



August 30, 2000

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TO: BOARD OF DIRECTORS

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SUBJECT: STATUS OF EC DIESEL TEST PROGRAM

ISSUE

This report 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 initiate 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 provide 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 is being conducted at the Arthur Winston Division on twenty 1998 New Flyer diesel buses. Of these buses, twelve buses are operating on EC Diesel and a control group of eight buses are operating on standard #2 diesel fuel. Two buses operating on EC Diesel are also equipped with exhaust after-treatment devices called continuously generating traps (CRT's).

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 by at least 85 percent.

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At the May 25 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. Staff developed and began implementation of 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

Staff held meetings with two particulate trap manufacturers, Johnson Matthey and Engelhard, to identify any issues with the installation of particulate filters on the methanol conversion buses. The primary concern identified in these meetings was the relatively low exhaust temperatures of the 2-cycle engines that are used in these buses, since the particulate filters require an average exhaust temperature of 270° C to burn off the particulate matter. This issue is not a problem with newer diesel buses due to an average exhaust temperature of about 300° C on the newer 4-cycle engines.

To evaluate the exhaust temperature on the methanol conversion buses, Johnson Matthey installed a data logger on bus 1256 for a period of several weeks. The data from these tests showed an average exhaust temperature of about 250° C, which is below the minimum temperature requirements for the particulate filter. To increase the exhaust temperature, thermal blankets were installed on the exhaust system of this bus. The preliminary results from these later tests showed an increase in exhaust temperature to about 270° C. The final results from this test will be completed in late August.

NEXT STEPS

In anticipation of obtaining a favorable exhaust temperature with the thermal blankets, Johnson Matthey began designing the particulate filters for the methanol conversion buses. During the next quarter, staff will continue to work with Johnson Matthey to finalize the design and begin in-service testing of the particulate filters on five methanol conversion buses. The cost of the prototype conversions will be higher than original projections for the 2-cycle engines due to the requirement for installation of thermal blankets on the exhaust system.

Engelhard has been less proactive in the development of particulate filters for 2-cycle engines. Staff will continue to work with Engelhard in an attempt to complete testing and design of their particulate filter system for installation on five additional methanol conversion buses. If Engelhard decides not to pursue the 2-cycle engine exhaust after treatment market, staff will expand the test of the Johnson Matthey particulate filter systems to meet the Board directive of installation of particulate filters on ten methanol conversion buses.