



# REPORT TO THE CONGRESS

## Savings Available Through A Government-Wide Program To Rehabilitate Instrumentation Tape

B-164392

General Services Administration

B-164392

BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES

~~715698~~ / 092266

FILE COPY - COMP GEN

AUG. 23, 1971



COMPTROLLER GENERAL OF THE UNITED STATES

WASHINGTON, D.C. 20548

B-164392

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

This is our report on the savings available through a Government-wide program by the General Services Administration to rehabilitate instrumentation tape.

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

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

A handwritten signature in black ink, appearing to read "A. J. Keller".

Acting Comptroller General  
of the United States

D I G E S T

WHY THE REVIEW WAS MADE

Instrumentation tape is a type of magnetic tape used by Federal agencies to record instrumentation data and is commonly used in telemetering and scientific projects. The information to be recorded is often critical; that is, vital and not repeatable. Instrumentation tape therefore must be highly reliable.

The Government's cost of procuring this tape is estimated at \$10 million annually.

The General Accounting Office (GAO) noted that the National Aeronautics and Space Administration (NASA) was prolonging the useful life of instrumentation tape by rehabilitation--cleaning, testing, and certifying the condition of the tape. Because the cost of rehabilitating tape was less than the cost of purchasing new tape, NASA realized savings.

GAO made this review to consider the feasibility of a Government-wide program for rehabilitating instrumentation tape.

FINDINGS AND CONCLUSIONS

The use of new tape exclusively for recording critical data was the practice at 11 of the installations included in GAO's review. The tape was reused only in secondary, or noncritical, applications. The principal justification for this practice was the contention that new tape was more reliable than rehabilitated tape. NASA and the National Security Agency, however, have established rehabilitation programs for instrumentation tape that have proven to be economically and technically feasible. (See p. 7.)

NASA officials told GAO that about 75 percent of the instrumentation tape processed by NASA's rehabilitation facility was restored to a condition suitable for use in critical applications. According to NASA officials, in the first year of the rehabilitation program, 18,000 reels of instrumentation tape having a replacement cost of about \$367,000 were successfully rehabilitated at a cost of about \$93,300 for labor and supplies and most of the tapes were recirculated to users and performed satisfactorily. (See p. 8.)

The National Security Agency estimated that procurement savings of \$1.2 million had been realized as a result of a June 1969 contract with a commercial

firm for the rehabilitation of 25,000 reels of instrumentation tape. The rehabilitated tapes were being used in critical applications. (See p. 9.)

GAO's review did not show the quantity of tape available for rehabilitation at most of the 11 installations. As an indication of the potential for savings, rehabilitation of the quantity of tape procured by the 11 installations during fiscal year 1969 would result in procurement savings of \$890,000--computed on the basis of the percentage of tapes rehabilitated for use in critical applications and the costs incurred by the National Security Agency. (See p. 10.)

Some agencies have recognized the potential benefits of effective instrumentation tape rehabilitation programs, but GAO's review indicates that the quantities of such tape procured by individual installations may not warrant the establishment of such programs at all installations. In GAO's opinion, a Government-wide program for the rehabilitation of instrumentation tape is needed to realize the savings attainable through reduced procurements. (See p. 15.)

#### RECOMMENDATIONS OR SUGGESTIONS

To achieve the economies available through the rehabilitation of instrumentation tape, GAO recommends that the Administrator of General Services

- enter into a program for the rehabilitation of instrumentation tape and
- promote the use of the rehabilitation program throughout the Government.

#### AGENCY ACTIONS AND UNRESOLVED ISSUES

The General Services Administration (GSA) informed GAO that it agreed with GAO's recommendations and planned to study the technical and logistical requirements and other aspects of a Government-wide program. GSA stated that, if the study showed that such a program was feasible, it would initiate the program and would notify the agencies of the potential savings. In addition, GSA was developing a specification for the rehabilitation of instrumentation tape.

The Assistant Secretary of Defense stated that the Department of Defense agreed with GAO's recommendation that GSA enter into a Government-wide program for rehabilitation of instrumentation tape.

#### MATTERS FOR CONSIDERATION BY THE CONGRESS

This report informs the Congress of the potential for significant savings through the establishment of a Government-wide rehabilitation program for instrumentation tape and of the pertinent actions planned by GSA.

## C o n t e n t s

	<u>Page</u>
DIGEST	1
CHAPTER	
1 INTRODUCTION	3
2 NEED FOR A GOVERNMENT-WIDE PROGRAM FOR REHABILITATION OF INSTRUMENTATION TAPE	7
Feasibility of tape rehabilitation	7
Opportunities for savings through use of rehabilitated instrumentation tape	10
Potential for a Government-wide program for rehabilitation of instrumentation tape	13
3 CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS	15
Conclusions	15
Recommendations to the Administrator of General Services	16
Comments by GSA and DOD	16
4 SCOPE OF REVIEW	18
APPENDIX	
I Potential for savings at selected installations based on procurements in fiscal year 1969	21
II Letter dated April 22, 1971, from the Assistant Administrator, General Services Administration, to the General Accounting Office	22
III Letter dated May 17, 1971, from the Assistant Secretary of Defense to the General Accounting Office	24

APPENDIX

Page

IV	Principal officials of the General Services Administration responsible for the administration of the matters discussed in this report	26
----	---	----

ABBREVIATIONS

DOD	Department of Defense
GAO	General Accounting Office
GSA	General Services Administration
NASA	National Aeronautics and Space Administration

D I G E S T

WHY THE REVIEW WAS MADE

Instrumentation tape is a type of magnetic tape used by Federal agencies to record instrumentation data and is commonly used in telemetering and scientific projects. The information to be recorded is often critical; that is, vital and not repeatable. Instrumentation tape therefore must be highly reliable.

The Government's cost of procuring this tape is estimated at \$10 million annually.

The General Accounting Office (GAO) noted that the National Aeronautics and Space Administration (NASA) was prolonging the useful life of instrumentation tape by rehabilitation--cleaning, testing, and certifying the condition of the tape. Because the cost of rehabilitating tape was less than the cost of purchasing new tape, NASA realized savings.

GAO made this review to consider the feasibility of a Government-wide program for rehabilitating instrumentation tape.

FINDINGS AND CONCLUSIONS

The use of new tape exclusively for recording critical data was the practice at 11 of the installations included in GAO's review. The tape was reused only in secondary, or noncritical, applications. The principal justification for this practice was the contention that new tape was more reliable than rehabilitated tape. NASA and the National Security Agency, however, have established rehabilitation programs for instrumentation tape that have proven to be economically and technically feasible. (See p. 7.)

NASA officials told GAO that about 75 percent of the instrumentation tape processed by NASA's rehabilitation facility was restored to a condition suitable for use in critical applications. According to NASA officials, in the first year of the rehabilitation program, 18,000 reels of instrumentation tape having a replacement cost of about \$367,000 were successfully rehabilitated at a cost of about \$93,300 for labor and supplies and most of the tapes were recirculated to users and performed satisfactorily. (See p. 8.)

The National Security Agency estimated that procurement savings of \$1.2 million had been realized as a result of a June 1969 contract with a commercial

firm for the rehabilitation of 25,000 reels of instrumentation tape. The rehabilitated tapes were being used in critical applications. (See p. 9.)

GAO's review did not show the quantity of tape available for rehabilitation at most of the 11 installations. As an indication of the potential for savings, rehabilitation of the quantity of tape procured by the 11 installations during fiscal year 1969 would result in procurement savings of \$890,000--computed on the basis of the percentage of tapes rehabilitated for use in critical applications and the costs incurred by the National Security Agency. (See p. 10.)

Some agencies have recognized the potential benefits of effective instrumentation tape rehabilitation programs, but GAO's review indicates that the quantities of such tape procured by individual installations may not warrant the establishment of such programs at all installations. In GAO's opinion, a Government-wide program for the rehabilitation of instrumentation tape is needed to realize the savings attainable through reduced procurements. (See p. 15.)

#### RECOMMENDATIONS OR SUGGESTIONS

To achieve the economies available through the rehabilitation of instrumentation tape, GAO recommends that the Administrator of General Services

- enter into a program for the rehabilitation of instrumentation tape and
- promote the use of the rehabilitation program throughout the Government.

#### AGENCY ACTIONS AND UNRESOLVED ISSUES

The General Services Administration (GSA) informed GAO that it agreed with GAO's recommendations and planned to study the technical and logistical requirements and other aspects of a Government-wide program. GSA stated that, if the study showed that such a program was feasible, it would initiate the program and would notify the agencies of the potential savings. In addition, GSA was developing a specification for the rehabilitation of instrumentation tape.

The Assistant Secretary of Defense stated that the Department of Defense agreed with GAO's recommendation that GSA enter into a Government-wide program for rehabilitation of instrumentation tape.

#### MATTERS FOR CONSIDERATION BY THE CONGRESS

This report informs the Congress of the potential for significant savings through the establishment of a Government-wide rehabilitation program for instrumentation tape and of the pertinent actions planned by GSA.



## CHAPTER 1

### INTRODUCTION

The Federal Property and Administrative Services Act of 1949, as amended (40 U.S.C. 471), made the General Services Administration primarily responsible for providing an efficient and economical system for the procurement and supply of personal property and nonpersonal services needed by Federal agencies and Government-related organizations. GSA's responsibilities include such related functions as developing specifications and contracting for services and supplies and inspecting, storing, and issuing supplies.

Under contracts awarded by the Federal Supply Service which operates GSA's supply system, two types of magnetic tape are available--computer (digital) tape and instrumentation (analog) tape.

GSA has prescribed standardized specifications for the rehabilitation of computer tape--cleaning, testing, and certifying to the condition of the tape for reuse--and certain Federal agencies with large inventories of computer tape have established computer tape rehabilitation programs. Also some agency installations, although not rehabilitating computer tape, do clean the tape to prolong its useful life.

An important factor in determining whether to establish magnetic tape rehabilitation programs is the relationship of the cost of rehabilitating tape to the cost of purchasing new tape. One reason GSA has not established a Government-wide computer tape rehabilitation program is because of the small margin between the cost of rehabilitating used computer tape and the cost of purchasing new tape. We concentrated our review on the feasibility of establishing a Government-wide program for rehabilitating used instrumentation tape because of:

- The much greater potential for significant savings, as indicated by the results achieved by two agencies under their instrumentation tape rehabilitation programs.

- The volume of instrumentation tape purchased annually by the agencies. Firm data were not available, but estimates by a manufacturer and by a Federal Supply Service procurement official indicated that the purchases amounted to about \$10 million annually.
  
- The cost of instrumentation tape, which for the types frequently purchased ranged from \$17 to \$150 a reel depending on the size of the reel and the type and size of the tape.

Instrumentation tape is used to record continuous measurements transmitted from electronic measuring devices and is commonly used in telemetering and scientific projects. The tape consists of a thin ribbon of plastic, usually polyester, coated with an emulsion of highly refined magnetic oxide. Because the applications where instrumentation tapes are usually used are considered critical--where the data are vital and, in most cases, not repeatable--the tape must be highly reliable. Therefore a great degree of precision in uniformity of coating formulation, coating thickness, surface roughness, and other factors is required in the manufacture of the tape.

The operating life expectancy of instrumentation tape varies depending on its initial quality and its operating environment. Flaws causing data errors eventually develop in each tape and are sufficient to render the tape's continued use impractical. The rehabilitation process is intended to improve the condition of the tape and to prolong its useful life. Because the condition of each reel of tape is determined by testing during the rehabilitation process, the tape can be readily classified as to whether it is suitable for reuse in critical applications or only in noncritical applications or whether it should be discarded.

The condition of tape is affected primarily by external or self-generated contaminants. External contaminants can consist of dust, lint, and cigarette ash. Self-generated contaminants can consist of chips or pieces of magnetic oxide or plastic backing from the tape. Contaminants may cause a loss of contact between the recording surface of the tape and the recording and reading heads of the tape drive, which results in a reduction in the amplitude of the

electrical impulses transmitted or received by the heads. When these reductions in amplitude are of sufficient magnitude to cause an error, they are referred to as dropouts.

Another important source of error is tape distortion caused by improper winding or storage. Such distortion can prevent the tape from lying flat against the reading heads, which results in a dropout.

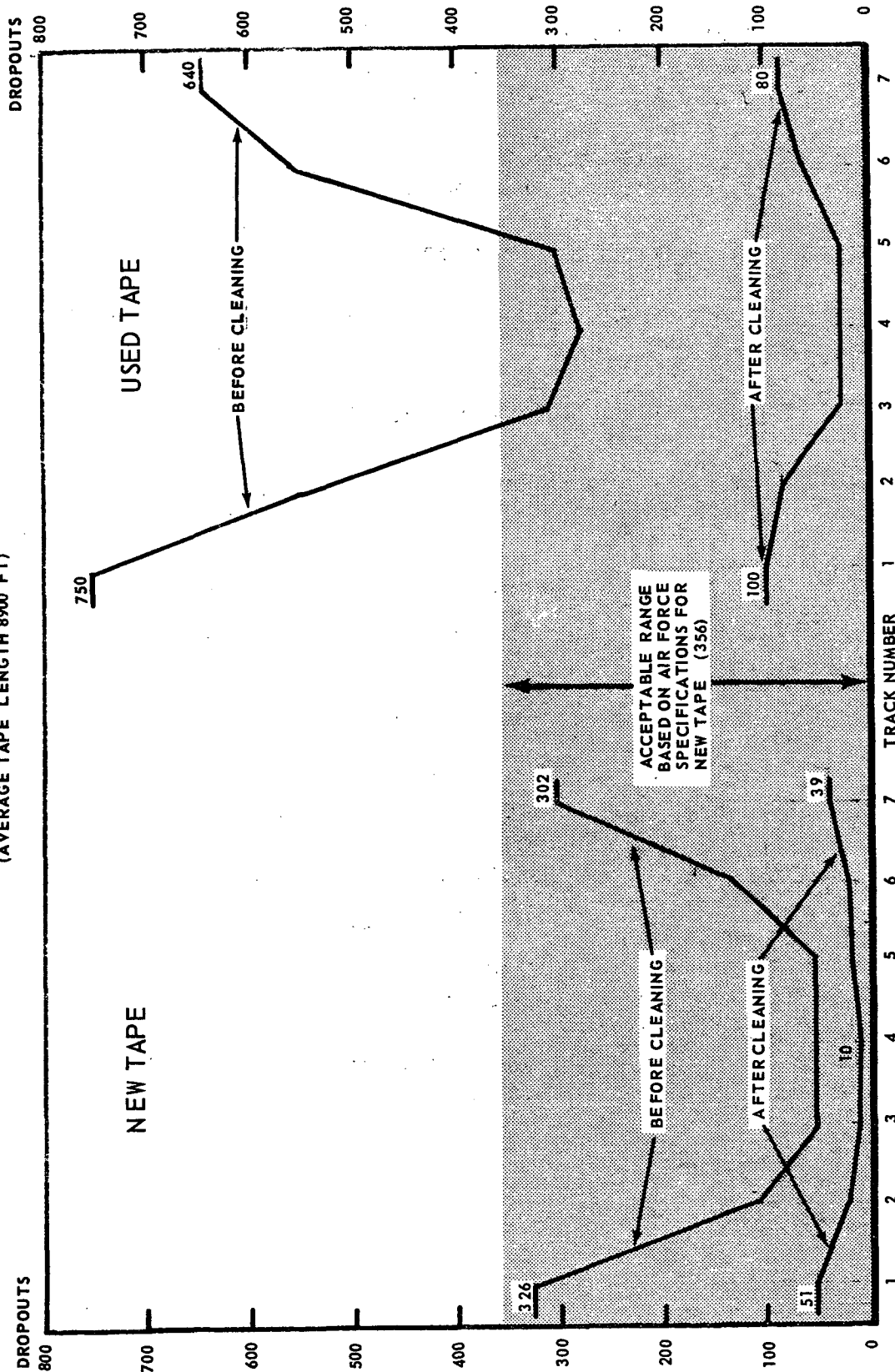
The rehabilitation process usually involves the following steps.

- Visually inspecting the condition of the tape and reel.
- Cleaning the tape to dislodge and remove the dirt particles.
- Testing primarily for dropouts and certifying to the condition of the tape.
- Final degaussing (erasing of signals on the tape) and precision winding.

As shown by the following graphs prepared during a fiscal year 1970 study by the Air Force Satellite Control Facility, tape cleaning--an important step in the rehabilitation process--significantly reduces the dropout count for both new and used tape and reduces the dropout count for the used tape to a level well within the acceptable limit set by the Air Force specifications which govern new tape procurements. The graphs also show the tendency for dropouts to occur most often in the recording tracks near the edges of the tape. On 1/2-inch-wide tape, information can be recorded in seven separate tracks running the length of tape.

# EFFECT OF CLEANING ON DROPOUTS

(AVERAGE TAPE LENGTH 8900 FT)



## CHAPTER 2

### NEED FOR A GOVERNMENT-WIDE PROGRAM FOR REHABILITATION OF INSTRUMENTATION TAPE

The feasibility of rehabilitating instrumentation tape has been demonstrated by the successful rehabilitation programs of the National Aeronautics and Space Administration and the National Security Agency. For the most part other agencies did not have programs for rehabilitating instrumentation tape but were reusing tape from one to several times in noncritical applications. Much of the tape, if rehabilitated, also could be reused in critical applications.

On the basis of the instrumentation tape procurements during fiscal year 1969 at 11 installations included in our review which were not rehabilitating instrumentation tape, we estimated that the one-time rehabilitation of an equivalent quantity of tape would have resulted in procurement savings of \$890,000. It is possible that such savings at these installations would have been substantially higher because tape can be rehabilitated several times. Further, since the tape procured at these installations represents only part of the total tape procured by the Government, a Government-wide rehabilitation program could result in substantially higher savings.

### FEASIBILITY OF TAPE REHABILITATION

Department of Defense (DOD) officials advised us that there was no Department-wide policy or program for rehabilitating instrumentation tape. Most of the installations included in our review were DOD installations, and they used only new instrumentation tape for recording critical data. The principal justification for this practice was the contention that new tape was more reliable than rehabilitated tape.

Technicians at Eglin Air Force Base, for example, contended that only new instrumentation tape could be used for critical recordings. Some of the technicians stated that the cost of a reel of tape was relatively minor when

compared with the total cost of the test in which it generally was used. They maintained that instrumentation tape was highly sensitive and could not be properly degaussed to ensure that previously recorded data would not distort subsequent recordings.

The reservations expressed by technicians apparently stemmed from some unsatisfactory experiences with rehabilitated tape at Eglin in 1963. That rehabilitation program, though generally considered successful, was discontinued for budgetary reasons. Since that time, improvements have been made in tape quality and in rehabilitation equipment and techniques. For example, GSA officials advised us that several degaussers were available which destroyed residual recordings to a level which effectively eliminated any adverse effects on subsequent recordings.

Successful rehabilitation programs have been established by NASA and the National Security Agency, as discussed below.

#### National Aeronautics and Space Administration

In January 1969 NASA expanded its tape rehabilitation program at the Goddard Space Flight Center to provide for the rehabilitation of instrumentation tape. A NASA official advised us that the tape rehabilitation facility had been established because NASA had recognized that it was less costly to rehabilitate tape than to purchase new tape. Also, a NASA official informed us that the rehabilitated tape had been restored to a condition suitable for use in critical applications and that, when properly rehabilitated, used tape was preferred over new tape in recording critical data for satellite operations because the condition of each reel of tape was tested and certified during the rehabilitation process.

NASA officials stated that the rehabilitation process was both economical and practical and that about 75 percent of the processed instrumentation tape had been restored to a condition suitable for use in critical applications. They advised us that, in the initial year of operation, 18,000 reels of instrumentation tape having a replacement cost of about \$367,000 had been rehabilitated successfully at a cost

of about \$93,300 for labor and supplies.<sup>1</sup> They advised us also that most of the rehabilitated tapes had been recirculated to NASA users and had performed satisfactorily.

### National Security Agency

In June 1969 the National Security Agency, realizing the practicality of, and cost benefits attainable through, a tape rehabilitation program, negotiated a contract for the rehabilitation at the contractor's facility of 25,000 reels of high-quality instrumentation tape. By August 1970 the contractor had certified that 62.4 percent of the processed tapes met the Agency's requirements for use in critical applications. Agency officials advised us that these tapes were being reused in critical applications and that, in addition, 8.5 percent of the processed tapes had met the Agency's requirements for use in noncritical applications.

The contractor's report to the Agency showed that the rehabilitation process under the contract had been similar to NASA's process and that the cost to rehabilitate the tape had been about \$17 a reel.<sup>2</sup> Agency officials estimated that, as a result of reduced procurements, savings of \$1.2 million were realized as a result of the rehabilitation of tape under this contract. Agency officials advised us that the rehabilitated tape had performed satisfactorily and that, as a result, the Agency had advertised formally for contracts for the rehabilitation of additional tape. Four companies submitted bids. The above-mentioned contractor was awarded the contract in February 1971 at the low-bid price of \$10.07 a reel. The contract provides that space and utilities be furnished by the Agency.

---

<sup>1</sup>NASA's direct costs were about \$5 a reel; no costs were assigned for overhead or equipment.

<sup>2</sup>The difference between NASA's and the National Security Agency's rehabilitation costs for each reel appeared to be due to several factors, including (1) most of the tape rehabilitated by the National Security Agency was wider and longer and (2) NASA's cost did not include equipment and overhead costs.

OPPORTUNITIES FOR SAVINGS THROUGH USE  
OF REHABILITATED INSTRUMENTATION TAPE

Of the installations included in our review, 11 did not rehabilitate instrumentation tape and used only new tape in critical applications. Generally the tape was reused from one to several times in noncritical applications and then was disposed of rather than rehabilitated.

In most instances our review did not show the amount of tape that the installations might have had available for rehabilitation. The potential for savings achievable by a rehabilitation program was indicated by the installations' purchases of instrumentation tape at a cost of about \$2.5 million in fiscal year 1969. We estimated that the one-time rehabilitation of an equivalent quantity of tape would have resulted in procurement savings of about \$890,000. (See app. I.)

These savings were computed on the basis of the 62.4-percent recovery rate and the rehabilitation costs of \$17.20 a reel experienced by the National Security Agency under its June 1969 contract. If the computation had been based on the Agency's current contract rehabilitation cost of \$10.07 a reel or on NASA's 75-percent recovery rate, the indicated savings would have been substantially greater.

Following are two examples of installations which did not rehabilitate instrumentation tape.

Eglin Air Force Base

The mission of Eglin Air Force Base involves the research, development, test, and evaluation of aircraft armament and munitions. Instrumentation tape is used to accumulate the vast amounts of test data required to support Eglin's mission. After the data are processed and are no longer needed, the tapes are sold for scrap or are used for low-grade recordings. All critical test data are recorded on new tape, although some tape is reused without rehabilitation for backup recordings.

On the basis of the National Security Agency's experience, the rehabilitation of instrumentation tape for reuse



at Eglin virtually would have eliminated the need to procure new tape in fiscal years 1969 and 1970, as shown below.

<u>Item</u>	<u>Fiscal year</u>	
	<u>1969</u>	<u>1970</u>
Number of reels of instrumentation tape available for low-grade recordings or disposition; that is, tape which could have been made available for rehabilitation	2,068	3,007
Percentage of reels of tape recovered for use in critical applications under the National Security Agency's rehabilitation program	62.4	62.4
Estimated number of reels of rehabilitated tape which could have been re-used	1,290	1,876
Number of reels of instrumentation tape procured	1,521	1,654

Eglin had 5,075 reels of instrumentation tape that could have been made available for rehabilitation during fiscal years 1969 and 1970. Instead, 1,807 reels, procured at an estimated cost of \$56,163, were sold to various commercial sources for \$642; 2,355 reels were provided to other agencies for use in low-grade voice recordings or other secondary purposes; and 913 reels were on hand at June 30, 1970, awaiting disposition.

We estimated that, if the rehabilitation of the 5,075 reels of instrumentation tape had been undertaken and had resulted in the recovery of 62.4 percent of the tape for re-use--the recovery rate experienced by the National Security Agency--the procurement of new tape could have been reduced and savings of \$56,000 could have been realized. On the basis of the recovery rate of 75 percent experienced by NASA, the savings in procurement costs would have amounted to \$67,000.

#### White Sands Missile Range

White Sands Missile Range supports missile test programs of the Army, the Navy, the Air Force, DOD, and NASA. White

Sands uses instrumentation tape to record instrumentation data on rocket and missile test programs. White Sands officials advised us that all instrumentation data collected on the range were recorded on new tapes and that these tapes were not rehabilitated and reused for critical missions. Some tapes were reused for secondary purposes, such as backup recordings, without having been rehabilitated.

White Sands officials stated that the practice of one-time usage of instrumentation tape for critical applications was based on the belief that new tape was more reliable than rehabilitated tape. The officials acknowledged, however, that rehabilitated tape had never been used at White Sands and that tape rehabilitation might be feasible if there were sufficient volume of used tape.

The volume of used tape that had been disposed of during fiscal year 1969 was not readily determinable. White Sands officials stated also that instrumentation tape was classified as an expendable supply item and that controls had not been established over the use and disposition of the tape. As a result they were unable to estimate the number of reels of tape which could have been rehabilitated during fiscal years 1969 and 1970.

White Sands officials estimated, however, that approximately 2,430 reels of used tape, which had been procured at an estimated cost of \$124,000, were on hand and awaiting disposition as of June 30, 1970. We estimated that, on the basis of the rehabilitation recovery rate (62.4 percent) and cost (\$17.20 a reel) experienced by the National Security Agency, new tape procurement costs of about \$51,600 could have been avoided through the rehabilitation of the tape awaiting disposition.

POTENTIAL FOR A GOVERNMENT-WIDE PROGRAM  
FOR REHABILITATION OF INSTRUMENTATION TAPE

Our review indicated that GSA could establish a Government-wide instrumentation tape rehabilitation program which would meet the varying requirements of different agencies.

We recognize that GSA's undertaking a Government-wide program would require the consideration of various factors inherent in establishing such a program. These factors include the specific guidance to be provided to the agencies, the approximate level of demand for the service, the decision as to whether contractors should be used, and the obligations to be imposed on participating agencies and contractors.

The establishment and operation of a Government-wide tape rehabilitation program would be facilitated if tape were procured under standardized specifications providing a uniform standard against which the tape's acceptability for reuse could be measured during the rehabilitation process. GSA made considerable progress in the development of a standardized procurement specification, but the specification had not been adopted upon completion of our review.

An official of a major rehabilitation contractor informed us of his opinion that it would be feasible for GSA to issue a contract with open specifications for the number of dropouts--the major condition tested in the rehabilitation process. He stated that the contract could set forth a definition of a dropout, and an agency submitting tapes for rehabilitation could specify the maximum number of dropouts acceptable on the rehabilitated tape. He stated also that, although the quality of the rehabilitated tape would be dependent on the specification under which it was procured originally, the quality that met that specification should be acceptable to the agency that had procured the tape.

The potential for a competitive price for such a contract appears to exist; the National Security Agency received bids from four firms for a contract to continue the Agency's rehabilitation program. Also, depending on the economic and policy factors involved, the rehabilitation service could be

provided through Government-operated, centralized or decentralized facilities or through combinations of Government and commercial facilities and services.

## CHAPTER 3

### CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS

#### CONCLUSIONS

In our opinion, a Government-wide program for the rehabilitation of instrumentation tape is needed to realize the savings attainable through reduced procurements. Some agencies have recognized the potential benefits of effective instrumentation tape rehabilitation programs, but our review indicates that the quantities of such tape procured by individual installations may not warrant the establishment of such programs at all installations. Also some agencies or installations appear to have reservations as to the performance capabilities of rehabilitated tape. These reservations, however, are not supported by the recent experiences of NASA and the National Security Agency which have established successful instrumentation tape rehabilitation programs.

We believe, therefore, that GSA should make a Government-wide rehabilitation program for instrumentation tape available to the agencies and should promote its use by informing the agencies of the successful experiences of NASA and the National Security Agency.

Although the establishment and operation of a Government-wide instrumentation tape rehabilitation program would be facilitated by the adoption of standardized tape procurement specifications against which to measure the acceptability of rehabilitated tape for reuse, our review indicates that the rehabilitation of tape currently in use is also feasible.

The rehabilitation service could be provided by Government-operated, centralized or decentralized facilities, but it is not necessary that GSA use this direct means to provide the service. The National Security Agency has demonstrated that the use of a commercial contractor is another practicable means of providing the rehabilitation service.

RECOMMENDATIONS TO THE  
ADMINISTRATOR OF GENERAL SERVICES

To achieve economies that are available through the rehabilitation of instrumentation tape, we recommend that the Administrator of General Services

--enter into a program for the rehabilitation of instrumentation tape and

--promote the use of the rehabilitation program throughout the Government.

COMMENTS BY GSA AND DOD

The Assistant Administrator of GSA stated that GSA agreed with the recommendations and planned to implement them by (1) initiating a study of the interrelated facets of a Government-wide program, (2) developing a specification for rehabilitating the tape, and (3) initiating a Government-wide rehabilitation program--if shown to be feasible by the GSA study--and notifying agencies of the establishment of the program and of potential savings. (See app. II.)

The Assistant Secretary of Defense stated that there was complete agreement within DOD with the recommendation that a Government-wide rehabilitation program be established by GSA. He stated also that DOD would participate in the development of the program if requested to do so. (See app. III.)

Both the Assistant Administrator of GSA and the Assistant Secretary of Defense indicated certain areas of concern, such as logistics, security, technical requirements, the future of existing rehabilitation facilities, and the relative procurement cost of new tape, which should be considered in entering into a Government-wide rehabilitation program.

We agree that due consideration should be given to such factors before implementing a Government-wide program. Our review was directed toward what we considered to be the primary consideration; that is, whether a Government-wide

rehabilitation program would be technically and economically feasible. We believe that such a program is technically and economically feasible.

Our review indicates also that the quantities of tape used by many installations may not warrant the establishment of individual rehabilitation programs, that there is a need to advise agencies' technical and administrative personnel as to the performance capabilities of rehabilitated tape and the economies that can be realized through its use, and that the varying quality and performance capabilities of the tape presently in agencies' inventories do not preclude the establishment of a Government-wide program.

## CHAPTER 4

### SCOPE OF REVIEW

We reviewed pertinent legislation, regulations, policies, procedures, and practices relating to rehabilitation of instrumentation tape. We also interviewed agency officials responsible for the supply and use of instrumentation tapes.

Our review included onsite examinations of the practices relating to the rehabilitation and reuse of instrumentation tape at Eglin Air Force Base, Florida; White Sands Missile Range, New Mexico; the Space and Missile Test Center, Vandenberg Air Force Base, California; Goddard Space Flight Center, Greenbelt, Maryland; the National Security Agency, Ft. Meade, Maryland; and the Federal Supply Service, Arlington, Virginia, and Gaithersburg, Maryland.

We also obtained information regarding the rehabilitation and reuse of instrumentation tape through questionnaires sent to the Atomic Energy Commission Operations Offices in Albuquerque, New Mexico, and San Francisco, California; the Air Force Satellite Control Facility, Los Angeles, California; the Air Force Flight Test Center, Edwards Air Force Base, California; the Naval Weapons Center, China Lake, California; the Federal Aviation Administration, Atlantic City, New Jersey; the Kwajalein Missile Range, Kwajalein, Marshall Islands; and the Air Force Eastern Test Range, Patrick Air Force Base, Florida. Additional information regarding instrumentation tape was obtained from major tape manufacturers and from a commercial tape rehabilitation firm.



**APPENDIXES**



## POTENTIAL FOR SAVINGS AT SELECTED INSTALLATIONS

BASED ON PROCUREMENTS IN FISCAL YEAR 1969

<u>Installation</u>	Fiscal year 1969 procurements	
	<u>Number of reels</u>	<u>Cost</u>
EGLIN AIR FORCE BASE	1,521	\$ 30,526
VANDENBURG AIR FORCE BASE	1,817	144,106
WHITE SANDS MISSILE RANGE	7,067	264,709
EDWARDS AIR FORCE BASE	1,320	89,155
AIR FORCE SATELLITE CONTROL FACILITY	26,471	1,054,007
NAVAL WEAPONS CENTER	1,262	26,527
FEDERAL AVIATION ADMINISTRATION	300	7,014
KWAJALEIN MISSILE RANGE	406	49,882
U.S. ATOMIC ENERGY COMMISSION:		
San Francisco Operations Office	265	19,456
Albuquerque Operations Office	2,360	112,846
PATRICK AIR FORCE BASE	<u>18,515</u>	<u>682,172</u>
Total	<u>61,304</u>	<u>\$2,480,400</u>
NUMBER OF REHABILITATIVE REELS (61,304 x 62.4%)		38,254
AVERAGE COST FOR EACH REEL (\$2,480,400 ÷ 61,304)		\$ <u>40.46</u>
REPLACEMENT COST OF REHABILITATIVE REELS		1,547,757
LESS COST TO REHABILITATE (38,254 x \$17.20)		<u>657,969</u>
Savings		<u>\$ 889,788</u>

APPENDIX II

UNITED STATES OF AMERICA  
GENERAL SERVICES ADMINISTRATION  
WASHINGTON, D.C. 20405



APR 22 1971

Honorable Elmer B. Staats  
Comptroller General of the United States  
General Accounting Office  
Washington, D. C. 20548

Dear Mr. Staats:

This is in reply to your letter of March 12, 1971, transmitting your draft report "Need for a Government-Wide Program for the Rehabilitation of Instrumentation Tape".

We have carefully reviewed your draft report and our comments and recommendations are enclosed.

If we can provide additional information, please let us know.

Sincerely,

A handwritten signature in black ink, appearing to read "Harold S. Trimmer, Jr.", is written over a faint, larger version of the same signature.

Harold S. Trimmer, Jr.  
Assistant Administrator

Enclosure

*Keep Freedom in Your Future With U.S. Savings Bonds*

Enclosure

GAO Draft Report "Need for a Government-Wide Program  
for the Rehabilitation of Instrumentation Tape"

We agree with the recommendations and plan the following actions to implement them.

1. Initiate a study of all the interrelated facets of a Government-wide program. These would include technical requirements, logistics problems, levels of demand, agency guidance, imposed agency obligations, etc. These considerations must be balanced by realistic appraisal of real life conditions existing at the time, such as: relative procurement costs of new tape and impact upon tape suppliers.

We do not have sufficient resources to immediately accomplish this study. However, it will be scheduled as soon as they become available.

2. Develop a specification for the rehabilitation of instrumentation tape.

This specification is now under development and will be ready for use by the end of 1971.

We believe that this specification is necessary to support an effective Government-wide tape rehabilitation program. It will establish characteristics and performance criteria by which tape performance as well as performance of facility doing the rehabilitation (either in-house or by contract) can be evaluated.

We are convinced that the use of a specification will be economical and efficient in support of a Government-wide program for instrumentation tape rehabilitation.

3. If the study mentioned above proves that a Government-wide tape rehabilitation program is feasible, one will be initiated and agencies will be notified of its establishment and of any potential cost savings which may be realized.

FSS/FM



ASSISTANT SECRETARY OF DEFENSE  
WASHINGTON, D.C. 20301

COMPTROLLER

17 MAY 1971

Mr. C. M. Bailey  
Director, Defense Division  
U. S. General Accounting Office

Dear Mr. Bailey:

This is in response to your request of March 22, 1971 for comments on the draft report of the "Need for a Government-Wide Program for the Rehabilitation of Instrumentation Tape" (OSD Case #3256).

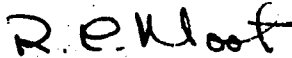
The draft report has been reviewed by the Military Departments and cognizant Defense Agencies. Although there is complete agreement with the recommendation for the establishment of a Government-wide rehabilitation program by the General Services Administration to reduce the requirements for the purchase of new tapes, several areas of concern have been expressed by one or more of the DoD Components.

For your consideration in the preparation of the final report, these are:

1. On-going rehabilitation efforts such as those at National Security Agency, Eastern Test Range (Patrick AFB), and Western Test Range (Vandenberg AFB) should not be replaced unless significant additional savings can be proven without degradation of service.
2. The use of rehabilitated tapes for critical or nonrepeatable events should be left to the discretion of the using activity to preclude any undue and possible disastrous impact on high cost programs.
3. The problem of security in the handling and shipping of tapes that have been used for the recording of highly classified data must be resolved. It is the practice of many activities that once a tape has been used for recording of classified data, it is never used for any lesser classification and therefore must be safeguarded.

The Department of Defense supports the idea of a General Services Administration sponsored tape rehabilitation program and appreciates the opportunity to comment on the draft report. We will continue to share our rehabilitation experiences with GSA and will participate in the program development if requested to do so. The extent of our use of the services offered will depend on their quality and the economy which they achieve.

Sincerely,

A handwritten signature in black ink, appearing to read "R. C. Moot". The signature is written in a cursive, slightly slanted style.

**Robert C. Moot**  
**Assistant Secretary of Defense**

APPENDIX IV

PRINCIPAL OFFICIALS OF  
THE GENERAL SERVICES ADMINISTRATION  
RESPONSIBLE FOR THE ADMINISTRATION OF THE MATTERS  
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<b>ADMINISTRATOR OF GENERAL SERVICES:</b>		
Robert L. Kunzig	Mar. 1969	Present
Lawson B. Knott, Jr.	Nov. 1964	Feb. 1969
<b>COMMISSIONER, FEDERAL SUPPLY SERVICE:</b>		
Lewis E. Spangler (acting)	May 1971	Present
H. A. Abersfeller	Mar. 1970	May 1971
Lewis E. Spangler (acting)	Dec. 1969	Mar. 1970
Arthur F. Sampson	June 1969	Dec. 1969
Lewis E. Spangler (acting)	May 1969	June 1969
H. A. Abersfeller	May 1964	May 1969