

**15****15****BOARD MEETING
AUGUST 15, 2002**

Metropolitan
Transportation
Authority

One Gateway Plaza
Los Angeles, CA
90012-2952

SUBJECT: ADVANCED TRANSPORTATION MANAGEMENT SYSTEM

**ACTION: UPGRADE ATMS RADIO SYSTEM TO 900MHZ RADIO
FREQUENCIES; EXERCISE ATMS OPTION TO ADD
AUTOMATIC VOICE ANUNCIATORS TO BUS FLEET**

RECOMMENDATION

A. Authorize the Chief Executive Officer to:

1. Modify contract OP63301054 with Motorola Corporation to upgrade radio systems for the ATMS program and consolidate Freeway Service Patrol's radio system with the MTA's, for an additional cost not to exceed \$12 million;
2. Exercise a contract option with Motorola to provide for the installation of Automatic Voice Annunciators for an additional cost of \$13,490,321; and
3. Negotiate and execute change orders with Motorola in an amount not to exceed \$2.5 million, for a revised not to exceed project contingency of \$3.7 million.

The proposed changes will increase the contract value from \$70,485,691 by an amount not to exceed \$29,190,321, for a total contract value not to exceed \$99,676,012.

B. Authorize the Chief Executive Officer to negotiate and execute third party license and co-channel user agreements in amount not to exceed \$6 million.

RATIONALE

In November 2001, the MTA awarded a firm fixed price contract to Motorola Corporation for implementation of an Advanced Transportation Management System (ATMS) in the amount of \$70,485,691. ATMS is a state-of-the-art system for bus management, communication, and information that includes a new radio network for MTA's bus fleet, computer aided dispatch, automatic vehicle location, automatic passenger counters, vehicle security system, and integration with the Universal Fare system.

Specifications for the ATMS contract were based on a Business Plan and Conceptual Design developed by a technical consultant, TM Tech Systems. MTA specified using existing 470 MHz radio frequencies for ATMS as the least expensive alternative. However, as part of their work scope, Motorola conducted extensive radio spectrum analysis and coverage design during Winter/Spring 2002, and based on the results of their analysis, staff determined that using MTA's existing 470 MHz channels has become problematic for the following reasons:

- (1) Negotiating license modifications to MTA's existing 470 MHz channel licenses will be subject to major cost impacts and schedule delays that were not anticipated when the system was designed and proposed by Motorola. In particular, the license holder of nine of the MTA's leased channels has recently advised the MTA that they are not currently able to get licensing modifications from the Federal Communication Commission (FCC).
- (2) The 470 MHz radio band is generally becoming more difficult to use for ATMS due to licensing restrictions brought about by the FCC regulations. Specifically, FCC licensing regulations necessitate that MTA negotiate concurrences for any license modifications with the leased channel holders as well as the owners of adjacent frequencies. Negotiating 470MHz license modifications in accordance with FCC regulations would delay the ATMS project by 12 months or more, resulting in a substantial increase to the project budget.

In an effort to resolve all of the problems with use of the 470 MHz channels, Staff proposes to implement the system based on a 900 MHz voice wireless communication network. This will keep the ATMS project on schedule, improve the overall system and reduce long term operating costs. To accomplish this, ATMS will take over 5 channels presently reserved for use by the Freeway Service Patrol (FSP) and purchase 7 additional channels which Motorola holds options to procure. ATMS will continue to use the MTA's owned 470 MHz channels for data. The plan will add approximately \$18 million to the cost of ATMS, including:

- \$4.2.million to procure 7 additional 900 MHz channels
- \$1.0 million to coordinate the license and frequency modifications of the MTA owned channels, the newly acquired channels, and the existing FSP owned channels
- \$4.0 million to upgrade Metro Bus from 470MHz to 900MHz Radio Equipment; and;
- \$2.8 million to allow for expansion capability

Total: \$12 million

- \$6.0 million to comply with FCC regulations for obtaining third party co-channel concurrence

Grand Total: \$18 million

The increase in public expectations of an AVA system and the desire to avoid perception of non-ADA compliance has led to the recommendation to exercise the option for an Automated Voice Annunciator (AVA) system onboard MTA buses included in the Motorola contract. AVA was identified as a desired feature in the business plan development for ATMS to improve customer service and to achieve compliance with Americans with Disabilities Act (ADA) requirements. As there was no immediate financial benefit to the MTA for inclusion of AVA, staff determined that AVA would be implemented in the second phase of ATMS and included as a contract option.

In order to mitigate any negative impact on the ATMS schedule, MTA staff issued limited authority for Motorola to proceed in the amount not to exceed \$800,000. This will protect sensitive lead times for the acquisition of channel frequencies, equipment, material and services. The limited notice to proceed was funded by the contingency authorized by the Board in November 2001.

The proposed change of \$2.5 million in change order authority does not include \$1.2 million contingency, previously approved in the original contract action. As indicated \$800,000 was expended to allow the Contractor to proceed with the implementation of the 900 MHz radio system and to add FSP to the ATMS radio system. Another \$168,000 was used for a facility assessment and preliminary design for remote dispatching to support the service sectors. Accordingly, approximately \$200,000 remains in the contingency amount authorized in the original Board award.

In order to be able to gain FCC approval for necessary modifications to the MTA's 900 MHz and 470 MHz channel licenses to utilize the sites required for coverage of the Bus service area, frequency coordination is necessary. As part of this frequency coordination, the MTA will need to provide for modification to systems of other licensees that might otherwise be adversely impacted by the MTA's new radio system. These costs will need to be negotiated with other licensees on a case-by-case basis and will add approximately \$6 million to the cost of ATMS.

FINANCIAL IMPACT

Funding of \$34 million for these changes will require revisions of the Board adopted Capital Program for FY03-FY06. The Capital Program currently includes \$40.7 million in FY03 and an additional \$29.2 million in FY04-FY06 for a total contract budget of \$72.6 million. In addition, the FY03 budget includes \$2.5 million for improvements to FSP's communications system upgrade, \$1.4 million of which will be allocated to cover the direct costs related to FSP. Based on the project progress to date there is sufficient funding in the current fiscal year to cover FSP contract expenditures, including the proposed change order. In FY04-06, additional funding will have to be identified in the Capital Program to cover the added costs. Options for identifying the funding include delaying or deleting projects previously approved but not yet started or increasing the available revenue.

Consolidating radio communications for all FSP and Metro Bus Operations into a single 900MHz system is expected to reduce radio system operating and maintenance costs. First,

MTA will be able to reduce the number of antenna sites it must operate and maintain. Second, staff estimates that sharing a common radio system between FSP and Metro Bus Operations will reduce inventory and training costs. Third, the six leased 470MHz frequencies may be discontinued in the future, and this is expected to save approximately \$325,000 annually.

ALTERNATIVES CONSIDERED

900 MHz Radio

The primary alternative to the proposed change order is to terminate the Motorola contract and re-procure ATMS using the new system specifications. This alternative would not be in the MTA's interest because substantial sums have already been committed on this contract and the ATMS project would be delayed. The existing radio system is outdated and badly in need of immediate replacement. Staff does not anticipate that ATMS could be re-procured as a 900 MHz system for less than the cost of ATMS under the current contract plus this change.

Staff also considered proceeding with development of a stand-alone radio system for FSP and separate procurement of additional 900 MHz channels for MTA's bus radio system. This alternative would be more costly both in terms of capital and operating costs and would delay implementation of FSP's communication system upgrade.

Automatic Voice Annunciators:

MTA can elect not to install the Automatic Voice Annunciators option onto the MTA bus fleet. This option is not recommended. AVA will provide MTA passengers with verbal/visual messages to indicate upcoming stops and transfer points. While MTA is not mandated to install this system, there have been recent legal challenges at other transit properties where public transit operators have elected not to install these systems due to Operators not calling stops consistently.

MTA could choose to defer installation of this system. This option is not recommended because Motorola's contract provides a \$2,069,067 million or 14% discount to MTA if the option for the subsystem is exercised within 13 months of the contract award. Furthermore, if the AVA is reprocured it is less likely to be fully integrated into the ATMS on-board vehicle operating systems, resulting in higher capital and operating costs. Staff does not anticipated that reprocuring a voice annunciator system in the future will be less expensive than has been proposed by Motorola.

BACKGROUND

900 MHz Frequency Change

The ATMS Project was awarded to Motorola in December 2001. When the ATMS project was originally developed, the ATMS business plan and conceptual design evaluated the risks and costs associated with 470 MHz trunked, simulcast operation and determined that the most cost-

effective approach was for MTA's bus radio communication to continue to be operated on 470MHz frequencies and radio systems.

As part of their work scope under ATMS, Motorola conducted extensive radio spectrum analysis and coverage design during Winter/Spring 2002 that determined the levels of radio frequency coverage available on MTA's 470MHz and 900MHz frequencies. In May 2002, Motorola provided MTA with the results of this detailed frequency analysis and coverage simulation. This information was necessary for the MTA to finalize the necessary license modifications. As the MTA proceeded with negotiations with the leased channel license holders, an additional risk factor was made known. The FCC recently restricted the owner of several 470MHz channel licenses used by MTA from requesting frequency license modifications.

In the course of their radio frequency analysis, Motorola also evaluated an alternative 900MHz system. The results of the 900MHz frequency analysis were much more favorable for the ATMS system, and the risk factors to achieve FCC approval for a 900MHz ATMS system were minimal. While the radio spectrum analysis identified approximately 150 co-channel license concurrences necessary at 470Mhz' there are only about 30 concurrences necessary at 900MHz. In addition, Motorola discovered that there are currently up to seven 900 MHz channels currently available for procurement. This represents a clear opportunity for MTA to keep the ATMS project on track. This change can be implemented at this time with minimal schedule impact and little sunk costs.

FSP has been in the procurement process of selecting a provider for the replacement of their existing obsolete fleet management and mobile location and data communications system (FSP computer system upgrade). The initial response to this RFP indicated that developing an independent stand-alone radio system for FSP is impractical. As an alternative, FSP was advised that they could obtain the radio system upgrades they are looking for within the ATMS system. Furthermore, by participating with ATMS, FSP will further benefit by using ATMS radios and radio sites, and this will reduce the operating and maintenance costs for their program. FSP and MTA staff are planning to present another contract modification proposal to the Motorola contract to add FSP's operational requirements sometime later this year.

In summary, while upgrading Metro Bus and FSP to a 900MHz fully trunked simulcast radio system could add up to \$18 million to the total program budget, it will address a number of radio system problems with other MTA services, including Freeway Service Patrol, and it will also provide enhanced flexibility and reliability for serving MTA's communications needs going into the future.

Automatic Voice Annunciation

As previously reported to the Board, MTA has not yet exercised a contract option with Motorola to install Automatic Voice Annunciators on all MTA buses. The firm-fixed price for this option is \$13,490,321 million if this option is exercised by January 2003.

The riding public is increasingly expecting traveler information services be provided. Some studies by the FTA have shown an expected correlation between traveler information systems and improved passenger perception of the transit service and increased usage of transit.

There have been a number of civil actions filed on ADA compliance that include alleged failure to provide next stop announcements. Two examples are:

- MARTA (Atlanta) is currently in litigation of a civil action filed by for failure to comply with ADA, in part based on failure to provide stop announcements on buses. This suit was filed in November, 2001.
- CTA (Chicago) has settled litigation of a civil action filed for failure to comply with ADA, in part based on failure to provide stop announcements on buses.

In consideration of the customer benefits and assurances of ADA compliance staff is recommending immediate exercise of the option to purchase and install automatic voice annunciators.

NEXT STEPS

Staff will direct Motorola to 1) proceed with necessary system design and component changes necessary to proceed with implementation of ATMS on 900MHz frequencies; 2) proceed with changes necessary to incorporate FSP's radio communication system during the initial ATMS project installation in Fall 2003; 3) proceed with steps to secure up to 7 additional 900MHz frequencies to support ATMS system implementation.

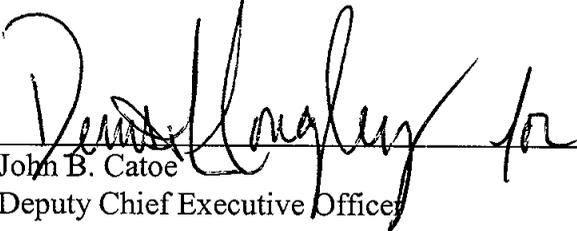
Staff will 1) proceed with negotiating third party co-channel license and site lease agreements; and 2) finalize the procurement process for the FSP Computer System Upgrade and submit to the Board for contract/amendment approval.

Staff will also complete an assessment of system requirements to support the San Fernando Valley Bus Rapid Transit that may require additional equipment and services performed by Motorola under the ATMS contract and submit any recommendations to the Board for contract action if necessary.

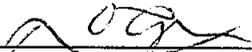
ATTACHMENTS

- A. Procurement Summary
- A-1. Procurement History
- A-2. List of Sub-Contractors

Prepared by: Tom Pope, Contract Administrator
Angela L. Brown, Contract Administrator



John B. Catoe
Deputy Chief Executive Officer



Roger Snoble
Chief Executive Officer

**BOARD REPORT ATTACHMENT A
PROCUREMENT SUMMARY**

ADVANCED TRANSPORTATION MANAGEMENT SYSTEM

| | | | |
|-----|---|---|------------------------------|
| 1. | Contract Number: OP63301054 | | |
| 2. | Recommended Vendor: Motorola, Inc. | | |
| 3. | Cost/Price Analysis Information: | | |
| | A. Bid/Proposed Price: | Recommended Price: | |
| | 1. Radio System Upgrade: \$12,000,000 | \$TBD | |
| | 2. AVA Option: \$13,490,321 | \$13,490,321 | |
| | B. Details of Significant Variances are in Attachment A-1.D | | |
| 4. | Contract Type: Firm Fixed Price | | |
| 5. | Procurement Dates: | | |
| | A. Issued: N/A | | |
| | B. Advertised: N/A | | |
| | C. Pre-proposal Conference: N/A | | |
| | D. Proposals Due: N/A | | |
| | E. Pre-Qualification Completed: 7/30/02 | | |
| | F. Conflict of Interest Form Submitted to Ethics: 7/18/02 | | |
| 6. | Small Business Participation: | | |
| | A. Bid/Proposal Goal: | Date Small Business Evaluation Completed: | |
| | 5% DBE | October 25, 2001 | |
| | B. Small Business Commitment: | | |
| | 7.88% DBE -- Details are in Attachment A-2 | | |
| 7. | Invitation for Bid/Request for Proposal Data: | | |
| | Notifications Sent: | Bids/Proposals Picked up: | Bids/Proposals Received: |
| | N/A | N/A | N/A |
| 8. | Evaluation Information: | | |
| | A. Bidders/Proposers Names: | Bid/Proposal Amount: | Best and Final Offer Amount: |
| | Motorola, Inc. | \$12,000,000 | \$TBD |
| | Upgrade Radio System | \$13,490,321 | \$13,490,321 |
| | AVA Option | | |
| | B. Evaluation Methodology: N/A | | |
| 9. | Protest Information: | | |
| | A. Protest Period End Date: N/A | | |
| | B. Protest Receipt Date: N/A | | |
| | C. Disposition of Protest Date: N/A | | |
| 10. | Contract Administrator: | Telephone Number: | |
| | Angela L. Brown | (213) 922-2516 | |
| 11. | Project Manager: | Telephone Number: | |
| | Tom Pope | (213) 922-5156 | |

**BOARD REPORT ATTACHMENT A-1
PROCUREMENT HISTORY**

ADVANCED TRANSPORTATION MANAGEMENT SYSTEM

A. Background on Contractor

Motorola has over 70 years of communications system integration experience and has successfully integrated some of the largest and most complex systems in public safety, transit, federal and international marketplaces. Motorola's experience includes design and integration of Computer Aided Dispatch, Automatic Vehicle Location, Mobile Data, Voice, Networking, Architecture, and Legacy Systems. In all, Motorola has implemented more than 1,400 systems in North America and more than \$500 million worth of communication systems throughout Southern California alone, including Orange County Transit Authority, San Diego County and the Los Angeles Police Department. Currently, Motorola is implementing a system at Washington Metropolitan Area Transit Authority.

B. Procurement Background

Following a comprehensive negotiated procurement process for specialized equipment pursuant to PUC 130238, the MTA Board approved a firm-fixed price contract award to Motorola, the recommended awardee, in November 2001. The ATMS Contract No. OP63301054 with options is for a period not-to-exceed five years.

C. Cost/Price Analysis Explanation of Variances

The recommended TBD price will be determined to be fair and reasonable based upon a cost and price analysis, technical evaluation and MASD audit where applicable. The ATMS current contract includes a firm-fixed price for the AVA option, agreed upon pricing for equipment items, Motorola's commercial labor rates and forward pricing rates for the subcontractor Orbital Science. Any additional proposed equipment in this amendment may be determined to be fair and reasonable by price analysis based on commercial, market or catalogue pricing. The additional subcontractor costs for RM Lane and The Spectrum Firm may be subject to cost analysis and a MASD audit.

| Bid/Proposal Amount | MTA Estimate | Recommended/Negotiated Amount |
|-----------------------------------|---------------------|--------------------------------------|
| Upgrade Radio System \$12,000,000 | \$TBD | \$TBD |
| AVA Option \$13,490,321 | \$14,104,630 | \$13,490,321 |

**BOARD REPORT ATTACHMENT A-2
LIST OF SUBCONTRACTORS**

ADVANCED TRANSPORTATION MANAGEMENT SYSTEM

- Prime Contractor:** Motorola, Inc.
- DBE Subcontractor(s):** Advantec Consulting
Archangel Systems, Inc.
Global Wireless Communications (dba Global Communications)
- Other Subcontractor(s):** Orbital Sciences
Advanced Electronics
Canam Technology Inc.
Day Wireless
DSP
Hi Tech Fabrications, Inc.
Global Wireless Communications/SaTera Corporation (dba MaComCo)
TransWorld Connections, LTD
Digital Recorders
IRIS-GMBH
Can Dou Communications

Small Business Participation

The Diversity & Economic Opportunity Department (DEOD) established a 5% Disadvantaged Business Enterprise (DBE) participation goal for this contract. Motorola committed to \$5.6 million DBE participation for Phase I and the installation of the (VSS) only, as a result of deleting the AVA, VHM and extended warranties from the initial award. DEOD will evaluate the scope of work for the AVA option, upgrades and FSP radio system to determine the Contractors DBE commitment.

Current DBE attainment¹ based on the current contract amount² is 0%. Current DBE participation³ based on total actual amount paid-to-date to the Prime Contractor and total actual amount paid-to-date to the DBE firms is 0%. The listed DBE subcontractors have not performed to date.

| | |
|--|------------------------|
| Original Award Amount | \$70,485,691.00 |
| Current Contract Amount² | \$70,485,691.00 |
| Total Actual Amount Paid to Date to Prime | \$ 2,488,870.08 |

| Subcontractor's Name | Commitment | Current Attainment ¹ | Current Participation ³ | Current Status |
|---------------------------------|------------|---------------------------------|------------------------------------|----------------|
| Advantec Consulting Engineering | 2.02% | -0- | -0- | To Perform |
| Archangel Systems, Inc. | 3.93% | -0- | -0- | To Perform |

| | | | | |
|--------------------------------|--------------|-----|-----|------------|
| Global Wireless Communications | 1.93% | -0- | -0- | To Perform |
| TOTAL | 7.88% | -0- | -0- | |

¹Current Attainment = Total Actual Amount Paid-to-Date to Subs ÷ Total Current Contract Amount

²Current Contract Amount = Original Contract Value + Contract Cost Modifications

³Current Participation = Total Actual Amount Paid-to-Date to Subs ÷ Total Actual Amount Paid-to-Date to Prime