

## DOCUMENT RESUME

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Continuing Need to Establish Uniform Guidelines for Controlling and Accounting for Ground Vehicle Fuels. LCD-77-220; B-163928. July 20, 1977. 18 pp. + 2 appendices (2 pp.).

Report to Secretary, Department of Defense; by Fred J. Shafer, Director, Logistics and Communications Div.

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Unlike the Air Force, the Navy has not exercised control and accountability over millions of gallons of petroleum. Findings/Conclusions: Petroleum safeguards were so poor and accountability practices so suspect at two Navy facilities that wholesale thefts had occurred. The Navy had not developed control procedures at the installation and unit level. At some activities visited, management guidelines were almost nonexistent, and at others, procedures were fragmented and incomplete. In contradistinction, the Air Force had a sound system of petroleum management at the installations surveyed; however, units at these installations did not always follow these procedures. The Navy's deficiencies, combined with similar shortcomings noted in an earlier study of the Army, show the need for establishing uniform guidelines for petroleum management. Recommendations: The Secretary of Defense should establish and implement uniform procedures for petroleum management at the installation and unit level of the military services. (DJM)

02786

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*UNITED STATES  
GENERAL ACCOUNTING OFFICE*

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**Continuing Need To Establish  
Uniform Guidelines For  
Controlling And Accounting  
For Ground Vehicle Fuels**

**Department of Defense**

The increasing cost and scarcity of petroleum makes it a must that military departments have effective management systems to control, conserve, and protect fuel supplies.

This report shows the Navy has not exercised control and accountability over millions of gallons of petroleum.



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

LOGISTICS AND COMMUNICATIONS  
DIVISION

B-163928

The Honorable  
The Secretary of Defense

Dear Mr. Secretary:

A continuing need exists for your Department to establish uniform petroleum management guidelines for application at the installation and unit levels of the military services.

We previously reported to you (LCD-75-218, May 20, 1975) that most audited Army petroleum dispensing activities did not exercise proper control over, and accountability for, ground vehicle fuels. Similar conditions were found at most Navy activities recently audited. The poor petroleum management conditions noted were due in large part to procedural weaknesses. In contrast, the Air Force has issued detailed guidance which, when properly implemented, provides sound control over, and accounting for, ground vehicle fuels.

This report contains recommendations to you on pages 14 to 16. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report, and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

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

Sincerely yours,

A handwritten signature in cursive script, reading "F. J. Shafer".

F. J. Shafer  
Director

GENERAL ACCOUNTING OFFICE  
REPORT TO THE SECRETARY OF DEFENSE

CONTINUING NEED TO ESTAB-  
LISH UNIFORM GUIDELINES FOR  
CONTROLLING AND ACCOUNTING  
FOR GROUND VEHICLE FUELS  
Department of Defense

D I G E S T

A continuing need exists for establishing and implementing uniform and effective military petroleum management guidelines. The Navy did not exercise effective control and accountability over millions of gallons of ground vehicle fuel at 11 of the 14 Navy activities audited.

Petroleum safeguards were so poor and accountability practices so suspect at two Navy activities that the Naval Investigative Service was prompted to conduct a detailed investigation. While its work was not complete at the end of GAO's review, illegal diversion of ground vehicle fuel in bulk quantities was discovered and one arrest had been made; other arrests were pending.

The poor petroleum management practices at most Navy activities existed because the Navy has not developed effective procedures for controlling and accounting for ground vehicle fuel at the installation and unit level. At some activities visited, petroleum management guidelines were almost non-existent. At others, procedures were fragmented and incomplete.

In contrast to the poor petroleum management noted at most of the audited Navy activities, the Air Force had published uniform comprehensive procedures for petroleum management which, when properly implemented, provided for sound control over and accounting for ground vehicle fuel. Although these procedures were followed at the Air Force installations fuel-dispensing activities audited, they frequently were not followed by units at these installations.

In a prior report to the Secretary of Defense, GAO pointed out that most audited Army petroleum-dispensing activities did not exercise effective control over and accountability for ground vehicle fuels, due partly to procedural weaknesses.

GAO recommended that the Defense Department study the feasibility of establishing and implementing a uniform petroleum management system patterned after the Air Force system. According to Defense, such a study was not warranted because, even though petroleum management procedures were unique to each service, all were designed to provide for adequate petroleum management.

Serious procedural weaknesses in the Navy's ground vehicle fuel management, combined with GAO's earlier findings concerning shortcomings in the Army, corroborate the need for establishing and implementing uniform Defense guidelines for effective petroleum management.

We therefore recommend that the Secretary of Defense establish and implement uniform procedures for controlling and accounting for ground vehicle fuel at the installation and unit level of the military services. (See pp. 14 to 16.)

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**DIGEST**

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### ABBREVIATIONS

<b>DFSC</b>	<b>Defense Fuel Supply Center</b>
<b>DLA</b>	<b>Defense Logistics Agency</b>
<b>DOD</b>	<b>Department of Defense</b>
<b>GAO</b>	<b>General Accounting Office</b>
<b>NAS</b>	<b>Naval Air Station</b>
<b>NSD</b>	<b>Naval Supply Depot</b>
<b>PWC</b>	<b>Public Works Center</b>

## CHAPTER 1

### INTRODUCTION

In fiscal year 1976, Air Force and Navy activities used about 120 million gallons of fuel for ground vehicles and other equipment. We visited 27 Air Force and Navy installations and tenant organizations having bulk storage facilities which issued a total of 12.9 million gallons of ground vehicle fuel during a recent 1-year period. (See app. I.)

Normally a single bulk storage and issue activity receives fuel from commercial sources or the Defense Fuel Supply Center (DFSC). In addition to these main installation fuel activities, many tenant organizations maintain their own bulk storage and mobile refueling activities. These organizations normally receive their petroleum from tank trucks operated by the installation fuels office. Or, they may receive it from commercial tank trucks under contract with the installation fuels office. As much as one-third of the fuel received by the base fuels activity is issued in bulk quantities to tenant organizations for storage and reissue.

### AIR FORCE PETROLEUM MANAGEMENT PROCEDURES

The Air Force has issued detailed procedures for fuel management at both the installation and unit level (Air Force Manual 67-1 and Air Force Regulation 144-1). These procedures provide for separation of duties and responsibilities between those who maintain physical control over inventories and those who maintain accountable records. When followed, they provide an adequate system for control and accountability with an established audit trail permitting early detection of losses or theft.

For Air Force base fuel managers, procedures require a daily physical inventory of all active storage locations. Receipts and issues are posted to fuel worksheets daily, and a gain or loss is computed. All fuels transaction documentation requires review for completeness and accuracy. The daily gain or loss computation allows immediate detection of any unusual loss.

A reconciliation of the book balance with the physical quantity on hand is made at the end of the month. Special forms are used for gain/loss determinations, and any loss exceeding one half of 1 percent of beginning inventory plus

issues requires an investigation of the entire loss. Supporting documentation must be retained for 2 years.

Each Air Force vehicle or equipment item has its own credit card which must be used to obtain fuel. All issues are recorded on a standard form designed specifically to record petroleum transactions. Issues are verified separately by the issuing activity, such as each active service station or bulk storage location. Issue quantities are verified by comparing issue documents, meter readings, and physical inventories. This permits daily identification of losses by storage location.

Trained fuel custodians are required to observe the delivery process. Before and after delivery, storage tank inventories are taken to verify that the quantity billed agrees with the quantity received. Controls are used to prevent undetected exit from and reentry onto the base to prevent fuel diversion. Delivery vehicles are inspected before fuel delivery begins to detect tampering and to insure that the truck is fully loaded. The truck is also inspected after delivery to verify that all fuel has been delivered.

Storage tanks are to be pressure-tested for leaks semi-annually. Measuring and dispensing equipment is to be tested periodically and documentation of these actions is maintained.

Air Force procedures state that additional controls will be instituted on refueling tank trucks. A special form is used to record dispensing meter readings, petroleum issues between refueling, and quantities required to refill the truck. These figures are used to verify the quantity issued and to insure that total issues are within 2 percent of the quantity required to refill the truck.

#### NAVY PETROLEUM MANAGEMENT PROCEDURES

Navy guidance is fragmented in several regulations (Navy Supply Manual Volume II, chs. 4 and 5; Navy Facilities Engineering Command Manual P-300; and Navy Comptroller Manual Volume 3, ch. 7) and control over the day-to-day fuel operations is based upon the initiative of local fuel managers. We did not find procedural guidance for user organizations.

Navy procedures require that a physical inventory be taken monthly and observed by someone independent of the



fuels operations. At the end of the month, receipts and issues are to be reconciled and compared with physical inventories. Losses exceeding one half of 1 percent of beginning inventory plus receipts require an investigation.

Navy procedures do not address the need for trained fuel custodians nor the method that should be used to verify fuel receipts. These controls, if used at all, must be devised by the local fuel managers. Navy procedures also do not emphasize the need to limit entrance to and exit from the installation by fuel transport vehicles. Controls over refueling tank trucks are not specified.

Navy procedures do not require credit cards for fuel issues, nor do they provide for standard forms to document petroleum transactions. Nor is identification of daily losses by dispensing activity required. Navy Facility Engineering Command Manual P-300 discusses the advantages of a credit card system and illustrates the forms that may be designed to record issues; however, these are optional.

#### PRIOR GAO REPORT

In 1975, we reported that deficiencies existed in controlling and accounting for ground fuels in the Army. 1/ Significant discrepancies at three of four major installations reviewed prompted us to recommend that the Secretary of Defense study the feasibility of establishing a uniform Defense-wide system for ground petroleum management at the installation level. The Secretary responded that, although not uniform, the services had satisfactory control systems and that discrepancies resulted from noncompliance, not procedural deficiencies.

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1/"Improvements Needed in Controls and Accounting for Ground Vehicle Petroleum" (LCD-75-218, May 20, 1975).

## CHAPTER 2

### IMPROVEMENTS NEEDED AT NAVAL INSTALLATION LEVEL

Three of five Navy installations visited did not exercise proper control and accountability over an estimated 4.9 million gallons of ground vehicle fuel issued during a recent 1-year period. Fuel issues of 714,000 gallons were not properly supported and a 113,000-gallon shortage had not been either detected or investigated. (See app. II.) Problems encountered regarding fuel management ranged from inadequate surveys of losses identified to a complete lack of control resulting in undetected theft.

Our tests at two Navy installations revealed no excessive losses or gains of ground vehicle fuel. These activities had established and implemented local petroleum management procedures which provided effective control over and accounting for ground vehicle fuels. The physical and accounting controls in effect at one of these activities--Naval Air Station (NAS) Alameda--were similar to Air Force procedures because they provided for daily physical inventories and accountability for fuel by each storage and dispensing activity.

Unsupported issues and inventory shortages occurred at three of these activities because petroleum management practices did not include adequate:

- Separation of functions between personnel responsible for physical custody and controls and personnel responsible for document verification, recording, and accounting controls.
- Training of fuel custodians to carry out their responsibilities.
- Control over entrance to and exit from installations by petroleum tank trucks.
- Verification and accountability for receipts, issues, inventories, and gains or losses by each storage and dispensing activity.
- Audit trails to provide for periodic examination and verification of the records.

- Reporting to management so that prompt action could correct errors.
- Calibration testing of the accuracy of fuel-measuring devices and dispensing meters.

Some of our findings are shown below.

PUBLIC WORKS CENTER,  
NORFOLK, VIRGINIA

The Norfolk Public Works Center had an estimated 703,000 gallons of unsupported ground vehicle fuel issues during fiscal year 1976. This amount represents 30.6 percent of the 2.3 million gallons of recorded issues during that period. In addition, theft of an undeterminable amount of fuel was discovered by the Naval Investigative Service during an investigation prompted by our audit.

Little confidence could be placed in the quantity of fuel being reported as issued by the Norfolk Public Works Center. Bogus issue quantities were often recorded to arbitrarily reduce the recorded quantity of fuel that the activity was accountable for. Poor recordkeeping practices left no audit trail of transactions for a specific day. Further, the fuel manager had not instituted adequate controls to periodically test dispensing equipment accuracy.

Recorded issues used to reduce the quantity on hand should have been based on the service station and mobile refueling truck meter readings, but this was not the actual practice. We reviewed a selection of public works center (PWC) issue documents for a 6-month period ended June 30, 1976, and found 678 recorded issues for 351,495 gallons were unreliable because quantities were altered, estimated, and duplicated.

The quantities on these bogus documents represent 30.6 percent of all ground vehicle fuel issued during this period. For example, our tests indicated that issues were being estimated based on the amount of fuel recorded as received rather than on individual issue documents. Fuel personnel admitted this occurred in 455 instances totaling 233,019 gallons. Also, 163 instances of altered and duplicated issues totaling 30,270 gallons had occurred. Additionally, there were 60 instances totaling 88,206 gallons, in which issues were fictitiously developed to arbitrarily reduce the onhand quantities recorded in the stock records because these quantities exceeded the activity's fuel storage capacity.

In our opinion, bogus issue documents were prepared by the PWC to give the appearance that fuels operations were normal when, in fact, they were not.

PWC officials responsible for managing and controlling ground fuels were not aware of existing guidelines pertaining to receipt, storage, and issue, nor were they aware of methods and procedures for taking physical inventories.

The PWC had not established a system of independent verification of ground fuel and related transactions. Instead, responsibility for physical control of petroleum as well as for handling documentation of receipts and issues was centralized in a single activity.

The PWC had not conducted a physical inventory for 2 years. Furthermore, the PWC fuel manager could not take an accurate physical inventory--even when requested to do so during our audit. He did not have:

- A measuring device with legible markings so that the volume of fuel contained in storage tanks could be determined.
- Gaging charts to convert the measured quantity of fuel (recorded in feet and inches) to the number of gallons on hand.
- A standard thermometer to make volume adjustments due to temperature fluctuations.

We tried to reconcile inventories but found records so inadequate that a meaningful analysis could not be made.

Consequently, the PWC could not accurately report onhand quantities of ground vehicle petroleum. As of January 2, 1976, the records showed that 86,500 gallons were stored in the service station's tank; however, the maximum storage capacity was only 10,000 gallons. Again on June 9, 1976, the PWC reported that 68,000 gallons were onhand in the 10,000-gallon tank.

The Norfolk PWC had neither trained its personnel in supervising fuel deliveries nor designated specific individuals to be responsible for assuring that petroleum receipts were appropriately handled. Petroleum delivery vehicles were not inspected upon arrival or after delivery. Meters measuring quantities dispensed were not used. Physical inventories of storage tanks were not taken before and after delivery.

Quantities on delivery tickets were not verified. During our observations of fuel deliveries, a truck driver filled out the receipt record and then a PWC employee who had not witnessed the delivery signed for the quantity on the receipt document.

Receipt records and payments for petroleum were based solely on the amount billed by the activity issuing fuel to the PWC. Records were not sufficiently complete or accurate to identify any receipt shortage or overbilling if they occurred.

Totalizer meters on the service station pumps had not been calibrated since February 1973. We tested the accuracy of 12 meters (13 percent of the 91 in use from April 29 to July 28, 1976) and found only 4 to be accurate. The other eight meters were understating actual issues by 10 to 30 percent.

The Norfolk PWC did not record truck refueling meter readings before and after the trucks were filled. Issue documents were not compared with truck meter readings to verify that all issues were properly documented. Further, no controls existed to verify that the quantity required to replenish the refueling truck was equal to prior issues.

Because of shortcomings we observed at the Norfolk PWC, the Naval Investigative Service was requested to make an inquiry. The Investigative Service found that PWC truck drivers were leaving the base, unloading diesel fuel on personal property, and then returning to the base. While the investigation was continuing at least one arrest was made and several others were anticipated. However, the size of the loss and frequency of occurrence probably will not be determined because of inadequate recordkeeping practices.

PUBLIC WORKS CENTER  
SUBIC BAY, PHILIPPINES

The Subic Bay PWC had shortages and unsupported issues totaling 80,000 gallons of ground vehicle petroleum over an 8-month period ended July 1976. Physical controls were inadequate and reliable records were not available to support the fact that the 1.1 million gallons of fuel issued in 1975 by the PWC's fleet of mobile refueling trucks were accurately reported.

We reconstructed the records, beginning with the PWC's November 1975 recorded physical inventory, and compared the

recorded balance to the physical inventory of July 6, 1976. This revealed a 69,000-gallon shortage. Further, our review of selected issue documents for the same period revealed that documentation supporting issues totaling 11,300 gallons could not be located.

According to the PWC's records only two physical inventories were taken from November 1975 to April 1976. However, these were not actual physical inventories, but were visual estimates by PWC personnel. Before our visit, the PWC reconciled the estimated inventory to the recorded one and found a 39,000-gallon fuel shortage as of April 30, 1976. This exceeded the allowable handling loss by 37,000 gallons. However, it was not the PWC's practice to calculate and compare the allowable handling loss with the actual. Consequently, no action was taken to survey the shortage. Our review of available records for the same period revealed an additional 10,000-gallon shortage.

We made a later reconciliation for the period June 1 through July 6, 1976; a 20,000-gallon shortage was discovered. The Naval Investigative Service was asked to make an inquiry into the unaccounted-for fuel. The results of that inquiry were not complete at the conclusion of our fieldwork.

From November 1975 through July 6, 1976, substantial losses and unsupported issues had occurred, but causes had not been identified because effective procedures to account for refueling truck issues were not used. The PWC normally did not

- record meter readings before refueling the trucks,
- inspect trucks immediately after refueling to assure they were full,
- total issue tickets to compare with meter readings, or
- insure that the quantity required to replenish each truck is justified by prior issues.

Without these controls, discrepancies between the total quantity reported on the issue tickets, the meter readings, and the amount of fuel required to replenish the trucks cannot be resolved.

The PWC did not periodically verify the accuracy of dispensing meters on mobile refueling trucks. Before our visit, the most recent calibration for some vehicles was March 1975 and, when tested at our request, the meters on all vehicles were inaccurate by 10 to 30 percent. PWC officials believed that the inaccurate dispensing equipment was responsible for some of the 69,000-gallon fuel shortage. However, this could not be verified since data was not available to determine how long the problem had existed. After testing and recalibration, one truck was deactivated because of dispensing meter inaccuracies and the total number of trucks was reduced from 12 to 4 to afford greater control.

For November 1975 through April 1976, the PWC could produce support for only 219,000 of the 231,000 gallons recorded as issued by mobile refueling units, leaving 12,000 gallons unsupported.

SUPPLY DEPOT  
SUBIC BAY, PHILIPPINES

The Subic Bay Naval Supply Depot had experienced a 44,000-gallon shortage of ground vehicle petroleum. Reported issues for calendar year 1975 were 1.5 million gallons. Physical controls were not adequate and records were not available to support issues and receipts by the three service stations and the two mobile refueling units.

We reconstructed the records beginning with the NSD's book balance of February 1, 1975, and ending with our July 12, 1976, physical inventory. A 44,000-gallon shortage had occurred and was confirmed by Naval Supply Depot (NSD) officials.

NSD had not conducted monthly physical inventories, nor was it aware of a requirement to do so. This activity was operating under a prior requirement for taking quarterly inventories which had been changed to monthly as of September 1975. Even when reconciliations were conducted, they were frequently incorrect because physical inventory figures were often based on visual estimates. A physical inventory of one storage facility had not been made since May 1974. At that time the gaging charts were discovered to be inaccurate. However, efforts to obtain accurate gaging charts were not initiated until our visit. In one instance the opening inventory for a service station was recorded as minus 470 gallons.

NSD officials were unable to explain the discrepancies noted during our audit. They expressed doubt about the

accuracy of the gaging charts, including the one prepared recently for the service station that previously had not been taking physical inventories.

Additionally, the NSD did not have a program to periodically test dispensing equipment accuracy, and records could not be located concerning testing before April 1976. Because pilferage was suspected at that time, service station pumps were calibrated. Inaccuracies in four of the five pumps exceeded allowable limits. Also, the primary gasoline delivery truck's meter, which was tested at our request, overstated issues by 10 percent.

Before our audit, the NSD did not (1) inspect delivery tank trucks, (2) use dispensing meter readings, or (3) take before and after delivery physical inventories to verify quantities received. We reviewed records of deliveries between July 25 and August 9, 1976, and found delivery truck meter readings and gaging of storage tanks did not agree for 13 deliveries. These differences generally exceeded 100 gallons.

Physical inventories of storage tanks which were initiated during our review showed actual receipts for seven deliveries to range from 5,124 to 5,535 gallons, even though the deliveries supposedly were for a full truck load of 5,500 gallons. In one instance the truck's dispensing meter and physical inventory before and after delivery differed by 422 gallons. In most cases, neither the delivery truck's dispensing meters nor our physical inventories at the storage tanks agreed with the amount billed to the NSD. Furthermore, the NSD had made no attempt to reconcile these differences. Receipts posted to the accountable record were based on the billings.

During our examination, the NSD experienced numerous instances in which meter readings and physical inventory quantities subtracted from the beginning inventory plus recorded receipts did not correspond with recorded issues. At two service stations, the difference between the ending physical inventory and the beginning physical inventory plus receipts exceeded reported issues by 1,160 gallons during June 1976. In fact, daily fuel reports showed that the service station meter readings rarely agreed with reported issues. For example, the day after dispensing pump meters were calibrated, recorded issues were 54 gallons short of actual issues calculated from the service station meter readings.

Records for each service station and for each mobile refueling truck were not maintained individually. When physical



inventories were taken, the combined total had to be reconciled to one recorded inventory balance. Consequently, gains and losses could not be identified to each service station or refueling truck. Therefore, losses through leaking storage tanks, defective dispensing equipment, or pilferage could not be traced to the storage and dispensing activity experiencing the problem. Also, periodic inspections and pressure tests of the storage tanks for leaks were not being conducted.

Separation of duties and responsibilities at the NSD was inadequate. For example, the NSD Storage Division was responsible for physical inventories, receipts, and issue documentation. This procedure allows the division to have complete control over physical assets and all petroleum transaction reporting. This concentration of control offered potential for diversion of fuel products while it also provided the means to conceal diversions.

The NSD Quality Assurance Division, responsible for confirming the accuracy of physical inventories and for reconciling these with accountable records, played a minor role in the actual independent verification process. Specifically, this division's responsibility was limited to receiving "after-the-fact" documentation specifically prepared by the Storage Division for the Quality Assurance Division's review procedure.

### CHAPTER 3

#### IMPROVEMENTS NEEDED AT THE

#### AIR FORCE AND NAVY UNIT LEVEL

At 17 of the 18 unit organizations tenanted on Air Force and Navy installations, estimated annual issues of 520,000 gallons of ground vehicle fuel could not be properly accounted for because of incomplete and inaccurate records. (See app. II.) Additionally, the ground vehicle fuel handled by these units was highly susceptible to pilferage because of a general lack of physical inventory controls and security safeguards.

At the nine Air Force units audited, poor petroleum management conditions were due to failure to comply with established uniform procedures. At eight of the nine Navy units audited, these conditions were due to lack of petroleum management guidelines. One of the units, tenanted at NAS Corpus Christi, which annually issued about 4,000 gallons of ground vehicle fuel, exercised good control over and accounting for fuel through locally established procedures.

#### KELLY AIR FORCE BASE

Bulk transfers of ground vehicle fuel to nine unit organizations accounted for 433,000 gallons, or about 33 percent of the total volume of such fuel issued at the installation level in 1975. Five of the nine unit organizations did not keep records of fuel receipts and issues. Also, only four of the nine units secured their storage tanks and dispensing equipment with locks. None of the nine units took physical inventories.

Two units had noted signs of possible recent pilferage but, due to lack of records, were unable to determine the quantities lost. For example, at the largest unit organization (Aerospace Group Equipment Shop Maintenance Division), recorded issues of 143,727 gallons during January through May 1976 exceeded receipts by 13,000 gallons after taking into consideration an estimated maximum beginning inventory balance of 2,400 gallons. This was partly attributable to significant inaccuracies in recordkeeping. Also, pilferage was indicated by excessive equipment fuel consumption rates. According to unit refueling records, a generator used 33 gallons in 1 hour of operation even though its normal hourly fuel consumption was 6 gallons.

Likewise, according to unit refueling records power-generated ramp lights operated 5 hours consumed 28 gallons, even though the normal 5-hour fuel consumption rate for this equipment was 7.5 gallons. Finally, fuel issue records showed that inoperable equipment undergoing maintenance at a contractor's plant was issued gasoline by the unit's mobile refueling truck.

CORPUS CHRISTI  
NAVAL AIR STATION

Bulk transfers of ground vehicle fuel to the nine unit organizations visited accounted for 91,000 gallons, or about 25 percent of the total volume of such fuel dispensed at the installation level in calendar year 1975. Five of the nine units did not keep records of fuel transactions, four did not secure their storage tanks and dispensing equipment with locks, and eight units did not take physical inventories.

Our audit revealed relatively large undetected shortages at two units that did maintain fuel transaction records. The Naval Air Station Fire Department Cabaniss Field location had a shortage of 2,443 gallons, or 46 percent of the gasoline received during the year. This had gone undetected before our visit and officials could not explain it. They indicated that pilferage was a possibility, since different personnel were on duty each weekend and the storage tank top hatch was not locked.

During the 6-month period ending June 30, 1976, the Naval Air Station installation fuel-dispensing activity charged the Corpus Christi Army Depot for 30,831 gallons of gasoline delivered from bulk storage to a contractor-operated refueling truck. However, the depot's fuel records for the same period showed that only 27,717 gallons were delivered to its equipment by the contractor-operated refueling truck. The remaining 3,114 gallons, or 10.1 percent of the quantity for which the unit was billed, could not be accounted for. Unit personnel were not previously aware of nor could they explain the shortage. One opening on the contractor-operated refueling truck was not locked during nonoperating hours.

## CHAPTER 4

### CONCLUSIONS AND RECOMMENDATIONS

#### CONCLUSIONS

The increasing petroleum cost and scarcity reported worldwide makes it imperative that the military services effectively protect, conserve, and account for fuel supplies.

Proper control and accountability were not exercised over millions of gallons of ground vehicle fuel at the Navy activities audited. As a result substantial unaccounted issues, shortages, and thefts occurred and went undetected for prolonged periods.

The Navy's poor petroleum management existed because effective procedures for controlling and accounting for ground vehicle fuel at the installation and unit level were lacking. Serious procedural weaknesses found in the Navy's management of ground vehicle fuel, combined with our earlier findings concerning shortcomings in the Army's management, corroborate the need for establishing and implementing uniform Defense guidelines for petroleum management.

In contrast to the Army and Navy, the Air Force has issued uniform, detailed guidance for petroleum management to both its installation and unit level fuel storage and dispensing activities. These guidelines, when properly implemented, provided effective control over and accounting for ground vehicle fuel. Although these procedures were followed at the audited Air Force installations, they frequently were not followed by the audited Air Force units.

#### RECOMMENDATIONS

We recommend that the Secretary of Defense establish and implement uniform management guidelines to control and account for ground vehicle fuel at the installation and unit levels in the military departments. We suggest that these guidelines be patterned after Air Force guidelines. For application at the installation level, the guidelines should include, but not be limited to, the following provisions:

--Separation of responsibilities for physical control and recordkeeping.

--Verification and certification of fuel receipts by trained fuel custodians.

- Establishment of installation entry and exit controls for commercial and military fuel tank trucks.
- Daily accountability for fuel receipts, issues, balances, and gains and losses by individual bulk storage tanks, service stations, and mobile refueling units.
- Daily physical inventories and comparison of issues per totalizer meters with fuel issue documents.
- Monthly or more frequent reconciliations by a designated accountable petroleum officer of physical inventory counts with beginning inventory balances, receipts, issues, and ending balances.
- Periodic reporting of fuel gains or losses, and their causes, to management officials other than those responsible for custody or accounting.
- Retention of fuel transaction records and supporting documentation for audit purposes for at least 2 years.
- Annual or more frequent pressure testing of storage tanks for leaks.
- Annual or more frequent calibration testing of the accuracy of fuel-measuring devices and fuel-dispensing meters.

The uniform guidelines for application at units which receive, store, and issue petroleum products should include as a minimum the following provisions:

- Maintenance of fuel receipt and issue records.
- Verification and certification of the accuracy of fuel receipts.
- Physical inventories of onhand fuel quantities and comparison and reconciliation with recorded balances at least monthly.
- Establishment and enforcement of security safeguards to assure that storage tank openings and dispensing equipment outlets are properly secured during non-operating hours.

We also recommend that the Air Force be directed to reemphasize to its unit fuel storage and dispensing activities the importance of effective implementation of established procedures for controlling and accounting for ground vehicle fuel. Also, we recommend that compliance by Air Force units with established petroleum management procedures be monitored by appropriate Air Force audit and inspection teams.

## CHAPTER 5

### SCOPE OF REVIEW

We reviewed ground fuel management in the Air Force and Navy to ascertain whether procedures and practices at individual installations were adequate to properly control and account for petroleum products. Also, we visited unit organizations with bulk storage facilities to evaluate practices used to control petroleum at that level.

Our fieldwork was performed during May through October 1976 at the base fuels office of nine Air Force and Navy installations, as well as at the following 18 unit organizations with bulk storage facilities:

#### **Installations:**

- Hickam Air Force Base, Honolulu, Hawaii
- Travis Air Force Base, Fairfield, California
- Langley Air Force Base, Langley, Virginia
- Kelly Air Force Base, San Antonio, Texas
- U.S. Naval Base, Subic Bay, Philippines
- Naval Public Works Center, Norfolk, Virginia
- Naval Supply Depot, Subic Bay, Philippines
- Naval Air Station, Alameda, California
- Naval Air Station, Corpus Christi, Texas

#### **Unit organizations:**

##### **Kelly Air Force Base:**

- Fire Department, Bldg. 371
- 433d Tactical Airlift Wing
- AGE Shop Maintenance Division
- MAG, PAA Shop
- AFCD, 6960 CE squadron
- Office of Special Investigation, District 10-6,  
Det. 1016
- Transient Alert Branch, 2851 Air Base Group
- Detachment 40, Medina Base
- base Civil Engineer

##### **Naval Air Station, Corpus Christi:**

- NAS Fire Department, Cabaniss Field
- NAS Fire Department, Valdron Field
- Aircraft Intermediate Maintenance Division
- Navy Air Training Squadron VT-28 Ranger 56
- Navy Air Training Squadron VT-31 Ranger 47
- Special Services, NAS Bldg. 1757
- Correctional Centers, Bldg. 32
- Corpus Christi Army Depot
- U.S. Army Reserve Center

At the conclusion of our fieldwork, we held exit conferences with responsible officials of each audited activity. We also briefed officials from the Department of Defense and Departments of the Air Force and Navy on our findings and conclusions.



ANNUAL GROUND FUEL CONSUMPTIONAT ACTIVITIES REVIEWED

<u>Activity</u>	Consumption in gallons ( <u>note a</u> )
Naval Public Works Center, Norfolk, Virginia	2,327,978
Naval Public Works Center, Subic Bay, Philippines	1,084,000
Naval Supply Depot, Subic Bay, Philippines	1,523,658
Naval Air Station, Alameda, California	2,433,242
Naval Air Station, Corpus Christi, Texas	406,684
Langley Air Force Base, Langley, Virginia	704,260
Travis Air Force Base, Fairfield, California	1,374,140
Hickam Air Force Base, Honolulu, Hawaii	1,094,128
Kelly Air Force Base, San Antonio, Texas	1,429,364
18 Air Force and Navy units	<u>523,932</u>
Total	<u><u>12,901,386</u></u>

a/Consumption for the Norfolk Public Works Center is for fiscal year 1976. Data for other activities is for calendar year 1975.

UNSUPPORTED ISSUES ANDUNALLOWABLE LOSSES

	<u>Unsupported issues</u> (gallons)	<u>Unallowable issues</u> (gallons)
PWC Subic Bay - 11/75 - 7/76	11,311	68,840
PWC Norfolk - 7/75 - 6/76	702,990	(a)
NSD Subic Bay - 2/75 - 7/76	-	43,903
17 Air Force and Navy units - 7/75 - 6/76	<u>519,732</u>	<u>(a)</u>
Total	<u><u>1,234,033</u></u>	<u><u>112,743</u></u>

a/Undeterminable. Generally, records were not adequate to identify what quantities the activity was accountable for and what quantities were on hand.