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**The Execution of a Cooperative Industry/Government
Exhaust Emission Test Program**

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ABSTRACT:

The Clean Air Act (CAA) Amendments of 1990 require the Environmental Protection Agency (EPA) to review and revise the Federal Test Procedure (FTP), which measures vehicle exhaust emissions, to reflect current in-use driving patterns. The EPA, the California Air Resources Board (CARB), and the Automotive Industry agreed to participate in the design and execution of a cooperative program to:

- Measure the driving characteristics of the in-use fleet in urban areas, and
- Determine the emissions contribution from driving modes not included in the current FTP

Driving patterns were measured in a jointly funded program in Spokane and Baltimore in the early spring of 1992. Additional measurements were made in Los Angeles and Atlanta. It is anticipated that these studies will be reported in other papers in the near future.

Three new test cycles were developed from the driving information gathered and were used to conduct a comprehensive emissions testing program in the Vehicle Emissions Laboratory at the GM Milford Proving Ground during late 1992 and early 1994. The testing included 27 vehicles provided by eight participating manufacturers representing a cross section of the current fleet of passenger cars and trucks of up to 10,000 pounds of GVW.

The engine calibrations of a subset of the test vehicles were then modified to inhibit the use of air-fuel ratio enrichment for increased power, and as an engine and catalyst protective strategy under extreme operating conditions. The modifications did not reflect the EGR, spark and transmission shift changes necessary to make a commercial calibration. These vehicles were retested on the same test cycles to define the maximum emissions reductions that could be achieved with selective regulatory constraints on air-fuel ratio enrichment.

The experimental and emissions measurement methodologies used to conduct the vehicle emissions testing program are defined in detail in this paper. A complete database of the results

of the test program will be available to interested parties in machine readable format for a nominal fee. This document is intended to serve as a companion to the database providing detailed insight that can be used to place the results in the proper context.