

## **CATEGORY DEFINITION**

### **Status / Timing of Category Development**

Starting with the most developed test, the Mack T-11 has already been developed for use in both Mack EO-N Premium Plus 03 and API CI-4 Plus. At this time it has not been accepted into the ACC Code of Practice, but work is progressing toward that end. The T-11 uses PC-9 test fuel with 500 ppm maximum sulfur.

Perhaps the next most developed test is the Cummins ISM, which also uses PC-9 fuel. This test is a replacement for the M11-EGR test that has virtually run out of hardware. The ISM is the current production configuration of the Cummins 11 liter diesel engine. It has a significantly more robust valve train design than the M11, and early testing in a mini-matrix has shown much less separation between very good and very bad M11 oils on valve train wear protection. However, although the differences were smaller, they were still statistically significant. An additional round of mini-matrix testing is progressing to refine test precision and discrimination.

The Cummins ISB, a new valve train wear test, uses a version of the 5.9 liter diesel engine that Cummins supplies to the Dodge Ram pick-up truck. Since this test uses flat tappet cam followers rather than roller followers, Cummins believes that it is protecting against a different kind of wear than either the RFWT or the ISM. Several engines have been supplied to the test labs, and a Development Task Force is working to standardize the test procedure. Limited discrimination and precision data have been generated in one lab, but additional work is required to bring additional labs on-stream. The ISB uses ULSD fuel with 15 ppm maximum sulfur as defined by the PC-10 fuel specification.

The Caterpillar C-13 engine is a new test using a 13 liter Caterpillar engine with a full ACERT (R-TM) emission control system. Early versions of the C-13 experienced field problems with piston deposits and oil consumption, and this test is designed to predict those field issues. Unfortunately, Caterpillar was not successful in identifying good and poor oils from its field experience and is relying on performance in the C-13 test as a "guesstimate" of the field. At this time, Caterpillar has identified a borderline failing oil and is looking for a good oil. Mini-matrix