

DEMONSTRATION OF THE LOW-EMISSION POTENTIAL FOR UREA SELECTIVE CATALYTIC REDUCTION AND DIESEL PARTICULATE FILTER TECHNOLOGIES

Magdi Khair and Chris Sharp

Southwest Research Institute

Ralph McGill

Oak Ridge National Laboratory

ABSTRACT

The demonstration of the potential for urea selective catalytic reduction (SCR) and diesel particulate filter technologies is one of the major projects in the Advanced Petroleum-Based Fuels – Diesel Emission Control (APBF-DEC) activity. The objective of this project is to integrate several diesel emission control technologies to demonstrate their capability to comply with the 2007 heavy-duty diesel engine standards. Once the engine and control system were developed, several fuels having various sulfur content were evaluated to establish the sensitivity of the control system to sulfur.

The work is being conducted on a Caterpillar C-12 heavy-duty diesel engine. Two different emission control systems, employing urea SCR catalysts and diesel particulate filters, were calibrated and showed the potential for controlling NO_x and particulate matter emissions to levels near the 2007 standards. The project will also examine the long-term durability of the control systems and their interaction with the test fuels. This presentation is a summary of this work, which is still in progress.