates the leadtime when 10 percent of the ordered items have been received, and the Navy terminates the leadtime based on the average date of receipt of the first item by all consignees.

The Army and Air Force were unable to explain why leadtimes continued until a certain percentage of items were shipped or received other than they believed their methods served their purpose and were more representative than using receipt of the first item as the basis for terminating leadtime.

Because the Army terminates the leadtime when the items are shipped from the contractor's plant rather than when the items are received at the destination, 30 days is added to the leadtime to cover the shipping time. As shown in our review, the actual shipping time was considerably less than the 30-day standard and, as a result, leadtime requirements were overstated.

Demand and leadtime forecasting

The Navy's technique for forecasting demand and leadtime is unique among the services in that it involves filtering and smoothing. For example, demand and leadtime data which exceed the weighted average of historical data by a certain amount are excluded (filtered out) from the leadtime history. This precludes the forecast from being unduly influenced by atypical data. For data within the filter limits, the more recent data are given a lesser weight 1/ than the older data (smoothing), and a new demand or leadtime factor is computed. The effect of smoothing the data over a period is that the forecast will not overrespond to an indicated increase or decrease in the trend until there is sufficient data to support the trend.

The Navy's technique, particularly for forecasting leadtime, is unlike the Army's and Air Force's technique which uses the leadtime of the last representative buy as the basis for determining future leadtime requirements. One problem with their technique is that neither service has defined what constitutes a representative buy. The determination is made by the item manager who decides whether there were any unusual circumstances involved in the last buy which would make it atypical. Thus, it is common for the same item to have been bought at various times in varying quantities and to have widely varying leadtimes and yet be considered representative.

In addition, the Army follows the practice of using a standard (fixed) leadtime factor for requirements computation purposes, and it only uses the actual leadtime when it exceeds the standard. The overall effect is that the leadtime requirements are greater than if actual leadtime data are used. Army officials contend that leadtimes are increasing so rapidly that it is necessary to fix the data at an artificial level to compensate for the dramatic increases. While leadtimes are increasing, the use of standard leadtimes does not result in more accurate forecasts. To the contrary, our review showed that the use of historical leadtime data gives a much more accurate forecast.

1/When an item is trending up or down (see p. 19), the weighting factor is increased for the more recent data and decreased for the older data.

In the following chapters, we discuss the impact of the aforementioned problems on the requirements determination process and actions to be taken to make the process workable and creditable.

CHAPTER 3

INCONSISTENCY IN COMPUTING LEADTIMES RESULTS

IN SIGNIFICANTLY OVERSTATED REQUIREMENTS

A lack of uniformity and coordination exists among the services regarding when the procurement leadtime ends and what the leadtime requirements should be for items requiring first article testing. In addition, the Army's rationale for including a delivery leadtime factor in its production leadtime is not supported by actual experience.

This lack of uniformity and coordination has caused the services to miss opportunities to refine their leadtime requirements. Since each day of leadtime equates to several hundred thousand dollars, lost opportunities to reduce leadtimes can mean the unnecessary expenditure of vast amounts of funds.

WHEN SHOULD PROCUREMENT LEADTIME END?

The services are fairly consistent as to when the procurement leadtime begins. However, there are major differences in when the leadtime ends. For example, the Army terminates the procurement leadtime when a cumulative total of one-third of the ordered items are shipped; the Air Force terminates the procurement leadtime when 10 percent of the items are received; and the Navy terminates the leadtime based on the average initial receipt date of an ordered item by all consignees.

Thus, depending on the service, items ordered the same date and received on an incremental basis in like quantities could have significantly different procurement leadtimes. We did not determine the impact that the different leadtimes had on the activities' operating requirements because sufficient information was not available to associate receipt quantities and receipt days for each of the three methods. However, the impact on leadtime requirements would be significant because each day of procurement leadtime has a dollar value, ranging from several hundred thousand to over a million a day, as shown below.

Activity	Dollar value of each day of procurement leadtime (note a)
ASO	$1,250,000
MICOM	870,000
WRALC	719,000

a/The wide variance in the values of leadtime is due primarily to the number of items each activity managed and item cost.

As indicated above, leadtime requirements are an expensive element in an activity's total cost of operation and, therefore, every effort should be made to keep such requirements to a minimum. One way would be to develop a uniform method among the services regarding when the procurement leadtime is terminated. The preferred method would be the Navy's which cuts off procurement leadtime upon receipt of the first item.

Officials at the three activities in our review were not able to explain why particular leadtime termination points were used. They speculated that these evolved over time and that there was no specific reason for using one method versus another. Air Force officials said that in the absence of a clear definition of what constitutes a procurement leadtime, the Air Force developed a criterion that procurement leadtime would be terminated when 10 percent of the items are received. They also stated that this criterion is reasonable.

In addition to employing a different leadtime termination point, we found that the Army

--Arbitrarily adds 30 days to its production leadtime which has resulted in overstated requirements.

--Needs to revise its method for determining leadtime requirements for items with a first article testing requirement. By adopting a method similar to the one that the Air Force uses, the Army could potentially reduce its requirements by several million dollars without affecting its ability to meet users' needs.

<u>Army adds 30 days delivery leadtime to its production leadtime</u>

The Army, unlike the other services, adds 30 days to an item's production leadtime to compensate for delivery from a contractor's plant to the storage location. However, this additive is excessive when compared to actual experience and has resulted in overstated leadtime requirements at MICOM totaling about $1.3 million for the items in a buy position in August 1980. (See app. II.)

The Army orders its items free onboard point of origin; therefore, the production leadtime is calculated from the date of contract award to the date the items are ready for shipment from the contractor's plant. To complete the link from the contractor's plant to the storage location, the Army assumes an additional 30 days is required and adds this amount to the production leadtime cycle.

Our analysis of 53 sample items which had a total of 228 receipts during the last 2 years showed that the actual delivery time averaged about 11 days and that 90 percent of the items were received within 15 days, as shown on the following page.

Number of receipts	Delivery time from contractor's plant to storage location				
	1-10 days	11-15 days	16-20 days	21-30 days	over 30 days
228	155	52	13	3	5

Reducing the delivery leadtime from 30 to 15 days would reduce leadtime requirements for the 53 sample items about $80,000 and, when projected to the universe of items in a buy position during August 1980, would reduce requirements about $1.3 million.

MICOM officials stated that the 30-day additive was directed by the Army Materiel Readiness Command and has been in effect since the late 1950s. Other than that, the officials could not offer any rationale or justification for adding 30 days to the production leadtime.

Army officials stated that since no standard DOD definition exists for production leadtime, there is no justification to eliminate one portion of the leadtime for the Army. Furthermore, the Army Inventory Research Office has been directed to perform a delivery leadtime study.

We are not suggesting that the 30-day additive be deleted for the Army, but rather that it be limited to actual leadtime as opposed to a constant 30 days. Regarding the study being performed by the Army Inventory Research Office, we applaud the Army's effort in this area. However, the Inventory Research Office does not set Army policy and can only suggest recommended changes. For that reason, we believe action must be taken by the Secretary's office to resolve the matter.

DETERMINING LEADTIME REQUIREMENTS FOR ITEMS REQUIRING FIRST ARTICLE TESTING

To qualify a new contractor and assure that the contractor can provide a quality product, the services may require that an item be tested and approved--first article testing--before the contractor is authorized to proceed with production. Since it is assumed that additional leadtime will be required for an unproven contractor to produce and receive production approval, the services have devised various means for determining this additional leadtime.

In general, the Army doubles the production leadtime and associated requirements under the assumption that a new contractor will require the normal leadtime to produce the first item and the same amount of leadtime to produce the remaining items. The Air Force, on the other hand, does not increase the leadtime for such items, but instead reviews the asset position at the time of contract award and determines if interim support may be required. The Navy uses yet a third method: it splits the contract award between a proven source of supply and a new contractor. The additional time means added requirements. In the case of the Army, it has resulted in millions of dollars of overstated requirements because the test is normally waived but the requirements are not reduced. These variances point out the need for a more uniform approach for determining first article test requirements.

Army

The MICOM Product Assurance Directorate has responsibility for identifying which type items should have a first article testing requirement. Once this determination has been made, the testing requirement remains with the item unless it is a sole source or restricted source item. For competitive buys, MICOM assumes a new contractor will receive the award and computes the leadtime requirements as illustrated by the following hypothetical item which has a production leadtime of 12 months and leadtime demands of 100 items, excluding the delivery leadtime.

	Leadtime (months)	Requirements
Time to produce first item	12	1
Demands during the time required to produce first item	-	100
Time to test and approve first item	2	17
Time required to produce remaining items	12	100
Delivery leadtime	1	8
Total	27	226

Under MICOM's procedure, every time the above item comes up for buy, the leadtime and requirements would be 27 months and 226 items even though the normal leadtime is 13 months and total leadtime demands are 108 items. Furthermore, if the award is to a qualified contractor and the first article testing requirement is waived, neither the leadtime nor the requirements are reduced.

MICOM officials stated that the requirements and the leadtime should not be adjusted when the award is to a qualified contractor and the first article testing requirement is waived because the waiver is not made until after contract award. We agree that it may be too late to reduce the requirements after contract award. However, there are alternatives as discussed on pages 14 through 16, to avoid getting locked into a larger than needed quantity before contract award.

We determined that 16 of the 100 sample items had a first article testing requirement. However, in each case the testing requirement was waived after contract award, but the leadtime and the leadtime requirements remained unchanged. As a result, the requirements were overstated for the 16 sample items as shown below. When these results are projected to the universe of items in a buy position during August 1980, we estimate that requirements were overstated $8 million. (See app. II.)

Sample item	Leadtime without first article test requirement	Leadtime with first article test requirement	Difference (months) (note a)	Value of difference (note b)
4935-01-047-6011	15	28	13	$ 38,610
1260-01-073-5551	12	22	10	6,258
4935-00-591-0617	12	22	10	1,566
1430-01-064-3226	13	24	11	8,000
4935-00-136-4895	13	24	11	75,475
5895-01-037-0157	14	26	12	3,240
1430-00-998-1715	16	30	14	267
5962-01-087-6730	11	20	9	(c)
1260-01-073-1657	11	20	9	142
4140-00-769-7211	14	30	16	70,026
1430-00-875-0740	16	30	14	251,068
4935-00-019-3028	12	22	10	12,250
1430-01-033-1087	11	20	9	700
1430-00-488-1091	15	28	13	9,212
1430-00-459-3239	17	32	15	15,188
3020-00-455-9362	14	26	12	1,570
Total				$493,572

a/Includes 2 months for testing. The balance represents the production leadtime allowed to produce the first article.

b/Unit price X average monthly demand X production leadtime months for first article production and test.

c/Unit price and average monthly demand were not shown in the source data for the sample item.

As discussed below, the other services, particularly the Air Force, have better methods for determining first article testing requirements.

Air Force

The Air Force does not increase the production leadtime for an item with a first article testing requirement. If a new contractor wins the award, WRALC reviews the item's support position and determines if interim support may be required to meet the demands until the new contractor can deliver. If the need for interim support is anticipated, a sole source or select source award is made on an urgent basis to a qualified producer for a quantity equal to 6 months' demands plus any backorders since the requirements computation.

None of the items sampled at WR-ALC had a first article testing requirement; therefore, we could not determine the number of instances when interim support was required or how the determination was made. Nevertheless, the Air Force's method provides item managers greater flexibility for determining leadtime requirements than either the previously described Army method or the Navy method which follows.

Navy

The Navy's method for determining first article testing leadtime is similar to the Army's in that it provides additional leadtime requirements. At the same time, it has similarities to the Air Force's method in that it provides for awarding a part of the requirement to a proven source to ensure continued supply.

More specifically, ASO first identifies the items which will be competed as opposed to those which will be awarded on a sole or selective source basis. For items which will be bought competitively and which have a first article testing requirement, the technical review division estimates the additional leadtime a new producer will require. Such factors as the needed material, special processing or manufacturing techniques, and who will perform the testing, influence this determination. When an item with a first article testing requirement is in a buy position, the automated requirements determination system prints out a recommended buy based on the historical leadtime. The item manager then recomputes the requirement based on the technical review division's estimate.

Once the requirement has been recomputed, a decision, based on the following criteria, is made as to whether to split the award.

--Reparables--If the sum of assets on hand, due-ins, and reparable carcasses is less than the sum of the safety level and demands during leadtime, a contract equal to backorders and 2 months' safety level is awarded on a sole or selective source, and the balance of the requirement is competed.

--Consumables--If the computed buy based on the additional leadtime exceeds the computer-generated buy by 10 percent or more, 50 percent of the requirement will be awarded sole or selective source and 50 percent will be competed.

For the competitive portion of the requirement, bids are solicited for 50, 75, 100, 125, 150, and 200 percent of the estimated requirement to be awarded. The solicitation is worded so as to allow ASO to accelerate delivery if the first article testing requirement is waived. However, once ASO determines which percentage of the requirement will be bought--supposedly before the bids are evaluated--the requirement cannot be adjusted even if the award is to a proven source and the testing requirement is waived.

None of the ASO sample items had a first article testing requirement; therefore, we could not determine the number of cases in which the requirement was waived or the award was to a proven source. However, in fiscal year 1980, ASO awarded contracts totaling $36 million for items with a first article testing requirement.

CONCLUSIONS

The inconsistencies among the services as to when production leadtime is terminated mean that items ordered by different services on the same date and received on the same date could have significantly different production leadtimes. These differences can mean millions of dollars in additional operating requirements to a particular service.

Although we did not make a judgment as to which service's leadtime termination point was the best, we believe that there should be a DOD standard for computing leadtimes in view of the significant requirements costs involved.

The method for determining leadtime requirements for items with a first article testing requirement also differs widely among the services--particularly between the Army and Air Force. The Army essentially doubles the leadtime requirements, whereas the Air Force allows items managers sufficient flexibility in determining if additional requirements are needed after the contract has been awarded. This method avoids being locked into a requirement for which a need may not exist. The Navy's method is more flexible than the Army's but not as flexible as the Air Force's method. In our opinion, both services could benefit from a method similar to the Air Force's.

The Army arbitrarily adds a 30-day delivery leadtime factor to its production leadtime when, in fact, the actual delivery leadtime is substantially less than 30 days. At MICOM, reducing the delivery leadtime from 30 to 15 days--the actual average is about 11 days--would result in reduced leadtime requirements.

In our opinion, the above-cited inconsistencies could be resolved by establishing specific DOD guidance which takes the best of each service's method and by applying the method uniformly among the services. Such action could reduce total operating requirements by millions of dollars.

RECOMMENDATIONS

We recommend that the Secretary of Defense issue guidance to the services which specifically states

--what constitutes the termination of production leadtime, and

--how leadtime requirements for items with a first article testing requirement should be determined.

In a separate report to the Secretary of the Army, we recommended that the use of a standard 30-day leadtime be discontinued and that actual or more appropriate delivery leadtime values be used.

AGENCY COMMENTS

DOD agreed with the recommendations. DOD stated that the recent trend of increasing leadtimes has resulted in the need for a more uniform DOD policy regarding measurement of these leadtimes. Specific changes to the current leadtime policy will be made as required in the course of a long-range review of materiel stockage policy.

Regarding the matter of the Army discontinuing a 30-day standard delivery leadtime, DOD advised that the Army Inventory Research Office has been directed to perform a leadtime study which should satisfy the recommendation.

CHAPTER 4

THE NAVY'S DEMAND AND LEADTIME FORECASTING TECHNIQUES COMPARED WITH THOSE OF THE OTHER SERVICES

The services have developed widely varying techniques for forecasting what will be needed and how long it will take to get the needed items. In general, the Navy's forecasting technique is more sophisticated than the other two services' primarily because it recognizes that certain demand and leadtime observations are atypical and can unduly influence forecasts. Generally, such data would be merged with other historical data under the Army's and Air Force's techniques.

THE SERVICES' DEMAND FORECASTING TECHNIQUES

Forecasting demand, that is, predicting future needs, is a difficult task because historical experience is often not representative of what will occur in the future. Events, such as systems may have been phased into or out of the inventory, missions may have changed, or past usage may have been unduly influenced by factors that will not reoccur, can affect future needs. Because of these uncertainties and the adverse effect that can result from faulty forecasts, the importance of accurate forecasts cannot be overemphasized.

The services' techniques vary significantly from the Army's relatively simple approach to the Navy's much more comprehensive and complex approach which considers variances in demand that can dramatically affect the forecast's accuracy. The following sections describe each of the services' techniques.

Navy

The Navy's demand forecasting technique provides realistic forecasts because it filters out atypical demand observations that can unduly influence the forecast. Although the filtering and smoothing process is used for both reparable and consumable items, the manner in which the forecasts are developed is somewhat different.

The demand forecast for reparable items (program related) is the product of the maintenance demand forecast 1/ and the

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1/Sum of the last 4 quarters' maintenance and overhaul demands divided by the sum of the last 4 quarters' flying hours.

anticipated flying hours during the procurement leadtime average. However, before the demand observation is considered as part of the forecasting formula, it is subjected to the filtering test. If the current observation exceeds the previous demand forecast by 3 times the standard deviation of demand or is less than the previous demand forecast by 3 times the standard deviation of demand, it is automatically rejected as being atypical. When an observation is rejected, it is reviewed by the item manager who determines if it is atypical, and if not, includes it in the forecast. Otherwise the forecast is not changed.

There is an exception to the rule that observations outside the limits are rejected. If the observations for 2 consecutive quarters are outside the limits (either high or low), then the forecasting system automatically includes both observations and computes a new forecast.

For nonprogram related items (mostly consumables), the demand forecast is determined by weighting the current demand observation and the previous demand forecast, using the following formula: [(A) (current observation) + (1-A) (previous forecast)]. The value of A depends on whether an item is trending 1/ or non-trending. If an item is trending, then a weighting factor of 0.4 is used for the current observation and a weighting factor of 0.6 is used for the previous forecast. However, if an item is non-trending, a weighting factor of 0.2 is used for the current observation and a weighting factor of 0.8 is used for the previous forecast. The reason for increasing the weighting factor for the current observation when an item is trending is to obtain a faster demand forecasting response.

The current observation for nonprogram related items is subjected also to the filtering test. If an item is fast moving, the same filtering test used for program-related items is used. For slow moving items, if the current observation is greater than the maximum of 15 or is 3 times the previous forecast, the observation is rejected and must be reviewed by the item manager who determines whether it should be included. As previously discussed, if the observations for 2 consecutive months are outside the limits, the observations are automatically included, and a new forecast is computed.

The Navy and DOD have evaluated various aspects of the forecasting system over the last 3 years. The studies generally concluded that a system which identifies trends, excludes erratic demand data, and uses varying weighting factors in the smoothing

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1/An item is considered trending, either up or down, if the ratio of 2 times the sum of the last 2 quarters' demands divided by the sum of the last 4 quarters' demands is greater than 1.5 or less than 0.99.

process is more responsive and accurate than a system which uses a moving average as the basis for forecasting demands.

In 1978 the Navy tested the validity of the weighting factors used by ASO--0.2 for nontrending items and 0.4 for trending items. The Navy concluded that increasing the weighting factor for current demand data provides a more accurate forecast than does the moving average method. At the same time, however, it may overreact to sporadic demands and generate additional funding requirements unless some method is used to detect those type demands.

In 1979 the Navy made a study to determine the relationship between the forecasting technique and actual demands. The study concluded that the forecasting technique, particularly for consumables, was overstating forecasted demands because the filter limits were too low. Consequently, there were too many instances where demand observations were being rejected. However, because of the system, observations which were rejected for 2 consecutive quarters automatically became a part of the forecast. The study recommended, and ASO agreed, that the filter limits be increased.

Later in 1979, the Navy studied the effect that increasing the filter limits had on the trending ratio. 1/ One effect was to reduce the number of rejected observations being included in the forecast due to the two consecutive rejection rule. Another effect was to increase the number of demand observations being initially included, which caused a trend change. Thus, greater weight was being given to the current demand data, and the forecast was reacting more quickly than normal to the demand data. The study concluded, and ASO agreed, that the trending ratio indicating an upward trend should be increased from 1.2 to 1.5 so as to reduce the number of trend changes and the forecast's response.

In 1980 DOD issued a report which stated that the forecast system for nonprogram related items was not responding rapidly enough when the items were part of a weapons system being phased out. DOD recommended that the forecast for declining programs be based on anticipated activity--as is the forecast for program related items--rather than on past experience. ASO agreed and implemented a system which uses both the program-related and nonprogram-related forecast techniques to forecast demands for declining programs.

1/At ASO, if the ratio of

$$2\,\frac{(\text{sum of last 2 quarters' demands})}{(\text{sum of last 4 quarters' demands})} \geq 1.2 \text{ or} \leq .99,$$

the item is trending. In such cases, the more current data is weighted at 0.4 versus 0.2 when the item is nontrending.

Army

The Army's technique for forecasting demands consists primarily of automatically extending, up to 60 months, recurring demands over the past 24 months and adjusting for any known program changes. The automated forecasting system does not compensate or adjust for nonrecurring or cyclical demands which can unduly influence the forecast. The item manager is responsible for detecting such variances and for making appropriate adjustments.

Army officials said the Army's technique excludes atypical demands and includes program data (flying hours or end-use density) to accommodate trends in an item's demand pattern. However, the Army has experienced problems with field activities reporting nonrecurring demands as recurring demands, and since there are no checks built into the automated forecasting system, demand forecasting has been a subject of much concern.

According to a DOD report issued in August 1980, this situation is a major problem, and inaccurate demand forecasting is the major contributor to items being in long supply. The report also noted that the Army does not use the trend analysis 1/ to forecast demands as the other services do. DOD stated that the use of trend analysis is an integral part of demand forecasting and a long-range study of the matter is planned.

As discussed in the following sections, the use of trend analysis by the other services is regarded as an important aspect of the forecasting technique.

Air Force

The Air Force forecasts demands by applying a program ratio to the planned program activity. To illustrate, the Air Force computes a base repair rate by dividing the number of reparable items repaired at base level during the past 24 months by the total flying hours during the same period. Then, to compute a depot demand rate, it divides the number of reparable items repaired at the depot during the past 24 months by the flying hours during the 24-month period. It then multiplies the sum of the two rates by the planned quarterly flying hours to arrive at the forecasted demands. It updates these forecasts quarterly and arrives at newly computed base repair and depot demand rates by deleting the oldest quarter's data and adding the latest quarter's data.

1/The analysis of demands over a period of time to determine if demands are increasing or decreasing. Such an analysis also detects erratic demands which could be an indicator that nonrecurring demands are being used in the forecast.

For certain items which meet prescribed criteria 1/, the Air Force uses a predictive logistics model which analyzes trends and forecasts demands using regression analysis. Generally, the model forecasts demands by plotting curves through data points which represent past quarterly demand rates and then by mathematically projecting the curve forward in time. However, not all reparable items are suitable for predictive logistics forecasting because of the items' demand patterns. For example, at WRALC, during the June 1980 computation cycle, only 592 of the 34,527 reparable items met the criteria for predictive logistics forecasting. In the majority of the cases, the model's forecasted demands are less than the moving average method's because the model recognizes that demand rates outside certain parameters may be atypical.

THE SERVICES' LEADTIME FORECASTING METHODS

The services use different methods to forecast leadtime requirements, that is, the amount of stock needed to meet requirements from the time procurement action is initiated until the order is received. The Army and Air Force use the last representative buy to forecast leadtime requirements; whereas, the Navy uses a sophisticated filtering and smoothing process which recognizes and considers wide variations in previous leadtimes and assigns weighting factors to the most recent and older leadtime data. Thus, leadtime data that would be considered by the Army and Air Force might be excluded as being atypical by the Navy.

The Navy's leadtime forecasting technique offers distinct advantages over the other services' methods. First, the Navy's technique rules out leadtime observations which are not consistent with previous experiences; whereas, the Army's and the Air Force's last representative buy methods do not. Secondly, the Navy's smoothing process, which is essentially a weighted average, evens out peaks and valleys within the prescribed limits and thus the forecast is more consistent over a period of time. Again, the last representative buy method does not offer this consistency, and as a result, the leadtime forecasts can vary widely from period to period based solely on the last observation/last representative buy.

The inconsistency of using the last representative buy was pointed out in a study performed by the Army's Inventory Research Office which recommended that an average of the last 2 years' observations be used to forecast leadtimes. The study concluded that use of the averaging method at the one activity

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1/Even though an item may not meet the criteria for predictive logistics, the equipment specialist can request a study for the item.

reviewed, could reduce leadtime requirements $16 million without adversely affecting supply responsiveness. As of May 1981, the Army had not decided whether the averaging method would be adopted. The following sections describe each leadtime forecasting method and provide the services' rationale and assumptions for using the particular method.

Army

Army Regulation 710-1 provides that production leadtime will be forecasted on the basis of the last representative buy or on the leadtime value in the signed, but undelivered, contract. Leadtime history is maintained on each item for a 2-year period, and each leadtime transaction is coded as either "R" for representative or "N" for nonrepresentative. 1/

MICOM interpreted the regulation to mean that leadtime should be based on the production leadtime value coded "R" or on the leadtime value in the signed, but undelivered, contract, whichever is larger. Since longer leadtimes mean larger leadtime requirements, MICOM's forecasting method overstates leadtime requirements. For example, if the last representative buy of an item had a production leadtime of 9 months and the leadtime estimate in the latest signed, but undelivered, contract was 10 months, MICOM would use the undelivered contract leadtime as the basis for future awards. Conversely, if the last representative buy had a production leadtime of 10 months and the latest undelivered contract had a leadtime estimate of 9 months, MICOM would use the leadtime value of the last representative buy as the basis for future awards.

Our analysis of 70 sample items for which historical leadtime information was available showed that if the latest leadtime value, rather than the larger of the two leadtime values, had been used as the leadtime basis for future awards, production leadtime requirements could have been reduced about $60,000, as shown below.

Value of requirements using the larger leadtime of the last representative buy or latest signed, but undelivered, contract.	$176,334
Value of requirements using the latest leadtime data--either last representative buy or signed, but undelivered, contract.	114,306
Difference	$ 62,028

1/All shipments from contractors to depot locations are considered representative. Direct shipments from the contractor to the user are considered nonrepresentative.

On the basis of the above, we believe that MICOM overstated the production leadtime requirements for the 1,948 items in a buy position during August 1980 about $1 million. (See app. II.)

MICOM also uses a standard administrative or production leadtime value, instead of a historical leadtime value, to compute requirements. This method also overstates leadtime requirements.

Our review of the 100 sample items disclosed that the administrative leadtime for 35 items and the production leadtime for 32 items were based on a standard. In all but 10 cases, the standard leadtimes exceeded what it would have been if the leadtimes had been based on the last representative buy or the latest signed, but undelivered, contract. As a result, the requirements were overstated by $140,000. For the 10 cases where the standard leadtime was less than the historical leadtime, the value of understated requirements was $24,000. The following table shows the number of sample items reviewed and the results of using a standard versus a historical leadtime.

	Leadtimes	
	Administrative	Production
Number of sample items with standard leadtimes	35	32
Sample items where the standard leadtime was greater than the historical leadtime	14	17
Sample items where the standard leadtime was less than the historical leadtime	7	3
Sample items where the historical leadtime not available to make a comparison	5	10
Sample items where standard and historical leadtimes were the same	9	2
Dollar value of inflated requirements by using standard leadtimes	$79,128	$60,892
Dollar value of understated requirements by using standard leadtimes	$17,553	$ 6,416

We estimate that for the items in a buy positon as of August 1980, MICOM has inflated its leadtime requirements $2.3 million ($1.3 million in administrative leadtime and $1.0 million in production leadtime) and has understated requirements $392,000 ($287,000 in administrative leadtime and $105,000 in production leadtime). (See app. II.)

MICOM officials believe that the use of a standard leadtime allows them to obtain better forecasts. However, our analysis did not support this contention. We compared the latest administrative and production leadtimes as of August 1980--the date of our sample--to the standard leadtimes and the latest leadtimes as of February 1981, and found that the August 1980 leadtimes more nearly approximated the latest procurement actions, as shown below.

	Leadtimes	
	Administrative	Production
Number of sample items where the latest leadtime as of Aug. 1980 was closer to the latest leadtime as of Feb. 1981	20	16
Number of sample items where standard leadtime was closer to latest leadtime action as of Feb. 1981 than the latest leadtime as of Aug. 1980	9	6
Number of sample items where historical information was not sufficient to make a comparison	6	10
Total	35	32

Army officials concurred that activities should follow the procedures prescribed in Army regulations for forecasting leadtimes. They said these procedures will be reemphasized to all inventory control activities.

Air Force

The Air Force also uses the last representative 1/ buy as its basis for forecasting procurement leadtime requirements. If there are no representative buys, then leadtime standards or contractor estimates can be used to forecast requirements. Leadtime standards are used only when actual or contractor estimates are

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1/All buys except those involving expedited deliveries and buys where the item manager determines the leadtime was not realistic.

not available, and in such cases, a standard administrative leadtime of 3 months and a production leadtime of 9 months are used. However, even in cases where historical leadtime data are available, the administrative and production leadtimes used to compute requirements cannot exceed 6 and 18 months, respectively, without supervisory approval.

Our analyses of the leadtime computation for the sample items reviewed at WRALC showed that the activity followed its prescribed procedures for forecasting leadtime requirements.

Navy

The Navy uses a filtering and smoothing process which rejects variations in leadtimes from the forecast if the variations are outside prescribed parameters. This forecasting method ensures that atypical data does not influence the forecast.

The leadtime parameters established by ASO are as follows:

--Upper limit - Two times the current leadtime average.

--Lower limit - Three-fourths of the current leadtime average.

Those observations that are outside the parameters are reviewed by the cognizant item manager. The manager can include the observations in the forecast if it is determined that the variations are not caused by unique or atypical circumstances.

Leadtime observations that are within the parameters are weighted and smoothed. At the time of our review, ASO used a weighting factor of 0.5 for the most recent observation and for the current average.

The following examples illustrate the effect of the filtering and smoothing process and compare the process to the Army's and Air Force's method.

Example 1

Sample item 01-078-0024 had a current leadtime average of 231 days. Since the last observation (487 days) exceeds the upper filtering limit of 2 times the current average (462 days), the observation would be rejected. However, if the item manager, based on a review of the reasons for the variation, decided to include the observation, it would be smoothed in with the leadtime history and its forecasted leadtime would be 359 days [(0.5 x 487) + (0.5 X 231) = 359]. Otherwise, the leadtime would remain at 231 days.

The forecasted leadtime for the same item would be 487 days if the Army's and Air Force's last representative buy method were used.

Example 2

Sample item 00-235-3014 had a current leadtime average of 728 days. Since the last observation (519 days) was less than 0.75 of the current average, the observation would be rejected. However, if the item manager decided that the observation should be included, the new leadtime forecast would be 624 days [(0.5 X 519) + (0.5 X 728) = 623.5]. Otherwise, the leadtime would remain at 728 days.

In this example, the Army's and Air Force's forecast would be 519 days.

CONCLUSIONS

The services have developed significantly different methods for determining the anticipated usage of an item and what length of time will be required to obtain the item--forecasting demands and leadtime.

The major difference in the services' forecasting techniques is that the Navy's technique recognizes that certain demands and leadtime data are atypical, and therefore, does not consider such data in forecasting. The Navy's system also discerns trends and, in such cases, applies an increased weighting factor to the more current data in order to quicken the forecast's response. The Army's and Air Force's forecasting technique, with one exception, does not have these same qualities, and as a result, the accuracy and reliability of their forecasts are subject to question.

The exception referred to above concerns the Air Force's predictive logistics demand forecasting technique--a forecasting model which excludes certain demand data as atypical. Although a predictive logistics study can be performed on any item, its use is somewhat limited to those items that meet certain criteria.

The Army's technique for forecasting demands and leadtime does not possess any of the quality features previously described, and it has been a subject of various studies by the Army and DOD. In fact, DOD will study and determine the adverse affect of a system which does not recognize atypical and trending data.

The Army's production leadtime forecasting technique is based on the last representative buy which may or may not be truly representative. However, MICOM does not follow the prescribed technique. It has opted to use the maximum of the so-called last representative buy or the leadtime estimate shown in the latest signed, but undelivered, contract. To further compound the matter, MICOM uses a standard leadtime, for a large percentage of its items, at a constant level which is atypical of historical leadtime data.

RECOMMENDATIONS

We recommend that the Secretary of Defense direct the Secretaries of the Army and Air Force to develop demand and leadtime forecasting techniques which identify and exclude atypical demand and leadtime data and recognize item trends.

In a separate report to the Secretary of the Army, we recommended that leadtime forecasting be based on the procedures prescribed in Army Regulation 710-1. It is intended that the prescribed procedures be an interim measure until a uniform forecasting method is developed.

AGENCY COMMENTS

DOD agreed with the recommendations and pointed out that a research contract recently was awarded to identify and develop uniform DOD-wide forecasting techniques for use in materiel requirements computations and that, after contract completion, directions will be issued to all DOD components.

DOD also advised that the Army will take action to ensure that all inventory management activities adhere to established forecasting procedures, pending implementation of the contract results.

CHAPTER 5

DATA INTEGRITY IS LACKING

IN THE AUTOMATED REQUIREMENTS

DETERMINATION SYSTEMS

Operating and maintaining the automated requirements determination systems require the time and effort of numerous personnel and cost the services millions of dollars annually. Irrespective of the time and expense involved, the requirements are often based on inaccurate data, and the computer-recommended buys are not always reliable. As a result, the computer-recommended buys must be reviewed manually and adjusted before procurement action can be taken.

We recognize that misstated requirements do not automatically result in misstated procurements because the amount actually bought can be influenced by such factors as funds available or a decision to accept a higher risk of stocks being depleted. However, in view of the Administration's desire to increase defense spending in the logistics area, the probability that misstated requirements will result in misstated procurements increases significantly.

It is also recognized that a certain amount of manual file maintenance is required to update the data systems. However, the magnitude and type of manual adjustments are more than just normal file maintenance as indicated by the fact that about 65 percent of the requirements computations involve manual adjustments. This raises a question as to the value of an elaborate and expensive system which does not provide needed requirements information.

We did not validate the adjustments made at two of the activities reviewed. However, our validation efforts at the third activity showed that manual adjustments were often incorrect, which resulted in overstated and understated requirements and unnecessary procurements. These unnecessary procurements were canceled after we brought the matter to the attention of agency officials.

Making these adjustments is expensive and time-consuming. Although this situation may be bad in peacetime, it could be even worse in a wartime environment when time could preclude purging the faulty data from the system and could result in valuable resources being spent for items not needed.

Further compounding the problem is the fact that the services use the same data to determine budget requirements. Although an extensive scrub process is performed to eliminate and correct the faulty data, there is no real assurance that all errors are identified and that budget requirements represent valid needs.

SYSTEM COSTS

At the three activities in our review, agency officials estimated the annual cost of operating and maintaining the automated requirements determination systems at $34 million as shown below.

Activity	Computer operations	Personnel	Total
	----------------(millions)----------------		
ASO (note a)	$1.8	$ 8.4	$10.2
MICOM (note b)	3.8	16.0	19.8
WRALC (note c)	0.1	4.1	4.2
Total	$5.7	$28.5	$34.2

a/Includes direct and indirect costs associated with determining requirements.

b/Includes direct and indirect costs associated with managing approximately 58,000 primary and secondary line items.

c/Includes only direct costs attributable to management of reparable items and not personnel costs for those who interface with other systems which support management of these type items. Also, excludes the costs associated with the management of consumable items which were not a part of our review.

Although no direct comparison can be made of these costs because of the different type costs included in each estimate, it is readily apparent that operating and maintaining a requirements determination system is costly.

One contributing factor to the cost variances among the three activities is the frequency of requirements computations. ASO computes its requirements monthly for reparable items and weekly for consumables, while MICOM computes its requirements on a monthly basis. In contrast, WRALC computes its requirements quarterly. Obviously, the costs to operate the requirements system increase when requirements are computed more frequently. However, there are distinct advantages of having more frequent computations, which may offset any additional costs. For example, more frequent requirements computations allow for more near-real-time data. This in turn, allows managers to (1) more accurately compute requirements and to better assess needs in relation to readiness condition, (2) maintain more current and accurate system data, and (3) better assess the status of onhand stock, that is, serviceable versus unserviceable assets, and thus attain a more responsive repair capability when such action is needed.

Air Force officials said they are developing a new requirements system which will provide near-real-time capability and will allow them to achieve the above-stated benefits. They further advised that the system is being developed in four phases and that the final phase is several years away.

VALIDITY OF COMPUTED REQUIREMENTS AND MANUAL ADJUSTMENTS

The computer-recommended buys for many of the sample items selected for review at the three locations were adjusted manually because of incorrect requirements data as shown below.

	ASO		MICOM		WRALC	
	No.	Value	No.	Value	No.	Value
		(millions)		(millions)		(millions)
Sample items selected	100	$8.0	100	$2.8	65	$24.3
Sample items manually adjusted	83	7.3	63	2.4	26	12.6

Reasons for manual adjustments at ASO and MICOM are stated below. Specific reasons were not available for WRALC.

Reasons	ASO	MICOM
Onhand and due-in assets understated	14	11
Requirements overstated	15	19
Uneconomical buy quantity	3	2
System design undergoing change	-	3
Item is obsolete	-	9
Funds not available	8	2
Recommended buy automatically canceled due to lack of action by inventory managers	27	-
Procurement deferred after identify EXTRO excluded (note a)	-	4
Other (note b)	22	13
Total	c/89	63

a/Extended requirements objective - a code used to preclude a quantity of items from being declared potential excess.

b/The buy recommendation was not valid; however, the item manager could not provide specific reasons for documentation to support the decision not to buy.

c/Some items' computations were adjusted for more than one reason.

We did not validate the reasonableness of the manual adjustments at ASO and MICOM because

--ASO item managers are not required to maintain supporting documentation for their decisions not to buy the recommended amount and

--our review at MICOM was directed at the leadtime aspects of the requirements computation.

However, at WRALC, we validated the computed requirements and the adjustments made to the initial and final computations and found that incorrect data resulted in overstated and understated requirements of $2.5 million and $260,000, respectively, for 30 of the 65 sample items reviewed. 1/ These invalid requirements further resulted in unnecessary procurement actions of about $1.3 million. 2/ When this was brought to the attention of agency officials, action was taken to cancel the procurements.

The Air Force prepares an initial computation about 30 days after each calendar year quarter ends. Item managers update the data base and correct erroneous data contained in the initial computation. Once this has been accomplished, a final computation is made, and it is from this data that item managers decide whether to buy the recommended quantity. As shown in the following table, adjustments were made to the number and dollar value of items in a buy position between the initial and final computations for the June 30, 1980, cycle--the universe from which the sample items were selected.

	Computation	
	Initial	Final
Number of items in a buy position	3,808	4,642
Value of items in a buy position ($ millions)	$1,130.1	$1,107.8

1/While the results can be statistically projected to the universe of items in a buy position, the wide dollar range of overstatements and understatements for individual items causes the projected value to have large plus and minus sampling ranges. (See app. II.)

2/The overprocurements were not projectable to the universe because all of the items were not part of our statistical sample.

Even after the item managers had supposedly corrected the faulty data, we found that the requirements computations were often based on incorrect data. In some cases, the system data had not been corrected during the manual review, and in other cases, the manual adjustments were in error. The type of errors noted indicate that the personnel responsible for reviewing the computations (1) did not fully understand the interworkings of the automated system, (2) incorrectly interpreted regulations and instructions, and (3) did not review the accuracy of the system data before using the data in the computations. These type errors indicate a need for better systems, training, and periodic reviews to ensure that the training is having its desired effects on item managers and supervisory personnel.

The following table and appendix II summarize the results of our review of the 65 sample items which were in a buy position during August 1980 at WRALC. Also, the examples on pages 33 through 36 typify the reasons for the invalid computations.

Results of Using Invalid Data to Compute Requirements

	Sample items		
Requirements level	No. of cases	Value of misstated requirements	Projected value
Operating levels	4	$ 213,797	$6,706,647
Special levels	16	1,057,156	33,162,171
Safety levels	5	98,424	3,087,486
War reserves	6	249,331	7,821,322
Additive levels	5	452,572	14,196,836
Onhand assets	10	416,540	13,030,621
Due-in assets	a/34	a/791,275	b/7,325,280

a/Includes 8 sample items with an excess due-in value of $230,032 and 26 other items on the same purchase request. Further review of these items by GAO and the agency resulted in the cancellation of due-ins with a value of $567,507.

b/Projected amount relates only to the sample items with erroneous requirements of $230,032

Examples of not understanding system operations and not considering all available information

Example 1

The automated system computed a buy requirement of five for an item (unit price $3,250) used on the E-3A aircraft Included in the buy requirement was a quantity of two for other war reserve which is not bought due to lack of funds Thus, the buy requirement should have been three However, the item manager did not consider the fact that eight items were due-in on a military interdepartmental purchase request. Therefore, instead of a buy requirement of five, the asset position was actually five more than needed. This matter was brought to the attention of WRALC officials who reduced the purchase request quantity from eight to five--a reduction of $9,750.

There were also 26 other items on the same purchase request. We selectively reviewed and questioned the requirements for six of the items and asked WRALC officials to review all the items to determine if the purchase request quantities were supported by current requirements. On the basis of their review, they eliminated or reduced the quantities for 25 items--a total reduction of $382,317.

Example 2

The requirements computation for an item costing $4,957 showed a recommended buy of four after considering six due-in. However, in addition to the 6 due-in, the item manager was aware of, but did not include in the computation, 5 items under another stock number, which were interchangable with the prime stock number and 12 other items due-in. Thus, the item was actually in an overstock position. To avoid showing that the item was in an overstock position, the item manager established a negotiated special level requirement of 12 to counterbalance the 12 due-in but not included in the computation. Thus, the requirement was overstated by 17--a total of $84,269. At the time of our review, the recommended buy quantity of four had been placed on a purchase request which was canceled after the matter was discussed with WRALC officials.

Example 3

An item manager established an additive requirement level of 10 for an item with a unit price of $2,210 to compensate for war reserve materiel backorders. The item manager was not aware that the system had already considered backorders in computing the item's requirement. As a result, the requirements were overstated $22,100.

Example 4

An item manager established an additive requirement level of 12 for an item with a unit price of $1,788 supposedly to meet the needs of a special project. However, in discussing the validity of the requirement with the item manager, he was unable to provide us the required documentation to justify the need for the additive requirement. Thus, requirements were overstated $21,456.

Incorrect interpretation of regulations, instructions, and procedures

Example 1

Air Force regulations provide that a using location with a demand level for an item can establish a special level requirement of one if it can be shown that the demand level is not sufficient to support operating requirements. This is referred to as the one-per-base requirement level.

An item manager interpretated the regulation to mean that a one-per-base requirement level could be established for each location which operated the aircraft. Therefore, he established a requirement level of 13 for an F-4 aircraft item on the basis of 13 operating locations. However, only five of the locations had an established demand level for the item. Thus, the requirement was overstated by eight items--unit price of $9,222--for a total overstatement of $73,776.

Example 2

Item managers, as a part of their review of the initial computation, perform an asset reconciliation, which consists of comparing total receipts, less issues, to the number of assets reported by the system. If there is a difference, item managers research and explain it.

An item manager erroneously adjusted the assets reported by the system by deducting issues from receipts. On the basis of his reconciliation, he was accountable for 204 assets; however, the system reported that there were 389 assets on hand--a difference of 185. Rather than reconciling the difference, the item manager adjusted the onhand balance to 204. The item manager had interpreted the term "receipts" to mean items procured when in fact it also meant assets that had entered the system through reclamation and turn-in by using units. By adjusting the onhand balance to 204, the system computed a buy requirement of 62 when, in fact, there were 123 assets more than what was needed to support the requirement. The amount of the overstated requirement was $214,970 (unit price of $1,162 x 185 assets).

Example 3

Air Force regulations provide for establishing an initial spares support list requirement in order to support a new aircraft until there is sufficient usage data to base the requirement on demand. Normally, the requirement level is valid for 2 years.

An item manager established an initial spares support list requirements level of 22 to support the F-15 aircraft at seven locations. However, the item manager failed to consider that the requirement for 16 of the items expired before the buy period for which the requirement was computed. As a result, the item's requirement was overstated by 16 for a total overstatement of $235,744.

The number and magnitude of erroneous requirements generated by the automated system and either not detected or not properly corrected during the review process point out the need to improve the accuracy of the data.

From discussions with item managers and the managers' supervisors about the types of invalid data and as illustrated by the above examples, it was evident that in many cases the item managers did not have a full understanding of how the requirements system operated or were incorrectly interpreting policies and instructions issued by the local activity or higher headquarters. However, all the blame cannot be placed on the item managers since the adjustments required the supervisors' approval and were supposedly reviewed and approved by quality assurance personnel.

Although the matter of inaccurate data was reported by GAO 1/ in 1972, many of the same type problems continue. In that report, we stated that the causes of inaccurate data and adjustments were due to:

--Data not being checked for accuracy before being used due to manager's heavy workload.

--Good information sources not being readily available for some of the needed data.

--Policies and procedures being ambiguous and unclear.

--Personnel not thoroughly being trained in the system's operations.

In many respects, the type problems cited above and noted in our review are self-perpetuating. Because of faulty data and the extensive manual review process, time does not permit the needed training and understanding of the system's operation. And because needed training and system understanding needs are not met, invalid data entries and changes continue. Although this continuous cycle is bad in today's environment, it could be even worse in wartime when the workload will undoubtedly increase and the time may not be available to make the necessary changes.

1/"Need to Improve Accuracy of Air Force Requirements System For Reparable Parts" (Sept. 12, 1972).

In our opinion, the type of errors disclosed by our review indicate that the latest information available was not always used to make the adjustments and to compute requirements. In our analysis, we considered only that information that would have been available to the item manager at the time of review. Thus, we did not apply hindsight to arrive at our determination of what the requirements should have been.

POSSIBLE EFFECT OF ERRONEOUS DATA ON BUDGET REQUESTS

The need to correct erroneous data is not restricted just to the requirements determination process. It also extends to the budget formulation process. For example, WRALC used the March 31, 1980, system's computation of requirements deficits to prepare the fiscal year 1982 budget request for aircraft replenishment spares. The deficit listing showed needed requirements of $175.3 million. Item managers reviewed this listing and made adjustments of $6.5 million to the listing. The listing was then sent to the materiel management directorate where the deficits were further adjusted by $30.2 million based on the buy restrictions and inflation. In June the finalized listing--which represented the WRALC's budget submission--was sent to the Air Force Logistics Command.

The budget formulation process used by the other services is similar and also requires significant adjustments. For example, ASO made over 11,000 adjustments to correct erroneous data in preparing the fiscal year 1982 budget submission. These adjustments amounted to about $10.3 billion. 1/

Navy officials advised us that the $10.3 billion in adjustments was due primarily to introducing Uniform-Closed Loop Aeronautical Management Program items into the requirements system just before the March 1980 budget stratification, which is the basis for the fiscal year 1982 budget submission. The officials advised that the September 1980 and March 1981 quarter stratifications were adjusted $4.6 billion and $300 million, respectively. We agree that the magnitude of adjustments was significantly reduced between March 1980 and March 1981. Nevertheless, a $300 million adjustment is still a significant one to correct erroneous data.

We could not determine whether the overstated requirements identified in our review were included in the budget submissions. However, it is unlikely that all the errors disclosed during our

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1/As part of its budget formulation process, ASO reviewed the accuracy of its requirements and assets valued at about $18 billion. On the basis of its review, the combined requirements and assets were reduced to about $8 billion.

review occurred between the cycles, and therefore may have been included as part of the budget submission. The budget preparation and its relationship to validity of requirements is the subject of an ongoing GAO review.

CONCLUSIONS

Often, the data contained in the services' automated requirements determination systems are incorrect and require extensive manual adjustments. As a result, system-computed requirements and data adjustments are often in error as evidenced by the fact that at the Air Force location, computed requirements were overstated and understated about $2.7 million for the sample items reviewed. Furthermore, about $1.3 million of unnecessary procurements occurred at the same location.

In many respects, the reasons for the lack of system integrity are the same as disclosed in an earlier report. These reasons include (1) a lack of understanding by the people responsible for operating and maintaining the system, (2) unclear policies and instructions which lead to incorrect interpretations of system data, and (3) a lack of effective supervision and review on the part of those responsible for performing these functions.

Furthermore, inaccurate data and erroneous adjustments leave open the question of how valid are the requirements which have been included in these activities' budget submissions. While we were not able to demonstrate that erroneous requirements were included, it is reasonable to believe that all the errors were not detected during the budget formulation process.

RECOMMENDATIONS

We recommend that the Secretary of Defense direct the service Secretaries to:

--Emphasize the need for and provide training to personnel responsible for operating and maintaining the requirements system.

--Strengthen the supervision and review process to ensure that the data already in the requirements system and any subsequent adjustments are valid.

--Perform periodic reviews to test the validity of the system data and ensure that the supervision and review process are strengthened and that responsible personnel obtain a thorough knowledge of the system's operation.

AGENCY COMMENTS AND OUR EVALUATION

DOD agreed with the recommendations and stated that it has long recognized the need for improving the training of personnel responsible for operating the materiel requirements process. DOD also commented that each service has a training program and performs periodic reviews to ensure development of the most accurate requirements possible and to review the effectiveness of supervision and systems operations.

The point in our report was not that these training and review mechanisms did not exist, but rather that their effectiveness is questionable.

ITEMS MANAGED, ITEMS IN A BUY POSITION, AND SELECTED SAMPLE ITEMS AT THE THREE ACTIVITIES REVIEWED

	ASO		MICOM		WRALC	
	No.	Value (millions)	No.	Value (millions)	No.	Value (millions)
Items managed	273,562	$4,399.0	56,349	$436.1	a/34,527	a/$3,680.5
Items in a buy position (note b)	2,614	$ 331.7	1,948	$125.4	4,642	$1,107.8
Sample items in a buy position (note b)	100	$ 8.0	100	$ 2.8	65	$24.3

a/Includes reparable but not consumable items.

b/The sample items were selected from the universe of items in a buy position on May 4, 1980, for ASO; August 2, 1980, for MICOM; and June 30, 1980, for WRALC.

APPENDIX I

CATEGORIES OF ESTIMATES AND ASSOCIATED

95-PERCENT CONFIDENCE LEVEL INTERVALS

AT THE ACTIVITIES INCLUDED IN GAO REVIEW

	Overstated requirements			Understated requirements			Total		
		Range			Range			Range	
	Estimate	Low	High	Estimate	Low	High	Estimate	Low	High
Warner Robins									
Operating levels	$ 1,160,316	$ 71,519	$ 2,249,114	$5,546,331	$176,808	$16,417,140	$ 6,706,647	$ 213,797	$17,750,018
Special level	33,162,171	8,326,122	57,998,219	0	0	0	33,162,171	8,326,122	57,998 219
Safety levels	1 009,776	32,190	2,083,736	2,077,710	66,234	6,150 021	3,087,486	98,424	7 269 021
War reserves	7 821,322	249,331	19,376,030	0	0	0	7,821,322	249,331	19,376,030
Additive levels	14,196,836	452,572	36,917,451	0	0	0	14,196,836	452,572	36,917,451
Assets on hand	13,020,646	415,077	27,581,339	9,975	318	29,527	13,030,621	415,396	27,590 838
Assets due-in on purchase request	6,352,646	202,515	13,283,214	0	0	0	6,352,646	202,512	13,283,214
Assets due-in on contract	434,495	13,851	1,086,824	538,139	17,155	1,592,892	972,634	31,006	2,201,441
Total	$77,158,208			$8,172,155			$85,330 363		
Missile Command									
Use of larger rather than latest production leadtime	$ 1,012,177	$156,899	$ 1,867,456	0	0	0	$ 1,012,177	$ 156,899	$ 1,867,456
Use of standard rather than latest production leadtime	996,802	141,051	1,852,553	105,030	6,416	246,256	1,101,832	(a)	(a)
Use of standard rather than latest administrative leadtime	1,295 325	78,128	2,984,131	287,343	17,553	591 351	1,582,668	(a)	(a)
Use of excessive delivery leadtime	1 309,662	402,820	2,216,504	0	0	0	1,309,662	402,820	2,216,504
Excessive requirements for first article test items	8,079,774	493,572	16,808,762	0	0	0	8,079,774	493 572	16 808,762
Total	$12,693,740			$ 392,373			$13,086 113		
Total	$89,851,948			$8,564,528			$98,416,476		

a/Total high and low range values not computed

APPENDIX II

DOLLAR VALUE OF REQUIREMENTS, FUNDING LEVELS, ASSETS DISPOSED, AND ASSETS IN LONG SUPPLY FOR FISCAL YEARS 1978-80 FOR THE THREE ACTIVITIES IN GAO REVIEW

	ASO			MICOM			WRALC		
	FY 78	FY 79	FY 80	FY 78	FY 79	FY 80	FY 78 (note a)	FY 79 (note a)	FY 80 (note a)
	(millions)								
Total requirements (note b)	$3,394.0	$4,092.0	$4,414.0	$463.4	$463.8	$606.7	$1,679.0	$1,991.2	$2,287.3
Funding requested	503.3	405.0	634.6	167.5	153.0	259.8	460.1	535.8	862.9
Funding received	429.1	359.8	399.6	168.5	153.2	261.2	195.2	249.9	227.5
Assets sent to disposal	300.1	242.9	358.5	24.6	25.6	22.2	68.5	56.8	93.2
Assets in long supply (note b)	1,900.0	2,000.0	2,100.0	287.4	310.0	28.4	1,280.9	1,428.2	1,521.6

a/For reparable but not consumable items.

b/As of March 31 of the respective fiscal years.

APPENDIX III

ASSISTANT SECRETARY OF DEFENSE

VASHINGTON D C 20301

SR
MANPOWER
RESERVE AFFAIRS
AND LOGISTICS

19 OCT 1981

Mr Donald J Moran
Director, Procurement, Logistics
and Readiness Division
General Accounting Office
Washington, D C 20548

Dear Mr Moran

This is in reply to your letter of 27 August 1981 to the Secretary of Defense regarding your draft report, Code 947424, on "The Services Can Save Millions by Improving Their Process For Determining Requirements For Supplies and Spare Parts," (GAO SMD-81-32)(OSD Case #5780)

We concur on each of the major recommendations contained in the draft report Specific comments are provided in the enclosure detailing planned or ongoing actions in appropriate areas

We do not agree, however, with the contention of the report, particularly with regard to the Air Force automated requirements determination system, that the system is "fraught with errors" (statement, p iii) The vast majority of the manual adjustments made quarterly to the Air Force system are the result of antiquated data processing equipment (19 year old computers) Extensive manual input is required to prevent the use of incomplete or outdated data in the final determination of requirements The report does not contain sufficient detail to either substantiate or repudiate the projected dollar values cited as a result of overstated or understated requirements

We fully agree with the part of your report which cites the need for a modern, near-real-time materiel requirements data processing system for the Air Force The Air Force is, in fact, vigorously pursuing this objective The statement in the report that hundreds of millions of dollars of requirements could be eliminated by use of a near-real-time data processing system is erroneous, however, as data processing time, in the Air Force system, does not result in an increase to materiel stockage This point has been discussed in detail with your staff

We appreciate the opportunity to comment on this report in draft form

Sincerely,

James N Juliana

James N Juliana
Principal Deputy Assistant
Secretary of Defense
(Manpower, Reserve Affairs, and Logistics)

Enclosure
As stated

GAO note: Page numbers in this appendix refer to the draft report and do not correspond to the pages in the final report.

SPECIFIC COMMENTS ON GAO DRAFT REPORT,
"The Services Can Save Millions by
Improving Their Process For
Determining Requirements For Supplies
and Spare Parts
(OSD Case #5780)

GAO Recommendation, p 28 "We recommend that the Secretary of Defense direct the Service Secretaries to

--emphasize the need for and provide training to personnel responsible for operating and maintaining the requirements system

--strengthen the supervision and review process to ensure that the data already in the requirements system and any subsequent changes are valid

--perform periodic reviews to test the validity of the system data and ensure that the supervision and review process are strengthened and that responsible personnel obtain a thorough knowledge of the system's operation "

DoD Comment Concur DoD has long recognized the need for improving the training of personnel responsible for operating the materiel requirements process Each Service maintains a number of specific training courses in all areas of requirements management and continually improves the quality of these training efforts Further, each Service performs periodic on-site reviews at each Inventory Control Point to insure development of the most accurate materiel requirements possible and to review the effectiveness of supervision and systems operations

GAO Recommendation, p 41 "We recommend that the Secretary of Defense issue policy guidance to the services which spells out in specific terms

--what constitutes the termination of production leadtime, and

--how the leadtime requirements for items with a first article testing requirement should be determined

We also recommend that the Secretary of Defense direct the Secretary of the Army to discontinue the practice of adding a 30-day delivery leadtime factor to its production leadtime and, instead, base the delivery leadtime on actual experience or a factor which more closely approximates experience "

DoD Comment Concur The trend in recent years of increasing leadtimes has resulted in the need for more uniform DoD-wide policy regarding measurement of these leadtimes In addition to the points cited by GAO, other issues, such as the use of contractor projected data for determination of leadtimes, require further review. The needed analysis is being accomplished as a part of an extensive long range review of materiel stockage policy. Specific changes to current leadtime policy will be made as required in the course of the overall stockage policy analysis effort. Regarding the recommendation to delete the Army's 30 day delivery leadtime factor and base leadtimes on actual experience or a more realistic factor, the Army Inventory Research Office has been directed to perform a leadtime study which should satisfy this recommendation.

GAO Recommendation, p. 58: "We recommend that the Secretary of Defense direct the Secretaries of the Army and Air Force to develop demand and leadtime forecasting techniques which set parameters for excluding atypical demand and leadtime data and gives recognition to item trends.

We also recommend that the Secretary of Defense direct the Secretary of the Army to ensure that, until the forecasting techniques described above are developed, inventory management activities adhere to the already established procedures for making such forecasts."

DoD Comment: Concur. OASD(Manpower, Reserve Affairs and Logistics) has recently awarded a research contract to accomplish a detailed study of forecasting techniques. The objective of this study will be the identification and development of improved, uniform DoD-wide forecasting techniques for use in materiel requirements computations. Direction to all DoD Components will be forthcoming, subsequent to the completion of this study. The Army will take action to insure that all inventory management activities adhere to established procedures pending the implementation of the results of the above study.

(947424)

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