



UNITED STATES GENERAL ACCOUNTING OFFICE

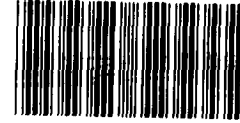
WASHINGTON, D.C. 20548

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PROCUREMENT AND SYSTEMS
ACQUISITION DIVISION

NOVEMBER 10, 1980

B-200786



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The Honorable Neil E. Goldschmidt
The Secretary of Transportation

Dear Mr. Secretary:

Subject: (Massachusetts Bay Transportation Authority's
Termination of Contract for Light Rail
Vehicles (PSAD-81-11))

This is to inform you of certain events associated with the Massachusetts Bay Transportation Authority's (MBTA's) procurement of light rail vehicles (LRVs) under the Urban Mass Transportation Administration (UMTA) project MA-03-0022 and the subsequent termination of the procurement contract.

(MBTA awarded a contract on May 1, 1973, to the Boeing Vertol Company (Boeing) for 175 LRVs to be manufactured using the standard LRV specification developed by MBTA and funded and approved by UMTA. When terminated in November 1979, this project had been amended three times and its total cost amounted to \$68.3 million, of which \$48.1 million is the Federal share.

Although the MBTA/Boeing settlement terms were not submitted to UMTA for approval before final execution of the settlement agreement, UMTA has conditionally approved the settlement. Our primary concern is that the conditional approval was granted without UMTA knowing conclusively if the settlement funds would permit meeting the project's original objectives without additional Federal funding.

[LRV, built to UMTA's approved standard LRV specifications, began experiencing problems when placed into passenger

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revenue service ^{1/} in December 1976. UMTA's lack of project monitoring and involvement contributed to its being unable to assist in resolving the LRV's problems.) Overall, UMTA's involvement in project monitoring and management is currently inadequate for insuring that project objectives are achieved. UMTA needs an effective involvement policy to insure that project objectives are achieved within allocated Federal funds.

Enclosure I describes in further detail the various issues and concerns we have relating to the MBTA/Boeing financial settlement and the contract termination.

CONCLUSIONS AND RECOMMENDATIONS

We believe that MBTA has an obligation to achieve the original project objectives within the Federal funds committed at the time of settlement. Should MBTA request additional Federal funds for the project, such requests should be carefully reviewed in view of MBTA's initial obligation. Considering (1) the lack of UMTA involvement in monitoring this project, (2) its failure to become involved in providing assistance to solve the many problems that have existed since 1976, and (3) its failure to direct preparation of a detailed and indepth evaluation of the proposed settlement and ascertaining how MBTA plans to achieve the project's objectives, how can UMTA be assured that MBTA will be able to achieve the project's approved objectives?) Regardless of whether UMTA grants final approval of the settlement, the terminated LRV contract cannot be reversed.) UMTA officials have indicated that if MBTA requests additional Federal funding to complete the project, such requests will be reviewed and considered on their own merits.

Our review of the settlement also raises a more basic concern regarding this and the many other projects which UMTA funds. Without a greater degree of UMTA oversight and involvement, (how can it be assured that project objectives are being achieved and Federal funding justified?)

We agree with UMTA's position that the original capital grant requirement should still be met by MBTA as long as that includes providing equivalent passenger carrying capacity and comforts. But, we believe that additional funds

^{1/}Regular service when the vehicle is available for fare-paying passengers.

will be required by MBTA to rehabilitate and restore the existing LRV fleet, install Boeing and MBTA modification kits, and acquire sufficient vehicles to meet the original project's objectives. Whether additional Federal funds should be granted requires close scrutiny. MBTA has maintained that based on the conditions of the financial settlement, the original project objectives could be achieved without additional Federal funding. This remains to be demonstrated.

Therefore, we recommend that the Secretary of Transportation direct the UMTA Administrator, before granting final approval of the Boeing/MBTA financial settlement, to require

- MBTA to complete the original project objective (for example, number of vehicles, passengers carried, equivalent passenger comfort, and so forth) without additional Federal funding beyond the \$48.1 million already approved and
- UMTA to work with MBTA to establish a realistic schedule to achieve the 175 LRVs' project objectives and monitor and provide any needed assistance and oversight to assure that the schedule is achieved.

We also recommend that the Secretary of Transportation direct UMTA's Administrator to make sure that:

- MBTA substantiates the nature, cause, and extent of damage to inoperable LRVs to assure that UMTA does not pay for damages caused by MBTA negligence or other causes which may be covered by insurance.
- UMTA reviews the adequacy of MBTA's LRV management and operations for assuring that the delivered LRVs achieve their intended design life. UMTA should identify and require MBTA to implement the necessary improvements.
- UMTA should perform a detailed analysis, which lends credibility to its decision, before granting acceptance, conditional or otherwise, to the termination of any third-party contract awarded using Federal funds.
- Where an UMTA developed and sponsored standard vehicle specification is initially implemented, the grantees performance is monitored and reviewed

to determine if the specification adequately achieves its objectives.

--UMTA's involvement policy with its grantees is reevaluated so that it can be assured that approved transit project objectives are being achieved within the allocated Federal funds. When additional funds are requested UMTA should be in a knowledgeable position to determine if such funds are actually needed and properly justified.

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; the Chairmen of the House Committee on Public Works and Transportation, Senate Committee on Commerce, Science, and Transportation, and Senate Subcommittee on Transportation; and other parties.

Sincerely yours,



W. H. Sheley, Jr.
Acting Director

Enclosure

TERMINATION OF CONTRACT FOR
LIGHT RAIL VEHICLES

This enclosure describes the various issues and concerns we have that relate to the Massachusetts Bay Transportation Authority (MBTA)/Boeing Vertol Company (Boeing) financial settlement and termination of the light rail vehicle (LRV) contract.

LRV PROBLEMS AND SETTLEMENT AGREEMENT

Since placing the LRVs in revenue service in December 1976, a multitude of operational problems, low vehicle reliability, and high maintenance costs have been incurred. After receiving 135 LRVs and considering the many problems, MBTA in June 1978 suspended any further deliveries from Boeing.

Representatives of MBTA, Boeing, and the San Francisco Municipal Railway, which also acquired the same LRVs, held a series of meetings during the summer of 1979 to review the vehicle equipment/component problems not meeting the specification and identify responsibility for their resolution. Based on this work, Boeing provided to MBTA a draft agreement in September 1979 for solving the remaining problems. However, MBTA did not feel the agreement provided for a satisfactory resolution of the various problems and decided to hire outside legal counsel to pursue the issues.

While attempts were continuing at the working level to solve the problems, the MBTA special legal counsel began in September 1979 to negotiate a settlement with Boeing. An agreement was reached on November 19, 1979. MBTA's special counsel met with the Urban Mass Transportation Authority (UMTA) headquarters officials on November 20, 1979, to inform them that MBTA and Boeing had reached an agreement to settle their LRV disputes and to obtain UMTA's approval. UMTA conditionally concurred in the agreement based only upon discussions with the legal counsel and without documentation or benefit of a detailed analysis of any kind. The conditions set forth in UMTA's November 20, 1979, concurrence letter were

"provided the net cash settlement and interest derived from investments of the cash are used for the acquisition or lease of additional cars and related equipment within the scope of the original project, and provided further that the expenditure of funds results in the

acquisition of at least a total of 175 LRVs meeting the objectives of the original project. This concurrence is further conditioned on our review of the actual settlement document and the basis for such settlement."

The agreement between MBTA and Boeing, and conditionally approved by UMTA, resolved all claims and counterclaims by both parties and terminated the LRV contract. Specifically, MBTA and Boeing agreed that:

- Any right, title or interest MBTA may have in 40 LRVs remaining to be delivered would revert to Boeing free and clear of any MBTA claim.
- Boeing would deliver modification kits which together with previously delivered kits would bring the 135 LRVs at MBTA to a specified configuration.
- Boeing would pay MBTA \$40 million less
 - (a) \$3,929,820 representing the balance of the contract price for the 135 LRVs previously delivered,
 - (b) \$799,000 representing legal fees, and
 - (c) \$900,000 representing the potential value of an unresolved dispute relating to the required design and configuration of diagnostic test equipment.
- Any suit or action at law would not be instituted.
- All warranties, either expressed or implied, including implied warranties of merchantability or fitness arising under the contract were terminated.
- Five of the 135 delivered LRVs, then at the Boeing plant in Philadelphia, were to be returned to MBTA at Boeing's cost if requested by MBTA within 10 days of the ratification of the agreement.
- Boeing would deliver 3 units of the diagnostic test equipment within 30 days of MBTA's ratification of the agreement and MBTA was to make payment at the contract price for each unit within 30 days of acceptance.

Based upon the agreement, the total amount available for investment was \$34,371,180 developed as follows:

Gross cash settlement		\$40,000,000
Less:		
Balance owed on delivered LRVs	\$3,929,820	
Legal fees	799,000	
Diagnostic test equipment	900,000	<u>5,628,820</u>
Balance		<u>\$34,371,180</u>

However, MBTA deducted \$1,747,180 for warranty claims outstanding at the time of settlement leaving a balance of \$32,624,000 which was actually invested. UMTA was unaware of this approximate \$1.7 million being withheld by MBTA until questioned by us as to its allowability. By not investing the net cash balance, MBTA will have less money available (\$1.7 million plus accrued interest) to meet the project objectives.

MBTA believes, and UMTA concurred, that considering the cash received, the settlement was in the best interests of MBTA and UMTA. However, when questioned, MBTA could not provide documentation explaining the cash settlement. We were advised that this amount was negotiated between MBTA's special counsel and officials of The Boeing Company, parent of Boeing Vertol Company. MBTA has invested \$32,624,000 which in addition to the earned interest is to be used to meet the original project objective of 175 LRVs.

We found no evidence to indicate that either MBTA or UMTA had made a detailed evaluation of the settlement terms to assure themselves that it was in the best interests of the authority and the Federal Government. MBTA, as a minimum, should have compared the terms of the final settlement to Boeing's September 1979 draft agreement representing the technical resolution committee's identification of vehicle design and configuration items for which Boeing was to provide modification kits. Such a comparison would have identified specific design problems which Boeing offered to correct such as leaking gearboxes, air conditioning compressor problems, and traction motor subsystem failures. As part of the settlement Boeing is no longer responsible for these problems. Considering the magnitude and importance of MBTA's decision to terminate the LRV contract, UMTA should have required MBTA to adequately document and support the termination decision before granting conditional approval. UMTA, as a minimum, should have required a cost-benefit analysis of the transaction, detailed plans for the replacement vehicle meeting project

objectives, a procurement plan for the acquisition of new vehicles, and plans and estimates for the restoration of the inoperable vehicles.

We doubt that MBTA will be able to achieve a 175 LRV fleet without additional Federal funding as the \$32.6 million plus interest must cover the costs of developing a specification for the replacement LRV, conducting a test program of the replacement vehicle, installing the Boeing supplied modification kits (valued at \$20 million to \$27 million by MBTA), repairing inoperable and cannibalized LRVs, and purchasing replacement vehicles and associated test equipment, spares, and maintenance materials.

Our primary concern is that the settlement money will be inadequate to meet the projects original objectives when considering all of the following factors.

Settlement funds may be inadequate to meet project requirements

In addition to the 40 LRVs that MBTA declined to accept in the settlement, MBTA may have lost title to 5 LRVs because it failed to provide notification to Boeing as required by the settlement. MBTA has also written off three other LRVs that will never be used. Therefore, as a minimum MBTA will be required to replace 48 LRVs. If all of the \$32.6 million was used to replace equivalent LRVs, approximately \$679,000 would be available for each LRV. In 1977 Boeing bid the same LRV to the Greater Cleveland Regional Transit Authority for more than \$750,000 each, and the successful Italian firm's price was \$645,000 per car for 48 LRVs. Therefore, considering increases in labor and material costs as well as inflation since 1977, we doubt that the settlement amount will be adequate to meet the project requirement of 175 LRVs. While MBTA has been testing a smaller nonarticulated car ^{1/} as a replacement, the cost or quantity cannot be determined until the design and configuration is completed.

Loss of LRV warranty coverage

At the time of contract termination, all 135 LRVs had unexpired warranty coverage on parts covered by the 5-year warranty clause, and 83 LRVs had unexpired warranty on parts covered by the 2-year warranty ranging from 1 to 8 months. Now MBTA will be responsible for all costs involved in

^{1/}A rigid vehicle unable to bend in the middle.

repairing or replacing previously warranted repairs. We found no evidence that this was considered in the negotiated settlement.

Loss of warranty for modification kits

Boeing-supplied modification kits must be installed at MBTA's expense. These kits are warranted only to be free from defects in materials and workmanship and do not require any prior testing to provide assurance that the problems they are designed to solve will be solved. According to MBTA's installation schedule, the warranty period for those kits scheduled to be installed on the last 40 LRVs will have elapsed by the time installation is completed. Consequently, MBTA would not even have an opportunity to identify defects in workmanship and materials on these 40 LRVs. Further, if the kits do not solve the problems, all redesign costs will be at MBTA's expense. MBTA's budget revision of December 1979 estimated approximately \$4.4 million to install the modification kits.

Loss of warranty on the inoperable LRV

There were at the time of settlement, 41 inoperable LRVs attributed to Boeing's poor design and MBTA's negligence, accidents, cannibalization, and so forth. (See pictures on pp. 7 to 9.) We made no attempt to identify the party responsible for or the specific cause of the inoperable LRVs. However, any repairs previously covered by contract warranty has been lost through contract termination and the cost of repairs becomes MBTA's total responsibility. We found no evidence that these costs were considered in the negotiated settlement. MBTA's budget revision of December 1979 estimated approximately \$15.6 million would be require to restore the inoperable LRVs.

Reliability of LRVs is questionable

Before termination the contract contained a Reliability Verification Demonstration project requiring Boeing to demonstrate the reliability of the LRV's propulsion, electrical, air supply brake, and door systems to specified goals. At the time of settlement, Boeing claimed that, except for the doors, it had met the reliability goals. MBTA, however, claimed that none of the goals had been achieved. This controversy resulted because the parties were unable to agree on a relevant failure definition with both gathering and using data based upon their own definition. Because of the importance of achieving the reliability values, it appears that MBTA was premature in terminating the Reliability Verification Demonstration project.

LACK OF UMTA INVOLVEMENT

UMTA's monitoring of the LRV project has been an absolute minimum, with no participation in the resolution of problems even though it had been receiving quarterly reports which repeatedly identified LRV problems. UMTA was unaware that MBTA was acting to terminate the Boeing contract. It was asked to concur in the settlement after the parties had reached agreement. It was not until January 1980, 2 months after the settlement, that UMTA received a copy of the settlement document.

UMTA, since granting conditional concurrence in November 1979, has been attempting to obtain sufficient MBTA information to grant final settlement approval. Based upon an exchange of letters, UMTA on September 25, 1980, notified MBTA that its latest information submittal of August 22, 1980, along with previously supplied information, failed to provide detailed information which UMTA considered necessary to grant final approval. After 11 months (November 1979 to September 1980), UMTA has yet to obtain information it should have had before granting its conditional concurrence in November 1979. Without a Boeing/MBTA contract, the project objective of 175 LRVs within committed funds may not be achievable.

Oversight of UMTA's LRV specification lacking

MBTA and the San Francisco Municipal Railway were the first transit authorities to use the UMTA approved standard LRV specification. Given this initial application, UMTA should have initiated a greater degree of oversight in its use to determine if the specification would adequately serve as a standard for all LRV procurements as intended by UMTA. Had UMTA regularly monitored MBTA's vehicle performance using the standard LRV specification, it could have assessed the magnitude of the problems being experienced and more effectively contributed to their prompt resolution.

ENCLOSURE I

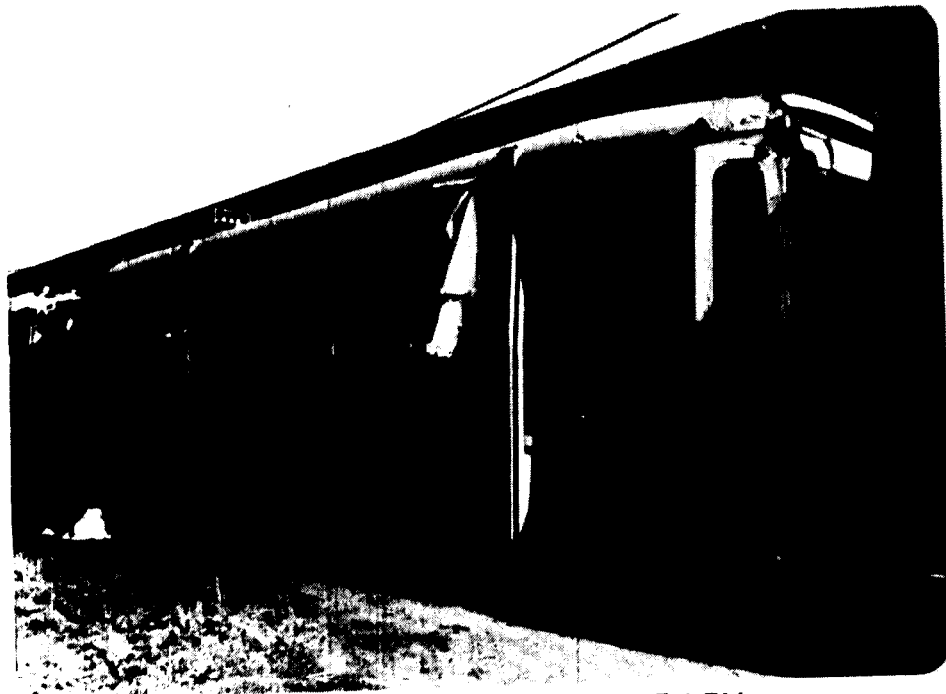
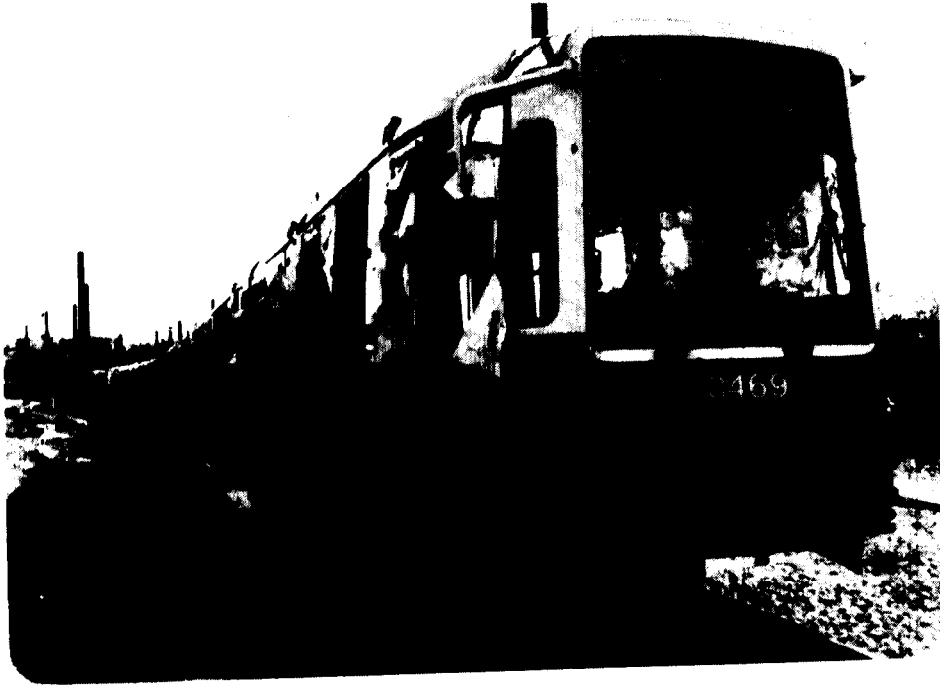
ENCLOSURE I



DAMAGED AND INOPERABLE LRVs



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