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

DEFENSE DIVISION

B-146864

FEB 18 1971

The Honorable  
The Secretary of Defense



Attention: Assistant to the Secretary of Defense  
(Telecommunications)

Dear Mr. Secretary:

We are examining into savings possible through the use of the Federal Telecommunications System (FTS) telephone network by Department of Defense (DOD) installations. Our review is to determine whether increased use of FTS by DOD would reduce Government telecommunications costs. This letter presents the results of our review to date. We request your comments on our findings and your answers to certain questions concerning DOD communications policy, as we interpret it.

COMPARISON OF AUTOVON AND FTS SERVICE

The Automatic Voice Network (AUTOVON) is the principal long-distance voice communications network of DOD. It is designed to handle essential command operations, intelligence, logistics, and administrative traffic. It offers special technical features, such as alternate routing for increased survivability and multilevel precedence service for priority-call override of other calls. Because AUTOVON is designed to serve DOD activities, service over the system is usually confined to traffic between locations of these activities. Completion of AUTOVON calls to nonsubscribers, off-network, is permitted; but, since AUTOVON is limited to the local-dialing areas of existing AUTOVON switchboards, many locations cannot be reached. As a result we find that commercial long-distance facilities provide the only means of reaching many locations called by DOD activities.

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/ The FTS telephone network, which is managed by the General Services Administration (GSA), serves executive agencies and departments, including DOD. It is designed to 17

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provide direct dial access to system subscribers and also off-network completion to those locations not served by the network. FTS subscribers are able to reach most telephones in the continental United States, Hawaii, and Puerto Rico through the FTS network.

#### CURRENT DOD POLICY

Current DOD policy concerning the use of FTS service by DOD installations, as promulgated by an August 6, 1964, memorandum from the Deputy Secretary of Defense, states that, where AUTOVON service adequately satisfies the requirements of a DOD installation, such service will not be duplicated by the addition of FTS service. The memorandum states further that, where it is economical and feasible to do so, FTS service may be used in lieu of AUTOVON, but in no case will DOD installations become subscribers to both systems without approval from the Assistant Secretary of Defense (Installations and Logistics). We understand that this approval authority has recently been transferred to the Assistant to the Secretary of Defense (Telecommunications).

In our opinion, the above policy emphasizes the use of either FTS or AUTOVON and discourages concurrent use. In reality, many DOD installations have divided communities of interest and cannot be adequately served by one system alone. AUTOVON does not offer the latitude of off-network completion that is required to communicate with commercial concerns and other telephone subscribers outside the DOD community, and FTS does not offer the precedence, survivability features, and overseas capability that are required for effective command and control.

We have been told by an official from the Office of the Assistant to the Secretary of Defense (Telecommunications) that, although current DOD policy permits concurrent use of AUTOVON and FTS, very few requests have been received--apparently because of the reluctance of the military departments to forward them. We believe that this reluctance is fostered by the restrictive context of current DOD policy. This belief is reinforced by the fact that only one of the four

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installations we visited had made any sustained effort to obtain FTS service.

Our review revealed that, prior to the request, the one installation that requested FTS service--the San Francisco Procurement Agency of the Army Materiel Command--was using both FTS and AUTOVON services through a GSA-operated manual switchboard. When the switchboard was converted by GSA in January 1969 to a direct in-and-out dial Centrex system, the installation was informed orally by its major command that direct access to both FTS and AUTOVON was prohibited by DOD policy and that use of one of the systems would have to stop. Nevertheless, the agency submitted, through channels, a formal request for approval to retain the use of both systems, on the grounds that the loss of FTS would result in a substantial increase in telephone costs.

The request was approved by the installation's major command and forwarded to the Department of the Army for submission to DOD. The request was denied at this level, however, and returned with the following explanation.

"Your request for approval \*\*\* to have access to both the AUTOVON and FTS systems was discussed in the Office of Telecommunications Policy, ASD (I&L). During discussions it became apparent that the request would not be favorably considered if submitted."

The subsequent loss of FTS service resulted in an increase in the agency's average commercial toll costs from under \$100 to about \$4,900 a month.

#### SAVINGS AVAILABLE THROUGH USE OF FTS

Our review at four DOD installations, representing each of the military services, showed that the AUTOVON system alone did not satisfy the voice communications requirements of many DOD activities. We found that a relatively large number of official calls were being completed over commercial long-distance facilities, because the locations called could not be reached through the AUTOVON system.

To determine whether these commercial toll calls could have been placed over the FTS at a lower cost to the Government, we examined into 100 percent of the toll calls for a 3-month period at each installation visited. Nonofficial calls and those calls not eligible for FTS (calls with a toll of 20¢ or less, collect calls, credit-card calls, third-party calls, calls outside of the continental United States, and message-unit calls) were eliminated. The remaining calls were considered to be FTS eligible and were used in our economic analysis.

To determine the cost to the Government of providing DOD installations with sufficient trunk capacities to handle current commercial-call volume over the FTS, we used a GSA analysis procedure prescribed by the Assistant Commissioner, Transportation and Communications Service. This procedure is based on the following assumptions.

1. The average FTS call requires two access facilities and one interswitch (or backbone) facility.
2. The average total cost per FTS call is \$0.905 (based on GSA FY 1971 estimated costs).
3. The average overall interswitch facility costs are equal for each location studied.
4. The FTS interswitch facility cost factor is \$0.30 a call (based on GSA estimated costs).

The estimated monthly recurring cost of providing FTS service at the locations reviewed was determined as follows:

1. The cost of FTS access facilities, such as the circuits and termination equipment required to carry each installation's potential call volume, was computed using current Public Utility Commission-approved tariff rates.

2. The potential call volume was increased by 20 percent as a minimum stimulation factor to account for increased system usage when the commercial tolls were eliminated.
3. The estimated call volume was multiplied by the inter-switch facility cost factor to determine the inter-switch cost.
4. The sum of the access facility and interswitch costs was used to represent the total monthly recurring first-year cost of providing FTS service. Any other rental or purchase costs incidental to the installation of FTS would be paid by GSA and would be reflected in the interswitch cost factor. (See apps. I through IV for FTS analysis work sheets.)

Our review at the four DOD installations showed that, on the basis of these determinations, the projected annual call volume indicated in table I could have been placed over the FTS system at an estimated cost to the Government of only \$147,000. Since present commercial services cost about \$366,000, this difference represents a potential saving of about \$219,000 a year, or about 60 percent. We recognize that the estimated saving of \$219,000 comprises total governmental savings. GSA bills its customers at its average cost for a call whether or not the cost to service a particular customer is more or less than average. In this case, we estimated that DOD would pay about \$185,680 (on the basis of 170,976 calls, times the \$0.905 a call GSA billing rate, times the stimulation factor--1.20), or a saving of about \$180,128 annually from our projection of annual costs of about \$366,000.

Table I

	Estimate of commercial calls which would be placed over FTS--per month		Estimated cost using FTS--per month	Savings through use of FTS--per month
	Number	Commercial cost		
Presidio of San Francisco	2,255	\$ 4,917	\$ 1,251	\$ 3,666
Mare Island Naval Shipyard	3,607	10,556 <sup>a</sup>	3,316	7,240
San Francisco Procurement Agency	2,435	5,275	1,994	3,281
McClellan Air Force Base	5,951	9,736 <sup>b</sup>	5,664	4,072
Monthly total	<u>14,248</u>	<u>\$ 30,484</u>	<u>\$ 12,225</u>	<u>\$ 18,259</u>
Projected annual total	<u>170,976</u>	<u>\$365,808</u>	<u>\$146,700</u>	<u>\$219,108</u>

<sup>a</sup>Includes charges of \$4,494 for 1,730 calls via Interstate WATS (Wide Area Telephone Service), a service offered by A.T. & T. (American Telephone and Telegraph Company) which provides a special line allowing the subscriber to make unlimited calls to any location in a specific geographical zone for a flat monthly charge.

<sup>b</sup>Includes charges of \$9,500 for 5,820 Interstate WATS calls.

### ACCESS TO FTS

Discussions with GSA officials at both the Washington and the local administrative levels revealed that GSA was willing and able to handle DOD telephone traffic over FTS. GSA officials said that FTS currently had facilities to handle traffic for a large number of DOD installations and anticipated that this traffic would affect, only slightly, the present total average cost a call.

GSA told us that methods for providing DOD installations with access to FTS were simple and readily available. The switchboards of DOD installations would interface with FTS at the nearest FTS switching center. The interface would be provided by means of leased feeder circuits connecting the two points; the cost would be paid by GSA.

Installations currently receiving local-only telephone service from GSA switchboards would be provided with access to FTS through simple rewiring of the switchboards.

CONTROL OVER UNAUTHORIZED ACCESS TO FTS

We have been informed that several means of controlling unauthorized use of FTS are available. For example, administrative instructions and educational programs may provide adequate control in many instances. If more control is required, both mechanical and manual controls are available to restrict the unauthorized use of FTS. Mechanically, telephone switchboards can be wired to limit the number of telephone instruments that are able to dial FTS circuits. In this manner only parties with official need and prior approval would be able to use FTS. For manual control, telephone switchboards can be wired in such a manner that the only way to obtain an FTS circuit would be through the switchboard operators. This method provides tight control over the use of FTS circuits, but it is costly in terms of operator time and switchboard efficiency.

We believe that these methods are adequate for controlling the unauthorized use of the FTS system by DOD users. AUTOVON can continue to serve as the primary means of communication between DOD activities, and FTS can provide a less expensive means, in lieu of commercial telephone service, for DOD activities to communicate with commercial organizations, civilian agencies, and other telephone subscribers.

We believe that dual access to AUTOVON and FTS could result in substantial reductions in commercial long-distance telephone costs at selected DOD installations.

We recognize that savings would be available only at installations where the community of interest extends beyond the military establishment; for example, at installations with supply- and procurement-type missions. However, with hundreds of DOD installations in the United States as potential users of FTS, savings could be substantial. We recognize that the question of consolidating FTS and AUTOVON networks into a common communications system is currently under consideration by DOD as well as by other Government activities. It appears to us, however, that economy through

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expanded use of FTS in lieu of commercial service should be effected until such time as the larger question of consolidating these networks has been resolved.

Although current DOD policy provides approval procedures for the use of both AUTOVON and FTS at the same facility, we believe that the retention of approval authority at the DOD level, the impression conveyed by the Deputy Secretary's memorandum of August 6, 1964, and the informal discouragement of dual access as displayed in the San Francisco Procurement Agency's request, deter potential users from initiating action to obtain dual access.

For us to properly evaluate current DOD policy regarding the use of FTS facilities, we would appreciate your answers to each of the following questions.

1. Is the current policy intended to discourage concurrent use by DOD activities of both AUTOVON and FTS facilities?
2. Has DOD issued any policy statement or guidelines instructing DOD installations on the procedures to be followed in obtaining dual access to FTS and AUTOVON?
3. In view of the potential savings that exist through dual access to AUTOVON and FTS, are there disadvantages foreseen that would deter issuance of policy statement or guidelines encouraging such use of FTS?
4. Are the disadvantages, if any, of sufficient import and extent to invalidate the potential economies?

We would appreciate receiving, within 30 days, your answers to the above questions and any comments or suggestions you may wish to make. Information you provide will be evaluated along with the information we are obtaining during this review. Copies of this letter are being sent to the Director,

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Office of Management and Budget; the Director, Office of Telecommunications Policy, Executive Office of the President; the Administrator of General Services; and the Director, Defense Communications Agency.

Sincerely yours,

*for*   
Director, Defense Division

## FTS ECONOMIC ANALYSIS

AGENCY--Presidio of San Francisco

LOCATION--San Francisco, California

A Tolls for month <u>1970</u>	B Total toll calls less--message-unit calls; tolls of 20¢ or less; collect, credit-card, third- party calls; and calls outside CONUS		C Commercial Interstate WATS		D Person-to-person calls--only 60% of this charge is FTS eligible	
	<u>Calls</u>	<u>Charges</u>	<u>Calls</u>	<u>Charges</u>	<u>Total charge</u>	<u>40% of total charge</u>
March and April	1,677	\$ 4,869.10	-	-	\$217.20	\$ 86.88
April and May	2,352	5,093.15	-	-	333.85	133.54
May and June	<u>2,737</u>	<u>5,160.25</u>	<u>-</u>	<u>-</u>	<u>375.00</u>	<u>150.00</u>
Total	<u>6,766</u>	<u>\$15,122.50</u>	<u>-</u>	<u>-</u>	<u>\$926.05</u>	<u>\$370.42</u>

MONTHLY AVERAGE CALLS--B+C = 6,766 ÷ 3 = 2,255

MONTHLY AVERAGE CHARGES--B+C - (40% of D) = \$14,752 ÷ 3 = \$4,917

TRUNK REQUIREMENTS--2,255 calls at 6 minutes average holding time require 12 circuits (including provision for 20-percent stimulation factor) at grade P.02 (grade P.02 means two of every 100 calls will not be completed).

## FTS COSTS:

- The average number of calls a month (2,255) multiplied by a stimulation factor of 1.20 equals 2,706 projected calls.
  - Projected call volume 2,706 multiplied by backbone cost factor of \$0.30 a call equals total FTS backbone costs \$ 812
  - Telephone company charges for 12 circuits, including mileage and termination equipment costs 439
- Total FTS costs \$1,251

## ESTIMATED MONTHLY SAVINGS USING FTS:

Current average commercial cost	\$4,917
Estimated FTS cost	<u>1,251</u>
Estimated savings	<u>\$3,666</u>

## FTS ECONOMIC ANALYSIS

AGENCY--Mare Island Naval Shipyard

LOCATION--Vallejo, California

A Tolls for month <u>1970</u>	B Total toll calls less--message-unit calls; tolls of 20¢ or less; collect, credit-card, third- party calls; and calls outside CONUS		C Commercial Interstate WATS		D Person-to-person calls--only 60% of this charge is FTS eligible	
	<u>Calls</u>	<u>Charges</u>	<u>Calls</u>	<u>Charges</u>	<u>Total charge</u>	<u>40% of total charge</u>
April	2,274	\$ 6,003.05	1,817	\$ 4,204.04	\$182.20	\$ 72.88
May	2,412	6,166.00	1,522	4,916.76	146.90	58.76
June	<u>945</u>	<u>6,217.25</u>	<u>1,851</u>	<u>4,359.80</u>	<u>167.25</u>	<u>66.90</u>
Total	<u>5,631</u>	<u>\$18,386.30</u>	<u>5,190</u>	<u>\$13,480.60</u>	<u>\$469.35</u>	<u>\$198.54</u>

MONTHLY AVERAGE CALLS--B+C  $10,821 \div 3 = 3,607$ MONTHLY AVERAGE CHARGES--B+C - (40% of D) =  $\$31,668 \div 3 = \$10,556$ 

TRUNK REQUIREMENTS--3,607 calls at 6 minutes average holding time require 16 circuits (including provision for 20-percent stimulation factor) at grade P.02 (grade P.02 means two of every 100 calls will not be completed).

## FTS COSTS:

1. The average number of calls a month (3,607) multiplied by a stimulation factor of 1.20 equals 4,328 projected calls.
  2. Projected call volume 4,328 multiplied by backbone cost factor of \$0.30 a call equals total FTS backbone costs \$ 1,298
  3. Telephone company charges for 16 circuits, including mileage and termination equipment costs 2,018
- Total FTS costs \$ 3,316

## ESTIMATED MONTHLY SAVINGS USING FTS:

Current average commercial cost	\$10,556
Estimated FTS cost	<u>3,316</u>
Estimated savings	<u>\$ 7,240</u>

## FTS ECONOMIC ANALYSIS

AGENCY--San Francisco Procurement Agency

LOCATION--Oakland, California

<u>A</u> Tolls for month	<u>B</u> Total toll calls less--message-unit calls; tolls of 20¢ or less; collect, credit-card, third- party calls; and calls outside CONUS		<u>C</u> Commercial Interstate WATS		<u>D</u> Person-to-person calls--only 60% of this charge is FTS eligible	
	<u>Calls</u>	<u>Charges</u>	<u>Calls</u>	<u>Charges</u>	<u>Total charge</u>	<u>40% of total charge</u>
Nov. 1969	2,340	\$ 5,508.75	-	-	-	-
June 1970	3,069	6,283.30	-	-	-	-
July "	<u>1,895</u>	<u>4,032.95</u>	-	-	-	-
Total	<u>7,304</u>	<u>\$15,825.00</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>

MONTHLY AVERAGE CALLS--B+C 7,304 ÷ 3 = 2,435

MONTHLY AVERAGE CHARGES--B+C - (40% of D) = \$15,825 ÷ 3 = \$5,275

TRUNK REQUIREMENTS--2,435 calls at 6 minutes average holding time require 12 circuits (including provision for 20-percent stimulation factor) at grade P.02 (grade P.02 means two of every 100 calls will not be completed).

## FTS COSTS:

- The average number of calls a month (2,435) multiplied by a stimulation factor of 1.20 equals 2,922 projected calls.
  - Projected call volume 2,922 multiplied by backbone cost factor of \$0.30 a call equals total FTS backbone costs \$ 877
  - Telephone company charges for 12 circuits, including mileage and termination equipment costs 1,117
- Total FTS costs \$1,994

## ESTIMATED MONTHLY SAVINGS USING FTS:

Current average commercial cost	\$5,275
Estimated FTS cost	<u>1,994</u>
Estimated savings	<u>\$3,281</u>

## FTS ECONOMIC ANALYSIS

• AGENCY--McClellan Air Force Base

LOCATION--Sacramento, California

<u>A</u> Tolls for month 1970	<u>B</u> Total toll calls less--message-unit calls; tolls of 20¢ or less; collect, credit-card, third- party calls; and calls outside CONUS		<u>C</u> Commercial Interstate WATS		<u>D</u> Person-to-person calls--only 60% of this charge is FTS eligible	
	<u>Calls</u>	<u>Charges</u>	<u>Calls</u>	<u>Charges</u>	<u>Total charge</u>	<u>40% of total charge</u>
May	109	\$274.70	5,905	\$ 9,500	\$17.40	\$ 6.96
June	99	199.40	6,093	9,500	30.60	12.24
July	97	265.50	5,551	9,500	30.90	12.36
Total	<u>305</u>	<u>\$739.60</u>	<u>17,459</u>	<u>\$28,500</u>	<u>\$78.90</u>	<u>\$31.56</u>

MONTHLY AVERAGE CALLS--B+C  $17,854 \div 3 = 5,951$

MONTHLY AVERAGE CHARGES--B+C - (40% of D) =  $\$29,208 \div 3 = \$9,736$

TRUNK REQUIREMENTS--5,951 calls at 6 minutes average holding time require 23 circuits (including provision for 20-percent stimulation factor) at grade P.02 (grade P.02 means two of every 100 calls will not be completed).

## FTS COSTS:

1. The average number of calls a month (5,951) multiplied by a stimulation factor of 1.20 equals 7,141 projected calls.
  2. Projected call volume 7,141 multiplied by backbone cost factor of \$0.30 a call equals total FTS backbone costs \$2,142
  3. Telephone company charges for 23 circuits, including mileage and termination equipment costs 3,522
- Total FTS costs \$5,664

## ESTIMATED MONTHLY SAVINGS USING FTS:

Current average commercial cost	\$9,736
Estimated FTS cost	<u>5,664</u>
Estimated savings	<u>\$4,072</u>