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FEB 24 1975

The Honorable John C. Stennis
Chairman, Committee on Armed Services
United States Senate

Dear Mr. Chairman:

Your letter of October 16, 1974, asked that we survey the Department of Defense's (DOD's) conservation of petroleum and comment on:

--The steps and extent of the measures already taken by DOD to conserve petroleum products, including gasoline and diesel fuel.

--The measures under consideration which could effect further savings.

--Any views GAO might have on additional economies that could be achieved.

--The savings that have resulted from any conservation policies, together with the added cost to DOD for petroleum resulting from the increase in the price of crude oil worldwide.

We did our work at the energy offices of DOD and the Army, Navy, and Air Force. To provide the above information within the timeframe established by Mr. Braswell of your staff, and as he agreed, we have not verified the information given to us. Also, as Mr. Braswell instructed, we have not obtained written comments from DOD on this report.

INTRODUCTION

Although petroleum fuels are DOD's major energy source, when compared to the entire nation DOD is a relatively small

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user. During fiscal year 1974 DOD used 185.7 million barrels of petroleum fuels--about 5 percent of national consumption. For fiscal year 1975 DOD expects to use 203.7 million barrels--about 3.4 percent of national consumption. These percentages are well below DOD's previous consumption percentages, which ranged from 5.7 percent of national consumption in fiscal year 1949 to 7.7 percent in fiscal year 1969.

Petroleum products account for approximately 72 percent of the energy DOD uses. The following chart shows, by military service and function, the amount of petroleum consumed in fiscal year 1974.

	Petroleum Consumption	
	Barrels	Percent
By service:		
Air Force	101,421,781	54.6
Navy	66,499,996	35.8
Army	17,832,402	9.6
Total	185,754,179	100.0
By function:		
Air operations	118,325,412	63.7
Ship operations	27,677,372	14.9
Installation support	27,120,111	14.6
Ground operations	12,631,284	6.8
Total	185,754,179	100.0

In June 1973 the President set a Government-wide goal of reducing fiscal year 1974 energy consumption by 7 percent, using fiscal year 1973 consumption as the baseline. DOD estimated that the cessation of combat activities in Southeast Asia would result in at least a 7-percent reduction in its energy consumption in fiscal year 1974, so, to comply with the President's directive, DOD set its energy-reduction goal at 15 percent of fiscal year 1973 consumption.

To achieve this goal, DOD established a Defense Energy Task Group, under a steering group chaired by the Assistant Secretary of Defense (Installations and Logistics), to review energy-related problems and recommend solutions. In addition, the task group was to investigate DOD's existing energy conservation programs and identify specific actions which would increase these programs' effectiveness.

Reporting the results of its investigation to the Assistant Secretary of Defense (Installations and Logistics) in November 1973, the task group made a number of recommendations on (1) organizational changes needed to provide better management of DOD's energy consumption, (2) conservation actions that should be taken, and (3) other management actions needed to emphasize DOD's concern for energy conservation and to improve its reporting of energy resources and consumption. DOD's actions on the recommendations are discussed in the following sections of this letter.

ORGANIZATIONAL CHANGES

A Defense Energy Policy Council has been established to develop broad energy policy guidelines. It is chaired by the Assistant Secretary of Defense (Installations and Logistics) and is composed of representatives of the Assistant Secretaries of Defense (International Security Affairs, Program Analysis and Evaluation, Public Affairs, and Comptroller); the Defense Supply Agency; the Office of the Joint Chiefs of Staff; and the Office of the Director, Defense Research and Engineering.

A Defense Energy Action Group has been established to help coordinate the implementation of the Council's guidelines and to provide a forum for exchanging information. This group, composed of representatives from the services, the Defense Supply Agency, and the Office of the Joint Chiefs of Staff, is chaired by the Director for Energy (a newly established position).

The Director for Energy rep rts to the Assistant Secretary of Defense (Installations and Logistics) and serves as a program manager for energy. His responsibilities include:

--Developing a petroleum logistics policy.

--Assisting in the development of DOD's energy budgets.

--Serving as DOD's principal point of contact on all energy matters and on implementation of energy policy.

--Managing DOD's energy conservation program.

--Monitoring the implementation of the task group's recommendations.

--Developing a Defense energy information system.

Each service has established its own organizations to deal with energy matters. The organizations are responsible for such matters as developing, coordinating, and recommending concepts, plans, policies, and systems with respect to the allocation, supply, and use of energy resources; helping to formulate and justify energy-related budgeting actions; and coordinating energy-related research and development (R&D).

CONSERVATION ACTIONS TAKEN

According to DOD reports, during fiscal year 1974 DOD used 29 percent--over 76 million barrels--less than it used in fiscal year 1973, the baseline period. It reported a 30-percent reduction--over 18 million barrels--for the first quarter of fiscal year 1975 in comparison with consumption in the first quarter of fiscal year 1973. Enclosure I shows a breakdown of these reductions by type of fuel. These figures are not precise, however, because of shortcomings in the systems used in those years for reporting and aggregating the energy consumption data. DOD has been reviewing its baseline data and developing an improved energy reporting system. Further details on the reporting system are on page 6.

DOD used less petroleum mainly by reducing flying hours and ship steaming hours and taking other actions to conserve

aircraft and ship fuel. In fiscal year 1974 flying hours were reduced by over 2 million hours (compared with hours flown in fiscal year 1973) and steaming hours were reduced 373,000 hours. About 55 million barrels of aviation fuel and 14 million barrels of ship fuel were saved. (DOD's specific actions to conserve aircraft and ship fuel are listed in enclosure II, along with actions it has taken to reduce the military installations' petroleum consumption and the amount of petroleum used for transportation.)

Although these conservation actions no doubt contributed to reductions in petroleum consumption, DOD officials could not relate specific reductions to specific actions. The data available did not permit such analyses. According to DOD, the following factors also had an impact on reductions in petroleum consumption in fiscal year 1974.

--Phasedown of operations in Southeast Asia.

--A decrease in the number of active installations and the partial closing of some facilities.

--Supply problems, including inadequate contract coverage and the embargo.

--Temporary suspension of flying activities in the National Guard and the Reserves.

--Budgetary constraints.

--The unusually warm 1973-74 winter.

In the area of R&D, DOD has established a policy framework within which priorities for selecting energy-related R&D programs can be established. DOD has identified the extent to which it will participate in each R&D project category and has generally assigned responsibility for each category to one service in order to avoid duplication and to insure proper emphasis and coverage. The R&D categories are aircraft operations, ship operations, installations and buildings, and ground operations.

OTHER MANAGEMENT ACTIONS TAKEN

DOD and the services have taken many other steps to focus attention on, control, and evaluate conservation efforts. A list of the major ones follows.

--Schools and training programs at all levels now include orientation on the energy problem and the need for energy conservation.

--Energy seminars, at all levels, and follow-on field surveys are now conducted to maintain field-level interest and to receive feedback on accomplishments and problem areas.

--Specific energy conservation items are included in Inspector General staff visits and internal audits.

--Incentive awards program are being established for utility and tactical equipment operators as well as managers.

--A procurement circular requesting voluntary adoption of conservation measures has been issued to Defense contractors.

In addition the Defense energy information system (DEIS) was put into operation July 1, 1974. This system provides worldwide data on the consumption, receipt, and inventory status of all petroleum products on a weekly basis, aggregated by major service command as well as by Federal Energy Agency regions, continental United States commands, and unified commands. This system was needed to give DOD more current, reliable, complete, and objective energy data than that which had been available previously.

Since the data generated through DEIS is important for good management of petroleum resources, the Assistant Secretary of Defense (Installations and Logistics) asked the Deputy Assistant Secretary of Defense (Audit) to audit and evaluate the reasonableness of the data reported. The audit results showed that DEIS produced reasonably reliable data which DOD could use to monitor DOD-wide fuel consumption.

DOD has had some problems in developing accurate fiscal year 1973 baseline data. Under the procedures in effect in that year, not all energy consumption had to be reported. Therefore, DOD made estimates to arrive at baseline figures which it believed to be within 10 percent of actual consumption in that period. DOD is continuing its review of this data and is studying the feasibility of adjusting it as major program changes occur so that the baseline will be compatible with consumption data for current programs.

CONSERVATION ACTIONS UNDER CONSIDERATION

To assess the status of the recommendations made in the task group's report (see p. 3), a follow-on investigation was made under the direction of the Defense Energy Policy Council. The results of this investigation, a report entitled "Management of Defense Energy Resources, Phase II Report," dated July 22, 1974, showed that the task group's recommendations generally had been implemented.

The report noted, however, that many of the conservation measures taken represented only a "first cut" at the problem and were largely concentrated in operational mission areas. The report recommended that the Assistant Secretary of Defense (Installations and Logistics) issue revised policy guidelines based on a long-term need to foster a strong conservation ethic, as distinguished from guidelines directed to a short period of limited supply caused by an embargo. The report also recommended that

--DOD continue to carry out its existing conservation policies (see enc. III),

--the Director of Defense Research and Engineering begin measuring energy effectiveness as well as cost effectiveness and mission effectiveness in developing DOD studies and in making management decisions concerning weapons system development and acquisition, and

--he make a comprehensive review of DOD energy-motivated R&D projects submitted by the services and the Advanced Research Projects Agency, to determine whether the projects conform to current guidance.

IMPACT OF RISING FUEL PRICES

In spite of large decreases in petroleum consumption, the rise in fuel costs has had a substantial impact on DOD's energy costs. The following schedule shows the price increases in petroleum products since July 1, 1973.

Petroleum Price Escalation History

(average contract price per barrel)

Product	July 1 to Dec. 31, 1973	Jan. 1 to Mar. 31, 1974	Apr. 1 to June 30, 1974	July 1 to Dec. 31, 1974
Aviation gas	$7.91	$ 7.94	$13.48	$16.51
JP-4	6.12	9.65	12.52	13.73
JP-5	6.39	11.82	12.25	13.53
Navy distillate	5.40	11.29	12.92	12.31
Navy special	4.30	8.12	11.39	10.90
Motor gas	6.04	8.88	11.59	14.19
Diesel	5.65	10.11	12.07	12.31

Heating oil contract prices were omitted from the above schedule because this fuel was procured at the installation level and because DOD-wide average prices paid for the period shown above were not readily available. Consumption data was available for heating oil and has been included in the following overall consumption data.

The rising prices have put DOD in the position of spending more while using less. As shown in enclosure I, DOD cut its petroleum consumption by about 29 percent in fiscal year 1974, as compared to fiscal year 1973; however, its petroleum costs increased by about $496 million--over 50 percent. The impact of the higher prices can be illustrated by assuming that, if the amount of petroleum used in fiscal year 1974 had been the same as that in fiscal year 1973--about 262 million barrels--DOD's petroleum costs would have increased over $1 billion. Or, from another viewpoint, the petroleum DOD actually used in fiscal year 1974--about 186 million barrels--priced at fiscal year 1974 prices cost about

$753.8 million more than the same quantity of petroleum priced at fiscal year 1973 prices.

OTHER POTENTIAL SAVINGS

In the past 2 years DOD has become very active in the area of energy conservation. It has initiated programs, established organizations, and made future plans, all of which have been directed towards conserving energy. Further potential exists, but DOD is constrained by financial limitations or, in some cases, saving energy is only one of many factors DOD has to consider. For example, DOD is studying a program to upgrade existing facilities in view of the need for energy conservation. However, this project is currently estimated to cost about $1.3 billion.

Also, DOD has studies underway to determine whether it would be feasible to reduce the number of permanent-change-of-station moves by military personnel and to evaluate the most desirable way to ship DOD cargo. Although budgeting concerns may be the principal influence in these studies, the potential for saving fuel should also be considered in the decision process.

Another way to promote energy conservation might be to give residents of military housing an allowance for energy costs and charge them for energy actually consumed.

One of the most important factors in conservation is that DOD must continue to keep its conservation programs alive and active. High-level interest is a must, along with continued monitoring to see that objectives are met.

We have ongoing reviews which will assess DOD's conservation programs and their implementation. Reports will be issued to the Congress and DOD as we identify areas for further energy savings.

We will be glad to discuss this matter with you or members of your staff at your convenience. We plan no further distribution of this report until it has been released by your office.

Sincerely yours,

Comptroller General
of the United States

Enclosures - 3

ENCLOSURE I

"TION IN DOD'S PETROLEUM CONSUMPTION

(in barrels)

	FY 1974			
	FY 1973 base	FY 1974 use	Decrease	Percent
Type of fuel:				
Heating oil	20,82[illegible]1	16,846,568	3,975,283	19
Gasoline	8,245,280	6,825,193	1,420,087	18
Distillates	11,801,536	7,924,566	3,876,970	33
Aviation fuel	175,11[illegible],167	122,1[illegible]852	52,923,615	30
Ship fuel	46,129,000	31,9[illegible]000	14,166,000	31
Total	262,116,134	185,754,179	76,361,955	29

	FIRST QUARTER OF FY 1975			
	FY 1 73 base	FY 19[illegible] use	Decrease	Percent
Type of fuel:				
Heating oil	2,252,160	2,117,238	134,922	6
Gasoline	1,947,984	1,818,500	129,484	7
Distillates	2,659,019	2,222,429	436,590	16
Aviation fuel	45,420,626	32,307,564	13,113,062	[illegible]
Ship fuel	11,532,000	6,355,666	5,176,334	[illegible]5
Total	63,811,789	44,821,397	18,990,392	30

ENCLOSURE II

CONSERVATION ACTIONS INSTITUTED BY DOD

Aircraft operations

--Use simulators as much as possible.

--Reduce administrative support flights.

--Reduce engine warmup time.

--Fly at the appropriate airspeed for maximum fuel economy.

--Keep taxiing to a minimum.

--Use optimum fuel load for mission requirement.

--Taxi with minimum essential engines.

--Use afterburners as little as possible.

--Use most efficient climb, cruise, and descent rates.

--Minimize use of extra aircraft accompanying a mission for use in case of an abort.

--Minimize fuel d[illegible]

--Keep flights to as possible.

--Minimize engine runs for aircraft alerts.

--Cut back number of training flights.

Ship operations

--Limit ship speeds to most economical, considering operations.

--Schedule night anchoring instead of night steaming.

--Restrict number of ships participating in exercises to those preparing for deployment and receiving refresher training.

ENCLOSURE II

Installations

--Reduce thermostat settings to 65° F. to 68° F.

--Eliminate heating in warehouses, where possible.

--Reduce cooling system settings to a minimum of 78° F. to 80° F.

--Tune up, calibrate, and clean heating plants.

--Reduce lighting to minimum levels.

Transportation

--Limit speed of Government motor vehicles to a maximum of 50 miles an hour.

--Implement a program to reduce the use of oversized sedans.

--Encourage carpooling.

ENCLOSURE III

CONSERVATION POLICIES RECOMMENDED IN PHASE II REPORT

FOR CONTINUED DOD APPLICATION

1. Minimize the administrative use of vehicles, ships, aircraft, and support equipment.

2. Strive to reduce energy consumption when operating mission equipment.

3. Within budgetary constraints, retrofit facilities for greater energy efficiency.

4. Maintain energy conservation task forces, committees, advisory groups, or officers at levels of command down to battalion, ship, and squadron, with direct access to the commander.

5. Minimize flight and weapons demonstrations to those essential for training and recruiting purposes. Energy-efficient equipment should be utilized whenever possible.

6. Buy compact or subcompact commercial sedans and station wagons.

7. Encourage employee suggestions through incentive awards.

8. Encourage the voluntary aspects of carpooling with the assignment of preferred parking to carpools.

9. Conduct periodic orientation and training seminars to exchange information on lessons learned as well as successful practices.

10. Incorporate energy conservation into troop training and information programs.

11. Maintain a strong in-house information program fostering the conservation ethic.

12. Keep large-scale energy-intensive exercises to the minimum level required to maintain readiness and include an energy analysis as part of the planning process.

13. Consider energy consumption as a factor in the decision process during the design, development, and construction of new facilities and equipment. Prepare energy impact statements for projects costing more than $1 million.

14. Maintain the 50 miles an hour speed limit for Government vehicles where safety and mission permit.

15. Maintain heating and cooling temperatures at 65° F. to 68° F. and 78° F. to 80° F., respectively.

16. Reduce the fuel consumption of DOD- and GSA-owned administrative-type vehicles by 15 percent of fiscal year 1973 levels. Mission-essential users, such as recruiting activities, are exempt.

17. Control temporary duty travel so that other means of communication, such as telephonic communications and multipurpose staff visits, are used as much as possible.

18. Continue to assign goals and monitor performance using DEIS.

19. Include energy conservation as a special topic for Inspector General and command inspection teams.

20. Provide for inclusion of energy conservation performance ratings in existing officer and enlisted evaluation systems in order to promote continued interest and strengthen the conservation ethic.

21. Establish and fund a 5-year facility conservation program and energy conservation features in new construction projects.

22. Conduct periodic DOD energy conservation seminars to spread information about what the services are doing to conserve energy.