**Questions and Answers**

**CRC Project E-149**

**Effect of Engine Deposits on Tailpipe Emissions of New-Technology Vehicles**

1. In terms of "bringing engine internals to a mechanically clean condition", does this apply to all engine internals or just the intake ports and backs of the valves? If we clean all engine internals, optional step c is not optional.

> 3. Bring engine internals to a mechanically clean condition via walnut shell blasting and/or chemical cleaning and/or ultrasonic cleaning.
>
>    a. Perform a compression and leak down check on all cylinders [9]. Note if leak down check presents any leak at the intake valve(s) by listening at throttle body, or exhaust valve(s) by listening at exhaust pipe, or crankcase by listening at the dipstick location.
>
>    b. Optional task: Project panel may request procurement and replacement of injectors and spark plugs.
>
>    c. Optional task: Remove and disassemble cylinder head(s) to mechanically clean combustion chamber, valve seat/tulip/stem region, and intake + exhaust ports.

**Answer: Regarding cleaning engine internals, it is not meant to require disassembly of the cylinder head from the block. Rather an in-situ walnut blasting of the intake ports and back of valves, ultrasonic cleaning of the injectors, and new OEM spark plugs. The contractor can give an option for cylinder head disassembly and cleaning if they are capable.**

2. With regard to the Vehicle Details, it's stated that "3 GDI, 1 PFI, and 1 GDPI with emissions certification reults spanning the range from <0.5mg/mi to near 3mg/mi.

   Do you mean 30 mg/mi?

Details

**Vehicles**

- 3 GDI, 1 PFI, and 1 GDPI with emissions certification results spanning the range from <0.5mg/mi to near 3mg/mi. (GDPI = Combined Direct and Port Fuel Injection.)
- It is preferred that most test vehicles have conventional drivetrains, considering the added complexity of testing full hybrid (FHEV) drivetrains.
- New or low-mileage in-use vehicles are acceptable. The former would require de-greening procedures prior to the initial as-received emission tests. [6]

**Answer: 3mg/mi was indeed our intention. There are plenty of vehicles in that range from which to choose. Note that 30mg/ mi is for NMOG + NOx, whereas the 3mg.mi is a PM value that is targeted meeting a Tier 3 standard for PM achievement.**