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THE DSA AND MILITARY LOGISTICS

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PREFACE

This Project RAND Memorandum examines some questions raised by the establishment of the Defense Supply Agency. The Air Force is directly concerned both because it is participating in deliberations about the form and character of the Defense Supply Agency, and because the decisions and activities of this agency will influence its methods of support operations. Elaborating and evaluating some consequences of this change in the logistics environment may furnish useful guidelines to the Air Force for modifying military supply organization and operations to cope with the inter-service integration of materiel management.

SUMMARY

This Memorandum identifies and discusses some questions facing military management as a result of supply-support centralization.

The Defense Supply Agency (DSA) has been designated DOD manager for a number of "wholesale" logistics functions, such as procurement and distribution, for about one-third the items in the military inventory. Such a reorganization raises a variety of questions about the changes in military materiel management.

The Memorandum identifies three requirements for building a new management structure: (1) linking DSA operations with activities of the military services, (2) organizing the activities of a new "wholesale" logistics agency for common supplies, and (3) adjusting service logistics structures to a situation of reduced materiel support activity and divided responsibility.

Numerous questions then arise about the alternative management structures and procedures to be implemented for the various activities involved. The major portion of this Memorandum is devoted to a review of these questions.

In the requirement to link DSA operations with service activities, one of the problems discussed is the DSA's role in the depot overhaul of items it manages. Currently, the DSA has to overhaul only items it owns; however, it may be more efficient for military materiel management if the DSA shares in the depot maintenance of service-owned units of DSA-managed items. There may be two alternatives here: the agency may be assigned a decision-making function regarding the quantities of DSA-managed items the services may overhaul at

depot maintenance facilities; or the agency may be given control over depot-maintenance resources. On balance, the Memorandum concludes that the first alternative probably is preferable for the immediate future. Other questions are related to this requirement, such as the choice between centralized and decentralized processing of service requisitions by the DSA.

One of the problems in adjusting service logistics structures to reduced levels of responsibility is whether the services should modify or completely overhaul the management systems affected by the DSA's activities. For example, Air Force Inventory Managers will soon lose some of their functions with respect to common supplies. The Air Force may respond either (1) by retaining Inventory Managers for common supplies in a modified form, or (2) by eliminating Inventory Managers for common supplies and dividing the remaining functions between Hq AFLC and the bases or using commands (SAC, TAC, etc.).

This report discusses these questions and others, and indicates some directions for further research.

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I. INTRODUCTION

On August 31, 1961, the Secretary of Defense announced the formation of the "Defense Supply Agency" within the Department of Defense to manage, procure, and distribute certain common supplies and related services for the military services. To begin, the agency has taken over the functions of the existing commodity single managers, the Armed Forces Supply Support Center, the Military Traffic Management Agency, and the Consolidated Surplus Sales Offices. Studies have been initiated to broaden the agency's activities further.*

At the time of writing, the Defense Supply Agency (DSA) is proceeding to administer over one-third the items in the military inventory--about 1,300,000 items**--comprising an inventory valued at approximately $4 billion.*** The reorganization will result in extensive changes in the relations between the "wholesale" suppliers and

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*DOD Press Release, "Secretary McNamara Announces Decision to Establish Defense Supply Agency," August 31, 1961.

**The number of items is the sum of items administered by the eight existing single managers plus approximately 450,000 electrical/electronic items regarded as coming under the agency's control. See Defense Supply Agency, Highlight Information on Defense Supply Agency Activities, October, 1961.

***From a talk delivered by the Deputy Secretary of Defense at the National Security Industrial Association Annual Dinner in New York City on Thursday, September 28, 1961: "When fully constituted, this Agency (the DSA) will employ about 13,000 people, manage $4 billion of inventories and procure about $2 1/2 billions of new stocks each year. Also under study for assignment to the new Agency are industrial production equipment, chemical supplies, and aviation spares. Should these additional categories be included, the Defense Supply Agency would manage inventories of over $20 billion with an annual turnover of $4 - $5 billion, and would thus become the biggest single customer of the defense industry."

the military users of these items. This organizational change has been initiated to achieve substantial economies and improvements in military materiel management.

The DSA offers numerous opportunities to improve materiel management. By transferring and unifying certain "wholesale" logistics activities, formation of the DSA makes it necessary to modify some parts of the materiel management structure. To take advantage of the opportunities and to meet the problems will require the development of proper policies, procedures, and organization within the next few years.

It is hoped that this study will be of some assistance to policy planners of the Air Force, the other services, and the DSA by identifying and discussing several questions that appear in shaping a new logistics structure.

II. DSA RESPONSIBILITIES, ORGANIZATION, AND FUNCTIONS

RESPONSIBILITIES

The DSA's mission is to provide "the most effective and economical support of common supplies and supply services to the military departments."* Common supplies are defined as "those items of supply which are determined, through the application of approved DOD criteria, to be susceptible of integrated management by a single agency for all of the Military Services;" and common supply services are "those common supply services directly associated with the supply management function."** DSA operations are limited to the continental United States "except as specifically extended by the Secretary of Defense."***

An impression of the scale of materiel management activity expected in the near future of the DSA may be obtained from some data in Table 1 pertaining to the commodity single managers assigned initially to the agency. Table 1 shows estimates of the number of items, level of inventories, and values of procurement and sales when the assigned commodity single managers will be fully operational. Assuming the data therein remain generally stable from year to year, Table 1 indicates the following scale of activity for the present DSA commodity single manager assignments within three to four years:

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*DOD Directive 5105.22, "Defense Supply Agency (DSA)," November 6, 1961, p. 3.

**Ibid., p. 2.

***Ibid., p. 3.

Table 1

PROJECTED ITEMS, INVENTORY, PROCUREMENT, AND SALES FOR FULLY OPERATIONAL COMMODITY-SINGLE-MANAGER AGENCIES

Agency	Target Date When Fully Operational	Est. No. of Items When Fully Operational[a]	Est. Value of Inventory When Fully Operational ($ million)[a]	Est. Value of Annual Procurement When Fully Operational ($ million)[b]	Est. Value of Annual Sales When Fully Operational ($ million)[b]
Military Medical Supply Agency	Present	8,385	246.0	61.2	82.5
Military Petroleum Supply Agency	Present	981	393.2	1,080.0	1,100.0
Military Subsistence Supply Agency	Present	1,384	103.0	687.3	702.3
Military Clothing and Textile Supply Agency	Present	28,623	1,305.0	243.2	316.3
Military Industrial Supply Agency	4/30/63	480,000	352.00	125.0	137.0
Military General Supply Agency	7/1/61	32,000	160.0	124.0	125.0
Military Automotive Supply Agency	6/30/62	105,000	750.0	150.0	225.0
Military Construction Supply Agency	6/30/62	190,000	350.0	83.0	92.0
Electrical/Electronic Agency	?	450,000	600.0	150.0	200.0

SOURCE: Defense Supply Agency, Highlight Information of Defense Supply Agency Activities, October 1, 1961.

[a]Data for MMSA, MPSA, MSSA, and MC&TSA are for June 30, 1961; figures for MISA are for April 30, 1963; values for MASA are for June 30, 1962; and numbers for MASA and MCSA are for June 30, 1962.

[b]Data for MMSA, MPSA, MSSA, and MC&TSA are for FY 61; figures for MISA are for FY 64; values for MGSA are for FY 62; and numbers for MASA and MCSA are for FY 63.

(1) These commodity single manager agencies will manage about 1.3 million items;

(2) Their inventories will be valued at about $4.3 billion;

(3) The annual value of their procurements will amount to about $2.7 billion; and

(4) The annual value of these commodity single manager sales will be about $2.9 billion.

ORGANIZATION

The operation of these DSA activities is under the control of a director who reports directly to the Secretary of Defense.* To assist the director, four Directorates and five Offices have been established: the Directorates of Procurement and Production, Logistics Plans and Systems, Supply Operations, and Logistics Services; and the Offices of Administration, Manpower, Comptroller, Counsel, and Inspector General.**

The proposed DSA charter also establishes a Defense Supply Council (DSC) (1) to "advise and assist the Secretary of Defense in the direction and control of DSA," and (2) to "be available for consultation with the Director on such matters as he may bring before it." The principal members of the DSC will be the Deputy Secretary of Defense, as chairman, the Secretaries of the three military departments, the Chairman of the JCS, and the Assistant Secretary of Defense (Installations and Logistics).***

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*Ibid., p. 2.

**"Organization Chart for the Defense Supply Agency," December, 1961.

***DOD Directive, p. 3.

FUNCTIONS

Major materiel management functions of the DSA include requirements, procurement, inspection and quality control, wholesale stockage, and inventory control. Since this study is primarily concerned with these functions, it may be advisable to discuss in greater detail the agency's responsibilities in these functions.

In requirements, the DSA is assigned three activities: (1) to compute replenishment requirements, (2) to review special program and mobilization requirements, and (3) to compute special program and mobilization requirements when authorized by the Secretary of the military department concerned.*

For procurement, the DSA is to "conduct or direct procurement of assigned items and services to meet the needs of the military services and other authorized customers," to "administer the procurement priorities and allocation authorities as authorized by the ASD (I&L)," and to "determine which (assigned) items should be centrally procured and which items should be decentralized to local procurement."**

The stockage function requires the agency to determine requirements for storage space and "to manage, control, and operate assigned wholesale warehouses and depots."***

Inventory control involves the agency in such tasks as: (1) prescribing requisitioning procedures for DSA stocks, (2) prescribing the flow of customer requisitions to appropriate DSA Inventory Control Points, (3) establishing prices and pricing procedures according to DOD directives, (4) controlling,

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*Ibid., p. 7.

**Ibid., p. 8.

***Ibid., pp. 8-9.

distributing, redistributing, and disposing of serviceable and reparable stocks owned by the DSA or stocks sold by the DSA which become excess to the needs of "individual military installations" of the services, (5) instituting measures for the use of substitute or interchangeable items in coordination with the using military service, (6) positioning general mobilization stocks, (7) prescribing informational systems for the DSA activities, and (8) participating as a "supporting inventory manager in the provisioning processes of the military departments."*

A number of other agency functions, with which this study is not concerned, are cataloging, reviewing the Coordinated Procurement Program, administering the Defense Standardization Program, administering the Defense Materiel Utilization Program, administering the Defense Surplus Personal Property Disposal Program, and directing and supervising all functions for efficient transport of supplies.

In the future the DSA's responsibilities may expand in two directions: commodity coverage and functional assignment. Studies are currently under way to determine whether industrial production equipment, aviation supplies, and chemical supplies should be candidates for integrated management. Also, with greater experience in materiel management, the services and the DSA may find it advantageous to give the agency responsibilities for depot maintenance and research and development for assigned classes of items.

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*Ibid., pp. 9-10.

III. THE DSA AND MATERIEL MANAGEMENT

Until recently, each service was responsible for all materiel support functions with respect to common supplies. Because the DSA now undertakes some of these activities for many common items, it is necessary to modify the materiel support structure. Modifying this structure raises numerous questions about policy alternatives, procedural choices, and DSA-service roles. This section discusses and identifies some of the questions involved in adapting to the new logistics environment.

THE NECESSITY TO MODIFY THE LOGISTICS STRUCTURE

The DSA alters the logistics environment. It consolidates certain of the services' "wholesale" logistics responsibilities involving common supplies within a single agency. Each service, then, retains authority for all other logistics activities involving these common supplies and all logistics functions relating to all other items, including "retail" logistics activities and depot maintenance for all items, procurement of major end items and weapon peculiar items, etc.

Consequently, it is necessary to modify the structure of military materiel support (1) to establish a mechanism which permits effective interaction between the services and the DSA; (2) to obtain an efficient DSA management system; and (3) to adjust service materiel support organization to a new logistics environment.

Networks Connecting Logistics Activities

DSA activities must be linked with the logistics and military activities of the different service branches.

Since "wholesale" logistics activities are not ends in themselves, they often must be performed in conjunction with activities of organizations using these items. For example, "wholesale" inventories are stored to meet demands over some time period; to stock the proper items, "wholesale" inventory managers must be informed of the consuming organizations' decisions about the types and quantities of items they expect to use. Similarly, the performance of service logistics and military operations may partially depend on the decisions of these "wholesale" inventory managers. For example, the performance of military equipment may partially be a function of the quality of the common supplies purchased by the agency responsible for procurement; to assure items of satisfactory quality, the using organizations must be able to inform the procurement agent about the quality they require. Some of the links connecting the activities of the consuming organizations and the "wholesale" suppliers are now broken with the founding of the DSA, and must be reestablished.

A DOD "Wholesale" Logistics Agency

Like any new organization, the DSA must set up a management system in order to achieve its purposes effectively and efficiently. It must establish basic rules of operations and organization to carry out its assigned materiel management functions in procurement, "wholesale" storage, "wholesale" inventory control, etc.

As DOD "wholesale" supplier of many items, the DSA may have to adopt some unique management policies and procedures that are consistent with its novel role. Some present management practices may not be applicable to DSA activities. Existing military materiel management systems have been developed by the services. To a degree, they have incorporated peculiar needs and conditions in some aspects of these systems.

Service Logistics

The services may now have to revise some materiel support practices.

First, because the services have lost some "wholesale" support responsibilities relating to many common supplies, the level of activity of units responsible for these functions and items may be reduced substantially. For example, those Air Force Inventory Managers who have heretofore been managing mostly common supplies may now have a smaller support role.

Second, the character of the "wholesale" supplier of common supplies has changed. He is no longer part of the service materiel-management system. As a result, certain policies and procedures based on interactions between the activities of the common supplies "wholesale" manager and other logistics activities may have to be altered. To illustrate, the Air Force has tried to tie in spares procurement with end-item procurement. Some of these spares probably will be considered common supplies. Since one organization, the DSA, handles common supplies, and another organization, the Air Force, is procurement agent for major end items, it may be necessary to revise some

of the present procedure relating to these two types of procurement.

Not all the services have to be affected uniformly by the changing circumstances. In fact, not all subgroups within each service need be affected similarly. After all, each military service is an extremely large organization in terms of the resources it owns and uses; further, each military service and each of the subgroups of the services has a number of missions. There is a considerable division of labor within each service. It follows that in each service some groups will be affected considerably by the projected changes, some only slightly, and some not at all.

The remainder of this Section discusses and identifies a few of the policy alternatives and policy questions involved in developing management techniques for accommodating the logistics structure to a new type of support organization, the DSA.

LINKS TO CONNECT DSA AND SERVICE ACTIVITIES

Three types of factors must be considered in formulating methods to connect the actions of the DSA with the activities of the services: First, there are the DSA and service activities to be linked. Occasionally circumstances dictate the linking of activities, such as the flow of requisitions to the agency and the return flow of items to the services. At other times, linking may be optional. The DSA managers may compute their requirements using mostly their own factors, or they may depend heavily on factors from the services.

Second, the organizational roles for some support activities involving common supplies must be worked out. For example, what are

to be the roles of the agency and the services in provisioning processes and depot maintenance for common supplies?

Third, alternative policies and procedures to implement the decision to establish particular links must be considered. For example, what policies should the DSA devise for handling service requisitions?

Some important first steps have already been taken. For example, a standard requisitioning form and a standard distribution priority system have been developed.

But many questions still remain to be decided. We may illustrate the situation by discussing some policy alternatives and policy questions for four aspects of materiel support: (1) determining the item mix of DSA wholesale inventories; (2) requirements processes of the DSA; (3) distribution of "wholesale" inventories by the DSA; and (4) the role of the DSA in depot maintenance.

Item Specification and Item Choice

The DSA can probably influence the number, variety, and quality of different items available to the services. As inventory manager, the DSA will probably try to minimize the investment in inventories necessary to provide effective support. The agency as a participant " . . . in the provisioning processes of the services"* can probably influence the services' selection of new items.

Also, the DSA will probably try to stimulate standardization of common supplies: First, as administrator of the Federal Standardization Program, one of its objectives would be to encourage standardization. Second, one of the goals in consolidating materiel management

*DOD Directive 5105.22, "Defense Supply Agency," p. 10.

is to encourage standardization. Consequently, the DSA will probably try to reduce the variety of close substitutes and will be wary of introducing new items.

In these roles of inventory manager and advocate of standardization lies the influence to affect the design of major weapon components. Many types of supplies to be administered by the DSA, e.g., electrical and electronic supplies, are parts of larger components of weapon systems.* The design and specifications of such common items help determine the design and specifications of major components.

The influence and pressures to standardize may sometimes conflict with a desire to change or modify items or to introduce new items. For example, a slight performance or design change advocated may not appear to be worth the added costs of introducing a similar item in the inventory. A succession of decisions for or against introducing a new item or item change may affect the characteristics of major components.

Therefore, some techniques should be formulated to accomplish the following: first, assure the services the types of items they need to maintain and improve the design and performance of the components of their weapons; second, maintain an awareness within the DSA of the types of items the services need; and third, minimize disagreements as to the types of items which should be part of the inventory of common supplies.

Policy planners may deal with these questions in a number of

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*If the DSA is given responsibility for aeronautical supplies in the near future, its influence on weapon-system design and performance may be expanded considerably.

general ways: the most obvious would allow the services to retain complete control over item choice. However, unless the possibility of service abuse of this authority is minimized, this solution may weaken current efforts at item standardization through consolidating materiel management. Another course is to allow the services to use as leverage their power to code items for service management when they belong to Federal Stock Classes administered by the DSA. If the services use this alternative heavily, such a position may diminish management savings. A third possibility may be for the services to work closely with the DSA on the design of their equipment. Among the problems of this alternative are (1) possible delays in the development of new or modified equipment, and (2) the need for hiring additional personnel to coordinate designs.

Requirements Process of the DSA

The requirements process links the "wholesale" supplier's actions in procurement and inventory policy with the decisions by the consuming organizations to demand particular items in various quantities for some future period.

The DSA computes replenishment requirements for supplies managed by the agency and participates "as a supporting inventory manager in the provisioning processes of the military departments."*

A number of questions still remain in developing procedures to carry out these assignments. For example, one question is the amount

*Ibid., pp. 7, 10.

and timeliness of the information the DSA should use to estimate replenishment requirements. The DSA may choose between two alternatives: it may use only its past issue-rate experience; or it may base its requirements estimates on service information about the various factors, e.g., program factors and service stockage objectives, that determine expected future retail demands. The major advantage of the estimation technique based solely upon agency issue experience is the relative ease of computing requirements in this fashion; however, this technique may not reflect expected major changes in service requirements factors. The technique which uses service estimates of factors may reflect more closely changes in expected future service demands, but it too has its drawbacks. Not only is it more complicated but the DSA may be made dependent upon possibly poor estimates of factors, thereby causing the agency to overstock certain items and to understock others. In conclusion, if the DSA intends to rely largely on its own issue experience to compute requirements, it will probably have to develop techniques for obtaining information from the services about major changes in requirements factors. Effective application of the technique using service factors will probably require development first of some methods to assure reasonable accuracy of service estimates.

The authority given the DSA to participate in the provisioning process introduces the question of the extent to which it should get involved, particularly when the items are spare parts. DSA entry into the support picture after initial spares provisioning may give rise to a number of problems. The military services are still involved

in the procurement of items handled by the DSA. Continued service dealings with contractors for these items may diminish the savings from integration by reducing the lot sizes of DSA purchases. Also, the services now must continue to maintain some management resources which are to be saved because of the consolidation of supply management in an interservice agency. Finally, these conditions may impede efforts toward item standardization.

On the other hand, a number of problems could arise if the DSA were to provide "wholesale" supply support for initial provisioning. First, initial spares provisioning may be separated from the purchases of the major end items of military equipment. Second, the lead times for obtaining initial supply support for this equipment may be lengthened because of the greater complexity in procedures.

Whether or not the DSA becomes involved to any extend in initial spares provisioning, management techniques have to be developed to deal with some of the above problems.

Distribution of "Wholesale" Inventories of the DSA

Distribution from "wholesale" stocks is the process by which the demands are filled for the services' "retail" logistics and consuming units.

The DSA can prescribe procedures for distributing its stocks, and has already devised a standard requisitioning procedure and a standard distribution-priority scheme; but many questions are still to be answered. One is how the DSA will handle service requisitions: should they be received and decided upon at a central agency location, or be dealt with at the decentralized stockage points? The Military

Industrial Supplies Agency used the latter procedure; the Military Construction Supplies Agency, the former. Because the services have different logistics organizations and needs, either method may be suitable for some services, less suitable for others. Consequently, using one technique exclusively could affect the logistics organizations of one or more of the services. For example, the Air Force is organized so that the bases transmit their requisitions for particular classes of items to the depot or AMA responsible for managing these classes. The Navy has a more complex system, which may be illustrated by taking the case of a ship's supply officer: he obtains all his items from a single point; in turn, this point obtains its stocks by requisitioning on various decentralized inventory control points stocking particular classes of items, rather than on the "wholesale" managers of these items. It may well be that the choice of a requisitioning technique may be resolved only by a further standardization of supply support operations.

Role of the DSA in Depot Maintenance

Depot maintenance of supplies generates serviceable items within the materiel support system by converting worn-out items to usable ones and by modifying items already in the military inventory.

It is connected with other logistics activities and military organizations in numerous ways. Since depot maintenance can replace worn-out equipment or supplies with relatively short lead times, it can be an alternative to procurement. Depot maintenance is also an adjunct to depot overhaul of major military equipment. In addition,

it supplements maintenance at lower support echelons.*

At present, the DSA's role in depot maintenance is negligible. It has been assigned only the maintenance of items it owns. The preponderant share of items it manages is non-reparable; i.e., they are Cost Category II-NR and III items.

There is, as yet, no definite answer about whether DSA managers should have authority over the depot maintenance of items managed but not owned by the agency.

To improve "wholesale" supply management, it may be advisable to give the DSA some authority for the depot maintenance of the items it manages. For example, Government Accounting Office studies of service management of electronic and aeronautical supplies have pointed out that in the past one service was expending depot maintenance resources to repair items while another service had the same items in long supply.** Giving the DSA a role in depot maintenance would eliminate this kind of situation for DSA-assigned items and open a possibility for further economies from consolidation.

DSA participation in depot maintenance probably would be a major step. Services devote a large amount of resources to the depot maintenance of supplies and equipment. In Fiscal Year 1960, the Air Force

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*As a result, there are always questions about the proper roles of depot and lower-echelon maintenance. The answer is important for military organization as well, since it affects the manpower skill-mix of units engaged in military operations and the supplies these units must carry.

**(1) The Comptroller General of the United States, Review of Supply Management of Electronic Supplies and Equipment, Washington, Government Printing Office, May, 1960, pp. 40-43.

(2) Idem, Review of Interservice Utilization of Aeronautical Equipment and Supplies, (draft), March, 1961, pp. 21-23.

used (1) about 130,000 direct man-years; (2) approximately 16 million square feet of maintenance space; and (3) hundreds of millions of dollars worth of tools, equipment, and repair parts to overhaul and modify about four billion dollars worth of materiel.* A decision-making role in the depot maintenance of items would influence allocation of these resources. At a minimum, the agency would decide the amounts of the items it manages which each service should overhaul or modify; the DSA then would indicate to the services the quantities of various types of resources to be used for a certain type of depot maintenance. Because different depot-maintenance activities are interrelated, partial authority to allocate some resources might also extend the role to decisions about other maintenance resources and activities. As a result, numerous questions are raised concerning the DSA's role and the organization of its activities in depot maintenance.

Two Alternative Approaches to DSA Participation in Depot Maintenance

The DSA could participate in the depot maintenance of the items it manages in two ways: (1) it could have a role in deciding the quantities of various items the services may overhaul or modify when these items are in surplus somewhere in the military establishment; (2) it could be assigned depot maintenance authority for the items it manages.

Where DSA helps decide the items the services are to overhaul,

*Headquarters AMC, "Maintenance Engineering," The Air Force Logistics System -- Concepts, Methods, Procedures (WPAFB: Hq AMC, October, 1960), Section IV.

the DSA's decision-making must be linked with the services' maintenance activities. A number of arrangements could accomplish this end. One would be for a DSA group to match, for each DSA-managed item, the surpluses of one service with the depot-maintenance workload projections of the other services, and then for each item, allocate the remaining workload among the services which have a maintenance requirement. Such an arrangement would require the services to report surpluses and maintenance-workload projections to the DSA before they draw up production plans. This kind of management process might lengthen the production-planning period for depot maintenance. It would also require criteria and procedures for modifying production plans and allocating workloads among the services. The major advantage of this method is that it establishes a single point of responsibility for deciding the quantities to be overhauled.

Another way would be to set up joint DSA-service committees by commodity classes to decide about the amounts of items to be overhauled by the services. Each committee would meet periodically. It would obtain service reports of surpluses and workload projections. The committee would subtract surpluses from workload projections for each item and would allocate the remaining production requirements among the services. If necessary, each committee could meet frequently to make adjustments. This arrangement probably is more responsive to service needs and conditions than the one mentioned above, but it may be more prone to disputes and nebulous decisions.

Where the DSA is responsible for depot maintenance of items it manages, the agency would have to decide about its maintenance program.

Many components and alternatives would have to be considered. For example, the DSA would have to decide on the mix between in-house and contract maintenance--a choice involving not only complex policy considerations of what types of maintenance to contract to whom, but also being the fundamental determinant of (1) the quantity of maintenance resources the agency is to control, if any, and (2) the methods of carrying out depot maintenance operations if the agency does control the resources.

The DSA must also decide who is to choose the items for depot overhaul once the maximum quantities to be repaired for the period have been established. Where the agency assumes this responsibility, it would purchase reparables from the services at a fraction of the catalog price of the item under specified conditions. The services, in turn, would acquire serviceable items by purchasing them at catalog prices from the agency. Agency depot-overhaul costs would be defrayed by the difference between what the agency pays for reparables and what it receives for serviceables. Because of its relative simplicity, this type of arrangement probably is preferable to permitting the services to determine the agency's depot-maintenance workload.

Where the services continue to choose items for depot overhaul by the agency, a number of alternative schemes could be implemented. A rational allocation--assuming the usual situation where the workload exceeds the available maintenance resources--would require an inter-service priority system for evaluating the relative needs for the serviceables produced by depot maintenance. Where repair is not important to the success of major service missions, the lack of an

interservice priority system is minor; but where such repair is critical, the absence of such a priority system can be a formidable difficulty. Then, there is the complex question of funding the agency's depot-maintenance activities. Two obvious alternatives are (1) to have the agency bear all maintenance costs or (2) to have the services pay all or some of them; either recourse has both shortcomings and advantages. If the agency bears all costs, the services may be encouraged to stress the agency's capability; on the other hand, if each service fully or partially pays, there may arise distortions in criteria of items to be candidates for depot maintenance. The advantage of each method is that it probably eliminates many of the problems created by the other.

Each of the two alternative approaches to DSA participation in depot maintenance has certain advantages. Where the DSA has a voice in deciding on the items to be overhauled and the services retain their depot-maintenance resources, the logistics system avoids problems of splitting up interrelated resources and maintenance activities between the DSA and the services, since most depot maintenance goes toward the overhaul of major military equipment. The resources continue to be located at the same facilities and can continue to be transferred from one maintenance activity to another. Another important benefit of depot maintenance is retained for the military: assurance of a quick response to emergency needs for resupply of reparable type items.

There are also a number of advantages to assigning the DSA depot maintenance for the items it manages. First, the DSA would be assured that its decisions were carried out. Second, because the DSA now

would have authority over the major sources of resupply for reparable type items--procurement and depot maintenance--it could adopt more precise management techniques to interrelate its management functions for reparable type items and thereby probably improve its management efficiency. Third, the DSA probably would be in a position to consolidate the depot-maintenance activities of the military establishment in relation to these items.

In conclusion, as long as the DSA manages only a small percentage of all reparable type items, it probably is preferable for the services to retain their depot-maintenance resources and for the DSA only to help decide on the amounts of the items it manages which are to be overhauled. First, the loss in efficiency which may result from taking away a part of the interrelated depot maintenance operations from the services may be greater than the benefits of small-scale consolidation along product lines. Second, probably little is to be gained from close DSA control over the depot maintenance of the few thousand relatively simple items the agency now manages.

On the other hand, DSA control over depot-maintenance facilities and operations might be more efficient only were the DSA to obtain management authority over most high-value and major end items. First, it could then interrelate its management functions for reparable type items more easily and effectively. Second, centralizing control would permit the consolidation of depot-maintenance facilities, which might produce economies for the military establishment. To be effective, however, this situation requires the development of management techniques which integrate DSA control of depot maintenance with service control of lower-echelon maintenance.

ORGANIZING A NEW "WHOLESALE" LOGISTICS AGENCY

Like any new organization, the DSA must select methods for carrying out its functions. After all, the services often take different approaches to inventory management. For example, each service has based its selective management techniques upon different criteria: "The Army selects items for special management on total dollar turnover, the Air Force on unit price and the Navy for the most part on quantitative turnover."* The choice of DSA's modus operandi should depend on such factors as (1) the types of items it manages, (2) the impact of alternative management techniques on service logistics systems, and (3) the extent of the DSA's authority in particular spheres of management.

We may illustrate the types of potential policy alternatives and questions involved in building the DSA management system through two functions: procurement and stockage.

Procurement

One function given to the DSA is to "Conduct or direct procurement of assigned items . . ."** To organize its procurement activities, the agency must select among a number of approaches. For example, it must develop procurement cycle policies. This task is intricately bound up with a philosophy of management. The DSA may adopt an approach under which some high-cost items are managed selectively and

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*J. B. Booth, F. P. Sanna, and M. R. Shafer, Comparative Study of the Army-Navy-Air Force Distribution Systems, Institute of Technology, Air University, WPAFB, December, 1960, p. 59.

**DOD Directive 5015.22, p. 8.

the many low-cost items are managed automatically by means of "optimal reorder formulae." This alternative is like the Air Force Hi-Valu, Lo-Valu management philosophy. On the other hand, the agency may choose to manage its inventory solely by "optimal" machine-programmed formulae. Which method best suits the agency would depend on the type of items it handles. For example, the Military Construction Supplies Agency more or less adopted the latter inventory management philosophy; but some proposals for the electrical-electronics single manager reflected the former position.

The DSA must also decide what procurement policies to adapt to hedge against uncertainty. Many conditions influence the degree to which uncertainty is a major problem. Among the more prominent are (1) the rate of obsolescence of the inventory, (2) uncertainty of service demands, and (3) the need for responsiveness to service requirements. On the other hand, the capability to utilize different procurement procedures to hedge against uncertainty is a function of such factors as (1) the relationship between agency and contractors, (2) the production functions of the contractors, and (3) management resources available to the agency. From the viewpoint of management, the easiest way to hedge against demand uncertainty is to overstock; however, more complex methods such as preferred procurement and incremental release may sometimes be more economical.

In addition, the DSA must establish criteria for local purchase by service units. There usually are a number of items for which centralized procurement is uneconomical. Standard low-cost items with low service demands and readily available in the civilian economy may

be one group which lower-echelon service units should purchase locally. There may be others.

Stockage

Another set of functions assigned the Defense Supply Agency is to ". . . prescribe stockage objectives for (its) inventories" and to "Manage, control, and operate . . . wholesale warehouses and depots."*

The important question in setting stockage objectives is the level of supply support performance the DSA should try to achieve. Other things being equal, the higher this level, the greater stockage costs; but there are many considerations in setting the stock levels appropriate for a particular level of support performance: (1) supply management philosophy, (2) demand variability, (3) demand uncertainty, (4) pipeline times, (5) production lead times, and (6) obsolescence. Other things being equal, policy stockage levels necessary for a given support performance vary inversely to the resources devoted to the management of these items. In setting these levels, the DSA must consider the relative costs of inventories and management resources. As for the other determinants of policy stockage levels, other things being equal, the amount of stock necessary to achieve a certain level of support performance varies directly with demand variability, demand uncertainty, pipeline times, and production lead times. The rate of obsolescence also affects the costs of achieving a particular level of supply support.

Because of its authority to "manage, control, and operate . . .

*Ibid., p. 9.

wholesale warehouses and depots," the DSA must formulate policies relating to stockage points--their number and location, and their depth and breadth of stockage. These choices are important for the efficient operation of the agency. For example, since the services pay for transport costs, the location of inventories at different points can significantly affect the prices the services pay.

REORIENTING SERVICE LOGISTICS ORGANIZATION

Because "wholesale" logistics functions for common items are connected with other logistics activities, the services may have to adjust their remaining management responsibilities to the new situation. Many types of service logistics activities may be involved in this adjustment, and there may be many ways of making it. For example, the services may have to choose between modifying or overhauling activities or organizations, and then choose between alternative policies and procedures for implementing their decisions.

Some initial steps toward adjustment already have been taken. For example, the Air Force has formulated procedures modifying the activities of the Inventory Managers with respect to handling base requisitions for centrally funded items assigned to the DSA.

But much remains to be done. We may illustrate some characteristics of this task by examining some of the policy alternatives and policy questions for two aspects of service materiel management: service stockage policies and service management of common supplies.

Centralization of Wholesale Inventory Control and Service Stockage Policies

The services may have little control over the composition, location,

and distribution of DSA-controlled materiel. In stockage, this may result in "wholesale" stockage policies which differ from those of the services because of the DSA's DOD-wide responsibilities. As a result a service may regard some of the agency's inventories as not completely adequate; or a service may feel that stocks are inconveniently placed in view of its present mode of operations. At present, for example, the Air Force locates its inventory control points near airfields; the DSA may find it inconvenient to do so.

The loss of wholesale stocks may mean that individual military services cannot control as effectively the flow of common supplies to retail distribution points. For example, the services now do not choose the priority procedures for filling requisitions. Also, when items are in short supply, each service may have difficulty in controlling (1) which of its units requesting the scarce items are to have their orders filled, and (2) what quantities these units are to receive.

Under such circumstances the services should review the assumptions underlying their "retail" stockage policies for common supplies.

There are at least two recourses available to the services: increase stockage at lower support echelons or hold some stocks at an intermediate level between the consumers and the "wholesaler." One way to assure the availability of commodities is to see to it they are on hand. Since the services are free, within budget constraints, to determine stockage objectives, their reaction to supply uncertainty could be to increase inventories of essential items at lower support echelons. It should be noted that enlargement of stocks at the lower-echelon

support levels could increase the costs of mobility as well as support costs.

Storing items at an intermediate echelon is a more satisfactory solution, since it would continue the present situation; but such buffering, if abused, could duplicate the stocks held by the DSA.

Service Management of Common Supplies

In the near future the services may find themselves with complete materiel-management authority largely for items (1) peculiar to specific weapon systems or (2) considered directly vital for accomplishing missions. This change raises several questions about the appropriateness of present service materiel-management structures to the conditions of the new logistics environment. Let us take the Air Force as an example.

Generally speaking, in the Air Force, the management of such "wholesale" logistics functions as replenishment, "wholesale" storage and inventory control, requirements estimation, etc. for all items, is the responsibility of the Inventory Managers. Many items assigned to the Inventory Managers are to be transferred to the DSA. As a result, the Inventory Managers handling largely these supplies lose some of their functions. However, for DSA-managed supplies, these Inventory Managers could still compute Air Force net and gross requirements, possibly exercise some control over "retail" stocks and distribution, assist in initial provisioning, etc.

In the next few years, the Air Force must decide whether to retain this truncated form of the Inventory Manager or to change the structure of materiel management, at least with respect to supplies assigned to

the DSA. There are a number of alternatives. For example, the Air Force could retain the present structure. Here, the Inventory Manager monitors Air Force requisitions for centrally funded items assigned to the DSA, and exercises all the other functions remaining to him. Some problems with this alternative may be that (1) the procedure of forwarding requisitions through the Inventory Manager may lengthen pipelines from DSA "wholesale" inventory control points to the "retail" customer, and (2) this plan may increase distribution and data costs to the Air Force.

At the other extreme, the Air Force could change its inventory-management structure. To illustrate, some "wholesale" functions involving common supplies assigned the DSA--e.g., requirements and inventory control--may be centralized within the Air Force Logistics Command. Other Inventory Manager functions--e.g., allocation of available funds among different items in a class--may be decentralized to the bases or the using commands, such as SAC, TAC, etc. In turn, for items not assigned to the DSA, materiel management could be consolidated among fewer Inventory Managers or be spread out among a number of System Support Managers. However, this type of alternative also may have a number of shortcomings: (1) it may not be efficient to handle such functions as inventory control and requirements centrally for common supplies; (2) similarly, it may be inefficient to turn over certain functions to the bases or using commands; (3) since there may be common items which fall outside the DSA's responsibilities, it may be less efficient to have many System Support Managers responsible for the materiel management of these items rather than one Inventory Manager.

The best solution may be some kind of compromise between the extremes.

The tasks of some AMA's or depots also may come into question. When the DSA stores and distributes the "wholesale" inventory for most common supplies, the requirements for storage space and supply personnel may have to be reduced substantially at AMA's and depots assigned largely these DSA-managed items. Should the Air Force then retain all its present AMA's and depots? If the answer is yes, the efficiency of some may drop because they now operate on a smaller scale. In addition, there would be the question of whether the AMA's and depots most affected should operate at a much smaller scale than at present, or whether there should be a widespread reassignment of responsibilities among these installations. On the other hand, should the Air Force decide to reduce the number of depots, it might increase the vulnerability of its storage and industrial network.

A CHECKLIST OF SOME QUESTIONS

The preceding discussion illustrates some major policy questions raised by the establishment of the Defense Supply Agency.

Among the questions to be faced in linking DSA functions with service activities are the following:

1. What are to be the management techniques and the DSA-service roles in facilitating agreements between the DSA and the services? As an example, what means can be devised to harmonize the DSA aim to standardize common supplies with the services' requests for peculiar supplies?

2. To what extent should the DSA depend on information from the services in its decision-making processes? To illustrate, would the

performance of the DSA be more efficient if its commodity managers computed their requirements largely on the basis of their past issue experience or if these managers relied primarily on service estimates of factors underlying expected future demands?

3. What management techniques can bridge the complementary activities of the DSA and the services? For example, what techniques can adjust provisioning processes to a situation where the services continue to develop and manage weapons and major end items and the DSA manages common components on a "wholesale" level?

4. What are the consequences of alternative DSA policies for the structure or operations of service support systems? As an illustration, what are the differences to service support operations between the DSA processing requisitions at a central location or at decentralized storage points?

5. What are some possible DSA roles suggested by present assignments? For example, if it is more efficient for the DSA to help decide on the depot maintenance of DSA items, is it better to give the DSA only a decision-making role or should the DSA be responsible for depot maintenance operations? In either case, what would be the best way to organize the DSA's role?

Some important questions involved in organizing the DSA are as follows:

1. Should DSA commodity managers adopt some kind of selective management policy for certain types of items or should they apply the same management techniques to all items?

2. In what instances should DSA commodity managers adapt a

particular activity for the purpose of overcoming some problem which exists in another activity? For example, should the agency use such procurement techniques as deferred procurement or incremental release as a substitute for larger inventories to deal with demand uncertainty in requirements processes?

3. What kind of criteria should decide the responsibility of the services for "wholesale" logistics activities assigned the DSA? To illustrate, what should be DSA's criteria for determining whether an item should be coded for agency procurement or local service procurement?

4. What level of support performance does the DSA intend to provide the services? As examples, the DSA must determine its stock levels and the distribution of its stocks among various storage points.

The services also have to resolve a number of important questions in adjusting their support systems to the DSA.

1. What means should be devised to assure the services the availability of items to satisfy pressing needs? For example, should the services set up some kind of buffer stocks? If so, in what form?

2. Should the services modify or overhaul parts of their materiel management systems affected by the activities of the DSA? For example, would it be most advantageous for the Air Force to retain, for DSA-controlled items, its present Inventory Manager system in a modified form or should the Air Force transfer its management of common supplies to a different group of managers, e.g., Weapon System Managers?

IV. CONCLUSIONS

The DSA has been assigned DOD-wide management of numerous "wholesale" logistics functions, such as procurement and distribution, initially covering about one-third of the items of the military inventory.

Setting up the DSA shifts and divides materiel-management responsibilities between services assigned both military missions and logistics functions, and an agency engaged only in materiel support operations. This change sets up requirements (1) to link DSA operations with service activities, (2) to organize a new "wholesale" logistics agency for common supplies, and (3) to adjust service logistics structures to reduced materiel support activity and divided responsibility. Numerous questions arise about alternative courses of action which should be taken.

Our discussion of some examples of these questions leads us to four specific and two general conclusions about the desirability or inevitability of certain courses of action. The specific conclusions are:

First, the services should have a voice in determining the characteristics and specifications of items in DSA inventories. The DSA, as inventory manager of minor weapon components and administrator of the Defense Standardization Program, may be in an important position to determine the configuration and performance of major end items. As consumers of these items, the services probably will be more aware than the DSA, which acts only as supplier, of the items they need.

The question raised by the existence of the DSA concerns the development of a method by which the services can exert their influence.

Second, regardless of whether the DSA commodity managers process service requisitions at a central location or at decentralized storage sites, parts of the logistics systems of some military services probably will have to be modified. Further standardization of supply-support operations may even be necessary. This probable requirement results from the fact that each service organizes its "wholesale" distribution differently and, in turn, this difference affects the organization and operation of a number of materiel-management activities.

Third, because of its close connection with other "wholesale" materiel support activities, it may be more efficient, from the viewpoint of the entire military establishment, to give the DSA a role in the depot maintenance of the items it manages. However, as long as the DSA manages only a small percentage of the reparable items, the services probably should retain their depot-maintenance resources and the DSA, at most, should help decide the amounts to be overhauled for the items it manages. A major question is the implementation of DSA's role.

Fourth, the transfer of certain responsibilities to the DSA may make it advisable for the services to consider overhauling their supply-management structure. For example, the Air Force should consider whether or not to take Inventory Managers out of the management of common supplies by substituting another form of management structure for the remaining Air Force responsibilities for these supplies. Of

course, a big problem is to choose the alternatives which should be evaluated.

Our two more general conclusions are as follows: Regardless of the techniques and procedures decided on for dealing with the new materiel-management structure, the mode of operating many parts of the military materiel support system will probably have to be altered. In place of the different service "wholesale" management systems, there probably will be a uniform set of DSA policies and procedures for common supplies. An example here would be the replacement of uniform DSA "wholesale" requisitioning practices of the services. Also, the DSA must consider its role as DOD "wholesale" logistics manager from a viewpoint differing from that of service "wholesale" logistics managers, and it must act accordingly. For example, the DSA's inventory policies cannot be determined by any homogeneous group of military missions.

On the other hand, the specific courses adopted probably will have widespread effects on the character of the future logistics environment. The organization and operation of military logistics may depend on the choice made in developing the new materiel-management structure. For example, the extent to which the military services control the materiel support available to them may depend on the specific responsibilities assigned the DSA in such activities as provisioning, depot maintenance, etc., and on the range of items the agency is to manage, e.g., minor weapon components, major end items, etc. The choices adopted may affect the performance of military logistics.