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Caterpillar Unveils Oil Specs

By David McFall

NORFOLK, Va. – Earlier this month, at the conclusion of ASTM's Subcommittee B on Automotive Lubricants meeting here, Caterpillar Inc.'s Abdul Cassim surprised the group with the announcement that his company soon will introduce two new heavy-duty engine oil specifications, called ECF-2 and ECF-3. In addition, CAT for the first time will have a registration system for products meeting the new specifications.

ECF stands for Engine Crankcase Fluid, and the two new specifications are upgrades to ECF-1, which Caterpillar issued on June 1, 2003. The original ECF specification was developed to ensure optimum life and performance of engines equipped with CAT's Advanced Combustion Emissions Reduction Technology (ACERT), which allowed its engine/emissions systems to meet 2002 emissions requirements while operating at acceptable durability, drain interval and reliability levels. ECF-1 will be retired in the third quarter of 2006.

In his Dec. 7 presentation to ASTM's Subcommittee B (which is developing the new diesel engine oil upgrade called PC-10, and now officially designated by API as CJ-4), Cassim explained, "The new specifications are designed to address gaps in oil availability before API CJ-4 licensing for 2007 engines begins late in 2006. They address off-highway and on-highway needs and the [CAT] specifications are mutually exclusive." He added, "While the new specifications are in addition to the API system, Caterpillar remains committed to the API engine oil licensing system."

Caterpillar will release draft specifications for both ECF-2 and an "interim" version of ECF-3 on Jan. 16, followed by a comment period of less than one month – an aggressive time frame. Final ECF-2 specifications will then be issued on Feb. 17, with implementation scheduled for June 5, 2006. ECF-3's final specification is expected in the second or third quarter of 2006.

Cassim went on to highlight the differences between its two new specifications:

ECF-2 replaces ECF-1, and is designed for off-highway requirements and pre-2007 truck engines. It is planned for worldwide use through 2011. It features a removal of ECF-1's current ash maximum (1.3 percent) and includes an ash minimum of 1.0 percent. The

specification requires a minimum performance level of API CH-4 (the current category) and will include CAT's new C-13 engine sequence test, as well. However, Cassim noted, the C-13 limits for ECF-2 "could differ from CJ-4," although he did not indicate in what way.

ECF-3, by contrast, is designed for 2007 on-road truck engines in the United States. It will be implemented in two phases, interim and final. The interim ECF-3 version will be issued prior to CJ-4 licensing and is a subset of CJ-4 tests. It also includes the C-13 engine test with limits that "could differ from CJ-4" – although Cassim again did not indicate in what way. Interim ECF-3's scheduling, comment period, final specification and implementation dates are the same as ECF-2, above.

ECF-3's final version will be based on the final API CJ-4 specifications, be concurrent with them and will include the CAT C-13 test with limits possibly differing from CJ-4. CAT expects to begin licensing ECF-3 oils concurrently with first API CJ-4 licensing – now highly likely to begin in October 2006.

The registration system marks another change for Caterpillar, which is headquartered in Peoria, Ill. For ECF-1, the engine builder had simply announced the specification. Oil marketers then complied and made that information available on technical documents. For ECF-2 and ECF-3, however, oil marketers will have to send test data to Caterpillar, and this data will be examined for concurrence with the specifications. CAT will also publish a list of approved oil marketers for each specification.

Attendees of the ASTM meeting had little time to explore the details and implications of these proposed new categories with Cassim. However, the impact on the PC-10 (CJ-4) approval process was pointed out by Infineum's Pat Fetterman. "There is an issue of test-stand availability for these categories and for CJ-4, especially given the uncertain status of the C-13 [test] and the additional requirements these new specifications place on the system," he said.

Test-stand availability is a core issue for both categories, as candidate oils trying to qualify for PC-10 and ECF will need to undergo testing during the same time period. The American Chemistry Council, which represents the additive industry, has recommended a formal nine-month testing period for PC-10 programs, to begin when test limits are approved (either on Jan. 10 or, possibly, on Jan. 26). After nine months, ACC said, enough oils should have had the opportunity to be tested that API could fairly begin licensing PC-10 oils in the marketplace. This nine-month time frame is three months shorter than API's customary time frame of one year.

ACC's nine-month recommendation, however, was a best estimate based on a careful count of the number of C-13 test runs likely to be required to complete all new programs for CJ-4 oils – alone – and allow all marketers to bring their products to the marketplace at the same time. A key goal was to meet the engine builders' longstanding demand that first API licensing begin by October 2006. Each C-13

test run requires close to one month to complete, including the actual test run of 500 hours (nearly 21 days), parts rating, rebuilding and making the stand ready for the next test.

The new ECF categories throw ACC's estimates, done without knowledge of CAT's plans, into an uncertain status. Craig Stone, an engineer with Caterpillar's External Test Business Group, stated, "Any number between four and 10 C-13 engine stands could be made available to ease the perceived C-13 test-stand shortage and not to compromise the PC-10 timeline."

However, Infineum's Fetterman explained to Lube Report, "Some of our customers may now want to upgrade their ECF-1 oils to ECF-2 or ECF-3 quality levels, and that will require C-13 testing. But that testing will tie up C-13 stands that we had earlier projected for CJ-4 testing and upon which the nine-month interval was based."

Moreover, ACC's estimates carry additional weight given the fact that independent lubricant manufacturers, which usually wind up near the end of the testing queue because of their smaller size, have indicated reliance on ACC to protect their interests. As Larry Kuntschik, a consultant who represents the Independent Lubricant Manufacturers Association on automotive issues, told *Lubes'n'Greases* magazine last month, "ACC has the best handle on technology development requirements and engine test availability. When ACC is comfortable [with the PC-10 testing environment], ILMA is served."

ACC is currently reevaluating its nine-month testing period. An extension of that period would have far-reaching effects, however, beginning with the Engine Manufacturers Association, which is firm on October as the first-licensing target date.

Two other U.S. diesel engine manufacturers have proprietary engine oil specification and registration systems. Cummins Inc. has maintained an engine oil specification and registration system for seven years. Its current specification, which generally parallels API CI-4 PLUS, is CES 20078. Volvo Powertrain North America has published proprietary engine oil specifications and maintained a review and approval program for 35 years; its current category is called EO-N.

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