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Progress Made and Improvements Needed in Developing a Containerized Ammunition System (Unclassified Digest of a Classified Report). LCD-78-222A; B-176139. August 3, 1978. 14 pp.

Report to Secretary, Department of Defense; by Donald J. Horan (for Richard W. Gutmann, Director, Logistics and Communications Div.).

Issue Area: Military Preparedness Plans: Transportation in Emergency Situations (804).
Contact: Logistics and Communications Div.
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Congressional Relevance: House Committee on Armed Services; Senate Committee on Armed Services.

Military plans for transporting ammunition in the event of a war in Europe include augmenting the existing transportation system with a containerized ammunition distribution system. Containerized shipping involves less handling than breakbulk shipping, but it requires specially designed support equipment; container storage requires large areas of concrete or asphalt-paved surfaces.
Findings/Conclusions: The Department of Defense is making plans to extend containerization capability to all ammunition plants but has not defined the quantity of ammunition the system should be capable of moving. The Army and Navy port operators have only recently coordinated planning for upgrading port facilities, and more coordination is needed to assure that the proper type capacity in the right location is available when needed. Major unresolved problems affecting the ability of a containerized system to meet mobilization needs are: Will adequate overseas port facilities be available? Is there sufficient inland transportation? Can containerized ammunition be handled in-theater? What is the cost of a containerized system and is it justified? What are the problems in shipping ammunition from storage sites? There is a need to expose a wider variety of ammunition shippers and types of ammunition to the system during peacetime and to experiment with commercial containers. Recent developments have cast doubt on the need for a containerized system and related port improvement projects of the extent now under consideration. For example, current Army plans call for sorting larger quantities of ammunition in Europe which should reduce sealift requirements. Recommendations: The Secretary of Defense should take the necessary action to: define the capacity and extent of the containerized system and develop a plan for funding construction and equipment acquisition to this capacity, assure coordination between the Army and Navy of planning for

upgrading ammunition ports to increase or maintain capacity, and revise present plans and revaluate investment decisions to achieve a balance between programs for prepositioning ammunition and acquiring transportation assets. (Author/RTR)

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REPORT BY THE U.S.

General Accounting Office

Progress Made And Improvements Needed In Developing A Containerized Ammunition System

In the event of mobilization, the Department of Defense will rely heavily on modern fast containerships to deliver ammunition to its forces overseas. The Department is developing an ammunition distribution system which will permit maximum and efficient use of such ships.

Although much progress has been made in this system, problems still exist. This report questions whether large planned expenditures should be made before the problems are resolved.

LCD-78-222A

AUGUST 3, 1978

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-176139

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

We have reviewed military plans for transporting ammunition in the event of a war in Europe. These plans include augmenting the existing transportation system with a containerized ammunition distribution system.

This is an unclassified version of our report. Classified information has been deleted.

We believe there is a need for more study and better coordination and control before investing large sums for the containerized system. Some matters which need to be addressed include:

--Identifying the quantity and capacity the containerized system would handle.

--Maintaining coordination between the Army and Navy on port operations and improvement plans.

--Possible inadequacies in the containerized system to meet wartime needs due to major unresolved issues.

--The need to expose a wider variety of ammunition shippers and types of ammunition to the system during peacetime and to experiment with commercial containers.

--Analyzing recent developments which cast doubt on the need for a containerized system and related port improvement projects of the size and composition now under consideration. For example, current Army plans call for storing larger quantities of ammunition in Europe which should reduce sealift requirements.

GENERAL INFORMATION

Ammunition is shipped from the United States to overseas areas either breakbulk or in containers. When shipped breakbulk, pallets of ammunition are loaded, and blocked and braced in trucks or railcars for shipment from source (depots or ammunition plants) to ports. The pallets are removed from the trucks or railcars, loaded on breakbulk ships, and blocked and braced to minimize movement during the voyage. At the overseas port, the pallets are removed from the ship's hold and loaded, and blocked and braced in trucks or railcars for shipment to storage or user.

Containerized shipments, on the other hand, involve less handling than breakbulk shipments. Several pallets of ammunition are loaded, blocked, and braced in an 8- by 8- by 20-foot container with a capacity of about 15 tons. The container is then sealed for shipment and placed on a truck or flatcar for shipment to the port, where it is removed and placed into specially designed holds on container ships. At overseas ports, it is removed from the ship's hold and placed on a truck or flatcar for shipment to storage or user. Containerization eliminates the multiple handling and blocking and bracing of individual pallets and provides additional security.

Containerized shipping requires specially designed support equipment, such as specialized ramps, heavy-lift cranes and forklifts, specialized railcars and truck trailers, and container chassis. Container storage requires large areas of concrete or asphalt-paved surfaces. When shipping general commodities, many of these elements are provided by commercial carriers and are interfaced into the total intermodal services offered.

With ammunition, however, commercial shipping capability is, for the most part, denied because safety restrictions preclude ammunition from commercial piers and ports. As a result, all ammunition must be shipped through approved Department of Defense (DOD) ports and since only one port--Sunny Point, North Carolina--has any fixed container handling capability, 1/ container shipping has been relatively limited. However, DOD is moving toward greater use of containers since containerships are gradually replacing breakbulk ships in the merchant fleet.

A DOD report on strategic mobility requirements and programs, dated February 8, 1977 (the latest report available to us), estimated that [deleted] ammunition would have to be moved to Europe by sealift in the event of a European war and recommended a significant portion be containerized. The report stated that existing ammunition port capability could not handle this volume.

To close the gap, the Military Traffic Management Command proposed that $133 million be spent to upgrade three east coast ports. That proposal would do [illegible] container capability to 1,000 a day at the Military Ocean Terminal, Sunny Point, North Carolina. Additionally, the proposal originally envisioned increasing breakbulk capability at the Military Ocean Terminal, Kings Bay, Georgia, and the Naval Weapons Station, Earle, New Jersey.

Since the time of our review, the Navy assumed control of the Kings Bay facility and plans to use it as a submarine port. Kings Bay will continue to be available for shipping ammunition until commensurate planned expansions to the Earle facility are completed.

1/Some ammunition has been loaded on self-sustaining containerships (ships which carry their own loading equipment) at the Naval Weapons Stations, Concord, California, and Earle, New Jersey. This operation is relatively slow and much of the benefit of container shipping is lost.

NEED TO DEFINE CONTAINERIZED SYSTEM'S CAPACITY

Commands and offices within DOD, responsible for the various segments of the ammunition transportation pipeline, have initiated plans or actions in anticipation of the containerization of large quantities of ammunition. Some ammunition plants are now being given the capability to containerize all anticipated production. Plans to extend total containerization capability to all plants are being made. Depot plans call for a need to have facilities and equipment to handle specific numbers of containers a day. Plans for ports' improvements and ocean transport are based on optimum use of containerships. In Europe, theater commanders foresee a need to be capable of handling [deleted] percent of anticipated Army ammunition requirements in containers.

Although committed to a containerized system, DOD had not, at the time of our review, defined the quantity of ammunition the system should be capable of moving. Since the containerized ammunition system is an integrated concept involving all of the various segments discussed above and reliant on commercial industry for transportation services and transport vehicles, a need exists for oversight guidance concerning the size and capacity to be achieved.

Not defining the system's capacity could easily result in an unbalanced system, i.e., too many resources at some points and too few at others.

This is particularly true because it is not anticipated that all shipments will be containerized. A good portion will continue to be shipped on pallets and stowed on break-bulk ships. Questions as to how much ammunition each system should be expected to handle and how much redundancy at each segment is required to assure readiness must be answered.

Also, container facilities may not be needed at ammunition plants from which little or no production will be available for shipment during the time frame of a European war. The exception would be those plants with significant volumes of ammunition in storage, if any.

NEED TO MAINTAIN COORDINATION IN PLANNING PORT UPGRADING

The Army and Navy port operators have only recently coordinated planning for upgrading port facilities. Since some ammunition ports are operated by the Army's Military Traffic Management Command and others are operated by the Navy, coordination is needed to assure that the proper type capacity in the right location is available when needed.

The Military Traffic Management Command's $133 million proposal to upgrade ammunition ports included a plan to upgrade breakbulk port facilities at the Naval Weapons Station, Earle. This proposal envisioned facilities for only Sunny Point to handle containerized military ammunition shipments. The Navy, however, independently established plans to build container facilities at Earle and at the west coast ammunition port, Naval Weapons Station, Concord, California.

The recent decision to transfer Kings Bay Ocean Terminal from the Army to the Navy resulted in closer coordination between the two services. An agreement between the services was formalized in mid-1977 to provide for an orderly and expeditious Navy takeover of Kings Bay. The agreement also provided for the Navy to increase the breakbulk port capability at Earle to compensate for the loss of the Kings Bay port as an ammunition shipping facility. Capability must be maintained by the Navy at Kings Bay until the Earle improvements are complete. Navy plans to build container facilities at Earle have been canceled and the additional breakbulk facilities were estimated to cost about $76 million.

The Army's original upgrading program, and more recently the agreement reached by the Army and the Navy to coordinate port improvements, were based on transportation requirements projected by the DOD report on Strategic Mobility Requirements and Programs (see p. 3). Not considered in that report, however, was a later decrease in requirements and a decision to preposition larger amounts of ammunition in Europe (see p. 11).

The Army-Navy agreement only concerned east coast port capability. The Army's plan to increase port capability to meet projected European requirements also only addressed east coast ports. However, we found that the Navy was giving emphasis to upgrading the Naval Weapons Station, Concord, California, to handle containerized ammunition for an undefined Asian requirement. The project would cost $34.9 million, would provide a vessel support system for 750 containers a day, and was programed for fiscal years 1979-83.

PROBLEMS WHICH WOULD AFFECT A CONTAINERIZED SYSTEM

An established, intact, balanced containerized system may offer the services what is needed in mobilization--the capability to move large volumes of ammunition in a short period of time. However, there are several unresolved problems, some of which could seriously undermine the system. These problems include:

--Will overseas ports with sophisticated facilities needed to handle containerized ammunition be destroyed or otherwise rendered unusable? This would force unloading by other time-consuming techniques, thereby negating a primary advantage of containerships--productivity.

--Is there sufficient inland transportation?

--Will the overseas theater be able to handle ammunition in containers?

--How much will the total containerized system cost? Since planning for the system has been segmented at the plants, depots, ports, etc., decisionmakers have not had the benefit of knowing just how expensive a program they are acting on, and consequently are not in a position to control cost.

--Will it be possible to assure that ammunition from storage is moved to ports in containers and breakbulk in the right quantities to match up with the type of ship on berth?

We believe these problems must be addressed in determining the role of a containerized system during mobilization. In commenting on a draft of this report, DOD officials agreed and indicated such problems would be addressed in their not yet released program management plan.

Will adequate overseas port facilities be available?

This question can be argued indefinitely. It is addressed in strategic mobility studies deleted Whether there will be enough capacity for offloading ammunition in containers during a war will depend on how much container capability remains intact and deleted

Is there sufficient inland transportation?

An Army study shows that there are not enough containers to meet the mobilization requirement. The Military Traffic Management Command is currently doing a study to determine whether the inland transportation system, including containers and flatcars, can move material required in mobilization. However, the Army has not identified the items, tonnages, and sources for ammunition to be shipped in containers; yet the Military Traffic Management Command needs precisely this information to assess the capability of the system. Until this is done, the services can only speculate on whether sufficient inland transportation assets exist.

Can containerized ammunition be handled in-theater?

Currently, there is limited capability to handle containerized ammunition in Europe-- deleted The Army recently completed a study of containerized shipment and storage of ammunition in Europe. The report contains recommendations on the development of a system capable of handling

deleted of Army ammunition in containers. Therefore, the capability is contingent on getting the necessary funding deleted

What is the cost of a containerized system and is it justified?

DOD has invested millions of dollars in the containerized system and is planning for enhancement totaling hundreds of millions. DOD has not determined what the total cost will be.

The cost of the containerized system will certainly be high. Is the cost justified? This question can only be answered after all alternatives to the containerized system have been analyzed.

What are the problems in shipping ammunition from storage sites?

Precise planning is needed to coordinate containerized and breakbulk shipments from storage sites with ships on berth to preclude port congestion. Given the need to load both breakbulk vessels and container vessels at ammunition ports, a sophisticated scheduling system would have to be developed to assure that the right types of cargo (containerized or palletized) would be available in order to avoid port congestion and to minimize vessel turnaround time.

CURRENT PRACTICES SHOULD EXPOSE ALL POTENTIAL SHIPPERS AND TYPES OF AMMUNITION TO THE CONTAINER SYSTEM AND SHOULD TEST COMMERCIAL CONTAINERS

Mobilization plans envision moving a variety of ammunition items from numerous stateside storage/production sites to overseas destinations. The plans call for using both breakbulk and container shipping. Containers are to be loaded at the ammunition source rather than the port to prevent congestion. Proponents of the program view the use of containers as an integral part of the overall system that will be required to move the vast quantities of

ammunition which will be needed. The justification for using containers to move ammunition during preacetime is based largely on mobilization needs. The objective is to exercise a system in peacetime which could be rapidly implemented during mobilization.

There is little semblance between the system in use and that envisioned during mobilization. Specifically, the shipments are limited to a few different items from a handful of depots and ammunition plants; military-owned containers are used; and about half the containers are loaded at ports.

Currently, 160 containers of ammunition are shipped to Europe every 6 weeks to exercise the containerized ammunition distribution system. Shipments are made on the SS American Ranger, a breakbulk ship with two holds converted to accommodate 160 containers.

DOD has 4,417 containers (MILVANs) specifically designed for intermodal shipment of ammunition. Notwithstanding this large inventory, the services have problems getting together 160 MILVANs needed for the shipment to Europe. The basic problem here is that the MILVANs are scattered all over the world and are being used for purposes other than shipment of ammunition or contingency storage at ammunition plants/depots. The Army's project manager for containers is continually trying to get MILVANs returned from overseas locations. In addition, the MILVANs which are available are in a deteriorating condition. This is in part attributable to improper use of forklifts in handling MILVANs. Repair costs at the port on three recent shipments averaged about $100 per MILVAN.

There is also a lack of standard application of inspection criteria for MILVANs. As a result, ammunition arriving at ports in MILVANs occasionally must be removed and placed into other MILVANs--a costly procedure. In discussing a draft of this report, DOD officials told us that the Army is now preparing a handbook which will set forth inspection criteria.

Currently, 80 percent of ammunition shipments in the continental United States are moved by rail. However, there is a continuing shortage of flatcars for hauling ammunition in containers. This problem was recently aggravated by

enforcement of a tariff requiring that all railcars carrying Class A explosives be equipped with roller bearings, high-friction composition brakeshoes, and spark shields. Although the requirement for high-friction composition brakeshoes was waived in November 1976, the shortage persists. Flatcar sufficiency is the subject of continuing analysis within DOD.

It currently costs more to ship ammunition in containers. For example, one study showed that it costs $475,000 more to ship 5,086 tons of ammunition in containers than it would by breakbulk. An apparent reason is the higher rates charged by inland carriers for movement of ammunition in containers.

Because of limited transportation funds, minimizing the additional costs, rather than exercising a system which stimulates mobilization conditions, becomes the objective. For example, lighter weight items which are best suited for shipment in containers are selected; ammunition from sources nearest the port is selected to minimize inland transportation costs; a cost analysis is made to determine whether to load containers at sources or the port, rather than loading at the source as called for in the program; and DOD-owned--rather than commercial containers--are used almost exclusively. Therefore, the results have been:

--Shippers of certain types of ammunition which will be shipped in wartime are not getting experience in using containers for this ammunition.

--There has been no testing of the potential for using a large volume of commercial containers.

With respect to the testing of commercial containers, DOD officials--in commenting on our findings--said that some testing is now planned for the fourth quarter of fiscal year 1978 and more extensive tests are scheduled for the second quarter of fiscal year 1979.

Several DOD officials cite the need to resolve the operational problems in the current system if it is to respond during mobilization. We believe these problems should be resolved, if for no other reason than to enhance credibility of the system.

POTENTIAL MAJOR DECREASE IN AMMUNITION SEALIFT REQUIREMENTS

We found that there may be a substantial decrease in sealift requirements from those shown in the Strategic Mobility Requirements and Programs Report. This decrease could have an impact on the need for both port upgrading and a containerized system.

Army ammunition sealift requirements for a war in Europe have changed substantially.

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CONCLUSIONS AND RECOMMENDATIONS

Planning for support during mobilization and hostilities is complicated. Prepositioning larger quantities subjects more of the inventory to sabotage or capture. On the

other hand, reliance on the transportation system to deliver ammunition overseas during hostilities increases the likelihood that ammunition will not reach the theater because of factors, such as attrition at sea.

Because of limitations on appropriated funds, all alternatives cannot be explored and all eventualities prepared for. Therefore, the various actions must be considered (1) in some reasonable order of priority and (2) with good coordination where disparate commands are involved which sometimes have different approaches and priorities for the same type of problem.

But inherent in these problems and alternatives are some common questions:

--How much ammunition should the services preposition in Europe?

--To what extent is a containerized system needed to deliver ammunition during mobilization?

In its planning, DOD must achieve balance between programs for prepositioning ammunition and upgrading transportation capability.

Our analysis of the current requirements and existing capability indicates that either the total port upgrading or total prepositioning program may not be needed at this time and that there needs to be better coordination between the services in establishing the total DOD needs and requirements.

We recommend that the Secretary of Defense take necessary action to:

--Define the capacity and extent of the containerized system and develop a plan for funding construction and equipment acquisition to this capacity. The current movement of ammunition in containers should better simulate this system.

--Assure coordination between the Army and Navy of planning for upgrading ammunition ports to increase or maintain capacity.

--Revise present plans and reevaluate investment decisions to achieve a balance between programs for prepositioning ammunition and acquiring transportation assets.

AGENCY ACTIONS AND OUR EVALUATION

DOD officials want the flexibility to shift from one method to another, depending on the type of ship to be made available. They do not intend to replace breakbulk with the container mode. These officials recognize that most of the problems discussed in this report exist and they are planning actions to alleviate existing impediments to a fully operational containerized ammunition distribution system.

A proposed Program Management Plan, dated May 1978, has been prepared by the Director for Transportation and Warehousing Policy, Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics). This plan has been coordinated with the military services and, if approved, should provide program direction, tasks, priorities, and target dates necessary for development of the containerized ammunition distribution system. The plan designates the Department of the Army as "lead service" for program management. The plan encompasses many tasks completed, in process, and to be started.

It also establishes a capacity to which the total containerized ammunition system should be built and envisions a system in which 1,000 containers a day can be shipped through the Sunny Point Terminal to Europe and 500 containers a day from the west coast to the Pacific. All segments in the system will be enhanced to achieve this capacity.

We questioned the basis for the Sunny Point capability because the transportation requirements set forth in the Joint Chiefs of Staff (JCS) Strategic Mobility Study mentioned on page 3, did not consider recent reductions and plans to preposition large amounts of ammunition in-theater. DOD officials say that a new JCS study, not yet released, takes into account the reduction in total requirements and the decision to preposition larger amounts overseas, as discussed on page 11. Notwithstanding this significant decrease in sealift requirements, these officials state that the new study also supports a need for a 1,000 container a day capability. We have not been given access to these studies.

Although DOD has taken some steps to correct problems noted in this report, much remains to be done. Questions posed on page 6 remain unanswered. These questions should be addressed in depth before proceeding with port upgrading. DOD must demonstrate progress toward resolving problems existing in developing other portions of the system, realizing that no single part of the system will be fully functional if the complete system cannot be fully responsive.

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 Chairmen of the House Committees on Appropriations, Armed Services, and Government Operations; the Chairmen of the Senate Committees on Appropriations, Armed Services, and Governmental Affairs; and to the Director, Office of Management and Budget.

We would appreciate being advised of actions taken on the matters discussed in this letter.

Sincerely yours,

Donald J. Horan

for R. W. Gutmann
Director

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