

# Cummins Surveillance Panel Report to HDEOCP



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# Scope

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The Cummins Surveillance Panel is responsible for the Cummins M-11 HST and M-11 EGR test procedures. The Panel works with the ASTM Test Monitoring Center to monitor test operations, test statistics, test severity and test precision for these tests. Overall improvements in the test operation and test monitoring are accomplished with the cooperation of the test developer, the Test Monitoring Center and ASTM Subcommittee B0.02.

# Objectives

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- Monitor and make improvements to existing tests
  - Develop an ASTM engine test method as a replacement test for the M-11 EGR and M-11 HST using the Cummins ISM engine platform. Target is to have a replacement test in place by September 2004. This engine test will be carried forward be included in the 2007 PC-10 specification for Heavy Duty Diesel Engine Oils.
- Develop an ASTM engine test method for the evaluation of a lubricant's capability to protect against overhead valve train wear using a Cummins ISB engine platform. This engine test is intended to be included in the 2007 PC-10 specification for Heavy Duty Diesel Engine Oils.

# ISB Update

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- **Test has shown ability to discriminate between oils.**
- **O&M panel meets next week in San Antonio to finalize procedural details and insure stand readiness**
- **HDEOCP is urged to select reference oils and define matrix by mid August so matrix testing can begin.**

# **ISM:**

## **Overview of status of Test Development**

- Initial phase of matrix testing complete.
- Additional data generated on two tests run to 300 hours.
- Statistical data review of the initial phase of matrix is complete.
- Test shows discrimination on CHWL, but other parameters unclear.

# Next Steps for ISM Development

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- Cummins has expressed a desire to move toward a higher level of soot in the ISM test (6.0 min)
  - This will require a modification to the original matrix design. Additional tests that will help develop a soot correlation from 5.5% to 6.5% are now being built into a revised matrix plan.
- Next phase of testing to begin once new matrix is finalized and approved.

# Cummins ISM Test Plan

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- Test in Stages
- Use Decision Points
- Use a Range of Oils – Quality Determined by Test Results/Models
  - Poor (1004)
  - Borderline (1005)
  - Good (830)
  - Great (ISMA)

# Cummins ISM Test Plan

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STAGE1 COMPLETE	SwRI	PE	LZ
1004	v 5.5% Soot	v 5.5% Soot	v 5.5% Soot
ISMA	v 5.5% Soot	v 5.5% Soot	



# Cummins ISM Test Plan

STAGE2 <b>PLAN</b>	SwRI	PE	LZ
1004			v 6.5% Soot
ISMA	v 6.5% Soot		
830		v 6.5% Soot	v 6.5% Soot
1005	v 6.5% Soot	v 6.5% Soot	

# Cummins ISM Test Plan

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- Is the Correlation Similar to the M11 EGR?
  - No: Stop the Matrix
  - Somewhat: Complete Matrix by Running the Reference Oil Twice in Each Lab (6 Tests)
  - Yes: Complete Matrix by Running the Reference Oil Once in Each Lab (3 Tests)

# Cummins ISM Matrix: Issues

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- **Surveillance panel ran out of time before matrix could be resolved.**
- **Does not appear to be sufficient spread between poor 1004 and ISMA to offer 4 levels of discrimination**
- **Cummins believes phase 2 design should include only 3 oils and target 6.0 % soot**
  - **ISMA      Great oil**
  - **830        Borderline Good**
  - **1004      Poor**
- **Panel seeks HDEOCP discussion; approval of matrix design; and go-ahead to proceed to finalize Phase 2 on Thursday**