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A
Metropolitan
Transportation
Authority

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TO: BOARD OF DIRECTORS

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SUBJECT: STATUS OF EC DIESEL TEST PROGRAM

ISSUE

This report (Quarterly Report #5) provides a status update to a motion approved by the Board at the May 25, 2000 meeting, which directed that:

- a) Within 30 days, staff initiates an expansion of the existing ultra low sulfur diesel fuel (EC Diesel) test program to evaluate the installation of continuously regenerating traps (CRT's) or other similar particulate filters on ten methanol conversion buses.
- b) That upon successful completion in February 2001 of the low sulfur diesel fuel (EC Diesel) test program currently underway at the Arthur Winston Division, staff be directed to initiate a program to install CRT's or other similar particulate filters by February 2002 on the entire remaining diesel fleet projected to remain in service after January 2003.
- c) Staff provides status reports to the Board on a quarterly basis on the ultra low sulfur diesel test program.

DISCUSSION

In February 2000, the MTA began a one-year test to identify emissions benefits and reliability issues of using low sulfur fuel in diesel transit buses. The test was conducted at the Arthur Winston Division on twenty 1998 New Flyer diesel buses. Of these buses, twelve buses operated on EC Diesel and a control group of eight buses operated on standard #2 diesel fuel. Two buses operating on EC Diesel were also equipped with exhaust after-treatment devices called continuously regenerating traps (CRT's).

Results from the EC Diesel program have been favorable. The vehicle reliability evaluation phase of the program was completed in December 2000 with maintenance data revealing no discernable difference in the reliability of buses operating on low sulfur diesel fuel and buses operating on standard diesel fuel. The results from emissions tests conducted about 2 - 3 weeks after installation of the particulate filters on the EC Diesel buses revealed an 80 percent or greater reduction in particulate matter (PM) emissions. The costs associated with the EC Diesel program include bus retrofit costs of about \$8,000 per bus and diesel fuel costs that run about five cents per gallon greater than conventional diesel fuel.

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The California Air Resources Board (CARB) has mandated use of low sulfur diesel fuel for transit buses in 2002 and will require transit agencies to begin retrofitting older diesel buses with CRT's or other similar after-treatment devices by 2003 to lower particulate matter (PM) emissions.

At the May 2000 Board meeting, a motion was approved to initiate an expansion of the existing EC Diesel test program to evaluate the installation of CRT's or other similar particulate filters on ten methanol conversion buses. In response to the Board's direction, staff developed and implemented a comprehensive test program to evaluate the performance and reliability of particulate filters on the 2-cycle, Detroit Diesel 6V-92 engines used in the methanol conversion buses.

STATUS OF EXPANDED TEST PROGRAM

The following status update will discuss the performance of the particulate filters installed on the 1998 New Flyer buses with 4-cycle engines and the installation of particulate filters on older buses with 2-cycle engines.

1998 New Flyer Buses – The original EC Diesel program that evaluated the use of particulate filters on newer buses with 4-cycle engines is complete. The final emissions tests at the CARB Emissions Test Facility confirmed earlier tests that revealed an 80 percent or greater reduction in particulate matter emissions.

The existing program is now being expanded based upon the Board's directive to install CRT's or other particulate filters on diesel buses after successful completion of test programs and will include the installation of particulate filters on all twenty 1998 New Flyer buses with Series 50 (4-cycle) engines. To ensure availability of low sulfur diesel fuel for the additional buses, a procurement was initiated for low sulfur diesel fuel at Division 6. The procurement of low sulfur diesel fuel is expected to be presented to the Board for approval in October. The installation of CARB certified particulate filters on the 1998 New Flyer diesel buses will begin after low sulfur diesel fuel becomes available at this location.

Buses with 2-Cycle Engines – While the lower exhaust temperatures on 2-cycle engines make installation of particulate filters more difficult, the first prototype particulate filter was successfully installed on a methanol conversion bus in late June and has operated without incident for over two months. Johnson Matthey (currently one of two manufacturers producing particulate filters) is in the process of manufacturing additional particulate filters for installation on four other methanol conversion buses. The methanol conversion bus with the particulate filter was emissions tested in early August. The results of the emissions tests showed extremely good results with an average reduction in particulate matter emissions of over 90 percent.

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Engelhard (the other manufacturer of particulate filters) has indicated that their particulate filter for older diesel buses with 2-cycle engines will be ready for installation in September.

NEXT STEPS

During the next quarter, the delivery of low sulfur diesel fuel is expected to begin at Division 6, and buses with particulate filters will be transferred from the Arthur Winston Division to Division 6. The procurement of particulate filters for the remainder of the 1998 New Flyer buses will also be initiated during this period.

Staff is anticipating delivery, installation, and testing of four additional Johnson Matthey prototype particulate filters for buses with 2-cycle engines. Engelhard is expected to install their first particulate filter on one methanol conversion bus. The ten methanol conversion buses with particulate filters will be tested for a period of six months to ensure the durability of the particulate filters prior to expanded use on the remainder of the diesel fleet.