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# *REPORT TO THE CONGRESS*


# Bulk Fuels Need To Be Better Managed

Department of Defense

*BY THE COMPTROLLER GENERAL OF THE UNITED STATES*

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report discusses the military services' war reserve petroleum products and daily operating stocks and presents our recommendations for improving the Department of Defense's management of petroleum fuels.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget, and the Secretary of Defense.

Elmer B. Staats

Comptroller General
of the United States

# Contents

ABBREVIATIONS

| | |
|---|---|
| CONUS | continental United States |
| DFSC | Defense Fuel Supply Center |
| DOD | Department of Defense |
| GAO | General Accounting Office |
| POS | peacetime operating stocks |
| PWRS | prepositioned war reserve stocks |

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

# BULK FUELS NEED TO BE BETTER MANAGED Department of Defense

## D I G E S T

### WHY THE REVIEW WAS MADE

Because of congressional interest in the use of bulk fuels, GAO reviewed the Defense Fuel Supply Center's management of petroleum fuels. The review was also part of GAO's continuing examination of important Department of Defense (DOD) activities, including the military services' readiness posture.

GAO looked into the adequacy of prepositioned war reserve petroleum products and the daily operating stocks in the continental United States and the Pacific Theatre.

### FINDINGS AND CONCLUSIONS

Large quantities of DOD's total fuel requirements for storage are not supported by an inventory of fuel because fuel storage is unavailable. DOD has been unable to lease additional storage and has no plans to construct storage to alleviate this situation. (See p. 4.)

Existing shortages in fuel stocks could impair the services' ability to move men and equipment to combat areas.

The military services did not always furnish contractor-operated terminals with contingency plans for delivering fuel during an emergency. (See pp. 6 and 7.)

Although overall estimated war reserve needs were not covered fully in certain areas, excess requirements computations in other areas partially offset those shortfalls.

Some estimates of fuel needs for U.S. military forces in the United States and overseas are excessive because DOD's formula for computing requirements

--uses factors such as predetermined levels rather than levels based on usage and

--provides for increases in requirements to include quantities in pipelines and storage tank bottoms.

GAO did not review the validity of the total war reserve requirements. However, in reviewing the rationale for computing the needs for operating stock and war reserves, GAO found that fuel requirements in the United States and the Pacific Theatre are overstated by at least 2.6 million barrels.

Overstated requirements should be corrected and this overstated inventory used to cover shortages. Stocking fuel away from where it is needed could also impair combat readiness. (See ch. 3.)

Although the Defense Fuel Supply Center owns the product stored at its terminals, the services have final authority over which product should be stored in their tanks. Because of this restriction, the Defense Fuel Supply Center has not been able to

--obtain full use of storage,

--meet the services' fuel requirements, or

--improve overall storage management.

Excess storage capacity exists at some Government-owned storage facilities, while storage facilities are being leased in the same area. (See pp. 17 and 18.)

RECOMMENDATIONS

The services should re-evaluate war reserve requirements and implement a plan to provide adequate storage capacity.

The Secretary of Defense should give the Defense Fuel Supply Center more authority over assignment of products to storage facilities.

The Defense Fuel Supply Center should:

--Take steps to insure timely preparation and distribution of the "Inventory Management Plan." (See pp. 7 and 8.)

--Change its procedures for computing peacetime operating stockage objectives.

--Review the use of Government-owned storage to determine the need for leased storage, develop specific plans for covering current shortfalls in fuel quantities, and coordinate the funding for the fuel and storage capability. (See p. 19.)

The Navy should count usable stocks in tank bottoms and pipelines in computing its war reserve requirements. (See p. 15.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

DOD agreed that shortages existed in petroleum war reserve stock during GAO's review but said attempts had been made to correct the situation. According to DOD, the shortages resulted from reductions in peacetime operating stocks caused by domestic supply deficiencies antedating the Arab oil embargo by several months.

DOD said that every effort had been made before and during the embargo to minimize the adverse impact on prepositioned war reserve

stocks and that deficiencies were essentially eliminated by the end of fiscal year 1974, after the embargo.

DOD said that the need to develop adequate storage capacity had been emphasized in a November 1973 report to the Defense Energy Task Survey and that recommendations for developing a long-range construction program to begin in fiscal year 1977 are under evaluation. (See pp. 8 and 9.)

DOD agreed in part with the recommendation about revising current procedures for computing peacetime operating stocks. The minimum 10-day level will no longer be maintained at terminals in the continental United States when the peacetime operating stock computation formula indicates that less fuel is required.

DOD does not concur with the recommendation that no allowance be made in peacetime operating stocks objectives for unusable stocks (pipeline and tank bottom fuel) when the amount of prepositioned war reserve stocks on hand is greater than the unusable quantity.

Such a practice, DOD stated, would effectively reduce the assured emergency prepositioned war reserve stocks level at any storage point where, at the time of the emergency, peacetime operating stocks happen to be at minimum levels. (See pp. 15 and 16.)

For clarity, the Defense Fuel Supply Center will in the future stratify stockage objectives to reflect unusable stocks in a category separate from both prepositioned war reserve stocks and peacetime operating stocks.

In addition, DOD will examine the feasibility of eliminating the safety level increment of peacetime operating stocks at terminals where the stratified unusable inventory is equal to or greater than the safety level. (See pp. 15 and 16.)

The Navy has acknowledged that its prepositioned war reserve requirement has been overstated by 1.9 million barrels in all terminals holding both prepositioned war reserve stock and peacetime operating stocks. That amount had been added to the prepositioned war reserve stock by the Navy to compensate for unusable inventory in tank bottoms and pipelines, duplicating additions made to the peacetime operating stock by the Defense Fuel Supply Center for the same purpose. The Navy has discontinued this practice. (See p. 14.)

DOD stated that it recognizes the need for Defense Fuel Supply Center-military department coordination

for storing products at terminals.

However, because not all changes proposed by the Defense Fuel Supply Center will be feasible from an operational or financial standpoint, the services should retain a voice in storage allocation decisions. (See p. 19.)

## MATTERS FOR CONSIDERATION BY THE CONGRESS

Although it makes no recommendations requiring legislative action by the Congress, this report contains information on opportunities to reduce costs and suggestions to correct and improve the Defense Fuel Supply Center's and the military services' management of bulk petroleum products.

# CHAPTER 1

## INTRODUCTION

The Assistant Secretary of Defense (Installations and Logistics) is responsible for policies and guidance relating to Department of Defense (DOD) petroleum logistics programs, systems, and procedures, and for insuring their effective implementation. On July 1, 1973, the Commander, Defense Fuel Supply Center (DFSC), was designated as the Integrated Materiel Manager for bulk petroleum products by Defense Supply Agency Regulation 5805.3, the Defense Supply Center and Defense Depot Mission Statement.

The integrated materiel management (Phase I) concept provides for centralized worldwide management and ownership of bulk petroleum products from procurement to delivery to base boundaries.

Currently in the planning stage, Phase II of the Integrated Materiel Manager System would allow DFSC visibility of petroleum products to the point of actual consumption.

### ORGANIZATION OF THE INTEGRATED MATERIEL MANAGER SYSTEM

To expedite delivery of bulk petroleum products to each activity, DFSC has divided the country into five zones and established field offices at McGuire Air Force Base, New Jersey; Lynn Haven, Florida; St. Louis, Missouri; Houston, Texas; and Los Angeles, California, for zones I through V, respectively. The primary duties of these field offices include ordering from contractors and distributing to customers. DFSC also maintains overseas field offices in Honolulu, Hawaii, and Stuttgart, Germany, for contract administration.

In overseas areas, the joint petroleum offices are part of the Unified Service Commander, and the Defense Supply Agency has established defense fuel offices in the Pacific and Europe for contract administration.

Each service also maintains a petroleum office in the continental United States (CONUS) for management of petroleum products owned by the service and for procedural dealings with the joint petroleum offices and DFSC.

### OPERATION OF THE INTEGRATED MATERIEL MANAGER SYSTEM

Peacetime operating stocks (POS) of bulk petroleum products, used for the daily operation of military activities

during peacetime, are stored either on base or at a bulk fuel tank farm normally referred to as a terminal. POS levels for on-base activities are computed by the military services, those for CONUS terminals are set by CONUS field offices, and those for overseas terminals by DFSC headquarters. POS levels are computed on the basis of average daily consumption, resupply quantity and time frame, safety levels, and authorized deviations such as economic reorder quantities.

Prepositioned war reserve requirements, the fuel required to carry out the initial stages of a war, are computed by the services by grade of product and location using pre-D-Day worldwide materiel policies, approved force structure, and joint service war plans with a July 1 effective date for the fiscal year being reported.

Peacetime operations must be supported daily; therefore, in using base tank capacity, the services assign POS requirements first and use any remaining capacity to store prepositioned war reserve stocks (PWRS). The quantity of PWRS that cannot be stored on base because of lack of storage capacity is reported to DFSC as a terminal storage requirement. The services report terminal storage requirements to DFSC, which consolidates the requirements, computes POS storage requirements for terminals, and assigns the total requirements to available storage in a worldwide terminal storage program. DFSC publishes inventory requirements and levels in an annual report entitled "Inventory Management Plan," which is approved by the services.

When total storage requirements exceed the combined capacity of on-base storage and Government-owned terminals, DFSC obtains additional storage capacity through contracts with commercial terminals. The Government pays over $4.4 million annually for leased storage worldwide. If storage capacity deficits exist, DFSC obtains the services' agreement to allow a portion of the war reserve requirements to remain "uncovered." (That is, quantities or stocks are not maintained to meet requirements.)

The DFSC field offices publish annually an emergency distribution plan to inform all terminals of the planned distribution pattern and the primary mode of transportation of fuel in an emergency. This plan also includes the minimum PWRS levels terminals are to maintain for each military activity. The plan advises contractor-operated terminals of how much fuel is to be moved where in an emergency.

DFSC procures bulk petroleum products directly and negotiates procurement contracts for the activities. In most cases DFSC retains ownership of the product from the time it is procured until it is shipped across a base boundary. Ownership and responsibility for the product then pass to the base commander, except in overseas areas where responsibility for the product passes to the military service having custody.

Granting temporary waivers allowing PWRS inventory levels to fall below the level prescribed by the "Inventory Management Plan" is the sole responsibility of the service Chief of Staff. When temporary waivers are granted, stocks at individual terminals or bases are to be reconstituted as soon as possible.

DFSC is responsible for control of inventories within prescribed minimum and maximum levels and traffic management support in CONUS. DFSC may authorize temporary administrative relocations of PWRS if such relocations are coordinated with and agreed to by the affected military service. In overseas locations, the joint petroleum offices have these responsibilities.

The major bulk petroleum products managed by DFSC and their uses are as follows.

| Product | Use |
|---|---|
| Aviation gasoline | Propeller aircraft, helicopters |
| Jet fuel | Jet aircraft, ships |
| Motor gasoline | Combat vehicles, jeeps, sedans |
| Diesel fuels | Diesel vehicles, ships, utilities |
| Fuel oil | Heaters, utilities |
| Kerosene | Heaters |
| Navy distillate fuel | Ships |
| Navy special fuel | Ships, utilities |

## CHAPTER 2

## READINESS OF PREPOSITIONED FUEL

### WAR RESERVE INVENTORIES

In an emergency, the military services must have certain quantities of petroleum fuels to mobilize and deploy men and equipment to fulfill assigned missions. Since July 1, 1973, as Integrated Material Manager for bulk petroleum fuels, DFSC has had responsibility for maintaining war reserve stocks at levels designated by the services as necessary to fulfill their emergency missions. If war reserve stocks are not maintained at these levels, the services' readiness may be impaired.

### SHORTAGES OF WAR RESERVE INVENTORIES

War reserve stock levels at DFSC terminals have been generally maintained. However, because of storage limitations, the war reserve stocks are sometimes not sufficient to meet the services' overall war reserve requirements.

DFSC does not have access to sufficient storage capacity to fully meet the services' designated war reserve requirements. In addition, certain fuel terminals' war reserve stocks have intermittently fallen below war reserve requirements even though storage capacity was available.

#### Insufficient storage capacity

At the beginning of fiscal year 1974, over 11 percent of the total war reserve requirements were uncovered worldwide. DFSC officials stated that uncovered requirements worldwide had increased to about 16 percent since then because of increased Air Force requirements. Information on uncovered requirements for CONUS was not available.

DFSC personnel said the requirements are uncovered because DFSC does not have access to sufficient storage capacity. The services were aware of this storage shortage before the fuel embargo occurred but did not request funds to build additional storage. In addition, DFSC could not obtain additional leased storage capacity.

#### Insufficient inventory

At the time of our audit, DFSC and the CONUS terminals were maintaining assigned inventory levels and their reports of inventory levels were accurate. However, at selected

locations in zones II and V during the first half of fiscal year 1974, individual terminal inventory levels fell below their war reserve requirements 29 times. The shortages occurred primarily because:

--Field offices and terminals received the war reserve stockage objectives from DFSC headquarters 51 days late; consequently, they were not aware of the levels at which they were to keep their inventories.

--Because areawide shortages existed, it was not always possible to reduce shortages by transferring requirements to other terminals with adequate inventory.

--If shortages existed but resupply was imminent, field offices did not transfer the uncovered requirements to another terminal.

--The field offices ordered fuel in time to avoid shortages; however, some deliveries were diverted to other locations or delayed.

--The inventory was less than the war reserve requirement level when DFSC assumed responsibility for fuel. DFSC has since been unable to reconstitute the inventory to required levels because of a scarcity of suppliers.

Of the 29 shortages, 16 occurred before DFSC was authorized to transfer requirements to terminals with adequate stocks to cover additional requirements. The remaining 13 shortages could not be covered by transfers within the area because of areawide shortages. The shortages lasted from 1 to 14 days and involved quantities ranging from 1 to 50 percent of the terminal's war reserve requirement.

When inventory at terminals becomes less than specified war reserve requirement levels, DFSC's field offices are required to request temporary waivers from the service Chief of Staff. These waivers are to give notice to the Chief of Staff that inadequate fuel exists to support the proposed emergency mission.

In all 29 shortages, temporary waivers were not issued. Terminals' and field offices' personnel gave the following reasons for this.

--Resupply was imminent and the service Chief of Staff was made aware of the shortage by special inventory reports.

--Waivers were requested but not approved prior to resupply.

DFSC regulations required that, when waivers are granted, stocks are to be reconstituted at the earliest practical date. We noted that temporary waivers had been granted in November 1973 for shortages of 0.7 million to 1.5 million barrels of Navy fuels; however, the stocks were not reconstituted until April 1974. According to DFSC field office personnel, the stocks had not been replenished because of the fuel shortage resulting from the oil embargo.

## PLANS FOR EMERGENCY DISTRIBUTION OF PREPOSITIONED WAR RESERVE INVENTORIES

Because some PWRS are not stored at the points of use, an emergency distribution plan must be prepared. The absence of such a plan would impair the services' readiness posture because the terminal manager, and in some cases the base storage manager, would not know where to deliver the fuel.

Emergency distribution plans are to be prepared by DFSC field offices and issued by June 15 of each year to each terminal or military base storing war reserve fuel for use elsewhere. The plan should designate for automatic delivery those quantities of war reserve fuel that must be delivered during an emergency.

We found that emergency distribution plans prepared by the Lynn Haven field office were (1) prepared substantially in accordance with DFSC regulations, (2) updated to reflect changes in delivery requirements, (3) feasible with regard to delivery quantities, delivery rates, and the distances of the deliveries, and (4) coordinated with State and Federal emergency planning agencies. However, these plans were issued about 4 months late and automatic delivery quantities were not designated. If an emergency would have occurred during this period, delivering the proper quantity of the proper fuel to the proper activities would have been virtually impossible.

According to the Lynn Haven commander and supply manager, the distribution plans were prepared late because (1) the field office did not receive the war reserve requirements from DFSC headquarters until August 20, 1973, and (2) the required daily delivery rates were not received until September 7, 1973. Even with this information, the

field office could not issue the distribution plans because the services had not designated the fuel quantities for automatic delivery.

An October 1973 memorandum from the Director of DFSC to the field offices recognized the lack of automatic resupply information and said the Director would request this information from the services. The field offices were instructed to prepare the distribution plans although not all information was available.

## QUALITY OF FUELS AND CONDITION OF STORAGE FACILITIES

We examined fuel quality and storage tank conditions in zones II and V and the Pacific Theatre. The condition of these tanks and the quality assurance tests performed by the services were in accordance with prescribed procedures; and the tanks and fuel were in good condition. However, in a few cases, fuel did not meet quality assurance specifications because of low icing inhibitor content or high foreign matter content. And some storage facilities needed routine maintenance.

In all cases of low fuel quality and needed repairs to storage facilities, terminal personnel were aware of the problems and corrective actions were planned or underway.

## CONCLUSIONS

The services have experienced and are continuing to experience shortages in fuel and storage facilities needed to meet the war reserve requirements. In CONUS, war reserve levels were maintained most of the time. However, if the prepositioned war reserve requirements truly represent the services' emergency needs, DOD should maintain these levels at all times in order to perform their mission.

In addition, the service or activity with responsibility for distributing war reserve fuel during an emergency did not have adequate information to do so.

## RECOMMENDATIONS

We recommend that the Secretary of Defense instruct the services to reevaluate the war reserve requirements and implement a plan to provide adequate storage capacity to meet their needs. We also recommend that the necessary steps be taken to insure that the

"Inventory Management Plan" is prepared and distributed to the field offices before the fiscal year begins so that (1) the emergency distribution plans can be prepared and issued and (2) inventory managers are aware of the required levels of war reserve stocks.

## AGENCY COMMENTS AND OUR EVALUATION

DOD agreed that shortages existed in PWRS during our review but said attempts had been made to rectify the situation. In commenting on our report, the Assistant Secretary of Defense (Installations and Logistics) said the shortages resulted from reductions in POS caused by domestic supply deficiencies antedating the Arab oil embargo by several months. Supply was well below consumption for a long time, resulting in severe depletion of POS and, in some instances, some depletion of PWRS. He also stated that DOD had made every effort before and during the embargo to minimize the adverse impact on PWRS and that deficiencies had been essentially eliminated by the end of fiscal year 1974, after the embargo.

The fuel shortage caused some of the depletion; however, the more important issue is the lack of storage capacity. (See p. 4.) Even when DFSC could purchase fuel without any limitation, a serious shortage of storage capacity existed and we found no evidence of any attempt to alleviate this shortage. In addition, waivers existed for uncovered quantities of Navy distillate and special fuel for over 5 months. According to DOD, restoring an adequate supply-consumption balance could be the only way of solving the inventory shortfall.

DOD said that the need for a comprehensive plan to develop adequate storage capacity for all valid prepositioned war reserve requirements and POS had been emphasized in a November 1973 report to the Defense Energy Task Survey and that recommendations for developing a long-range construction program beginning in fiscal year 1977 are under evaluation. Although this action may be a long-range remedy, DOD should take some aggressive action, such as leasing additional storage on the west coast, to cover the short-range Pacific requirements.

According to DOD, shortages identified in our report were due to resupply falling below required consumption between July 1973 and January 1974. DOD further stated that merely relocating inadequate requirements and obtaining legitimate waivers would not eliminate real shortages; only restoration of an adequate supply could solve the problem.

We agree with the suggested solution but believe that, because the system was designed to notify responsible officials of shortages, the required waivers should be issued. The purpose of the waivers was not to eliminate real shortages, but to inform decisionmakers about available resources.

## CHAPTER 3

## COMPUTING FUEL REQUIREMENTS

DOD procedures for managing petroleum products state that peacetime requirements are to be computed on the basis of demand rate, resupply quantity and frequency, safety level, and authorized deviations. War reserve requirements are to be calculated on the basis of force structure and war plans. Although we did not review the validity of total war reserve requirements, we did review the rationale for computing POS requirements.

Overstated fuel requirements increase the cost of fuel inventories and leased storage facilities and may impair combat readiness by causing war reserve stocks to be uncovered or stored at locations distant from where they are needed.

### OVERSTATED FUEL REQUIREMENTS

Requirements are overstated by more than 2.6 million barrels because factors included in the requirements computations (1) provide for minimum inventory levels in excess of needs based on actual usage and (2) allow for fuel in pipelines and storage tank bottoms.

#### Use of minimum levels

Properly considering DOD's peacetime requirements criteria of (1) demand rate, (2) resupply quantity and frequency, and (3) a safety level factor would normally insure adequate POS and a margin for unforeseen increases in demand and transportation delays.

However, the DOD formula used by the Air Force and DFSC to compute peacetime requirements for CONUS bases and terminals further provides for automatically increasing the computed peacetime requirements to a minimum level of 5 days' supply at bases and 10 days' supply at terminals.

For example, the following table shows the effect of the 5- and 10-day minimums on computed levels at a specific base and terminal.

| Computation factor | Base X | | Terminal Y | |
|---|---|---|---|---|
| | Barrels | Days of supply | Barrels | Days of supply |
| Average projected daily issues | 2,567 | 1.0 | 5,591 | 1.0 |
| Resupply time quantity | 2,567 | 1.0 | 39,137 | 7.0 |
| Safety level | 6,418 | 2.5 | 22,364 | 4.0 |
| Computed total | 11,552 | 4.5 | 67,092 | 12.0 |
| Automatic adjustment to 5- and 10-day minimums | 1,283 | .5 | - | - |
| Adjusted total | 12,835 | 5.0 | 67,092 | 12.0 |

As shown, 1,283 additional barrels of fuel were stored at the base because of the automatic adjustment made to reach the 5-day minimum level. On the other hand, no adjustment was made to the computed terminal requirement because it exceeded the 10-day minimum requirement.

The 5- and 10-day minimum levels caused a total increase of 183,016 barrels to computed peacetime requirements at 87 of the 156 CONUS bases and terminals for which we analyzed requirements. Applying the average stock fund price to the overstated requirements shows that the investment in inventory at the 87 locations could be reduced by about $2.7 million.

The Pacific area doesn't have enough storage capacity for all fuel requirements. Because of this, stocks must be stored in the United States.

We found peacetime requirements for the Pacific area to be overstated, resulting in excessive local storage space being allocated to POS and, consequently, the quantities stored in the United States as war reserve requirement being overstated.

The overstatement of POS requirements stems from Air Force regulations calling for a minimum peacetime requirement of 10 days' average use in the Pacific Theatre. This minimum level exceeds that necessary to support the Air Force in Hawaii and throughout the Pacific area.

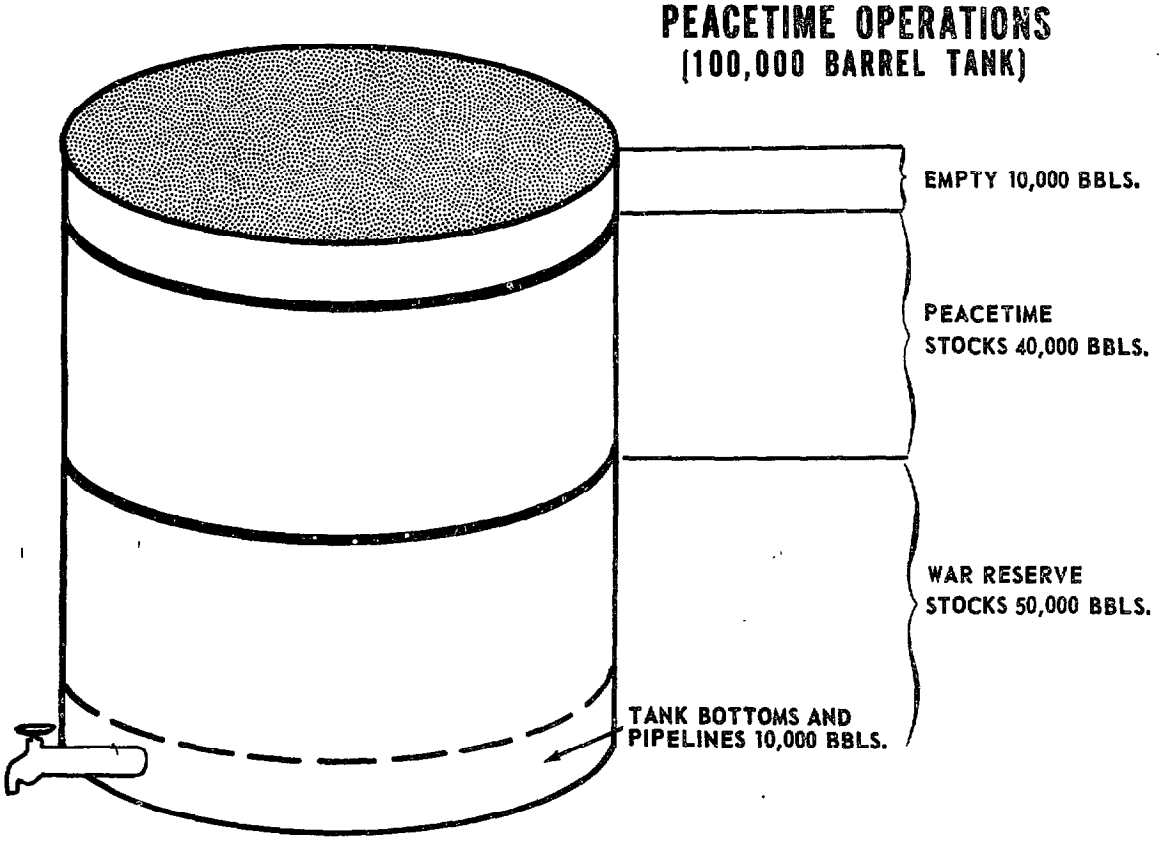
For example, from July through December 1973, the peacetime requirement for Hickam Air Force Base on Oahu was established at the minimum 10-day level, even though the base was

resupplied by an Air Force-owned pipeline from two nearby commercial refineries. Eliminating the minimum level requirement would reduce Hickam's peacetime requirement by about 29,268 barrels.

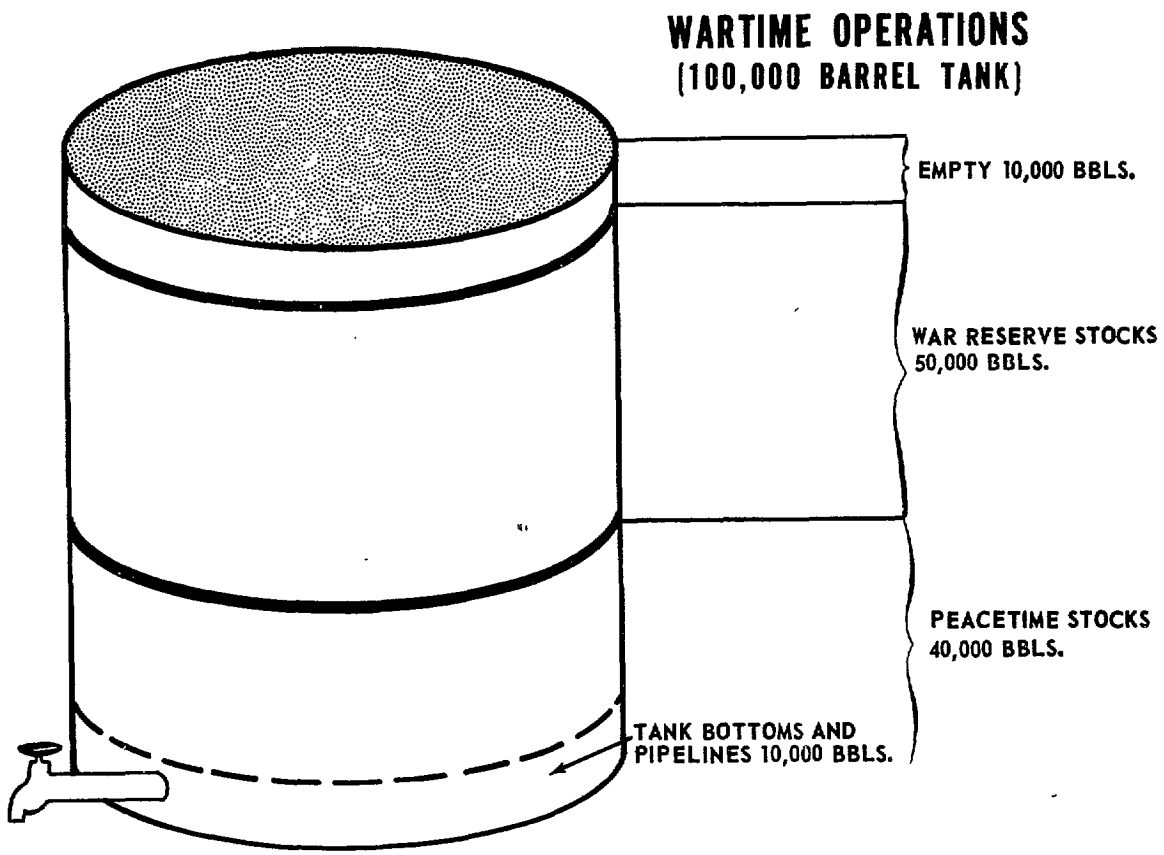
The 10-day minimum level also seems unnecessary in Thailand and the Philippines. According to an Air Force official, most bases in Thailand are resupplied daily by tank car or truck. Clark Air Base in the Philippines is supplied by pipeline from a DFSC terminal at Subic Bay every 5 days.

Inclusion of quantities for pipelines and tank bottoms

In addition to allowing for demand rate, resupply quantity and frequency, and safety level, DOD's formula for computing CONUS peacetime requirements includes a factor which increases the requirements by the quantities in pipelines and storage tank bottoms. DOD considers fuel in pipelines and tank bottoms to be inaccessible under normal operating conditions and therefore not available as either POS or war reserves. We believe, however, that, where war reserve quantities are stored in the same storage system as POS, the pipelines and storage tank bottom quantities can be considered as war reserves during peacetime. (See illustration on peacetime operations.)



In addition, in most cases the quantities of POS in storage exceed the amounts of fuel in pipelines and storage tank bottoms. Therefore, in an emergency, when POS would not be needed, the fuel from pipelines and tank bottoms could be considered as POS and would not be needed as war reserve. Indeed, in an emergency, POS itself would become part of the wartime operating stock considered as POS. In any event, special methods exist for retrieving such fuel in an emergency if POS were not available to, in effect, displace the pipeline and storage tank bottom war reserve quantities. (See illustration on wartime operations.)



DFSC's inventory requirements for CONUS terminals and bases were increased by about 585,000 barrels because pipeline and storage tank bottom quantities were added to the peacetime requirements. If such increases were eliminated, DOD's inventory investment could be reduced by more than $8.6 million. (This figure was computed on the basis of the average stock fund price for each fuel type.)

Each service has regulations describing procedures for computing war reserve requirements. The Navy's procedures are unique in that computed war reserve requirements are increased by 1.9 million barrels to account for quantities in pipelines and storage tank bottoms. This is in addition to the amounts included in POS requirements representing the fuel in pipelines and tank bottoms. In a May 2, 1974, letter to the Secretary of the Navy we questioned the need for this 1.9 million barrels.

The Navy's June 3, 1974, reply acknowledged that the 1.9 million barrels represented stockage against unneeded requirements and therefore resulted in excess inventory. The Navy was recomputing its requirements for war reserves and would no longer include an allowance for quantities in pipelines and tank bottoms.

A 1.9-million-barrel reduction in the Navy's worldwide war reserve requirements for fiscal year 1974 would reduce the inventory investment by about $27.8 million.

## CONCLUSIONS

DOD's total inventory and storage requirements are overstated because POS levels are increased to provide for a minimum number of days' supply despite actual resupply experience. In some cases, quantities required to displace fuel in pipelines and storage tank bottoms are also unnecessarily added to the POS requirements. The Navy's requirements for war reserves are further overstated because they include an additional 1.9 million barrels for fuel in pipelines and storage tank bottoms.

Overstated fuel requirements result in increased inventory investment and possibly in increased leased storage costs. In addition, because DFSC's worldwide storage capacity is less than current requirements, overstated fuel requirements can (1) cause war reserves to be stored at locations distant from the intended point of use and (2) increase quantities of uncovered war reserve requirements.

## RECOMMENDATIONS

We recommend to the Secretary of Defense that the formulas for computing POS requirements used at bases and terminals be revised to (1) eliminate minimum POS levels and (2) include pipeline and storage tank bottom fuel only to the extent that quantities of war reserve stocks of the same type of fuel are less than the volume of the pipelines and tank bottoms.

We also recommend that the Secretary of the Navy exclude the 1.9-million-barrel addition to war reserve requirements for pipelines and storage tank bottoms and count these stocks in computing its war reserve requirements.

We recognize that a reevaluation of POS requirements might result in a reduction of petroleum stocks. Several proposals have been advanced to maintain strategic reserves of petroleum in the form of useful storage or reserve-producing capacity. The proponents of these proposals argue that such reserves reduce our vulnerability to interruptions in supplies from abroad. We did not examine the validity of the military requirements; we accepted the requirements totals as computed. If DOD believes it necessary to retain or increase its petroleum stocks, in recognition of the total energy outlook for the United States, we recommend that DOD identify such additional stock as being retained for this purpose.

## AGENCY COMMENTS AND OUR EVALUATION

DOD agrees in part with our recommendation about revising procedures for computing POS requirements. DOD said it would no longer establish minimum levels at terminals; however, it will continue to maintain 5-day minimum levels at Air Force bases pending further evaluation of overall POS criteria. DOD also said that POS computation criteria for the Pacific are under review because criteria for offshore stocks may not relate to Hawaii, which has resupply characteristics similar to CONUS.

DOD does not concur with our recommendation that no allowance be made in POS objectives for unusable stocks (pipeline and tank bottom fuel) when the amount of PWRS on hand is greater than the unusable quantity. DOD believed that such a practice would reduce the assured emergency PWRS level at any storage point where, at the time of the emergency, POS happen to be at minimum levels.

For clarity, DFSC will in the future stratify stockage objectives to reflect unusable stocks in a category separate

from both PWRS and POS. In addition, DOD will examine the feasibility of eliminating the safety level increment of POS at terminals where the stratified unusable inventory is equal to or greater than the safety level.

Nevertheless, we believe that fuel in pipelines and tank bottoms should be considered as available for either POS or war reserve when these stocks are commingled in the same tank and the quantity of each exceeds the pipeline and tank bottom quantity. When the fuel is being used daily during peacetime, the top layer of fuel is considered to be POS. However, during wartime the tankage is reversed and the stocks formerly designated as POS become reserve stocks. Consequently, in an emergency, quantities in tank bottoms and pipelines become part of the operating stock. Although POS may sometimes be at minimum levels and be insufficient to displace the entire quantity in pipelines and tank bottoms, this is not a common occurrence.

For PWRS stored alone in a tank, the PWRS levels already include a built-in safety level to cover unforeseen contingencies.

## CHAPTER 4

## USE OF LEASED STORAGE INSTEAD OF GOVERNMENT-OWNED FACILITIES

DOD's procedures for managing petroleum products assigned to DFSC the responsibility for storing adequate quantities of inventory in the proper locations to meet peacetime and war reserve requirements. If adequate inventory to meet these needs is not stored in the proper locations, the readiness posture of the military services can be seriously impaired.

DOD's procedures also state that the fuel inventory is the property of DFSC until it crosses the base boundary. Thus, while stored in the terminal, the fuel belongs to DFSC, and DFSC must see to it that storage capacity is available.

Because public law prohibits DFSC from owning any real property, all storage locations used by DFSC are owned by the military services or private contractors. Along with ownership, the services have the authority to state which type of fuel will be stored in their tanks. DFSC has no official recourse if it disagrees with the military services' decisions. Yet DFSC is responsible for consolidating all the services' requirements and negotiating procurement.

### GOVERNMENT-OWNED STORAGE FACILITIES UNDERUSED

When combined on-base and Government-owned terminal storage capacity is insufficient to store total inventory requirements, DFSC leases additional storage capacity at commercial terminals. Our comparison of inventory requirements with available storage capacity showed that increased use of the Government-owned terminals would reduce storage requirements at the commercial terminal, as illustrated by the Port Everglades case.

#### Port Everglades terminal

DFSC leases 375,000 barrels (four 80,000-barrel tanks and one 55,000-barrel tank) of storage capacity at Port Everglades, Florida, for storing jet fuel. Much of this capacity is used to store prepositioned war reserves for McCoy Air Force Base. The Government-owned terminal at Lynn Haven, Florida, also stores war reserves for McCoy. During all of fiscal year 1974, there was more than enough unassigned storage capacity at Lynn Haven to handle the war reserve held at Port Everglades for McCoy. Government and contractor representatives at Port Everglades said that

storage tanks are in short supply in south Florida and that any tankage released by the Government could be leased to other customers.

## DFSC NEEDS GREATER CONTROL OVER STORAGE FACILITIES

In January 1974 DFSC asked for increased tankage at the Navy-owned terminal in San Pedro, California, for motor gasoline to meet increased demand in the greater Los Angeles area. In March 1974 DFSC asked for additional storage at another Navy-owned terminal in Norfolk, Virginia, for Air Force jet fuel to better preposition all war reserve stocks for Langley Air Force Base, Virginia.

The Navy did not agree with either of the DFSC proposed changes because it believed that pumping a high-volatility fuel such as motor gasoline or Air Force jet fuel through the same pipeline used to pump a low-volatility fuel could contaminate the Navy low-volatility jet fuel and increase the danger of fire on board ships using such fuel.

DOD officials believed that pumping Air Force fuel through the low-volatility fuel pipeline was feasible without greatly affecting the Navy's low-volatility fuel. We did not attempt to resolve these differing views but believe that DOD should perform whatever testing necessary to resolve the differing views so that, if the Navy position is erroneous, storage capacities can be maximized.

## CONCLUSIONS

DFSC has the responsibility for storing enough fuel in the proper locations to meet peacetime and war reserve requirements, but it does not have authority to determine the types and quantities of products to be stored in DOD-owned facilities. Consequently, uncovered requirements occur at many locations.

Contract costs for leased storage facilities could be reduced in CONUS by increased use of existing Government-owned facilities.

DFSC, as integrated materiel manager, is in the best position to assess the relative scarcity of petroleum products and to determine the overall petroleum needs for an area after considering the services' stated petroleum requirements.

## RECOMMENDATIONS

We recommend that the Secretary of Defense give DFSC more control over assigning products to storage facilities.

We also recommend that the Secretary of Defense instruct DFSC to (1) review the use of Government-owned storage facilities to determine the need for leased facilities, (2) develop specific plans for covering current shortages of fuel war reserves, and (3) coordinate the funding for the fuel and storage capabilities.

## AGENCY COMMENTS AND OUR EVALUATION

DOD recognized the need for full DFSC-military department coordination for storing products at terminals but added that all storage allocations or changes proposed by DFSC may not be feasible from either an operational or financial standpoint. DOD stated that, in some cases, operational considerations or physical systems design prohibit changes in tankage alignment which might be desirable from an inventory management standpoint. According to DOD, the services must retain a voice in storage allocations because many factors other than inventory management considerations influence what product should be stored where. DOD mentioned such factors as vapor control equipment, truck fill stand locations, piping and mainfolding restrictions, etc., and said these factors are subject to change depending on availability of funding, lead time involved, and the overriding system requirement.

We believe that the readiness posture of all military departments should be of primary concern and that it could be improved if DFSC had more control over storage use and tankage alignment after considering input from all the services.

DOD also stated that since our review overall requirements for McCoy Air Force Base have been reduced; thus one 80,000-barrel tank at Port Everglades is not needed. However, the tank is covered by a 3-year lease now in its second year. Possible disposition is being evaluated.

## CHAPTER 5

## SCOPE OF REVIEW

We made our review principally at DFSC headquarters in Alexandria, Virginia, and at DFSC field offices in Lynn Haven, Florida (zone II); Los Angeles, California (zone V); and Honolulu, Hawaii (Pacific area). In addition, we visited 12 terminals and 11 military bases in California, Florida, Hawaii, Nevada, South Carolina, and the Pacific Theatre. These terminals and bases and their locations, as well as the States included in zones II and V, are listed below.

We interviewed officials at these organizations regarding the management and operation of bulk petroleum products and reviewed applicable legislation, policies, reports, correspondence, and other records.

We also examined regulations and documentation on fuel inventory requirements, levels, distribution, and quality; observed inventory gauging; and reconciled those inventory quantities measured with those that had been reported.

### Terminals and Bases Visited

| | |
|---|---|
| **Terminals:** | |
| Charleston | South Carolina |
| Estero Bay | California |
| Hawaii | Hawaii |
| Lynn Haven | Florida |
| Mayport Naval Station | South Carolina |
| Naval Fuel Depot, Jacksonville | Florida |
| Norwalk | California |
| Philippines | Philippines |
| Point Loma Complex | California |
| Port Everglades | Florida |
| Port Tampa | Florida |
| San Pedro | California |
| **Bases:** | |
| Camp Kue | Okinawa |
| Charleston Air Force Base | South Carolina |
| Ching Chuan Kang Air Base | Taiwan |
| Clark Air Base | Philippines |
| Edwards Air Force Base | California |
| Hickam Air Force Base | Hawaii |
| Homestead Air Force Base | Florida |
| Kadena Air Base | Okinawa |
| MacDill Air Force Base | Florida |

| | |
|---|---|
| Nellis Air Force Base | Nevada |
| Norton Air Force Base | California |

States Covered by DFSC Zone Field Offices

Zone II:
- Alabama
- Florida
- Georgia
- Kentucky
- Mississippi
- North Carolina
- South Carolina
- Tennessee

Zone V:
- Arizona
- California
- Idaho
- Nevada
- Oregon
- Washington

APPENDIX I

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

Dec 3, 1974

INSTALLATIONS AND LOGISTICS

Mr. Fred J. Shafer
Director, General Accounting Office
Washington, D. C. 20548

Dear Mr. Shafer:

This is in response to your letter of September 6, 1974, with which you forwarded a GAO draft report entitled "Need to Better Manage Bulk Fuels," and in which you invited Department of Defense comments on the draft report (OSD Case 3903).

In a review of the adequacy of prepositioned war reserve stocks (PWRS) and peacetime operating stocks (POS) the GAO found that the Department of Defense has overstated PWRS and POS requirements, resulting in excess stockage of 1,900,000 barrels and 700,000 barrels, respectively. The cause of the overstatement of requirements was found to be: (1) the methodology by which the Defense Fuel Supply Center (DFSC) computes terminal POS; (2) criteria employed by the Navy and the Air Force in establishing base level POS in the Pacific Command; and, (3) the Navy's method of computing PWRS. The review also found that there is a lack of clearly defined authority for DFSC to exercise effective management control of its assets held in storage tanks owned and operated by the Military Departments. Lastly, the report states that some shortages in PWRS were noted during the review.

In the report, the GAO has recommended that (1) DFSC be directed to change its procedures for computing peacetime operating stockage objectives; (2) the Navy eliminate unusable stockage requirements for tank bottoms and pipeline fill from its war reserve requirements; and, (3) DFSC and the Services jointly review storage utilization to insure effective management of Government assets, and avoidance of unilateral actions by Service personnel which impact adversely on DFSC's operations.

As stated in the report, the Navy has acknowledged that its prepositioned war reserve requirement (PWRR) has been overstated by

APPENDIX I

in all terminals which hold both PWRS and POS.

[See GAO note 1, p. 24.] had been added to the PWRR by the Navy to compensate for unusable inventory in tank bottoms and pipelines, duplicating additions made to the POS by DFSC for the same purpose. The Navy has discontinued the practice.

We agree in part with the recommendation to revise current procedures for computing POS. The practice of maintaining a minimum ten-day level at CONUS terminals will be discontinued when the POS computation formula indicates a lesser requirement. In this connection, it should be noted that the report erroneously indicates that DFSC maintains a fifteen day minimum. A five day minimum is maintained at some CONUS installations, resulting in such instances in a total minimum stockage of fifteen days in support of those installations. It is recognized that the great changes which have occurred in the energy field in the past year dictate intensive review of all procedures concerned with petroleum management. Review is particularly important for procedures concerned with the way military inventories are determined and managed, because of the three-fold increase in the value of each barrel, as well as the uncertainties in availability of supply which now impact on inventory requirements. We are presently engaged in extensive review of all aspects of integrated petroleum management.

We do not concur with the recommendation that no allowance be made in POS objectives for unusable stocks when the amount of PWRS on hand is greater than the unusable quantity. Adoption of such a practice would effectively reduce the assured emergency PWRS level at any storage point where, at the time of the emergency, POS should happen to be at minimum levels - a cyclic occurrence. While it is true that in some cases unusable stock can be drained from the system, once that has been done the system becomes inoperative until it has been recharged with a new increment of unusable stock. PWRS is intended to assure continuity of operations at war time levels pending reconstitution and/or enlargement of the supply pipeline. Having drained the storage system, the first increment of resupply would be required for recharging, thus providing no supply relief to the combat forces, and lengthening the interval in which supply from PWRS would be required. The net result would be a need to increase the PWRR to reflect the unusable inventories no longer included in POS, thus restoring the status quo. For purposes of clarity, DFSC will in the future stratify stockage objectives to reflect unusable stocks in a category separate from both PWRS and POS. In addition, we will examine the feasibility of eliminating the safety level increment of POS at terminals where the stratified unusable inventory is equal to, or greater than the safety level.

APPENDIX I

We agree that existing directives and procedures for the management and control of DFSC petroleum products held in storage owned by the Military Departments require strengthening to more precisely delineate and clarify responsibilities. However, with respect to the specific recommendation that DFSC and the Services jointly review the utilization of storage facilities, it should be noted that such reviews are required on an annual basis by DoD Directive 4140.25 and DoD Manual 4140.25M, with results provided to this office for review. The first such joint review was conducted by the Defense Supply Agency in mid-1974, one year after assuming the mission for integrated centralized management of petroleum, submitted on 16 August 1974.

We agree with the assessment that shortages existed in PWRS during the period of the GAO review, but we do not concur that there were no apparent attempts to rectify the situation. The shortages were the result of reductions in POS caused by domestic supply deficiencies antedating the Arab oil embargo by several months. An already unsatisfactory supply situation was then severely compounded by the embargo. Military fuel consumption was drastically reduced pending re-establishment of a viable supply level by priority under the Defense Production Act. Nevertheless supply was well short of consumption for an extensive period of time, resulting in severe depletion of POS and in some instances, some depletion of PWRS. Every effort was made throughout the pre-embargo and embargo period to minimize adverse impact on PWRS, and deficiencies were essentially eliminated by the end of FY 1974 following termination of the embargo.

[See GAO note 2.] Detailed review of the draft report has revealed a number of statements, conclusions and minor recommendations with which we do not fully agree, or which appear to be in error. Attached is a listing of those points, identified by page number in the report, together with our comments on each.

The opportunity to review the draft report is appreciated.

GAO notes:

1. Material has been deleted because it is classified.

2. The detailed comments are not included because to the extent appropriate they have been reflected in the body of the report.

Sincerely,

ARTHUR I. MENDOLIA
Assistant Secretary of Defense
(Installations & Logistics)

Attachment

## PRINCIPAL OFFICIALS RESPONSIBLE FOR ADMINISTERING ACTIVITIES DISCUSSED IN THIS REPORT

| | Tenure of office | |
|---|---|---|
| | From | To |
| **DEPARTMENT OF DEFENSE** | | |
| SECRETARY OF DEFENSE: | | |
| James R. Schlesinger | Apr. 1973 | Present |
| Elliot L. Richardson | Jan. 1973 | Apr. 1973 |
| Melvin R. Laird | Jan. 1969 | Jan. 1973 |
| DEPUTY SECRETARY OF DEFENSE: | | |
| William P. Clements | Jan. 1973 | Present |
| Kenneth Rush | Feb. 1972 | Jan. 1973 |
| Vacant | Jan. 1972 | Feb. 1972 |
| David Packard | Jan. 1969 | Dec. 1971 |
| ASSISTANT SECRETARY OF DEFENSE (INSTALLATIONS AND LOGISTICS): | | |
| Arthur I. Mendolia | Apr. 1973 | Present |
| Hugh McCullough (acting) | Feb. 1973 | Apr. 1973 |
| Barry J. Shillito | Jan. 1969 | Feb. 1973 |
| **DEPARTMENT OF THE ARMY** | | |
| SECRETARY OF THE ARMY: | | |
| Howard Calloway | May 1973 | Present |
| Robert F. Froehlke | July 1971 | May 1973 |
| Stanley R. Resor | July 1965 | June 1971 |
| UNDER SECRETARY OF THE ARMY: | | |
| Herman R. Staudt | Oct. 1973 | Present |
| Vacant | June 1973 | Oct. 1973 |
| Kenneth F. Belieu | Aug. 1971 | June 1973 |
| Thaddeus R. Beal | Mar. 1969 | July 1971 |

| | Tenure of office | |
|---|---|---|
| | From | To |
| **DEPARTMENT OF THE ARMY (continued)** | | |
| ASSISTANT SECRETARY OF THE ARMY (INSTALLATIONS AND LOGISTICS): | | |
| Vincent P. Huggard (acting) | Apr. 1973 | Present |
| Dudley C. Mecum | Oct. 1971 | Apr. 1973 |
| J. Ronald Fox | June 1969 | Sept. 1971 |
| **DEPARTMENT OF THE NAVY** | | |
| SECRETARY OF THE NAVY: | | |
| J. William Middendorf | June 1974 | Present |
| J. William Middendorf (acting) | Apr. 1974 | June 1974 |
| John W. Warner (acting) | May 1972 | Apr. 1974 |
| John H. Chafee | Jan. 1969 | Apr. 1972 |
| UNDER SECRETARY OF THE NAVY: | | |
| Vacant | June 1974 | Present |
| J. William Middendorf | June 1973 | June 1974 |
| Frank Sanders | May 1972 | June 1973 |
| John W. Warner | Feb. 1969 | Apr. 1972 |
| ASSISTANT SECRETARY OF THE NAVY (INSTALLATIONS AND LOGISTICS): | | |
| Jack L. Bowers | June 1973 | Present |
| Charles L. Ill | July 1971 | May 1973 |
| Frank Sanders | Feb. 1969 | June 1971 |
| **DEPARTMENT OF THE AIR FORCE** | | |
| SECRETARY OF THE AIR FORCE: | | |
| John L. Lucas | July 1973 | Present |
| Dr. Robert C. Seamans, Jr. | Jan. 1969 | July 1973 |
| ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS AND LOGISTICS): | | |
| Richard J. Keegan (acting) | Aug. 1973 | present |
| Lewis E. Turner (acting) | Jan. 1973 | Aug. 1973 |
| Philip N. Whittaker | May 1969 | Jan. 1973 |

| | Tenure of office | |
|---|---|---|
| | From | To |
| **DEFENSE SUPPLY AGENCY** | | |
| DIRECTOR, DEFENSE SUPPLY AGENCY: | | |
| Lt. Gen. Wallace H. Robinson, Jr., USMC | Aug. 1971 | Present |
| Lt. Gen. Earl C. Hedlund, USAF | July 1967 | Aug. 1971 |
| **DEFENSE FUEL SUPPLY CENTER** | | |
| COMMANDER, DEFENSE FUEL SUPPLY CENTER: | | |
| Rear Adm. William M. Oller | Dec. 1972 | Present |
| Captain Carl P. Johnson, USN | Oct. 1972 | Nov. 1972 |
| Brig. Gen. William R. Bigler, USA | Feb. 1972 | Sept. 1972 |
| Col. Frederick E. Johnson, USA | Nov. 1971 | Jan. 1972 |
| Maj. Gen. Charles W. Case, USA | Nov. 1969 | Nov. 1971 |
| Col. Leon Stann, USAF | Oct. 1969 | Nov. 1969 |
| Rear Adm. Fowler W. Martin | Nov. 1966 | Oct. 1969 |

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