

The Library of Congress
Office of the Inspector General



Library Services
***(National Library Service for the
Blind and Physically
Handicapped)***

***Economies Are Available in
Managing NLS Cassette
Playback Machine Inventory***

***Audit Report No. 2001-PA-101
August 2002***



Memorandum*Office of the Inspector General*

TO: James H. Billington
The Librarian of Congress

August 30, 2002

FROM: Karl W. Schornagel
Inspector General



SUBJECT: *Economies Are Available in Managing NLS
Cassette Playback Machine Inventory*
Audit Report No. 2001-PA-101

This transmits our final audit report on the National Library Service for the Blind and Physically Handicapped (NLS) cassette playback machine inventory operations. Recommendations in the report apply to both NLS and Integrated Support Services (ISS). Recommendations IA, IC, and ID pertain to NLS, and IB, II, and III pertain to ISS.

NLS and ISS responses are briefly summarized in the Executive Summary beginning on page *i*, and in more detail after individual recommendations appearing on pages 7, 10, and 11. NLS's complete response is included as Appendix A and ISS's response as Appendix B.

We request that NLS and ISS provide an action plan addressing implementation of the recommendations, including implementation dates, within 90 calendar days in accordance with LCR 1519-1, Section 4.B. We also request that NLS complete the requirements analysis recommended in finding I prior to awarding the next manufacturing contract scheduled for early FY 2003. As follow-up to this report, the Office of the Inspector General would like to review the analysis before the new contract is negotiated, and review updates of the analysis before subsequent annual options are exercised.

We appreciate the cooperation and courtesies extended by NLS and ISS staff during the audit.

cc: Deputy Librarian of Congress
Associate Librarian for Library Services
Director, National Library Service for the Blind and Physically Handicapped
Director, Integrated Support Services
Acting Head of Contracts
Director, Financial Services Directorate

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
INTRODUCTION.....	1
OBJECTIVES, SCOPE, AND METHODOLOGY	3
FINDINGS AND RECOMMENDATIONS	4
I. Requirements Analyses Should Be Used to Determine Annual Playback Machine Purchase Quantities	4
Recommendations	7
NLS and ISS Responses and OIG Comments	7
II. Savings May Be Obtained by Renegotiating the MSCW Lease	10
Recommendation	10
ISS Response and OIG Comments	11
III. Savings Could Be Realized by Reducing the Warranty Period for Cassette Machines	11
Recommendation	11
NLS and ISS Responses and OIG Comments	12
APPENDIXES: A – Formal Response to the Draft Report – NLS	13
B – Formal Response to the Draft Report – ISS	33

EXECUTIVE SUMMARY

The National Library Service for the Blind and Physically Handicapped (NLS) operates a national library program of braille and recorded materials for blind and physically handicapped persons. The Library's Integrated Support Services (ISS) infrastructure component provides contracting services in support of the program. NLS efficiently operates a well structured decentralized warehouse and distribution network for its approximately 700,000 cassette playback machine inventory. However, economies could be realized through improved inventory management.

The primary equipment used today is the C-1 cassette playback machine. The supply and demand of these machines has changed in recent years. In the early to mid 1990s, there were shortages and patrons had to be placed on waiting lists for available machines. Currently, there are surpluses and the number of patrons is declining, resulting in increasing machine inventories on library shelves. Since 1998, the inventory of machines available to patrons and repairable machines have increased 75 percent and 55 percent respectively. Combined, the 147,000 available and repairable cassette machines represent 27 percent of the 538,000 machines currently assigned to patrons. According to NLS, in 1998 it needed about a 10 percent reserve of available cassette machines. Currently, the reserve is approaching 14% and growing. Over the same period, the demand for machines has decreased. Due to these trends, NLS may not need to buy as many new machines as planned.

We also determined that structured requirements analyses are not used to determine cassette playback machine purchase quantities. Instead, NLS bases its annual purchase quantity on the amount of available funding. In recent years, NLS has been purchasing about 50,000 machines annually. More accurate determinations of inventory needs, and reduced purchases of new machines, could be realized if requirements analyses were performed and used to establish annual purchase quantities. An annual structured requirements analysis should consider relevant social trends and cost factors that affect supply and demand, and existing inventories of new, repaired, and repairable machines. This analysis should be completed prior to the next five-year manufacturing contract award scheduled for early FY 2003. Additional reductions in new machine purchases may be available by expanding the underutilized and less expensive commercial repair effort. The cost to repair a machine is 30 percent of the cost of a new machine.

Further economies may be realized by renegotiating the Multistate Center West warehouse lease contract and reducing the warranty period for new cassette machines. Our review showed that comparable warehouses are more competitively priced and that based on actual warranty claims, savings of up to \$300,000 may be achieved by reducing the warranty period from one year to six months.

NLS and ISS agree with all of our recommendations, however, NLS believes we were led to inappropriate conclusions based on incomplete information. We disagree. Based on evidence

supporting the May 16, 2002 NLS response to our draft audit report and subsequent exchanges of information, we reaffirm our conclusions and recommendations, but have qualified some information in the report.

Even though NLS agrees with our recommendations and states that current inventory “may be a bit high,” it also states “We do not expect that we can have a gradual reduction in the production of C-1s.” NLS also agrees to increase repairs of C-1 machines, but only after it has reached an unspecified inventory level. We suggest the Library review the NLS requirements analyses recommended in this report when considering base funding requests for playback machines during future budget cycles.

Office of the Inspector General comments on specific NLS and ISS responses begin on pages 7, 11, and 12.

INTRODUCTION

The National Library Service for the Blind and Physically Handicapped (NLS) administers a free national library program for persons who are unable to read standard printed materials due to physical and/or visual impairments. Specially designed playback machines, books and magazines in braille, recorded discs, and recorded cassettes are delivered to eligible patrons by postage-free mail and returned to network libraries and agencies in the same manner.

There are two Multistate Centers (MSCs) that operate under contract to NLS to directly support network operations via the receipt, storage, and distribution of equipment and accessories directly to network agencies and repair locations. The Utah State Library operates the Multistate Center West (MSCW), located in Salt Lake City, Utah. The Clovernook Home and School for the Blind operates a similar center in Ohio for the eastern U.S. MSCs also loan braille, recorded books, and back issue recorded magazines from backup and special collections directly to patrons and distribute various supplies and publications directly to regional libraries.

The MSCW is located in a state-owned facility that includes offices that are used for other purposes. NLS is currently in the second option year of a cost-plus-fixed-fee contract and is billed only for the occupied warehouse space.

In addition to determining production quantities, NLS develops and maintains specifications for the equipment. With assistance from NLS, Integrated Support Services (ISS) solicits and evaluates bids and proposals for the production of the equipment and awards contracts. The primary inventory management responsibilities for audio playback equipment consist of allocation of equipment, maintaining accountability and control of the national inventory while in the custody of other parties, and controlling the disposal of equipment.

In 1997, the Library awarded a five-year contract to Telex Communications, Inc. for the annual purchase of approximately 50,000 C-1 cassette machines. Although other older technology machines are utilized, the C-1 machine represents the dominant playback machine in use today. The FY 2002 contract cost for each machine is about \$254. This amount reflects an average increase of approximately five percent per year. The Library's annual purchase of cassette machines is determined by the amount of funding received through appropriations. ISS recently received Telex's June 10, 2002 five-year proposal to replace the current contract. The proposal included prices for machine quantities ranging from 20,000 to 60,000 units. As of June 2002, NLS had an inventory of 708,000 cassette machines: 83,000 working and available; 87,000 repairable machines; and 538,000 assigned to patrons. The estimated life-duty-cycle of a C-1 machine is estimated to be 16 years, so machines purchased in FY 2002 can be expected to be useful until FY 2018.

NLS determines the needs for equipment repair and related supplies on a national basis and contracts with firms for the provision of these goods and services. It is the responsibility of a network of 60 Machine Lending Agencies (MLAs) participating in the program (including the

two MSCs), to obtain the services of volunteer organizations to repair damaged, non-warranty machines. Procedures for network agencies and repairers regarding equipment control and repair standards are developed by NLS. Volunteer repairers directly support network operations by receiving damaged equipment, repairing it, and returning it to the MLAs. MLAs control and distribute the playback machines and accessories in specified service areas. NLS supplements the volunteer repair effort with the Cintrex Audio Visual commercial contract. This five-year contract includes the annual repair of approximately 3,000 C-1 machines.

Under contract to NLS, Data Management operates a centralized national equipment inventory control system that involves receiving, inputting, and processing data provided by the MLAs and MSCs. This system produces management reports for NLS, and activity reports for network agencies to assist in controlling the national inventory. The reports include information on the number of machines that are available, damaged, and repairable. Available means new and repaired/reconditioned machines that have not been assigned to a patron.

NLS is in the early transition stages of moving from the current analog cassette machine to a digitally-based audio technology. It has made three assumptions in planning for this next-generation technology: it will be digitally based; it will use a standard or slightly modified version of a widely used consumer product or technology to gain the cost efficiencies of mass production; and the new technology will be implemented in FY 2008.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our audit objectives were to evaluate the economy and efficiency of (1) inventory management; (2) contract awards for MSCW operations; and (3) a centralized storage strategy for the playback machines. We focused our attention on the MSCW because it houses the vast majority of the playback machine inventory. The scope of our review included:

- Analyzing trends in playback machine usage, supply, and repair levels;
- Evaluating the Telex production and Cintrex repair contracts for possible savings opportunities in both the playback machine warranty period and adjustments to the purchase levels;
- Determining the repair capacity of Cintrex;
- Analyzing the State of Utah warehouse charges for reasonableness;
- Observing MSCW operations;
- Evaluating the storage trends of MSCW and MLAs, and the capacity of the MSCW to store more playback machines; and
- Evaluating the national equipment inventory control system contract.

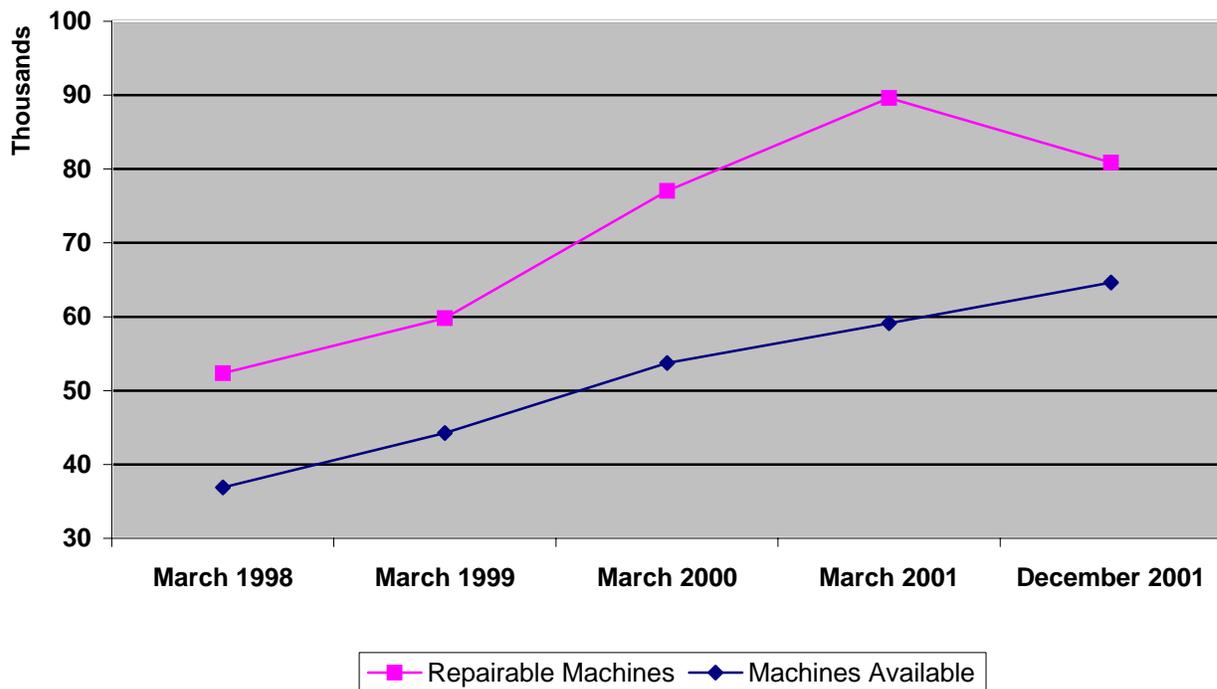
Interviews were conducted with NLS key personnel; contracting officers; contracting officer technical representatives; the Utah State Debt Manager; a real estate agent, developer, and appraiser in Utah; and representatives of NLS contractors. We conducted our fieldwork in Salt Lake City, Utah and Washington, D.C. from May 2001 to March 2002. The fieldwork was interrupted due to workload demands of our office. On January 25, 2002 and April 23, 2002, we conducted exit conferences with NLS and ISS, respectively. We also held an August 8, 2002 meeting with NLS to further discuss the issues contained in this report. We conducted our audit in accordance with generally accepted government auditing standards.

FINDINGS AND RECOMMENDATIONS

I. Requirements Analyses Should Be Used to Determine Annual Playback Machine Purchase Quantities

NLS does not conduct structured requirements analyses to determine annual purchase levels for playback machines. As a result, it is difficult to maintain adequate control over the size of the playback machine inventory. There has been a significant increase in the number of available and repairable C-1 machines on MLA shelves. Table 1 shows that from March 1998 to December 2001, the inventory of available C-1 machines increased 75 percent, from 36,906 to 64,634. During this same time, the inventory of repairable machines increased 55 percent, from 52,341 to 80,891. The increase of repairable machines is due to a decline in the number of volunteers who perform the majority of repairs. According to NLS, this trend will continue. At the same time, there has been no increase in commercial repair service.

Table 1 Unassigned C-1 Cassette Machine Inventory

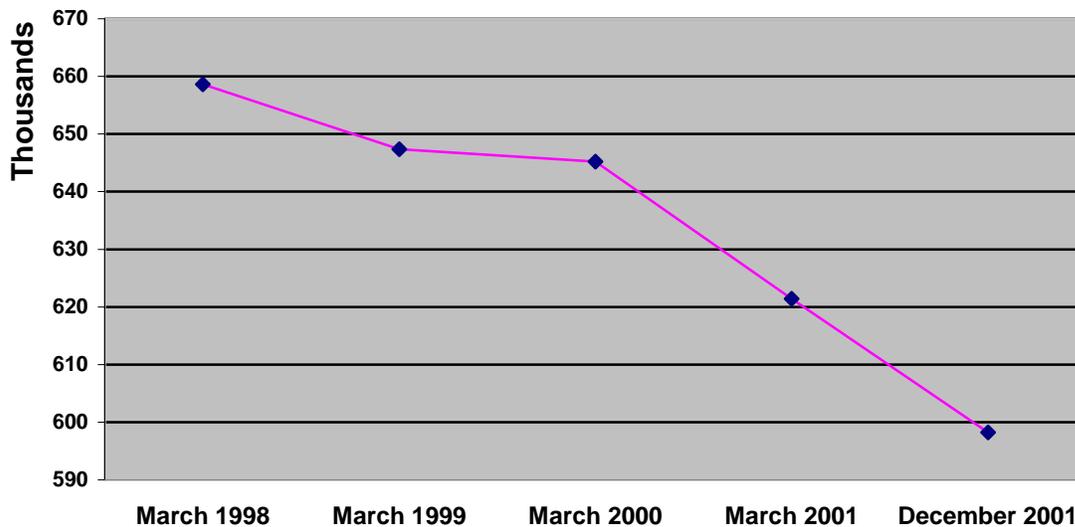


NLS could achieve significant savings by reducing the annual purchase of new C-1 cassette machines and simultaneously expanding the less expensive commercial repair effort. The current option year of the contract has each C-1 machine priced at about \$254, notwithstanding

yen to dollar fluctuations.¹ The current contract cost to repair each C-1 machine is about \$78: \$40 for parts and \$38 for labor. The cost difference between buying a new machine and repairing a machine is \$176 (\$254-\$78). According to NLS, with the proper reconditioning, the cassette machines could last indefinitely. A reduction of 25,000 to 50,000 machines over five years may be possible with potential savings of \$4.4 to \$8.8 million.² According to Cintrex, it could repair an unlimited number of C-1 machines if provided one to two months advance notice to increase capacity. Other contractors may also be capable of repairing C-1 machines. Most of the C-1 machines are stored at the MLAs around the country, however, an estimated 18,000 repairable machines are stored in the Salt Lake City warehouse. The large quantity in Salt Lake City would facilitate the logistical efforts to initiate the expansion of the commercial repair effort.

In the early to mid 1990s, there was a shortage of C-1 machines and patrons had to be placed on a waiting list for an available machine. As shown in Table 2, the environment has significantly changed in recent years. From March 1998 to December 2001, the total number of assigned machines has declined by nine percent (658,616 to 598,253³) and there is no evidence that this trend will change.

Table 2 Total Machines Assigned To Patrons



¹ A Japanese subcontractor produces internal components for Telex Communications, Inc.

² In the recently received proposal from the playback machine manufacturer, the per unit machine cost has increased which could result in significantly larger savings.

³ Total assigned machines include approximately 543,000 cassette players (C-1 and other types) and 55,000 talking books (phonographs).

The increase in available and repairable machines combined with the reduction in the total machines assigned to patrons should justify a reduction in the annual purchase of new machines. Even if machine usage remained constant at current levels, projected annual purchases of 50,000 machines would produce increasingly excessive machine inventory levels.

Another factor influencing the supply of machines is the new NLS practice of disposing of older machines. On October 5, 2001, it initiated the disposal of older C-1 machines in an effort to better utilize repair resources that were being consumed by numerous repairs of older machines. An estimated 10,000 C-1 machines were sent to disposal including both working and repairable machines. We were unable to determine how many of each status machine were included in this number.

NLS had an informal group of staff review its machine backlog and make recommendations to better use repair parts. However, the group did not maintain written criteria or documentation to support disposal decisions. The NLS inventory procedures manual states that equipment should not be disposed of as long as it is working. Despite the disposal of older working machines, the inventory of C-1 machines remains high.

There are also recent developments in available technology for the blind that may have reduced the demand for cassette machines. These developments include commercial online services that allow individuals to download books into braille, and telecommunication initiatives that provide audio versions of daily newspapers.

NLS has initiated two major national outreach campaigns aimed at increasing the enrollment of patrons. Sixteen libraries have participated in six-month campaigns that began in the first quarter of FY 2002. Other cities are scheduled to take part in the campaigns through FY 2004. Although NLS anticipates additional growth of 18,000 to 20,000 patrons as a result of the campaigns, based on recent statistics for these cities, we do not believe there will be a significant change in long-term demand for NLS playback machines.

GAO's *Leading Practices in Capital Decision-Making* (GAO/AIMD-99-32), December 1998, recommends conducting a comprehensive needs assessment of program requirements as an important first step in an organization's capital decision-making process. Many leading organizations conduct these assessments to identify and document needed resources. A comprehensive needs/requirements assessment considers an organization's overall mission and identifies immediate and future resources. Assessments usually cover a five or six-year period and are updated frequently as part of the organization's budget cycle.

Recommendations

- A. NLS should perform a structured requirements analysis of C-1 machine supply and demand prior to awarding the next contract in early FY 2003, and successive annual analyses, as input for determining new machine purchase quantities. The annual analyses should cover five years and incorporate social trends and cost factors including:
- The total number of patrons;
 - Alternative sources of material available to patrons via new technologies;
 - The impact of the national outreach campaign in generating new patrons;
 - The cost of new versus repaired machines;
 - Unit cost versus quantity of new machine purchases;
 - The impact of the C-1 machine phase-out strategy on digital machine implementation;
 - The estimated useful life of new and existing machines; and
 - The number of available and repairable machines.
- B. ISS should request machine prices at various quantities as input to the requirements analysis and purchase decision process.
- C. NLS should increase the C-1 machine repair contract to accommodate reductions in new C-1 machine purchases.
- D. NLS should develop specific criteria to support future disposal decisions. Additionally, all future disposals should document the basis for eliminating used machines.

NLS and ISS Responses and OIG Comments

NLS responded that it agrees, in general, with all recommendations and that it has plans to pursue most of the issues we raised, but will do so in the context of the transition from analog to digital technology scheduled for FY 2008. The response also states that the OIG reached inappropriate conclusions based on incomplete and inaccurate data. It disputed many of the calculations in the report and intends to increase the commercial repair contract when it reaches an undisclosed inventory level.

NLS states that it makes purchase decisions based on the factors we recommended, that the reported nine percent decline in demand for machines is only one percent when analyzing only cassette machines, and that computer technology (alternative sources for NLS patrons) will have little or no impact on demand for its services. It also disputed the 75 percent increase in the

quantity of available C-1 machines and believes the increase is only 21 percent when all cassette machines are considered, including prior generation machines.

We reaffirm all of our conclusions and recommendations. NLS states that the factors we recommended for structured requirements analysis are already used in decision-making and submitted a May 2002 publication entitled "Digital Talking Books, Progress to Date" as evidence. The publication documents planning considerations for the digital machines, however, there is no reference to inventory management of cassette playback machines and no specific criteria that could be used for a purchase decision model. NLS also refers to a Life Cycle Cost Model that predicts overall costs and the Digital Audio Development (DAD) project that reviews C-1 production and commercial repair timing. Although the Life Cycle Cost Model and the DAD may include some information that can be used to prepare the requirements analysis, they do not identify the quantity of machines needed.

NLS points out that the decline in demand is just one percent when only cassette machines are analyzed and that the cassette machine decline (excluding phonographs) is a more accurate reflection of demand. According to NLS, patrons who have phonographs also have cassette machines so they can use current magazine titles that are no longer produced for phonographs. NLS believes phonographs and cassette machines should not be considered together because they are not interchangeable and so reduced demand for phonographs does not result in an equal increase in demand for cassette machines as a result of patrons trading phonograph machines for cassette machines.

We understand the logic of this scenario, however, NLS could not provide evidence to show the extent of patrons using both machines. Without this information, the impact of fewer phonographs on the demand for cassette machines cannot be determined. We do know, however, that phonographs become an increasingly smaller factor in demand for cassette machines as the number of these older technology machines continues to decrease. Currently, there are 46,000 phonographs assigned to patrons, down from 107,000 four years ago.

NLS' statement that computer technology will have little or no impact on demand for its services is debatable. Although we could find no statistical evidence, the availability of these alternative sources to NLS services could continue to reduce the demand for C-1 machines and digital talking books. Consequently, the impact of technological advances in services for the blind must also be considered as usage data becomes available.

NLS states that the reported 75 percent increase in available C-1 machines is only 21 percent when all cassette machines are grouped, including prior generation machines. However, the inclusion of older machines (in some cases 20 years old) distorts the analysis. There were nearly 11,000 of these older machines available at the beginning of the analysis period, but less than 300 remained at the end of the period. They were declared obsolete and many MLAs are no

longer assigning these machines to patrons. Therefore, we believe the 75 percent increase in C-1 machines is a better representation of the total supply of useable and available machines.

Another analysis to demonstrate the large reserve of C-1 machines is shown in the chart below. The available C-1s, as a percent of total assigned cassette machines, has approximately doubled (from 6.69 percent to 13.22 percent) since 1998.

Chart - Supply of Available C-1 Machines

	<u>Available C-1s</u>	<u>Total Assigned Cassette Machines</u>	<u>% of Available C-1 Machines</u>
Mar-98	36,906	551,573	6.69%
Mar-99	44,252	555,621	7.96%
Mar-00	53,756	560,958	9.58%
Mar-01	59,113	555,010	10.65%
June-02	71,130	538,142	13.22%

NLS initiated the disposal of approximately 10,000 surplus older C-1 machines in October 2001 and these machines are excluded from the June 2002 calculation. Consequently, not only is there a greater supply of C-1 machines, the average machine is newer compared to earlier periods.

Although NLS agrees with our recommendations, it states the C-1 machine repair contract will not be increased until it reaches an inventory level that is sufficient to meet the demands of the analog to digital transition. NLS also states, "We bought machines to the limit of available funding and will continue to do so until we have an acceptable level of maintainable CBMs... By 1998, we reached the 10% range (for available cassette machines) which is probably about right." According to NLS it is approaching 14% and growing and there is no commitment of when repair efforts will be accelerated.

We reported a 55 percent increase in the number of repairable C-1 machines from March 1998 to December 2001. NLS basically agrees with the increase, but states it is 48 percent if you consider all cassette machines. As of June 2002, there were 75,808 repairable C-1 machines. If these machines were all repaired, it would increase available C-1 machines to 146,938, or 27 percent of total assigned machines. It is not cost effective to have this large quantity of machines on a shelf while new, more expensive machines are purchased. NLS should immediately expand the C-1 machine commercial repair effort due to the savings that can be achieved by reducing the number of new machines purchased.

The demand for NLS machines appears to be declining at an accelerating rate. Utilizing an additional six months of data since our draft report, from January 2002 to June 2002, the total number of machines assigned to patrons dropped another two and one-half percent, for a cumulative decline of 11.5 percent from March 1998 to June 2002 (658,616 to 583,840).

Demand for all cassette machines has declined 4 percent since March 2000. The continuing decline in machine demand must be incorporated into NLS's requirements analysis and weigh heavily on purchase quantity decisions on the pending Telex C-1 machine contract.

ISS agrees with recommendation IB and released a solicitation on May 15, 2002 that requested pricing for various quantities of cassette machines.

II. Savings May Be Obtained by Renegotiating the MSCW Lease

There is no evidence that the contracting officer performed a cost analysis or conducted any negotiations on the lease expenses prior to awarding the contract for the MSCW. We reviewed the market rate for comparable properties in Salt Lake City and determined there are similar warehouses that charge less than the Library is paying.

The Library could save money by negotiating better terms for the leased square footage warehouse space. The State of Utah charges \$5.52 per square foot and another \$1.75 per square foot for operations and maintenance. The total amount billed is \$7.27 for 34,420 square feet or \$250,233 annually. The quotes we obtained for comparable warehouses in the Salt Lake City area ranged from \$6.19 to \$6.91 per square foot, which would result in savings of \$12,400 to \$37,200 per year. Savings over the five-year cost-plus-fixed-fee contract could range from \$62,000 to over \$185,000.

Comparing the commercial square footage rates to the Library's payment does not take into account that the commercial quotes include all expenses and profit in the square footage charge. The State of Utah's square footage charges should be less than the commercial quotes because it does not pay state taxes or insurance, and does not include profit, which is included as a separate item in the contract.

OMB Circular A-87 states, "rental costs are allowable to the extent that the rates are reasonable in light of such factors as rental costs of comparable property, if any; market conditions in the area; alternatives available; and, the type, life expectancy, condition, and value of the property leased." The circular adds that consideration should be given to market prices for comparable goods or services when determining reasonableness.

Recommendation

ISS should obtain three lease cost estimates for alternative warehouse space and negotiate with the State of Utah an agreement to reduce the warehouse lease charges.

ISS Response and OIG Comments

ISS concurs with our recommendation and will contact GSA to request comparable square footage costs prior to exercising the next contract option year.

NLS questions whether the OIG used comparable warehouse space suitable for library materials, including climate control requirements. Our quotes were for comparable warehouses. NLS also believes that the contracting officer conducted a cost analysis because of a September 18, 1997 memorandum from the contracting officer to the Library's Contracts Review Board. The memorandum states that the contracting officer had a telephone conversation with the GSA Real Estate Division. GSA provided a general range of square footage prices that were rounded to the nearest dollar. However, the contracting officer's official contract file contained no record of specific prices or evidence of market research.

III. Savings Could Be Realized by Reducing the Warranty Period for Cassette Machines

NLS could achieve savings of up to \$300,000 over five years by negotiating a six-month warranty on all future C-1 playback machine contracts. The current Telex production contract contains a one-year warranty period. According to NLS, the majority of problems with new machines occur in the first three months of usage. Consequently, most of the defective machines would be identified prior to the expiration of a six-month warranty period. The Library has not taken advantage of current machine repair trends and attempted to change the contract warranty terms.

FY 2002 is the final option year of the five-year Telex contract. The machines are delivered throughout the year in lot shipments. The warranty period begins after the final lot is delivered regardless of the actual delivery date. As a result of this warranty period agreement, a six-month warranty period would actually be longer for all machines that are delivered prior to the final shipment.

The Federal Acquisition Regulations state that the Government shall use sound business judgment in dealing with contractors. In prior years, NLS purchased three-year warranties on C-1 playback machine purchases, then converted to one-year warranties in more recent years to obtain savings in the per unit machine prices. Based on actual experience with the C-1 machines, further reducing the warranty period would provide additional savings.

Recommendation

ISS, with NLS assistance, should negotiate the next Telex contract for a six-month warranty.

NLS and ISS Responses and OIG Comments

ISS concurs with our recommendation. NLS does not believe savings of up to \$300,000 are obtainable. However, the June 10, 2002 Telex proposal was priced with both six-month and one year warranty prices. The proposed savings between the 6-month and one year warranty periods, using 50,000 machine purchases, exceeds \$300,000.

Major Contributors to This Report:

Anita Scala – Assistant Inspector General
Stuart Axenfeld – Senior Auditor

UNITED STATES GOVERNMENT

Memorandum

LIBRARY OF CONGRESS

DATE: May 16, 2002

TO : Mr. Karl W. Schornagel
Inspector General

FROM : Frank Kurt Cylke
Director, NLS/BPH

SUBJECT : **Response to Draft Audit Report No. 2001-PA-101**

Draft Audit Report No. 2001-PA-101, April 11, 2002, has been received. NLS staff were surprised to see results concentrated on our acquisition policy for machines in an audit of the Multistate Center West (MSCW), a contractor to NLS whose sole relationship to the machines in question is warehousing. As stated in your report, "...the audit objectives were to evaluate the economy and efficiency of (1) MSCW inventory management; (2) contract awards for MSCW operations; and (3) a centralized storage strategy for playback machines." Had we known that the scope of the audit included the decision making for machine acquisition, would have made available the appropriate staff and provided more complete information on the subject. As a result, we believe that you were led to inappropriate conclusions based on the lack of complete information.

We do agree with all recommendations, in general and in so far as they apply to NLS. NLS has had plans to pursue most of what you recommend, but plans to do so in the context of the transition from analog to digital talking books. Transition issues are complex, particularly the issue of maintaining appropriate levels of analog inventories while building digital inventories, both for machines and books. We have a variety of task groups addressing the issues you raise. The groups include NLS staff, network librarians, and representatives of consumer organizations and state librarians.

As to the inappropriate conclusions reached and the incomplete and inaccurate data used to reach them. I have attached a point-by-point analysis of your audit report prepared by NLS staff. In particular, we disagree with the following conclusions:

1. *NLS does not conduct structured requirements analyses to determine purchase levels for playback machines:* All the factors you referenced in your memo of April 22, 2002, describing structured requirements analysis are included in our decision making regarding machine purchase. Factors are thoroughly analyzed and discussed at NLS in the context of digital planning at NLS. I have attached the NLS publication "Digital Talking Books: Progress to Date." It provides the context of our analyses. Please note the twenty steps, particularly steps 3, 8,

APPENDIX A
(Page 2 of 20)

Response to Draft Audit Report...

- 2 -

May 16, 2002

10,11, 16-20. Also see pages 20-22 and 32-33. Aside from the digital planning, NLS managers are aware of the variety of pressures on the machine inventory and raise all issues as they are seen. One very small recent example is the attached memorandum of April 26, 2002, regarding "Growing Cassette Magazine Subscriptions." These issues are in the forefront of all planning at NLS and are included in all decisions regarding machine purchasing.

2. *The inventory of cassette book machines is excessive.* This conclusion is based on your calculation of a 9% drop in cassette book machines assigned to readers over the past five years. Actually the number of cassette machines assigned has remained statistically constant, with a 1% drop over that period. The total number of machines assigned has dropped by 9% because readers have returned about half the talking book (disc) machines and one third of the combination machines as a result of our converting magazine production from disc to tape. More importantly, the analysis does not reference, nor the conclusion reflect, the need to maintain a sufficient inventory of analog machines for an extended period after digital machine production starts and analog machine production is terminated.
3. *A repaired machine can substitute for a new purchase at 1/3 the cost.* New machines can be expected to run for a number of years without requiring repair. The older the machine gets, the more often it needs repair. After a point, it is cost beneficial to replace the machine rather than to continue to repair it. In looking at cost, we must take into consideration the tangible costs of network libraries in retrieving broken machines, sending replacement and shipping the broken machine to and from the repair facility. We must also take into account the intangible costs of patron dissatisfaction with machines that more frequently go into disrepair. We have determined the duty cycle of a CBM to be 16 years, after which it is removed from service.
4. *NLS/BPH could achieve a savings of up to \$300,000 over five years by renegotiating a six-month warranty on all future C-1 playback machine contracts.* As we stated in our February 6, 2002, memo to your office, CS obtained from the contractor a quote of \$.33 per machine as a reduction to a six-month warranty. We estimate a savings of \$16,500 per year, or \$82,500 for five years. We do not believe it is reasonable to expect that savings from a one year to six month reduction would be the same as from a three year to one year reduction.
5. *The Library could save money by negotiating better terms for leased square footage warehouse space.* The Library does not lease warehouse space for the MSCW. We contract for a library support operation that includes a warehouse operation, among other services, and warehouse space for that operation. The contract is obtained under competitive procurement, following all FAR

Response to Draft Audit Report...

- 3 -

May 16, 2002

guidelines. In addition, the warehouse space is specified as being for library materials requiring a vapor barrier, specific temperature controls and the like. Such library space is normally charged at a higher rate than regular warehouse space. It should also be noted in the context of your report, confined as it is to audio machine operations, that: 22% of the storage space at the MSCW is for machine storage; 65% is for collection material (books, magazines and catalogs in braille, cassette, disc and large print formats); 10% is for bulk storage supply; and 3% is dedicated to offices providing storage of audio masters, tape duplication, interlibrary loan and logistical support to network libraries. (see Attachment 7)

We agree with your recommendations as follows:

I. Requirements Analyses Should Be Used to Justify Annual Playback Machine Purchases

A. *NLS/BPH should perform a structured requirements analysis of C-1 machine supply and demand prior to awarding the next contract, and successive annual analyses, as input for determining new machine purchase quantities. The annual analyses should cover five years and incorporate social trends and cost factors including:*

- *The total number of patrons;*
- *Alternative sources of material available to patrons via new technologies;*
- *The impact of the national outreach campaign in generating new patrons;*
- *The cost of new versus repaired machines;*
- *Unit cost versus quantity of new machine purchases;*
- *The impact of the C-1 machine phase-out strategy on digital machine implementation;*
- *The estimated useful life of new and existing machines; and*
- *The number of machines in available and repair statuses.*

These factors and more will be included in our analyses.

B. *CS should request machine prices at various quantities as input to the requirements analysis and purchase decision process. Those figures are essential to our transition planning and we have already requested Contracts Services to include the request in the solicitation.*

C. *NLS/BPH should increase the C-1 machine repair contract to accommodate reductions in new C-1 purchases. We plan to do so after we have reached an inventory level that our structured analysis tell us is sufficient to meet demands of our analog to digital transition.*

D. *NLS/BPH should develop specific criteria to support future disposal decisions. Additionally, all future disposals should document the basis for eliminating used machines. We shall.*

Response to Draft Audit Report...

- 4 -

May 16, 2002

II. Savings May Be Obtained by Renegotiating the MSCW Lease

This recommendation is for Contracting Section response.

III. Savings Could Be Realized by Reducing the Warranty Period of Cassette Machines

CS, with NLS/BPH assistance, should negotiate the next Telex contract for a six-month warranty. NLS will analyze the cost savings and potential drawbacks and act accordingly.

Based on the objectives stated for this audit and the limitation of findings and recommendations to machine purchasing and the lease cost of the building, we assume that economy and efficiency of: MSCW inventory management; contract awards for MSCW operations, with the exception of the building lease; and the centralized storage strategy for playback machines, all meet with your approval. Thank you for your confidence in our MSCW activity.

Attachments: 1) Analysis
2) Schornagel to Cylke 4/22/02
3) Cylke to Schornagel 4/17/02
4) Schornagel to Cylke and Washington 4/11/02
5) Bryant to Cylke 4/26/02
6) **Digital Talking Books: Progress to Date (May 2002)**
7) MSCW Contract S-LC00043

cc w/attachments: Deputy Librarian of Congress
Associate Librarian for Library Services
Director, Financial Services Directorate
Director, Integrated Support Services
Chief, Materials Development Division
Chief, Network Division
Automation Officer
Research and Development Officer
Equipment Control Officer
Head, Engineering Section
Head, Network Services Section

Attachment 1

Analysis: Draft Audit Report No. 2001-PA-101

While NLS ordinarily replies only to recommendations in an audit report, the executive summary and background of the subject report contain inaccurate and/or misleading statements to which we must respond. We address, by point, each of the areas where we find clarification needed.

Executive Summary:

"Since 1998, the inventory of machines available to patrons and machines in repair status have increased 75 percent and 55 percent respectively."

While those increases are true for the C-1 machine, they ignore the relationship of the C-1 to all the cassette book machines (CBMs) in the inventory. We consider machines available to cassette readers to be C-76 through C-1, plus C-2 and E-1. A-76 through A-1 and CT-1 are considered talking book machines for disc readers. For the period stated, available C-1 machines increased from 36,906 to 64,634, an increase of 75%, but overall available CBMs increased from 57,098 to 69,092, an increase of only 21%. For repairs, the C-1 increase is 55% while the CBM increase is 48%.

"Over the same period, the number of patrons using machines has decreased nine percent."

From the table shown in the report, it appears that you took the figures 658,616 and 598,253 to obtain the 9% reduction. Those are the totals for the number of assigned machines, including TBMs. The TBMs have decreased about 50% in that period because we stopped producing the flexible discs they were used for and thus the demand is greatly reduced. The numbers for CBMs are 545,162 and 538,851, a decrease of only 1%.

"Even if machine usage remained constant at current levels, projected annual purchases of 50,000 machines would produce increasingly excessive machine inventory levels."

This assertion is based on the flawed numbers above. A 1% change over 5 years is statistically constant. It implies that the increase in available machines, which is 21% and not 75%, is excessive. Experience tells us it is not! The important figure is the percentage of assigned machines for which there are machines available. The 2001 percentage is 13%. In 1994, when we could not serve new patrons and had waiting lines because of the lack of available machines, the figure was 7%. At that time, we stopped all outreach and took extraordinary steps to use older obsolete machines. By 1998, we were up to 10% and more comfortable. The increase to the current 13% may be slightly excessive in a static CBM context, but we have reasons to need a cushion, as will be explained further on.

APPENDIX A
(Page 6 of 20)

"We also determined that structured requirements analyses for cassette playback purchases are not prepared."

We have reviewed the definition of a structured requirements analysis from your April 22, 2002, memorandum and that is precisely the kind of analysis we carry out in determining the NLS program direction, including cassette purchases. In particular, I would point to the March 1995 detailed study of the audio playback machine, storage, distribution and repair system that was conducted for NLS by Mantech Technical Services Corporation and Wesley Kind Associates. The objective of the review was to document current operations, identify problems, and recommend several possible solutions that would mitigate or totally eliminate identified problems. The assessment has been updated annually via management plan process and Machine Committee monthly meetings as part of the NLS budget cycle. We also have the Life Cycle Cost Model developed in 2000 by Northrup Grumman Technical Services Corporation. It models the NLS program to predict overall costs based on predictions of demand, environmental factors and detailed costs. The Digital Long Term Planning Group is in the process of analyzing the possible effects of the expanding availability of commercial audio books on the NLS program. While we do not have separate analyses directed only at CBM purchases, requirements analyses are very much a part of overall planning at NLS and cover all aspects of our decision making, particularly for CBM purchases.

"NLS/BPH bases the annual purchase on the amount of available funding."

That is absolutely true, and absolutely false! NLS bases annual purchase of CBMs on available funding because, in the funding climate we have had for at least 20 years, our real need for CBMs has exceeded the funds available. The available funding is a limitation, not a goal. In 1993, machine supplies were critically low and NLS began seeing waiting lists for patrons wanting to begin using the talking book program. It was an accepted fact that increased funding to bring the machine inventory up to acceptable levels was not an option. Instead, we stopped all outreach campaigns to keep demand down, initiated the volunteer repair project to increase the repair rate and backed off the planned release of machines that were beyond the end of their duty cycle. We bought machines to the limit of available funding and will continue to do so until we have an acceptable level of maintainable CBMs.

"Cost to repair a machine is 30% of the cost of a new machine"

While this is true, it is not complete. New machines, barring manufacturing flaws covered under warranty, can be expected to run for a number of years without requiring repair. The older the machine gets, the more often it needs repair. There comes a point where it is cost beneficial to replace the machine rather than to continue to repair it. In looking at cost, NLS must take into consideration the tangible costs of network libraries in retrieving broken machines, sending replacements and shipping the broken machine to and from the repair facility. NLS must also take into account the intangible costs of patron frustration with machines that

more frequently go into disrepair. NLS has determined the duty cycle of a CBM to be 16 years. When a class of machines has reached the end of its duty cycle, it is declared obsolete and the process of removing it from the inventory is initiated.

Background:

"...Multistate Centers (MSCs)...directly support network operations via the receipt, storage, and distribution of equipment and accessories.....MSCs also loan braille, recorded books, and back issue recorded magazines...."

While true on its surface, the statement overemphasizes the machine side of the MSC warehousing with the book and supply side relegated to a secondary function. In fact, both the warehousing and the operations at the MSC are more heavily oriented to books and magazines. 22% of the storage space at the MSCW is for machine storage. 65% is for collection material: books, magazines and catalogs in braille, cassette, disc and large print formats. 10% is for bulk storage supply and 3% is dedicated to offices providing storage of audio masters, tape duplication, interlibrary loan and logistical support to network libraries.

"With Assistance from ISS's Contracts Services (CS), it [NLS/BPH] solicits.....NLS/BPH awarded a five-year contract.....NLS/BPH contracts with firms"

Be absolutely clear: NLS/BPH does not solicit, award or contract any contracts! CS carries out all those functions on behalf of NLS/BPH in accordance with LC policy and the law.

"The Library's annual purchase of cassette machines is determined by the amount of funding received through appropriations."

See response to the same statement on page 2 above.

"As of December 2001, NLS/BPH had an inventory of 713,000 cassette machines: 76,000 working and available; 94,000 in repair status; and 543,000 assigned to patrons."

Inaccurate. The figures given are for all playback machines, talking book machines used to read flexible discs, as well as the cassette book machines. The CBM figures for the same period are 701,000 total, 69,000 available, 93,000 in repair and 539,000 assigned. (See also the first responses under Executive Summary.)

Objectives, Scope and Methodology:

"The audit objectives were to evaluate the economy and efficiency of (1) MSCW inventory management; (2) contract awards for MSCW operations; and (3) a centralized storage strategy for playback machines. We focused our attention on the MSCW because it houses the vast

majority of the playback machine inventory. The scope of our review included:

- *Observing MSCW operations;*
- *Analyzing trends in playback machine usage, supply and repair levels;*
- *evaluating the Telex production and Cintrex repair contracts for possible savings opportunities in both the playback machine warranty period and adjustments to the purchase levels;*
- *Analyzing the State of Utah warehouse charges for reasonableness;*
- *Determining the repair capacity of Cintrex;*
- *Evaluating the storage trends of MSCW and MLAs and the capacity of the MSCW to store more playback machines; and*
- *Evaluating the national inventory control system contract."*

We fail to see the relevance of scope items 2, 3 and 5 to the stated objectives. We do not see any results in your findings related to number 6 and would be interested to receive them. We would interpret the national inventory control system in number 7 to be referring to BPHICS, for which we have already received your excellent report 2001-IT-301. Are you referring to that and reporting separately, or do you mean the MSCW contract?

As we said at the start of our response, we did not understand that the scope of your inquiry strayed so far from the stated objectives.

"Interviews were conducted with...."

Your scope includes an evaluation of storage trends in MLAs and your findings reference trends at MLAs, yet you do not include them in your list of interviewees. Was this an oversight?

Findings and Recommendations:

I. Requirements Analyses Should Be Used to Justify Annual Playback Machine Purchases

"NLS/BPH does not conduct requirements analyses to determine purchase levels for playback machines."

NLS/BPH does conduct such analyses. See under Executive Summary above.

"It is very difficult to maintain adequate control over the size of the playback machine inventory."

We do not understand what is meant here. We believe we have maintained as strong a control as possible in the overall operational environment.

APPENDIX A
(Page 9 of 20)

"There has been a significant increase in the number of available C-1 Machines ...table 1.....36,906 to 64,634."

Looking at C-1 machines, the increase is rather dramatic; however, the picture changes when one looks at all CBMs. Figure 1 expands your table 1 data to include all CBMs and also includes your table 2 data, but excluding the TBMs. The available C-1s rise faster than all CBMs because the other CBMs are being withdrawn from inventory for obsolescence or product recall (the C-2). From March 1998 to March 2002 the C-1s move from 65% to 94% of the available CBMs.

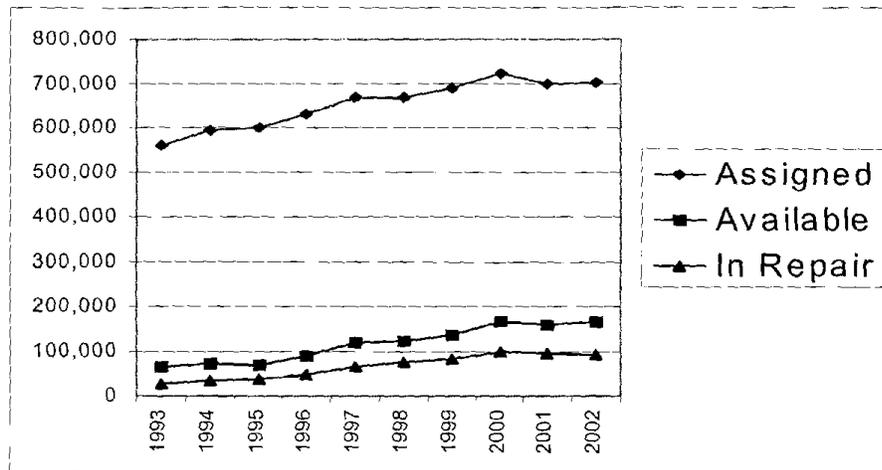


Figure 1

As can be seen, the number of available CBMs rises proportionally with the number of assigned machines, as it should. It rises somewhat faster, proportionally, because in 1993-1995 we were experiencing severe shortages, indicating the number of available machines per active cassette book reader (about 7%) was too low. By 1998, we reached the 10% range which is probably about right. By 2002, we are in the 13% range, which may be a bit high, but the factors of an ageing inventory, upcoming outreach campaigns and pending termination of C-1 production drive us to continue at the present rate of production.

"During this same time, the inventory of machines in repair status increased 55%, from 52,341 to 80,891. The increase in machines in repair status is primarily due to a decline in the number of volunteers who perform the majority of repairs."

APPENDIX A
(Page 10 of 20)

Figure 2 shows the number of C-1s in repair as compared to the total number of repairs each year. As can be seen, with the exception of 1994, repairs remained more or less constant from 1993 to 1999 and began to increase in 2000. The rise in machines in repair is not due to fewer repairs but to the decision to hold off on removing older machines from the inventory. As the inventory ages, the rate of failure increases. A constant repair rate and an increasing failure rate cause the increase of machines in repair. Note that in February and October of 2001, the oldest lots of C-1 machines were declared obsolete, contributing to the decline in machines in repair. The figures on this chart are the December counts for the stated year.

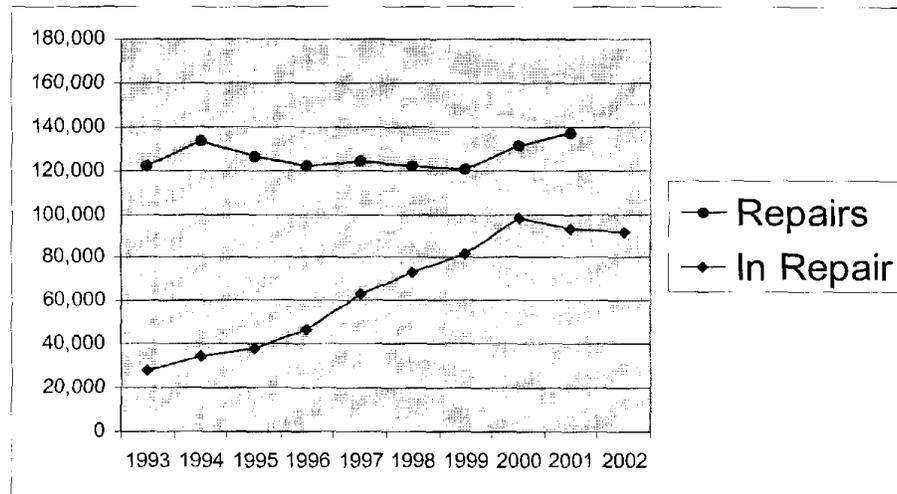


Figure 2

"NLS/BPH could achieve significant savings by reducing the annual purchase of new C-1 cassette machines and simultaneously expanding the less expensive commercial repair effort.... Savings of \$176 (\$254-78) could be achieved for each machine that is repaired and removed from the manufacturing contract.... A reduction of 25,000 to 50,000 machines over the next 5 years may be possible at a savings of \$4.4 to \$8.8 million."

This is an idea NLS has been considering for several years. We are in the middle of a large planning effort for the change of format from analog cassette to digital. That effort is consuming most planning resources. One major part of the plan is the transition of the machine inventory from CBM to digital talking book machines (DTBMs). There is much we do not yet know about the digital talking book and its equipment, but this much we do know. We know we will not be able to replace the inventory of CBMs with DTBMs in one year. Assuming a DTBM

APPENDIX A
(Page 11 of 20)

price in the \$150 range, 700,000 machines will be over \$100 million. Even if we get a reasonable startup funding, it will be a number of years before we have sufficient DTBMs to meet the demand. And once we do have enough DTBMs to meet demand, there will be a strong demand for CBMs for 10 to 15 years. We have over 48,200 titles on cassette. Our catalog includes access to more than 169,800 additional cassette titles. Copies available to users total approximately 15,000,000. Only a small percentage of those will be converted to the digital format. The demand for reading those titles will remain and the patrons will need CBMs to read them. Also, we are considering keeping magazines on cassette for some time for cost reasons. We know this from having conducted such a transition, from talking books on disc to cassette books.

Another thing we know is that we will soon stop producing C-1s. Even before we start full-scale distribution of DTBMs, we will devote all production resources to them. We do not expect that we can have a gradual reduction in the production of C-1s. Perhaps we can reduce annual production to 45,000, 40,000 or even 30,000 per year and stay in the same general price range, but at some point, a production line becomes uneconomical to keep running. Once we reach that point, C-1 production will stop. As you propose, the next C-1 solicitation is being written to request prices at various levels of production so that we can get the necessary information for our transition planning.

We must have an adequate supply of C-1s to carry us through while there is still demand for them. We have yet to determine the number of machines required in inventory when we stop producing C-1s in order to carry NLS through to the end of the transition. We know we will increase our commercial repair capacity to keep a sufficient working supply of CBMs. We also know that, as the CBMs age, they will break more often, eventually becoming uneconomical to repair. For that reason, we wish to go into the transition with as new an inventory as possible. The loss rate is unlikely to change and we will have no source to replace lost and damaged-beyond-repair machines. So we do know that we will be relying more and more on CBM repair, and that will need to be contract repair. All these issues are factored into our transition planning. So while your recommendation had merit, it should not be undertaken in isolation but will be part of larger transition planning.

"According to NLS/BPH, with proper reconditioning, the cassette machine could last indefinitely."

It is probable that a staff member of NLS made such a statement, but it could only have been in the context of the warehousing issue. We have staff who are very proud of our robust machines. And we can probably find examples of some very early machines that are still running, but like a '57 Chevy, it is a rare occurrence and not feasible in a large volume production operation. Too many parts of older machines wear out and parts become obsolete. Even C-1 machines have had internal parts changes over the years. We cannot expect them to last forever. While we have not done definitive studies, the combined experience of NLS, the network, and

APPENDIX A
(Page 12 of 20)

the volunteer agencies has determined a life-duty-cycle for CBMs to be 16 years.

"According to Cintrex, it could repair an unlimited number of machines if provided one to two months advance notice to increase capacity."

Cintrex management may believe this to be true, you are projecting an increase of capacity to ten times what they are doing today. Our many years of experience with contractors has proven that they cannot dramatically increase their output in a short period of time while maintaining quality levels and meeting delivery schedules. There are simply too many aspects of a production environment that do not change smoothly when the scale of the manufacturing line increases significantly. We certainly hope that they will be able to increase capacity to meet future demands.

"From March 1998 to December, 2001, the total number of patrons with an assigned machine has declined by nine percent (658,616 to 598,253) and there is no evidence this trend will change."

True for all machines, but the decrease for CBMs is 545,162 to 538,851, only 1%. The remainder of the decrease is in TBMs, the phonographs used for discs that are no longer produced. (see paragraph 2 under executive summary.)

"The increase in machines available ... would produce increasingly excessive machine inventory levels."

As shown above, the numbers used to obtain this conclusion are not appropriate for the argument.

"Another factor influencing the supply of machines is the new NLS practice of disposing of older machines. ... An estimated 10,000 C-1 machines were sent to disposal including both working and repair status machines."

It has been a long-standing practice of NLS to dispose of older machines. Going back to 1986, we find over a dozen Machine and Accessories Reports to the network declaring models of machines obsolete and specifying the process to remove them from the inventory. We also have similar reports in the 1992-1995 time periods declaring obsolete machines no longer obsolete and then returning them to the obsolete status. That was the period of machine shortages where we had to make use of every machine we could.

The new aspect of declaring machines obsolete came with the October 5, 2001, report. All prior reports simply stated that working machines were not to be disposed of. In that last report, it was stated that available machines in the obsolete status might be disposed of. Ideally, available machine are working and ready for assignment. In this case, NLS had delayed

APPENDIX A
(Page 13 of 20)

declaring any C-1s obsolete for longer than it should have. Older machines were recognized as unreliable by the network and thus held back from circulation while newer machines were available. Thus, many had been on the shelf for so long they would have needed retesting, a significant effort with the likely effect of having most of them discarded. It was decided that the most prudent course was to have them all discarded.

"NLS/BPH has a Machine Serial Number Review Committee that reviews the machine backlog and makes recommendations to better use repair parts. However, the Committee does not maintain written criteria or documentation to support disposal decisions."

Something was lost in the translation here. We do use serial numbers to do various ageing analyses of our inventory of machines, and we have had ad-hoc groups of individuals address parts problems with ageing machines, but we have no committee of that name or with the implied charge. We do use the availability of spare parts as one criterion in the decision to declare a machine obsolete. All of it is in the mix of our decision making, but not in the way stated above.

"...., the inventory of C-1 machines remains high."

From all we have said above, we disagree.

"There are also recent developments in available technology for the blind that may have reduced the demand for cassette machines. ... NLS/BPH estimates that there were 32,000 web-braille readers in FY 2001."

As shown above, there is no appreciable reduction in the demand for CBMs. The availability of braille is irrelevant. While most braille readers are also audio readers, only a small proportion of audio readers are braille readers. We have had many discussions of our patrons and their demographics and have concluded that, in the near future at least, computer technology will have little or no impact on demand for our services. Most of our patron base is over 65, has gone blind late in life, and has more than enough to cope with just learning to operate a CBM. Our Digital Long Term Planning Group is assessing the long term prospects for the use of new technologies by our patrons and their impact on the demands for our program, but any effects are considered to be well beyond the time that the C-1 will go out of production. And for the record, there were under 2,000 Web-Braille users in FY 2001. The total number of users only exceeded 2,000 in May of 2002.

"NLS/BPH has initiated two major national outreach campaigns aimed at increasing the enrollment of patrons. ... the number of machines assigned to patrons has remained constant in the participating cities."

It is too early in the process to feel the effects of an outreach campaign. In the past,

outreach campaigns eventually generated substantial increase in patron enrollment. In the early 1990's, we had to stop the outreach campaign in southern California because the response was so great that we could not meet the demand for machines. Since your very early finding, the participating libraries have registered a growth of 3,111 more patrons in the first six months of the campaign. Based on past experience with outreach, we anticipate a growth of 18,000 to 20,000 patrons by the end of the three year campaign.

"Recommendations"

- A. Agree
- B. Agree
- C. Agree, in the context of providing a sufficient inventory for the analog to digital transition.
- D. Agree

II. Savings May Be Obtained by Renegotiating the MSCW Lease

We leave this section for CS response; however, we have comments on a few points.

"There is no evidence that the contracting officer performed a cost analysis or conducted any negotiations on the lease prior to awarding the contract for the MSCW."

The September 18, 1997, recommendation for award, which we provided to you in our January 25 meeting, documents just such a cost analysis. Our April 17, 2002, memorandum referencing that recommendation for award is attached.

"The total amount billed is \$7.27 for 34,420 square feet or \$250,233 annually. The quotes we obtained for comparable warehouse space warehouses in the Salt Lake City area ranged from \$6.19 to \$6.91 per square foot..."

The Library does not lease warehouse space for the MSCW. The Library contracts for a library support operation that includes a warehouse operation, among other services, and warehouse space for that operation. The contract is obtained under competitive procurement, following all FAR guidelines. In addition, the warehouse space is specified as being for library materials requiring a vapor barrier, specific temperature controls and the like. Such library space is normally charged at a higher rate than regular warehouse space. The square foot price in the MSCW contract also includes security, heating, air conditioning, water, sewage and up-to-date wiring for electricity and communications. Were these included in the quotes you received? It should also be noted that, in the context of your report, confined as it is to audio machine operations, that 22% of the storage space at the MSCW is for machine storage. 65% is for collection material: books, magazines, and catalogs in braille, cassette, disc, and large print formats. 10% is for bulk storage supply and 3% is dedicated to offices providing storage of

audio masters, tape duplication, interlibrary loan, and logistical support to network libraries.

III. Savings Could Be Realized by Reducing the Warranty Period of Cassette Machines

"NLS/BPH could achieve a savings of up to \$300,000 over five years by renegotiating a six-month warranty on all future C-1 playback machine contracts."

As we stated in our February 6, 2002, memo to your office, CS obtained from the contractor a quote of \$.33 per machine as a reduction to a six-month warranty. We estimate a savings of \$16,500 per year, or \$82,500 for five years. We do not believe that it is reasonable to expect that the savings from a one year to six month reduction would be the same as from a three year to one year reduction. We will know the facts when the pending solicitation for C-1 machines is finalized.

NLS/BPH Analysis Summary

As we implied at the start of this response, NLS could have provided more complete and to-the-point information to the auditors. Had we known that the scope of the audit included decision-making for machine acquisition, we would have made available the appropriate staff and provided more complete information on the subject. As a result, we believe that you were led to inappropriate conclusions based on the lack of complete information. On the other hand, your recommendations are appropriate courses of action and are part of NLS plans.

One of the areas on which we disagree is the conclusion that NLS can substitute repaired machines for the purchase of new machines. While it is correct that a machine can be repaired for one third the cost of a new machine, it is not an equal tradeoff. Machines tend to run very well for a long time. Once they go into repair, it is probable that they will return for repair sooner than would a new machine, not from any flaw in the repair but from overall ageing. And at each repair, the time to the next repair gets shorter. When the time to the next two repairs is shorter than the time to repair for a new machine, it is cost beneficial to buy a new machine. The issue of when a machine is no longer worth repairing is far more complex than that, but that is the essence of the issue.

NLS has estimated the life-duty-cycle of a C-1 to be sixteen years. At some time after a class of machines has reached the end of its life-duty-cycle, or for other reasons that make it not cost-beneficial to continue repairing the machines, NLS declares the machine obsolete. A quick scan of old Machine and Accessories reports shows the time line of machines being declared obsolete: C-74s and C-76s in 1986, C-77s and A-77s in 1991, C-78s and A-78s in 1992, etc. Once we got past the C-80s, we paused because, the next class, the C-1s, were still coming off the production line, even though some were nearly 20 years old. But by the end of 2000, it was clear that the oldest C-1s were no longer viable. Libraries recognized their shortfalls and some would not distribute them unless they had nothing newer and needed a machine. Some repair

APPENDIX A
(Page 16 of 20)

organizations put them at the bottom of the priority list and never got to repairing them. Over the years, internal parts of the C-1 had changed and we were having problems keeping repair agencies supplied with appropriate C-1 parts. Finally, in 2001, we declared early C-1s obsolete, those with serial number below 80,000 in February and those below 265,000 in October. For perspective, that is just about the time the one millionth C-1 rolled off the production line.

In order to give you a more complete picture of the NLS machine inventory, we have attached three charts. They are based on the December MMR reports for each year from 1993 through 2001, with the addition of the March data for 2002. Each chart shows the total inventory by type of machine, with a hand drawn line indicating what we believe to be the appropriate trend for audio book machine acquisition planning. Our analysis is:

Available Machines:

Available machines are machines in working order that are ready to be sent to patrons. For questions relating to C-1 acquisition, we should only consider non-obsolete cassette book machines. For that reason, we place our inventory trend line about mid-point in the C80-C76 class in 1993 and reduce it to the bottom of that class by 1999. From 1999 on, we follow the top of the E-1 class, though we indicate that the C-1s are really going obsolete by the lowered dotted line. Note, also, that the early 1990s were times of machine shortage and waiting lists.

Assigned Machines:

An assigned machine is one that is in use by a patron. Since it is NLS policy that a patron have only one cassette book machine, we can assume with reasonable accuracy that the number of assigned cassette book machines is the same as the number of patrons needing a cassette book machine. Talking book machines are not really relevant because they are for discs. CT-1 users may also have a CBM and they are in insignificant numbers after 1993, so we exclude them from our "count" of CBM users. We do, however, include all obsolete machines as they are active CBM readers.

Machines in Repair:

This is a little more complicated. NLS uses the same criteria in early years as for available machines. We want to exclude obsolete machines from our trends, as it is not cost beneficial to repair them. Understand that not all libraries remove machines from their inventories as soon as they are declared obsolete. They will sometimes leave them on their shelves in repair status until they arrange a housecleaning (or are about to be audited). So we start at the halfway point on C80-C76 in 1993 and move to the bottom by 1999. The complication comes in 2001. From 1995 through 2000, C-2 machines in repair actually needed repair. In 2001, we recalled all C-2s due to a fire hazard. We cannot remove them from the inventory until the legal case with the manufacturer is settled. Our MMR system has no

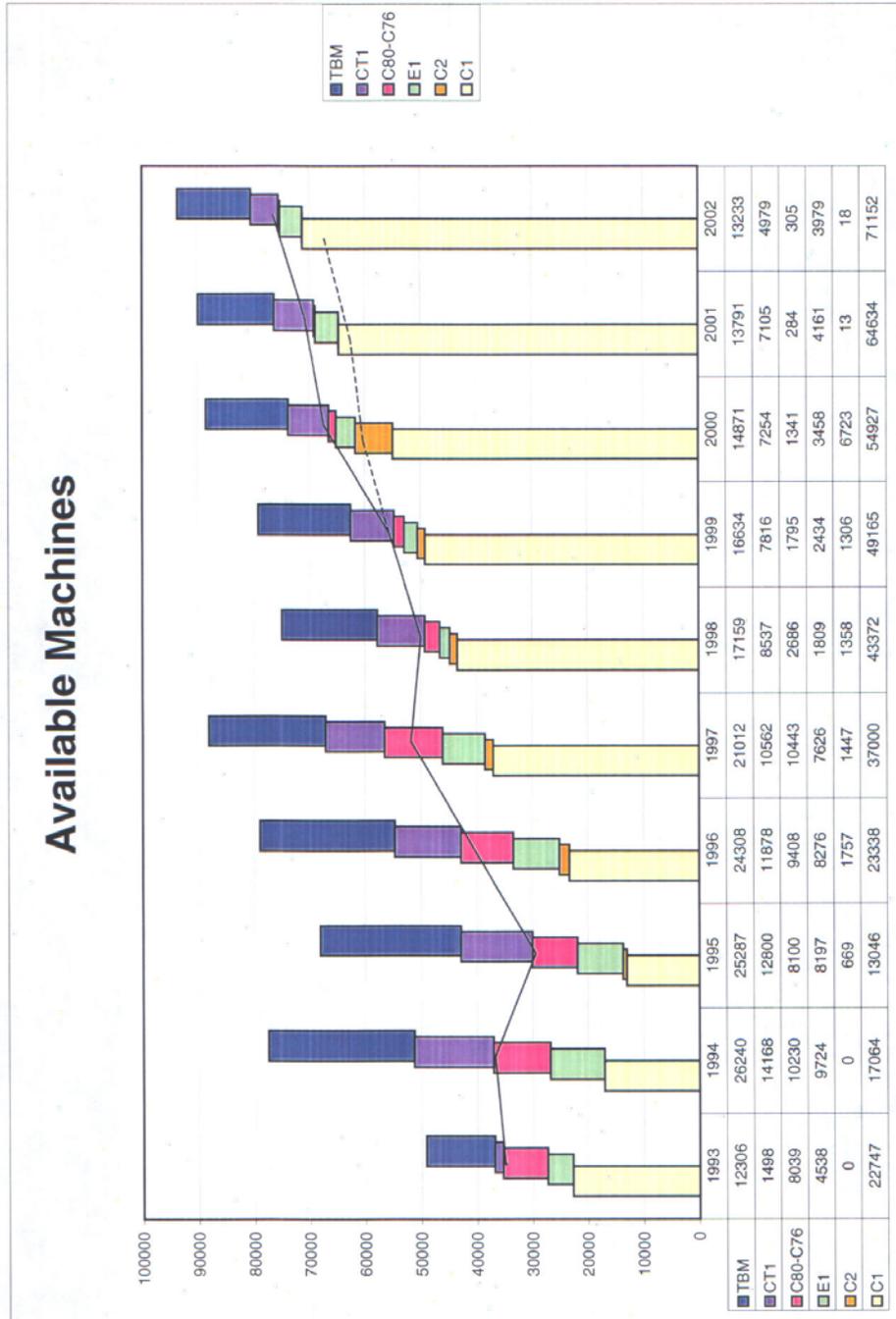
APPENDIX A
(Page 17 of 20)

provision for a class other than available, assigned or in repair. For our use, we have chosen to keep them in repair. But they are not really a part of the inventory being repaired. They are only in a holding pattern. So we exclude them from our repair trend line. We have not included the lowered dotted line for obsolete C-1's, but we have it in mind.

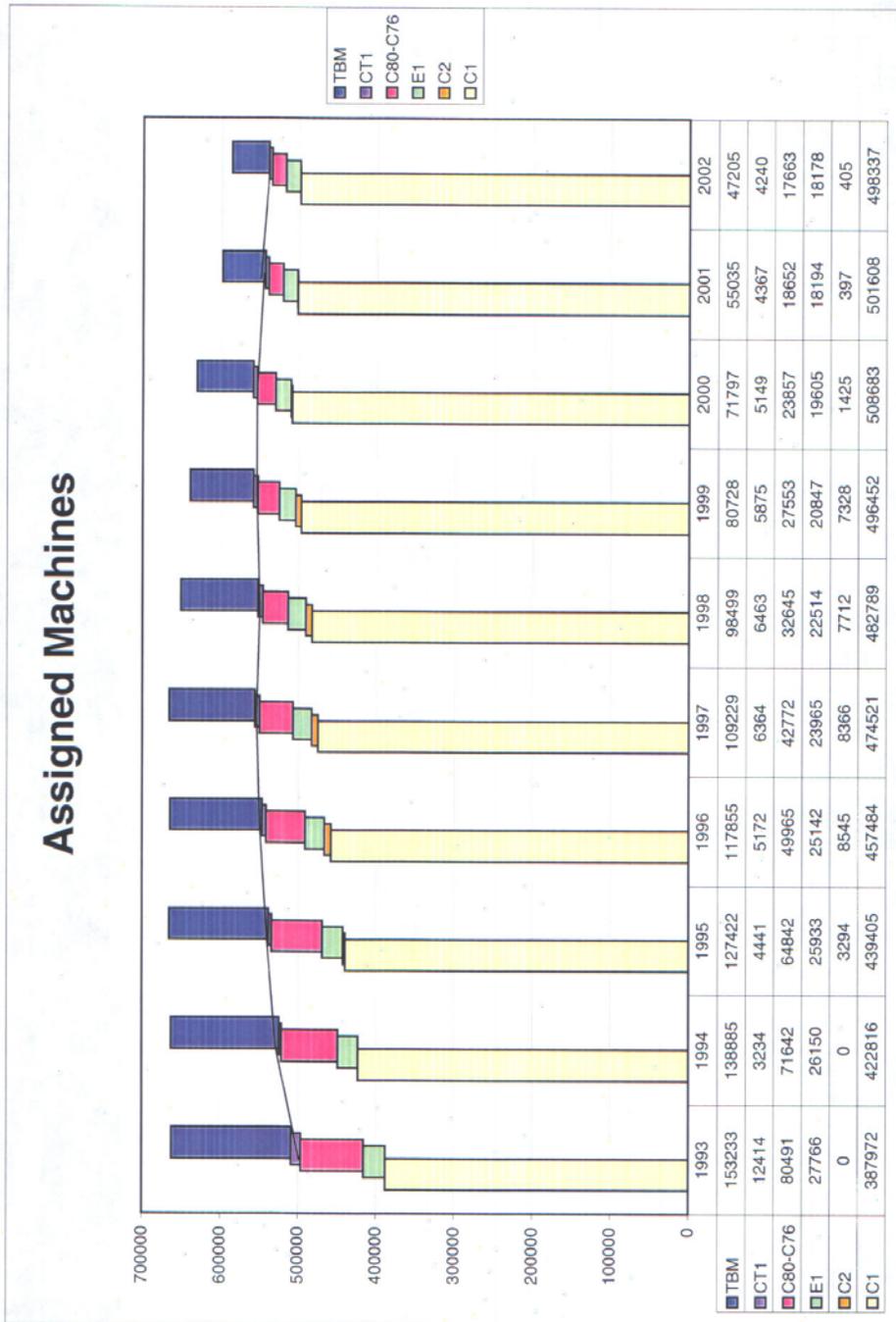
The one other issue that is a major factor in our planning but hardly touched in your analysis is the need for a strong inventory of CBMs going into the transition from CBM to DTBM. We know that the transition will take years, slowly ramping up the number of users with DTBMs and slowly ramping down the number of users with CBMs. The reduction in CBMs will not be parallel (or inverse in time) to the increase in DTBMs. We have nearly 50,000 NLS cassette books in our catalog. We do not expect to convert them all to DTBs. In addition, we are still unsure when it will be economical to convert magazines to the DTB format. It is virtually certain that we will have to keep magazines in the cassette format for a number of years after we begin the transition to digital. That tells us that most users, for a number of years, will need a CBM, even if they have a DTBM. We will need to have an inventory of CBMs sufficient to support those users over time. Note that CBMs came in as early as 1974 and we are only now getting to a minimal level of TBMs in the inventory.

The other key issue is that we will one day stop producing CBMs altogether, sooner rather than later. For one, we have limited resources. We cannot afford to be producing the numbers of DTBMs we need each year and also continue production of C-1s at levels necessary to maintain the inventory. Two, we do not expect that we can gradually reduce production of the C-1. At some point, it becomes uneconomical for the contractor to produce machines, at least at anywhere near the current price. It is debatable whether that level is 50,000 or 40,000 or 25,000, but such a level certainly exists. We know there will come a time when we must stop production of C-1s and we know that, for quite a while after that, we will have to support a large number of CBM users. In order to do so, we must have sufficient numbers of C-1s in our inventory and they cannot be too old. We also know that, once we start drawing back on C-1 production, we will have to depend a lot more on repair. And we are quite sure that will be commercial repair. The only issue in all the questions is when. When does NLS start slowing down C-1 production and when does NLS start increasing commercial repair? Those, among many other issues, are on the table in the Digital Audio Development (DAD) project. The DAD requirements, as well as the general user environment, are what drive our acquisition decisions.

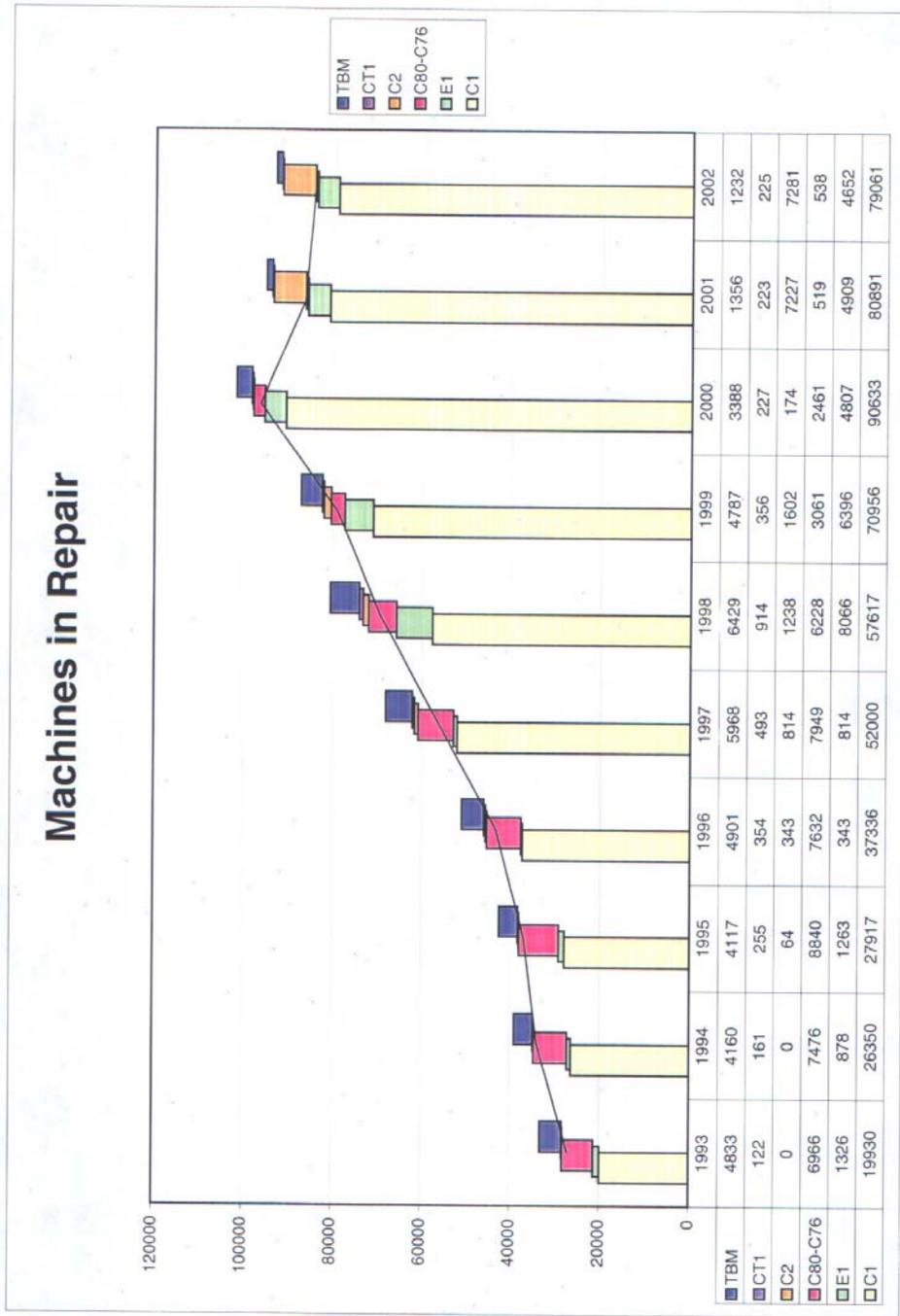
APPENDIX A
(Page 18 of 20)



APPENDIX A
(Page 19 of 20)



APPENDIX A
(Page 20 of 20)



APPENDIX B

UNITED STATES GOVERNMENT

Memorandum

LIBRARY OF CONGRESS

DATE: July 3, 2002

TO: Karl W. Schornagel
Inspector General

VIA: Linda J. Washington *LJW*
Director, Integrated Support Services (9400)

FROM: Kaye Klinker *KK*
Acting, Head of Contracts (9411)

SUBJECT: Reply to Draft Audit Report No. 2001-PA-101 *Economies Available in Managing Cassette Playback Machine Inventory*

I. Requirements Analyses Should be Used to Justify Annual Playback Machine Purchases

Audit Recommendation:

CS should request machine prices at various quantities as input to the requirements analysis and purchase decision process.

Contracts Response:

Solicitation S-LC02036 was issued 5/16/02 and requested pricing for audio cassette machines in quantities of 20,000; 30,000; 40,000; 50,000 and 60,000.

II. Savings May be Obtained by Renegotiating the MSCW Lease

Audit Recommendation:

CS should obtain three lease cost estimates for alternative warehouse space and negotiate with the State of Utah an agreement to reduce the warehouse lease charges.

Contracts Response:

Before exercising the next Contract option year, 10/1/02, the contracting officer will contact the Real Estate Division, GSA Public Buildings Service, Rocky Mountain Region in Denver, which serves the Salt Lake City area and request comparable square foot costs for warehouse space comparable to the Library's specific needs, i.e., vapor barrier, temperature controls, etc.

III. Savings Could be Realized by Reducing the Warranty Period for Cassette Machines

Audit Recommendation:

CS, with NLS/BPH assistance, should negotiate the next Telex contract for a six-month warranty.

Contracts Response:

Solicitation S-LC02036 was issued requesting pricing for 6 month, 1 year, 2 year and 3 year warranties