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REPORT BY THE U.S.

General Accounting Office

Transit Equipment Warranties Should Be Enforced

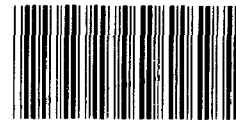
State and local transit authorities have not taken full advantage of contract warranties. Equipment manufacturers are not reimbursing the transit authorities for defects in material or workmanship because

- warranties expire before all the equipment is placed in operation and
- warranty enforcement, recordkeeping procedures, and provisions are inadequate.

The report includes GAO recommendations for warranty clauses in equipment contracts to be enforced as necessary.



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PSAD-80-12
DECEMBER 7, 1979





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

PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

B-141529

The Honorable Neil E. Goldschmidt
The Secretary of Transportation 29

Dear Mr. Secretary:

This report discusses the need for more effective management of transit equipment warranties by both the Urban Mass Transportation Administration and the grantees receiving Federal funds. This report is made as part of our ongoing evaluation of major acquisitions of executive agencies. 230

This report contains recommendations to you on pages 16 and 17. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Director, Office of Management and Budget, and the Administrator, Urban Mass Transportation Administration.

Sincerely yours,

A handwritten signature in cursive script that reads "J. H. Stolarow".

J. H. Stolarow
Director



GENERAL ACCOUNTING OFFICE
REPORT TO THE SECRETARY
OF TRANSPORTATION

TRANSIT EQUIPMENT WARRANTIES
SHOULD BE ENFORCED

D I G E S T

The Urban Mass Transportation Administration (UMTA) has either distributed or approved for distribution more than \$10.3 billion in capital assistance to State and local authorities through fiscal year 1978. This includes grants of 80 percent of the total cost for new system equipment, property acquisition, and construction and modernization of transit facilities. Many of the authorities also receive operating assistance grants which provide up to 50 percent of their operating loss in providing the transit service.

Contracts for the purchase of transit vehicles normally include warranties which guarantee that certain defects in material or workmanship will be corrected by the contractor for a stipulated time or mileage period. Also, transit authorities can generally make necessary repairs in-house and be reimbursed by the contractor under so-called billback agreements for the costs of labor and materials use. The nine projects included in GAO's review are estimated to cost \$882 million. Federal funding for these projects will be \$655 million. GAO estimates that on the basis that warranties cost about 2 percent of the contract price, about \$17.6 million was paid for warranties on these projects. (See pp. 2, 5, and 16.)

Some transit authorities have not effectively administered or taken full advantage of warranty clauses in various equipment contracts. Full reimbursement for warranty work has not been obtained from equipment manufacturers because

- warranties expire before all the equipment is placed in operation,
- better warranty enforcement and record-keeping procedures are needed, and

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PSAD-80-12

--contract warranty provisions are inadequate. (See pp. 6 to 12 and 16.)

Further, since State and local transit authorities are bearing costs for warranty work that should be paid by equipment manufacturers, these costs are considered in determining the loss from operations. Therefore, in addition to paying for warranty provisions under capital assistance grants, in many instances, the Federal Government is paying again for the inefficiency through operating assistance grants. (See p. 16.)

RECOMMENDATIONS

To minimize such losses in the future, GAO recommends that the Secretary of Transportation require the UMTA Administrator to:

- Prescribe the necessary procedures and criteria concerning warranties to be followed by grantees in the award of contracts.
- Issue warranty recordkeeping and enforcement guidelines which will provide greater assurance that warranty work is being reimbursed.
- Issue guidelines to aid grantees in recovering actual labor costs for in-house repair of warranted items. (See pp. 16 and 17.)

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ABBREVIATIONS

GAO	General Accounting Office
LRV	light rail vehicle
MBTA	Massachusetts Bay Transportation Authority
PAT	Port Authority of Allegheny County
SEPTA	Southeastern Pennsylvania Transportation Authority
UMTA	Urban Mass Transportation Administration

CHAPTER 1

INTRODUCTION

The passage of the Urban Mass Transportation Act of 1964 (Public Law 88-365) was largely due to congressional concern over urban congestion, energy conservation, environmental pollution, and the belief that mass transportation is one key to improving the quality of life in urbanized areas. This act authorized the Secretary of Transportation to provide Federal financial and technical assistance to State and local transit authorities to aid in developing transportation capabilities. In addition to establishing a program of Federal matching grants, the purpose of the act was to

- assist in the development of improved mass transportation facilities, equipment, techniques, and methods;
- encourage the planning and establishment of areawide urban mass transportation systems needed for economical and desirable urban development; and
- provide assistance to State and local governments in financing such systems to be operated by public or private mass transportation companies as determined by local needs.

In July 1968, the Urban Mass Transportation Administration (UMTA) was created as an operating administration within the Department of Transportation to provide consolidated management of all Federal mass transit programs. Specifically, UMTA was to provide grants for

- modernizing, improving, and maintaining existing urban transit systems;
- helping transit operators make up the losses sustained in day-to-day operation of transit systems;
- planning and technical studies;
- carrying out research, development, and demonstration projects for new bus and rail designs; and
- training management personnel.

UMTA carries out its responsibilities by awarding capital assistance and operating assistance grants for approved projects. The capital assistance grant program provides 80 percent of the total cost for new system equipment, property

acquisition, and construction and modernization of transit facilities, including special devices for the elderly and handicapped riders. Many of the same organizations receiving capital assistance grants also receive operating assistance grants, which provide up to 50 percent of their operating loss (operation and maintenance costs) incurred in providing the transit service.

During its first 10 years, UMTA has provided more than \$8 billion in capital assistance, has helped communities buy more than 32,000 buses and 4,500 railcars, and has added about 117 miles of new rail service, both to existing and new rail systems. More than \$6 billion of the total was distributed to well over 300 transit agencies during fiscal years 1975-77. Additional grants of \$2.3 billion to State and local transit authorities were approved by UMTA in fiscal year 1978.

Grantee contracts for the purchase of transit vehicles normally include warranties which guarantee that certain defects in material or workmanship will be corrected by the contractor for a specified period. The warranty period usually begins when the vehicle is placed into revenue service and continues in effect for a stipulated time or mileage period, for example, 12 months or 50,000 miles, whichever comes first. In addition, billback agreements may be established as part of the warranty. This agreement permits the transit authority to be paid by the contractor for any warranty repairs the transit authority makes when it is impractical to return vehicles to an authorized dealer or the manufacturer.

UMTA, in administering its capital facilities grants program, does not evaluate (1) the adequacy of the warranty provisions in contracts awarded by grantees for purchase of vehicles and related equipment or (2) how well grantees exercise their warranty rights.

PURPOSE AND SCOPE OF REVIEW

This review was made to assess the effectiveness of warranty administration by grantees purchasing vehicles and equipment with both UMTA and local funds. We reviewed the warranty enforcement system used by selected transit authorities to determine if warranties were effectively administered. Our review included five grantees operating nine projects costing \$882 million, of which \$655 million are Federal funds. (See app. I.)

CHAPTER 2

WARRANTIES EXPIRE BEFORE ALL

EQUIPMENT IS OPERATIONAL

The New Jersey Department of Transportation (New Jersey) requested UMTA funds for the major rehabilitation of the Erie Lackawanna and the New York and Long Branch Railroad railways. Both projects, currently estimated to cost over \$400 million, involved the purchase of 230 electric commuter railcars and the electrification of the lines the cars will operate on. Although the railcars have all been accepted and the design phase completed, work on the electrification project has not yet begun. As a result, the full benefit of the warranties will not be realized because only 45 of the railcars will be in full revenue service and 81 in limited use during the 5-year warranty period.

ERIE LACKAWANNA PROJECT

In February 1973, New Jersey requested UMTA funds for the purchase of 200 electric commuter railcars (subsequently amended to 180) and the reelectrification (rehabilitation, extension, and voltage conversion) of the existing electrified Erie Lackawanna railway. The estimated cost of the project was \$141 million, of which \$89 million was for 200 railcars and \$52 million was for reelectrification.

The contract specifications required delivery of the railcars to start in September 1977 and be completed by May 1978. New Jersey estimated the reelectrification work would be completed by November 1978, 6 months after the delivery of the last railcar. According to New Jersey officials, the November 1978 date was overly ambitious and was purposely selected to coincide closely with the delivery of the railcars.

The reelectrification project has had numerous delays. By October 1, 1979, the only contract advertised was for the electrification conversion of a 3-mile section of test track. Meanwhile, all 180 railcars have been accepted. Although the estimated cost of the project increased to \$315 million, funding constraints have caused UMTA to limit the project to \$265 million. The latest project budget, dated December 1978, was as follows:

	<u>Millions</u>
180 railcars	\$165
Reelectrification	<u>100</u>
Total	<u>\$265</u>

The reduction of \$50 million in project scope will affect such areas as structural, signal, and communication equipment; maintenance shops; yards; and passenger stations. New Jersey views the reduced budget as unacceptable for accomplishing the system reelectrification and, if the project is to be completed, additional Federal and local funds will be required.

New Jersey wants to close out its contractual relationship with the railcar contractor but, in order to do so, must accept delivery of cars being stored by the contractor. New Jersey, however, has not decided where to store or how to use those cars.

NEW YORK AND LONG BRANCH RAILROAD PROJECT

In December 1966, New Jersey requested \$30 million of UMTA funds. These funds were to be used for purchasing 38 railcars and extending a portion of the existing electrified New York and Long Branch Railroad.

	<u>Millions</u>
38 railcars	\$10
Rehabilitation and electrification	<u>20</u>
Total	<u>\$30</u>

The project was amended several times and currently includes purchasing 50 railcars, improving tracks and stations, and extending the existing electrified New York and Long Branch Railroad about 15 miles. This project also has had numerous delays. As of October 1, 1979, all 50 railcars had been accepted and the design phase completed, but significant construction had not yet begun. The project's first major construction contract will be awarded in the last quarter of calendar year 1979. The project's estimated cost has increased to \$143.6 million since the initial request for a grant in 1966. As in the case of the Erie Lackawanna project, UMTA reduced funding of this project by \$6.1 million to \$137.5 million.

	<u>Millions</u>
50 railcars	\$ 49.0
Electrification	<u>88.5</u>
Total	<u>\$137.5</u>

We were unable to identify which items were affected by the reduction in project scope.

DEPLOYMENT OF DELIVERED RAILCARS

About 126 of the 230 electric commuter railcars required for both projects are in revenue service, 59 are in storage by the contractor, and 45 are in storage in New Jersey's rail yards. In order to utilize as many railcars as possible, the 45 cars stored in New Jersey yards are being rotated with 81 of the cars in revenue service. About 45 cars are kept in constant use to evaluate performance reliability. Because of New Jersey's inability to fully utilize all of the cars, it may not realize all of the warranty benefits.

COST OF THE WARRANTIES

It is difficult to determine and contractors are reluctant to specify what portion of the contract cost represents the cost of warranty coverage. However, a February 1979 Defense Audit Service report conservatively estimated that contractors charge about 2 percent of the contract price for the warranty. This percentage was based on discussions with 35 contractors, including the one which manufactured the cars for New Jersey. Therefore, we conservatively estimate that New Jersey paid about \$4.1 million for the railcar warranties.

When the 5-year warranties on the 230 railcars expire on November 11, 1982, New Jersey will not have achieved the intended purpose of the warranties. Therefore, it may be unnecessarily bearing costs that should be borne by contractors or manufacturers because not all the vehicles are being fully utilized during the warranty period.

CHAPTER 3

BETTER WARRANTY ENFORCEMENT

AND RECORDKEEPING PROCEDURES ARE NEEDED

Transit authorities were not obtaining reimbursement for repairs which were covered under warranties. Inadequate records of equipment failures and weaknesses in warranty enforcement procedures by four of the grantees limited their ability to identify and submit claims for reimbursement of in-house warranty repairs. We estimate that this loss, which involves 1,400 transportation vehicles, will be more than \$90,000.

<u>Grantee</u>	<u>No. of vehicles/type</u>	<u>Estimated loss of warranty benefits</u>
Southeastern Pennsylvania Transportation Authority Philadelphia, Pa.	735 buses	\$18,340
Massachusetts Bay Transportation Authority, Boston, Mass.	175 light rail vehicles (LRVs)(subway cars)	40,967
Port Authority of Allegheny County, Pittsburgh, Pa.	190 buses	30,785
New Jersey Department of Transportation, Trenton, N.J.	300 commuter railcars	Unknown
Total	<u>1,400</u>	<u>\$90,092</u>

WARRANTY ENFORCEMENT COULD BE IMPROVED

Several transit authorities had written procedures for identifying warranty repairs and for claiming reimbursement from the railcar or bus contractors. Although the procedures appeared to be adequate, they were not always followed and there was some uncertainty and confusion as to which repairs qualify for reimbursement under the warranty agreements, for example, second-time part replacements and shipping charges for return of defective parts.

Southeastern Pennsylvania
Transportation Authority

The Southeastern Pennsylvania Transportation Authority (SEPTA) developed written warranty procedures applicable to the 735 buses purchased with UMTA funds that require bus maintenance facilities to properly identify, replace, and control defective parts or units. Although the procedures appeared to be adequate for effective warranty enforcement, they were not always followed. SEPTA officials attributed the \$18,340 loss in warranty benefits to a breakdown in such warranty control procedures as:

- The warranty material was not tagged due to lack of warranty knowledge.
- The warranty tag was improperly prepared or lost in transit without adequate followup action.
- The supervisor knowledgeable in warranties was not available at the time the warranty repair was performed.

SEPTA was uncertain whether warranty reimbursements could be obtained for (1) shipping costs to return defective parts to the contractor and (2) second-time part replacements.

Shipping charges

The contractor's warranty provided for reimbursing SEPTA for the shipping cost to return defective material under warranty. However, SEPTA never enforced this provision; therefore, claims for reimbursement of prepaid shipping expenses were not submitted. More than 20 shipments of defective material from 382 buses were returned to the contractor during the warranty period. Information is not available on defective material shipments concerning the other 353 buses. Although we notified SEPTA officials of this deficiency, we were informed that no attempt would be made to identify the respective shipping costs because of other priorities and the time-consuming effort required for this task.

Second-time part replacements

SEPTA sometimes replaces defective material with rebuilt parts or parts purchased from sources other than the contractor. Because of this, warranty responsibility was questioned on such parts if another failure occurred while the bus was still under warranty. SEPTA officials mistakenly thought warranty reimbursements would be authorized only for original

parts. Therefore, SEPTA only requested reimbursement for the labor costs but not the parts when they failed for the second time. Thus, legitimate claims were not being submitted. For example, the front heater core in one bus was replaced twice within the warranty period. When the item was first replaced, a warranty claim was filed for both parts and labor. No claims were filed when the item had to be replaced for the second time.

According to bus contractor officials, their policy is to replace all defective parts covered by the warranty even if the part had been previously replaced. Furthermore, with the exception of a few high value components, the contractor does not determine if a defective part was previously replaced on the same vehicle. Warranties continue on all subsequent part replacements for both parts and labor during the remainder of the warranty period, unless the replacement part is not considered to be identical or equivalent to the part removed. When advised of SEPTA's practice, the contractor officials believed that this misunderstanding occurred because of previous warranty rejections due to SEPTA's using inferior replacement parts. Contractor officials told us that SEPTA sometimes repaired transmissions using other than original or equivalent quality bearings. The replacement bearings failed prematurely and were not honored under the warranty.

Grantees may be receiving erroneous information about second-time part replacements from the contractors' representatives. Therefore, the contractor's policy on such replacements should be obtained in writing to avoid misunderstandings. In addition, contractors should be asked to define what constitutes equivalent quality components and to make assurances that such parts are readily available.

Massachusetts Bay
Transportation Authority

The Massachusetts Bay Transportation Authority (MBTA) utilizes an engineering consultant to administer contract warranty provisions. Repairmen are supposed to turn in failed parts, and a work order is to be prepared by a foreman. The consultant then determines whether the part or labor used in the repair can be claimed under the warranty provision. MBTA officials believe that warranty benefits of almost \$41,000 were lost because

--defective parts needed to support the claims were
not turned in with the work order,

- information needed to submit a claim was not provided on the work orders,
- repair costs recoverable under the warranty were unrecognized by the consultant, and
- repairs were incorrectly determined by the consultant not to be within the scope of the warranty.

New Jersey Department
of Transportation

AMTRAK maintains all New Jersey Department of Transportation-owned railcars. Repairs on railcars removed from service for more than 1 day are recorded on daily maintenance sheets, which are provided to department officials for monitoring purposes. Labor costs associated with warranty repairs made within the same day, called running repairs, are not submitted for contractor reimbursement. Labor costs are only claimed for warranty repairs performed on vehicles out of service for more than 1 day. The contractor representative believed that many contractor-provided benefits exceed the contract warranty terms and, therefore, outweigh any benefits not claimed for running repairs. We identified 129 running repairs for February 1979. Although the contractor representative claimed that about 75 percent of these repairs did not involve warranty, this cannot be verified because of inadequate documentation. Furthermore, department officials are not provided maintenance documentation on running repairs and were not aware of this situation. Also, documentation was not available to show whether the additional warranty benefits being provided by the contractor outweigh the warranty benefits lost on running repairs. The equality of this tradeoff is undeterminable.

Another example of New Jersey's confusion concerning warranty work is whether second-time parts replacement qualify under warranty agreements. New Jersey leases State-owned buses to numerous bus operators within the State. The largest operator of State-owned buses is Transport of New Jersey. We found that Transport of New Jersey does not claim reimbursement for the parts used in second-time repairs within the warranty period as it should. Conflicting opinions also exist over reimbursement for labor costs involved with second-time part replacements. Transport of New Jersey warranty personnel have obtained reimbursement for labor associated with second-time part replacements if the part replaced was not an original part. However, the contractor's representative and Transport of New Jersey personnel have informally agreed that warranty labor reimbursement can only be obtained when the defect involves an original bus part.

Port Authority of
Allegheny County

The warranty manager for the Port Authority of Allegheny County (PAT) believes that when defective parts are repaired in-house, the warranty does not cover the rebuilt part. According to the warranty manager's interpretation, in order for a repaired component to have continued warranty coverage, the repair must be performed by the contractor or a designated manufacturer's service outlet.

We believe that grantees should not make unilateral interpretations of warranty terms. Instead, when there is a question or doubt, the grantee should test the warranty provisions through the submission of claims.

RECORDKEEPING PROCEDURES
SHOULD BE ESTABLISHED

Accurate recordkeeping during the warranty period is extremely important. These records should provide a documented history of problems associated with each piece of equipment and how they were resolved or why they continued. Frequent malfunctions or parts failures may indicate a latent problem which, if discovered at some point beyond the warranty period, may be corrected at no cost or on a cost-sharing basis, provided there is accurately documented evidence pointing to a failure pattern.

PAT

PAT had no standard written warranty procedures, except for a company bulletin requiring mechanics to place a tag on defective parts removed from vehicles under warranty. The loss in warranty benefits of over \$30,000 was primarily attributable to both a lack of adequate warranty control over defective components and a lack of centralized records to identify all defective warranty items submitted by the various garages to the main maintenance facility.

Furthermore, we advised PAT officials that sufficient documentation was currently available for 65 of 212 in-house warranty repairs and that reimbursement of \$18,052 should be requested from the contractor. PAT officials informed us in October 1979 that the entire amount has been collected and that other warranty claims are being pursued.

SEPTA

We found that SEPTA intermingled used and rebuilt parts in its inventory, resulting in one contractor's component

being placed into another contractor's vehicle. The contractor charged SEPTA over \$8,600 for parts and labor used in the repair of transmission converters under warranty because they contained "unidentified" serial numbers. These repairs were performed by two authorized factory transmission dealerships.

According to a SEPTA official, prior in-house transmission converter repairs were performed utilizing parts from their general inventory pool. In SEPTA's opinion, this practice would not result in loss of warranty benefits because all their bus transmissions were manufactured by the same company. However, the contractor refused to honor the warranty on replaced converters which had serial numbers (1) identified with another contractor's coach, (2) unidentifiable to any coach, or (3) were unreadable. When requested to assist the contractor in identifying unreadable or unknown serial numbers for repairs totaling \$15,275, SEPTA could only identify serial numbers associated with transmission repairs totaling \$6,640 and was unable to verify that the contractor's converters were used in the remaining repairs.

By maintaining separate rebuilt parts inventories for vehicles still under warranty, intermingling of any material would be prevented and chances of invalidated or reduced warranty benefits would be minimized.

New Jersey

New Jersey recently procured two types of railcars-- Arrow II and Arrow III--at different times with warranties that expire at different dates. Several components of the Arrow II and Arrow III railcars are interchangeable and, therefore, require that separate inventories of rebuilt compatible parts be maintained since their warranties expire at different dates. According to the contractor's original warranty, rebuilt components have a warranty of 1 year or the remaining time left on the unexpired warranty of the railcar originally containing the part, whichever is greater. The warranties on Arrow II and Arrow III railcars expire in November 1979 and November 1982, respectively.

Because of these differing expiration dates, the warranty on a rebuilt Arrow II component installed into an Arrow III railcar would only apply for a 1-year period instead of the duration of the Arrow III warranty. However, if a rebuilt Arrow III component was installed into an Arrow III railcar, the component warranty would continue until the expiration of the Arrow III railcar warranty.

Maintenance personnel were intermingling the rebuilt inventories of all interchangeable Arrow II and Arrow III parts. No attempt was made to segregate the compatible Arrow II and Arrow III parts. Although this situation fosters the potential loss of warranty benefits, no instance was found where a loss of warranty benefits resulted from such intermingling. However, as a result of our inquiry, the contractor changed this policy. Warranty coverage is now based on the railcar in which the part is installed instead of the railcar the part originally came from; that is, when an Arrow II rebuilt part is now placed into an Arrow III railcar, warranty coverage lasts for the duration of the Arrow III railcar warranty.

Therefore, in order to obtain maximum warranty benefits, New Jersey should explore with AMTRAK the feasibility of maintaining separate inventories for compatible Arrow II and Arrow III parts, so preference can be given to the replacement that will result in the greater warranty coverage.

CHAPTER 4

INADEQUATE CONTRACT WARRANTY PROVISIONS

Using inadequate contract warranty language has resulted in only partially recovering the actual costs involved in many repairs. The grantees failed to obtain warranty labor reimbursement at the actual hourly rate in effect at the time of the repair. In the face of continuing inflation and generally rising prices, warranty provisions should specify that labor reimbursement be based on the current rate in effect at the facility performing the repair.

LABOR RATES DO NOT REFLECT GRANTEES ACTUAL COSTS

SEPTA's warranty language in the procurement of some buses specified that the reimbursement rate for labor was to be "as determined." Conversely, the contractor's standard warranty permitted the purchaser to charge for the repair at the actual labor rate in effect at their service facility.

Because of the nature of SEPTA's contract warranty language, each time a labor increase went into effect, negotiations with the contractor were required. For example, the labor reimbursement rate was changed twice during the warranty period of the first contract for 300 buses. For the more recent contracts for 435 buses, SEPTA developed a composite labor rate which represents an estimate of the average labor rate for the 2-year warranty period. The contractor accepted the composite rate and applied it to all warranty claims submitted for the 435 buses.

Although the composite labor rate did consider future labor increases, we found several errors in SEPTA's calculations which resulted in a \$0.35 lower hourly rate (\$8.40 versus \$8.75) because of its

- failure to consider increases in fringe benefits; a 5-percent increase on January 1, 1976; and a 6-percent increase on July 1, 1976;
- improper computation of labor rates; and
- failure to consider an increase in the labor rate on September 26, 1976.

In subsequent policy decisions to reimburse SEPTA for repair costs under an extended warranty situation, the contractor refused to change the \$8.40 per hour rate for labor

reimbursement. For example, SEPTA's February 1978 request to increase the warranty labor reimbursement rate to its labor rate of \$11.43 in effect at that time was rejected.

In another but similar situation, PAT agreed to a fixed warranty reimbursement labor rate for the duration of the warranty period based on the labor rate in effect at the beginning of the warranty. By this action, PAT limited its opportunity to recover subsequent labor cost increases. Specifically, in August 1978, PAT agreed to a fixed warranty labor reimbursement rate of \$12.20 which was in effect at that time. Subsequently, PAT's labor rate increased twice because of quarterly changes to the employees' cost of living allowances--\$12.58 as of December 3, 1978, and \$12.76 as of March 11, 1979. Therefore, PAT is bearing labor costs for warranty repairs representing the difference between the reimbursed and actual labor costs each time there is a change in its labor rate. Compounding the inequity, PAT's warranty manager has recently been using a \$12.18 hourly labor reimbursement rate rather than the \$12.20 established rate for warranty.

Local authorities, by proposing or agreeing to warranty provisions which prescribe fixed or as determined labor rate reimbursements, may establish inadequate rates which affect the amount of reimbursement over the entire warranty period. Accurate forecasting of equitable labor rates is extremely difficult and, once a rate is established, it may be difficult to obtain the manufacturer's consent to revise the rate if actual rates substantially exceed the agreed upon rate. In order to recover the costs incurred for warranty work, every effort should be made to adopt provisions which permit charging the actual labor rate in effect at the time of the repair.

FAILURE TO SPECIFY THE LABOR REIMBURSEMENT RATE

Using an agreed upon labor reimbursement rate, established in January 1975 for the duration of the warranty period, cost SEPTA \$31,200 for transmission repairs performed by outside repair facilities.

In August 1975, SEPTA recognized that a transmission failure pattern was developing and, based on the current failure rate, projected that future failures would far exceed their in-house repair capabilities. SEPTA notified the contractor prior to the expiration of the contract warranty and the contractor extended the warranty transmission coverage from 50,000 to 75,000 miles and agreed to reimburse SEPTA for

the repair costs. This agreement also permitted SEPTA, at its option, to use two authorized factory transmission dealerships for the warranty repairs; however, the contractor limited all labor reimbursements to \$8.40 per hour, the in-house rate established in accordance with the contract terms. Records show that 295 of 430 buses were sent to the outside repair facilities because SEPTA could not keep up with the number of transmission failures. Although a significant number of transmission repairs were performed by outside facilities, SEPTA made no attempt to have the contractor absorb the full labor cost nor did it seek UMTA's guidance or legal counsel in this matter.

A high incidence of failures had not previously been experienced; therefore, a provision to cover the applicable labor rate when using an outside repair facility was not considered when SEPTA developed the warranty terms. On the other hand, when the contractor agreed to the warranty labor reimbursement rate of \$8.40 per hour, it was anticipated that SEPTA would be performing most of the repairs in-house. The contractor paid the outside repair facility and billed SEPTA for the difference in the labor rates charged by the two outside repair facilities (that is, \$18 and \$17 per hour) and the agreed in-house warranty reimbursement rate (\$8.40 per hour). SEPTA absorbed about \$31,200 in order to get the work done and have the buses returned to revenue services in a timely manner. In addition, SEPTA absorbed the cost of transporting the buses to and from the point of repair.

We believe that when it was known that transmission failures would far exceed a reasonable rate of breakdowns, SEPTA should have attempted to renegotiate labor and transportation costs for the transmissions that had to be repaired by outside dealerships. If the contractor refused, SEPTA should have requested UMTA's advice concerning further action. In the future, UMTA should advise grantees to insist that contractors' warranties include provisions for full reimbursement for repairs by authorized dealerships when in-house capabilities are limited or when the number of repairs exceed estimates.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The Federal Government is providing capital assistance grants to local transit authorities which amount to 80 percent of the cost of transit equipment. Included in the cost of contracts awarded for such equipment is an amount representing about 2 percent of the total to cover warranties. Much warranty work is not being reimbursed by the equipment manufacturers because

- warranties expire before all the equipment is placed in operation,
- better warranty enforcement and recordkeeping procedures are needed, and
- warranty provisions are inadequate.

Further, since local transit authorities are bearing costs for warranty work that should be paid by contractors, these costs are considered in determining the loss from maintenance and operations. The Federal Government, in many instances, also provides operating assistance grants, amounting to 50 percent of the loss, to the same local transit authorities. Not only is the Federal Government shortchanging itself in the capital assistance grant because of ineffective warranty enforcement, but it is paying again for the inefficiency through the operating assistance grants. Action must be taken to minimize such losses in the future.

Local transit authorities need to protect both the Federal Government's and their own interests by proposing or agreeing only to warranty provisions that provide for reimbursement of costs incurred to make warranted repairs. UMTA should serve as the focal point by providing the necessary assistance and guidance to the local entities so that all of their contracts contain adequate warranty provisions. To assure that this happens, UMTA should pay particular attention to the adequacy of warranty provisions before approving the purchase of any transit equipment.

RECOMMENDATIONS

We recommend that the Secretary of Transportation require the UMTA Administrator to:

- Prescribe the necessary procedures and criteria concerning warranties to be followed by grantees in the award of contracts.

--Issue warranty recordkeeping and enforcement guidelines which will provide greater assurance that warranty work is being reimbursed.

--Issue guidelines to aid grantees to recover actual labor costs for in-house repair of warranted items.

Appendix II cites the warranty terms developed by SEPTA in a March 29, 1979, contract for the procurement of 141 LRVs. These provisions should improve SEPTA's administration of warranted items and could serve as an example to other grantees to improve their warranty administration.

LISTING OF PROJECTS INCLUDED IN OUR REVIEW

APPENDIX I

APPENDIX I

18

<u>Grantee and location</u>	<u>UMTA region</u>	<u>Approved project cost</u> (millions)	<u>Grant number</u>	<u>Grant amount</u> (millions)	<u>Purpose of grant</u>
MBTA, Boston, Mass.	I	\$ 57.0	MA-03-0015	\$ 39.0	Improvements to an existing subway line
		60.0	MA-03-0022	41.0	175 LRVs (subway cars)
New York City Transit Authority, Brooklyn, N.Y.	II	213.3	NY-03-0046	142.2	743 passenger cars
New Jersey Department of Transportation, Trenton, N.J. (note a)	II	28.1	NJ-03-0004	18.7	70 railcars
		107.1	NJ-03-0006	85.7	50 railcars/electrification
		265.0	NJ-03-0014	211.7	180 railcars/re-electrification
SEPTA, Philadelphia, Pa.	III	75.0	NJ-03-0015	60.0	866 diesel buses
		52.1	PA-03-0032	36.8	735 diesel transit buses 5 battery buses 110 trackless trolleys
PAT, Pittsburgh, Pa.	III	<u>24.4</u>	PA-03-0064	<u>19.5</u>	190 diesel transit buses 20 diesel articulated buses
Total		<u>\$882.0</u>		<u>\$654.6</u>	

a/The New Jersey Department of Transportation leases State-owned buses to numerous bus operators within the State. Our review was performed at Transport of New Jersey, Maplewood, N.J., the largest operator of State-owned buses (416 of the 866).

SEPTA WARRANTY TERMS USED
IN A MARCH 29, 1979, CONTRACT
FOR THE PURCHASE OF 141 LRVs

Light Rail Vehicles (LRV) Warranty

In addition to any warranties implied by law, the contractor specifically warrants each LRV, including all equipment and accessories furnished as part of the contract, to be free from defects in design, material, or workmanship as follows:

For a period of 1 year, or until the accumulation of 50,000 miles (80,500 km) from date or mileage at acceptance, whichever comes first, he shall at his own cost promptly furnish to purchaser repairs or replacement for all parts of the LRV that fail and all labor and of other resources necessary to install the parts.

For a period of 2 years, or until the accumulation of 100,000 miles (161,000 km) from date or mileage at acceptance, whichever comes first, he shall at his own cost promptly furnish to Purchaser repairs or replacement for all parts of the drive motor that fail and all labor and or other resources necessary to install the parts.

These warranty requirements do not apply to normal wear and tear, or to parts such as bulbs, windows, fuses, brake linings, filters, belts, etc., unless it is evident that the failure was caused by defective manufacture rather than wear or damage.

Performance of Warranty Work

The contractor is completely responsible for the performance of all required warranty work at its sole cost and expense during the warranty period. The contractor will perform, or have performed, all required warranty work as promptly as possible so as to preclude or minimize any interruptions to, or disruptions of, the operation of normal route service, using these LRVs because of delays in the performance of warranty work under this contract.

Purchaser shall not be obligated to perform any warranty work whatsoever for contractor, but may agree to do so at mutually agreed rates of compensation. The performance of any warranty work by purchaser with the prior agreement of contractor shall not in any way limit or diminish contractor's warranty obligations under this contract.

Purchaser may, at any time during the warranty, decline to perform warranty work, even though it has previously performed work of that kind. In that event, the contractor shall promptly arrange to perform the work itself, or arrange to have the work promptly performed by others, and purchaser shall not be liable for any additional cost for performance of the work by contractor or others.

Contractor shall make every effort to perform, or have performed, all warranty work on purchaser's property or in the vicinity thereof. If it becomes necessary to transport any LRVs or major components or subassemblies to off-property locations to perform warranty work, contractor shall bear the cost of transportation from purchaser's property to the off-property location where work is to be performed and return.

Purchaser will cooperate with contractor to the extent possible in providing facilities on its property for the performance of warranty work and assist the contractor in identifying third parties in the vicinity of purchaser's property who may be qualified to perform warranty work for contractor, and in locating suitable off-site facilities for contractor whenever it becomes necessary or desirable to do so in order to minimize down-time and costs to warranty work.

Complete or Partial Unit Replacement

In the event of any defect in design, material, or workmanship of a unit or an assembly under warranty, the contractor and purchaser shall mutually consider whether the unit or assembly is to be changed in its entirety or whether the unit or assembly is to be permanently repaired and the defective parts replaced. The decision as to which alternative will be used will be based upon minimizing down-time and total repair cost of the vehicle and considerations as to whether or not the failure of the unit might be detrimental to the life of the assembly.

Excessive Numbers of Operational Failures

Failures of the Same kind or Type

In the event that during the warranty period, specific repairs, replacements, or modifications necessitated by defects in design, material or workmanship of the same type or kind are required on 20 percent or more of the LRVs delivered under this contract, the contractor shall promptly furnish all necessary labor and material to effect permanent repairs, replacements, or modifications to all LRVs.

Purchaser shall give the contractor prompt notice of such defects or failures as are identified. In the event that contractor can demonstrate that such repairs, replacements, or modifications are required only on certain LRVs, purchaser may, at its sole discretion, direct that the repairs, replacements, or modifications be made only to the specifically identified LRVs requiring such actions.

Furnishing of Spare Units

In the event that such defects or failures, as are described above, require the removal of major components or assemblies for the purpose of repairs or modifications and such removals render LRVs inoperable or unfit for safe and efficient operation in regular transit service, the contractor shall promptly furnish an adequate number of spare components or assemblies for the temporary use of the purchaser so as to minimize down-time of affected LRVs, while repairs or modifications are being made.

Defects or Failures that Render LRVs Inoperable

In the event that, during the warranty period, 20 percent or more of the LRVs delivered under this contract are simultaneously inoperable or unfit for safe and efficient operation in regular transit service, even though operable, because of defects in design, materials or workmanship, whether or not of the same type or kind, purchaser may require contractor, within a reasonable time after receipt of written notice from purchaser, to submit contractor's proposal for a "remanufacturing program" or "campaign" to effect the necessary repairs, replacements, or modifications at no additional cost to purchaser in the shortest time possible, with the least disruption to, or interference with, regular LRV transit service. Such campaign or program shall consist of, but not be limited to the following:

- a. arrangement by the contractor for the use of suitable facilities on purchaser's property, or in the vicinity thereof, to be manned by the contractor's personnel to perform the required repairs, replacements, or modifications; and/or
- b. arrangement by the contractor to have the necessary repairs, replacements, or modifications performed by qualified third parties located in the vicinity of the purchaser's property.

Warranty Extension

In the event that, during the warranty period, repairs and/or modifications on all or any LRV made necessary by defective design, material, or workmanship are not permanent or completed due to lack of material or inability to provide the proper repair, the delay required to effect the repair or modification will not be considered in computing the warranty period, and the same warranty will remain in effect as if repair or modification was still within the warranty period, said warranty being extended by the period of delay.

Replacement of Major Components

The contractor shall guarantee a supply of components, including parts obtained from the contractor's subcontractors and suppliers, for a period of 15 years from date of delivery of the last unit.

Service

The contractor shall, at its own cost and expense, continuously make available to purchaser, on no more than 48 hours notice, the services of a qualified service engineer as required by purchaser during the term of this contract and the post-completion warranty period for the purpose of handling service or warranty problems. The contractor shall also make available at its own cost and expense such additional specialized technical assistance as may be required from time to time during that period.

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