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Report to Joel W. Solomon, Administrator, General Services Administration; by Fred J. Shafer, Director, Logistics and Communications Div.

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The General Services Administration (GSA) needs to improve its planning for management of record communications services. Findings/Conclusions: GSA did not thoroughly evaluate alternatives in its planning during 1969 and 1970 for future Advanced Record System services. Instead, GSA extended the existing contract, which resulted in subjecting the Government to significantly higher potential termination charges. Contrary to GSA's expectations of saturation, the Advanced Record System has unused capacity resulting primarily because a large user established its own system. Recommendations: The Administrator of General Services should: determine the civil agencies' record and data communications requirements and perform cost analyses of various system alternatives before further expanding or enhancing the Advanced Record System in a manner that would extend the performance period or increase the amount of termination liability for the Government; aggressively continue GSA's efforts to increase the use of the Advanced Record System under conditions where it can provide adequate service and when the incremental costs to the Government are equal to or less than those for an alternate system; and evaluate the economy and feasibility of shifting the circuit switching network to the Federal Telecommunications System voice network or another competitively procured system periodically, such as when tariffs or usage change significantly. (SC)

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

LOGISTICS AND COMMUNICATIONS
DIVISION

B-146864 AUG 8 1977

The Honorable Joel W. Solomon
Administrator, General Services
Administration

Dear Mr. Solomon:

The General Accounting Office (GAO) has completed its review concerning potential economies involving the Advanced Record System (ARS), (Code 941107). During this review we observed a need for (1) more thorough management planning for future record communications services, (2) continuing General Services Administration (GSA) efforts to expand the use of ARS, and (3) possible future studies on shifting a portion of ARS to an alternative competitively procured system. Such areas, we believe, warrant management attention.

We wish to bring to your attention the fact that this report contains recommendations to you, which are set forth on page 9. 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 and Senate Committees on Government Operations 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.

Our review was primarily conducted at GSA. However, some additional information was also obtained from the commercial carrier providing ARS service.

ESTABLISHMENT OF THE ADVANCED RECORD SYSTEM

In 1961, the General Services Administration (GSA) was directed to establish a unified telecommunications system to be known as the Federal Telecommunications System (FTS). FTS, as established, includes a voice network and a slow-speed record and data network, which is known as the Advanced Record System (ARS).

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ARS has two major operating segments, a circuit switching network (CSN) and store and forward message switching centers (MSCs). The CSN is basically a dial-up, point-to-point communications system like the public telephone network. The MSCs have computers to store messages, perform multiple-address message processing, message formating and code conversion and other functions associated with communications processing.

The ARS contract, entered into as of January 27, 1964, between GSA and the commercial carrier provides for CSN services under tariff (schedule of rates or charges by a commercial carrier) and specifies monthly rates for the MSCs. The contract provided for an eight-year service life to be used in establishing charges for the CSN. However, the period of performance for the MSCs was for five years ending February 28, 1971.

Supplemental agreement, dated September 22, 1970, provided for expansion and enhancement of the CSN and for full termination charges. Subsequently, tariffs provided for termination liability through June 30, 1984.

Supplemental agreements, dated June 18 and December 30, 1971, related to MSC service, extended the service through December 30, 1981.

Total costs of ARS were $17,790,000 for fiscal year 1976.

NEED FOR MORE THOROUGH EVALUATION OF ALTERNATIVES BEFORE EXTENDING ARS CONTRACT

GSA did not thoroughly evaluate alternatives in its planning during 1969-1970 for future ARS services. Although GSA identified three options for obtaining such future service, it did not request or obtain most civil agencies' requirements and did not fully evaluate one of the potentially less costly options. Instead, GSA extended the existing contract which resulted in subjecting the Government to significantly higher potential termination charges. Furthermore, the contract period extended significantly beyond the period included in GSA's planning.

In 1969, GSA was considering three options for continued ARS type services. The options under consideration were (1) extending the then existing contract with increased capabilities of the MCSs and CSN, (2) modifying the contract to provide for total service by the commercial carrier in lieu of merely technical support, and (3) increase the capabilities of the MSCs and CSN, extend the contract for MSC operation and overlay the CSN on the voice network of the Federal Telecommunications System (FTS).

GSA's early 1970 estimate of the civil agencies' future record communications needs in the 1972 through 1977 time-frame indicated that the ARS would become saturated in 1972. At the time, GSA recognized that existing traffic was increasing at a yearly rate of 15 percent and pending legislation could impose requirements for a large number of additional ARS stations to begin operations in a short period of time.

GSA's projected estimate was made without requesting or receiving future traffic or records communications requirements from Government agencies, except for some information furnished by the Veterans Administration. Additionally, the short-range (up to 5 years) and long-range (5 years and beyond) communications requirements programs submitted by the civil agencies were deemed to be of little value by a GSA official because they were in narrative form and did not provide specific detail information.

In March 1970, a Government contractor submitted its report of a simulation study concerning the potential placement of the CSN portion of the ARS on the FTS voice network, from GSA furnished traffic estimates. The study showed that the FTS voice network could accommodate the ARS traffic by adding circuits between switches. In July 1970, GSA completed a study which compared the projected costs of operating the CSN for April 1972 with the estimated costs of operating it over the FTS voice network for the same month. The comparison disclosed an economic advantage to the Government if the CSN was shifted to the FTS voice network.

Estimating saturation of ARS in 1972 and an 18 month required lead time for expansion and enhancement, GSA determined that, to accomplish the ARS expansion and enhancement without degrading service, the task would have to be accomplished by the existing carrier. Therefore, GSA issued supplemental agreements to the existing contract for the expansion and enhancements.

By supplemental agreement, dated September 22, 1970, GSA committed the Government to the expansion and enhancement of the CSN and purchasing this service under a tariff that contained full termination charges. This resulted in a significant increase (from less than $100,000 to over $11 million) in the potential termination charges. This termination charge will be amortized monthly over a 12-year period ending June 30, 1984.

Supplemental agreements, dated June 18 and December 30, 1971, extended the use of the existing MSCs from February 1971 through December 1973. Also, by the December 30, 1971, agreement, GSA committed the Government to (1) reconfiguration and enhancement of the MSCs, (2) commercial carrier services at fixed monthly rates for a period of 10 years from the date of the agreement, (3) payment of an estimated $4 million in nonrecurring computer and software costs, and (4) potential termination liability of $4 million for the carrier's investment. Thus, the contract for the MSCs would expire December 30, 1981.

As noted above, GSA's planning extended through 1977, whereas GSA subjected the Government to termination liability for CSN and MSC services for about seven years and four years, respectively, beyond that period.

INCREASING USE OF THE ARS

Contrary to GSA's expectations of saturation, the ARS has unused capacity resulting primarily because a large user established its own system in lieu of using ARS. GSA has taken action and plans to continue working towards increasing the use of ARS. Such continuing efforts are desirable because the distribution of total fixed costs over a larger base reduces unit costs allocated to users.

In this regard, GSA has revised its ARS charges to encourage use of ARS by low-volume users and undertaken marketing efforts to sell the qualities of ARS to potential users. These efforts had some effect because 168 ARS terminals were furnished to the Bureau of Customs and Department of Housing and Urban Development (HUD) during 1975 and 1976. For example, the estimated cost to HUD for a separate record and data network ranged from $250,000 to $360,000 annually. The incremental cost to the Government for ARS service to HUD at 85 terminals was estimated at $207,000 annually, or a savings to the Government of at least $43,000 annually.

Despite GSA's efforts, ARS usage has decreased. This decreased usage is evidenced in both traffic and terminals as shown below:

	Period		
	April 1974	June 1976	Decrease
Traffic in message minutes	5,255,000	4,869,000	386,000
Number of terminals	2,247	1,[illegible]40	507

GSA has attributed a large portion of this decrease to the transfer of terminals from the ARS to the Social Security Administration Data Acquisition and Response System (SSADARS), a faster and more sophisticated system.

The decreased usage indicates the existence of unused ARS capacity with the existing circuit switches. Also, various GSA and carrier officials have stated that the maximum terminal capacity of the present CSN would range from 2,500 to 2,900 terminals.

Since GSA now allocates ARS costs to users based at least partially on usage, increasing the use of ARS is desirable to its users because that portion of the unit costs applicable to fixed costs would be lower. For example, if the $291,000 fixed monthly cost of the circuit switching equipment is distributed to 4,869,000 and 5,255,000 message minutes, the average cost per message minute would be $.060 and $.055, respectively.

FEASIBILITY OF SHIFTING THE CSN TO AN ALTERNATIVE SYSTEM

Shifting the CSN to an alternative existing or competitively procured system may be technically and economically feasible on or before the expiration of the CSN termination charges.

Record and data messages originated on ARS terminals can be transmitted over a voice system through the use of signal converter devices. Our review of shifting the CSN to the existing FTS voice network disclosed that the shift is technically possible with the retention of virtually the same service, but is not economically desirable under present conditions. Under other conditions, such as increased usage, cost evaluation and comparisons can be expected to produce different economic results.

Although shifting the CSN to a competitively procured system was not studied during our review, we believe that such an alternative may also be technically and economically feasible on or before the expiration of the termination charges.

We believe and officials of GSA's Office of Automated Data and Telecommunications Service agree that most, if not all, technical features of the CSN could be provided by the FTS voice network. These features include answer-back, 1/ classmarking, 2/ number verification, 3/ and usage metering. 4/ Neither the CSN nor the FTS voice network preclude the interception of information and thus do not assure the security and confidentiality of information transmitted over them.

Under conditions existing at the time of our review, shifting the CSN to the FTS voice network would reduce operating costs; however, such a shift is economically undesirable when termination charges are included.

The operating cost for the CSN in April 1976 when about 1,750 terminals were being used was $618,000 and GSA's estimated monthly operating costs for the CSN on the FTS voice network--connecting the terminal to the nearest FTS switch--was $465,000 or a potential savings of $153,000. Since the costs for April represents an average month during fiscal year 1976, the yearly potential savings in FTS operating costs would be $1.8 million.

To determine the full impact of shifting the CSN to the FTS voice network, we compared operating costs for the present CSN with estimated operating, conversion, and termination costs associated with shifting the CSN to the FTS voice network with an 18-month lead time for conversion (January 1977 through June 1978). This comparison was made on projected costs using 1976 constant

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1/the exchange of predetermined codes by the sending and receiving equipment to establish connections

2/user restrictions imposed on access line

3/verification that the answering terminal corresponds to the number called

4/recording access line usage with electrical/mechanical meters dollars and present value of money analysis for the period of January 1977 through June 1984.1/ For the operating costs and conversion costs (excluding termination charges), the constant dollar comparison still showed a FTS savings of $8.3 million, and the present value, using 8 percent per year, showed a FTS savings of $5.6 million. However, inclusion of the termination charges would result in losses of $318,029 using 1976 constant dollars and $2,022,609 under the present value basis.

The losses identified in the above paragraph would be greater if either the discount rate is increased or a longer lead time is used. Conversely, the losses would be lowered by any salvage values, since the tariff provides for these values to be deducted from the termination charges. Additionally, the losses could be further reduced by decreases in the circuit mileage costs for those terminals that could be connected through Government switchboards on the FTS voice network in lieu of the FTS voice network switches, which were used in the above computations. Generally, the circuit mileage distances between the terminals and switchboards would be less since there are only 56 FTS voice network switches and 216 switchboards. We could not readily determine salvage values or circuit mileage savings through connecting terminals to FTS switchboards in lieu of FTS switches.

We recognize that the above economic comparisons only represent existing conditions and different results could be expected under different circumstances. Therefore, new economic evaluations and comparisons are necessary, when usage or tariff rates change, when the termination charges expire, and before expanding or enhancing the present CSN. Also, we recognize that an alternative would be to shift the CSN to another competitively procured system which could be designed and provided by the present or other commercial carriers.

GSA officials believe that the movement of the CSN onto the FTS voice network constitutes a "new requirement" and, therefore, is prohibited by language contained in its appropriations acts, the Treasury, Postal Service, and General Government Appropriations Acts for fiscal years 1975 through 1977. These appropriation acts prohibit the

1/The date CSN termination charges expire under the present tariff.

use of the funds appropriated and those provided under section 111 of the Federal Property and Administrative Services Act of 1949 for the procurement of automatic data processing systems, data communications networks, or related software and services for a joint General Services Administration-Department of Agriculture project, any successor to such project, or any common user shared facilities authorized under section 111. Recognizing that ARS and FTS voice networks are funded by the Federal Telecommunications Fund established under section 110 of the same act, we would characterize the transfer of the communications services from one network to another network as not being a successor project proscribed by the appropriation acts. In our opinion, the Treasury, Postal Service, and General Government Appropriations Acts for fiscal years 1975 through 1977 do not bar GSA from planning, programming, and implementing the transfer of the CSN to FTS or some other competitively procured network, if otherwise appropriate.

CONCLUSIONS

GSA needs to improve its planning for management of record communications services. This should include requesting and reviewing civil agencies' future requirements for the purpose of identifying potential ARS requirements in sufficient time to permit cost/benefit analyses. Cost/benefit analyses of various alternatives should be performed before further expanding or enhancing the ARS to preclude extension of the performance period or increased termination liability under the present agreement.

GSA should continue its planned efforts to increase the use of ARS. Such action should be aggressively pursued when ARS can adequately provide service to the potential users and the ARS incremental costs to the Government are equal to or less than the costs for an alternative system.

Current conditions suggest staying with ARS in lieu of shifting to the FTS voice network or another competitively procured system, but if the conditions--such as usage and tariff rates--change, such a shift may become economically beneficial to the Government on or before the expiration of the termination charges.

RECOMMENDATIONS

We recommend that you:

--determine the civil agencies' record and data communications requirements and perform cost analyses of various system alternatives before further expanding or enhancing ARS in a manner that would extend the performance period or increase the amount of termination liability for the Government,

--aggressively continue GSA's efforts to increase the use of ARS under conditions where it can provide adequate service, and when the incremental costs to the Government are equal to or less than those for an alternate system, and

--evaluate the economy and feasibility of shifting the CSN to the FTS voice network or another competitively procured system periodically, such as when tariffs or usage change significantly.

We would be pleased to discuss these matters in more detail with you or your staff.

We are sending copies of this report to the House Committee on Appropriations and its Subcommittee on Treasury, Postal Service, General Government; Senate Committee on Appropriations, Subcommittee on Treasury, Postal Service, General Government; House Committee on Government Operations and its Subcommittee on Government Activities and Transportation; Senate Committee on Governmental Affairs; House Committee on Interstate and Foreign Commerce and its Subcommittee on Communications; and Senate Committee on Commerce and its Subcommittee on Communications. We are also sending copies to the Director, Office of Management and Budget, and the Director, Office of Telecommunications Policy.

Sincerely yours,

F. J. Shafer

F. J. Shafer
Director