



Test Monitoring Center

6555 Penn Avenue
Pittsburgh, PA 15206-4489
(412) 365-1000

MEMORANDUM: 08-018
DATE: April 3, 2008
TO: Jim Moritz, Chairman, Cummins Surveillance Panel
FROM: Jeff Clark
SUBJECT: ISB Calibration Testing for the April 2008 ASTM Report Period

The following is a summary of ISB reference oil tests completed during the April 2008 ASTM report period, which began on October 1, 2007 and ended on March 31, 2008.

| Test Status | TMC Validity Code | Number of Tests |
|---|-------------------|-----------------|
| Acceptable Calibration Test | AC | 3 |
| Failed Calibration Test (LTMS Criteria) | OC | 0 |
| Operationally Invalid | LC | 0 |
| Aborted Test | XC | 0 |
| Total | | 3 |

Severity and Precision:

Figure 1 (attached) shows the current industry EWMA severity and cusum charts for Average Camshaft Wear (ACSW). ACSW is currently within control chart limits. For this period, ACSW is on target.

Figure 2 (attached) shows the current industry EWMA severity and cusum charts for Average Tappet Weight Loss (ATWL). ATWL is currently within control chart limits. For this period, ATWL is on target.

Precision estimates will be presented on an annual basis, in the following table. The precision estimate for 2005 was primarily generated from the PC-10 matrix program. Precision estimates for 2006 show improvement for ACSW and degradation for ATWL. The 2007 estimates show continued improvement for ACSW and a return to 2005 levels for ATWL. No estimate is yet available for 2008.

ISM Precision Estimates

| Parameter | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------|-------------|-------------|-------------|-------------|-------------|
| df | 15 | 5 | 5 | | |
| ACSW | 6.69 | 5.58 | 3.45 | | |
| ATWL | 14.13 | 22.29 | 15.62 | | |

Reference Oils:

The current reference oil test targets are shown below:

| Oils | N | Parameter | Mean | S |
|----------------|----------|------------------|-------------|----------|
| 831 (PC10B) | 14 | ACSW (µm) | 42.5 | 5.0 |
| | | ATWL (mg) | 97.2 | 14.8 |

The first five tests on oil 831-1 will be judged using the 831 targets. To date, one test has been completed on oil 831-1.

The table below shows the supply levels of oils 831 and 831-1.

| Oil | TMC Inventory (gallons) | Lab Inventory (gallons) | Estimated Life^A (years) |
|--|------------------------------------|------------------------------------|---|
| 831 | 17 | 100 | 0.5 |
| 831-1 | 1021 | 75 | 5+ |
| Total Estimated Life of All Reference Oils | | | 5.5 |

^AThe ISB shares reference oils with the C-13 test. Activity levels of both tests are taken into account in the estimated life of the reference oils.

Information Letters:

No ISB Information Letters were issued this ASTM period.

TMC Laboratory Visits:

No TMC laboratory visits were conducted this ASTM period.

Additional Information:

The ISB timeline is attached as Figure 3. The ISB database and alarm logs can be accessed on the TMC's homepage. If you have any questions on how to access this information, contact the TMC.

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JAC/jac/mem08-018.jac.doc

Attachments

c: J.L. Zalar, TMC

F.M. Farber, TMC

Cummins Surveillance Panel

<ftp://ftp.astmtmc.cmu.edu/docs/diesel/cummins/semiannualreports/ISB/ISB-04-2008.pdf>

Distribution: Email

FIGURE 1 CUMMINS ISB INDUSTRY OPERATIONALLY VALID DATA

AVERAGE CAMSHAFT WEAR

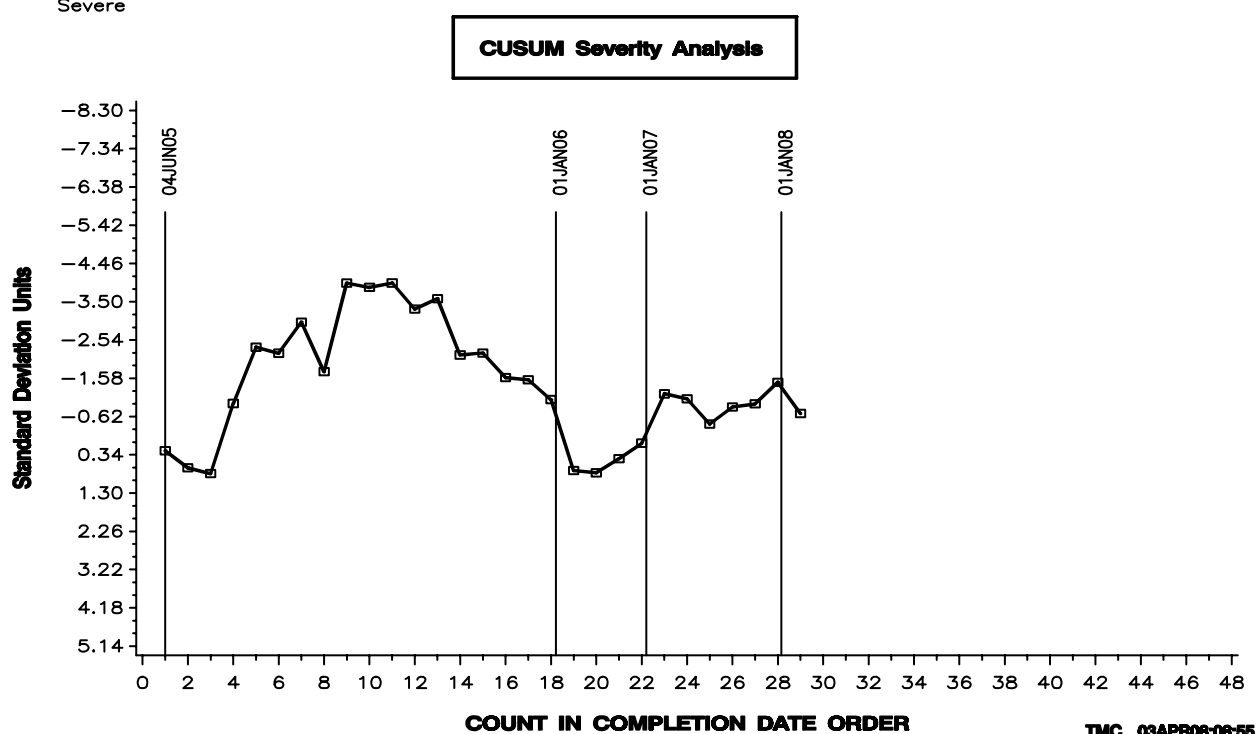
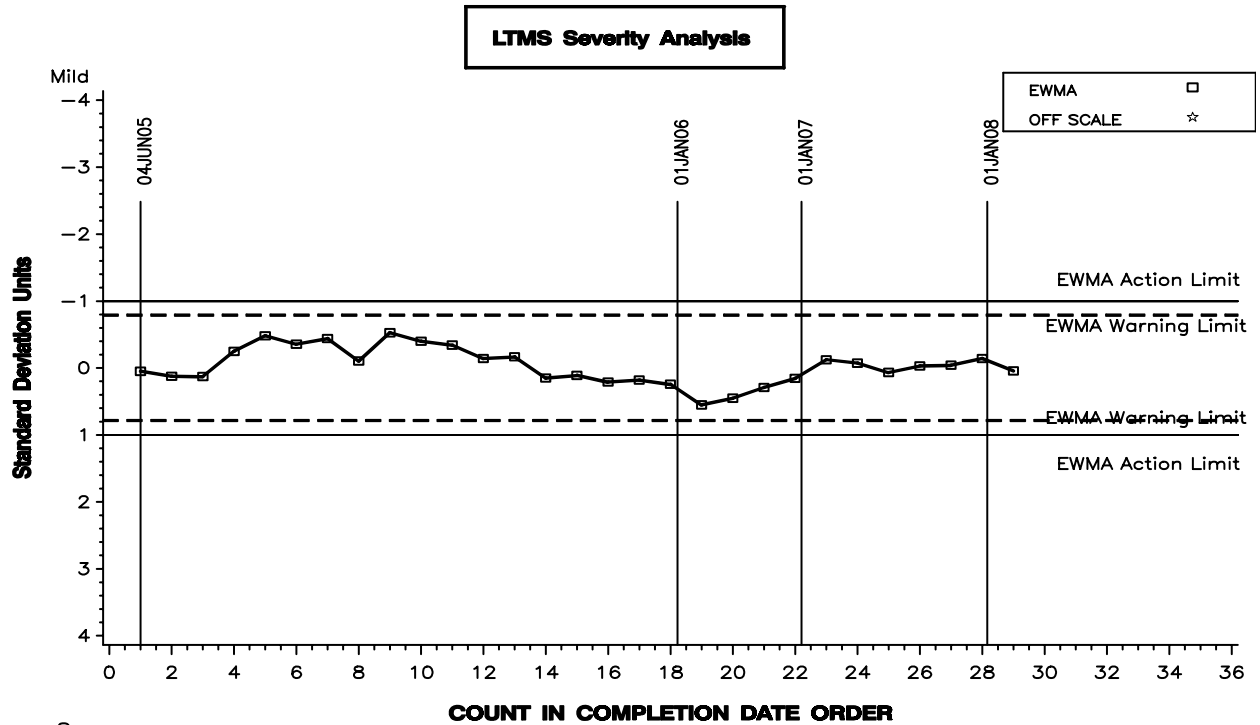


FIGURE 2

CUMMINS ISB INDUSTRY OPERATIONALLY VALID DATA

AVERAGE TAPPET WEIGHT LOSS

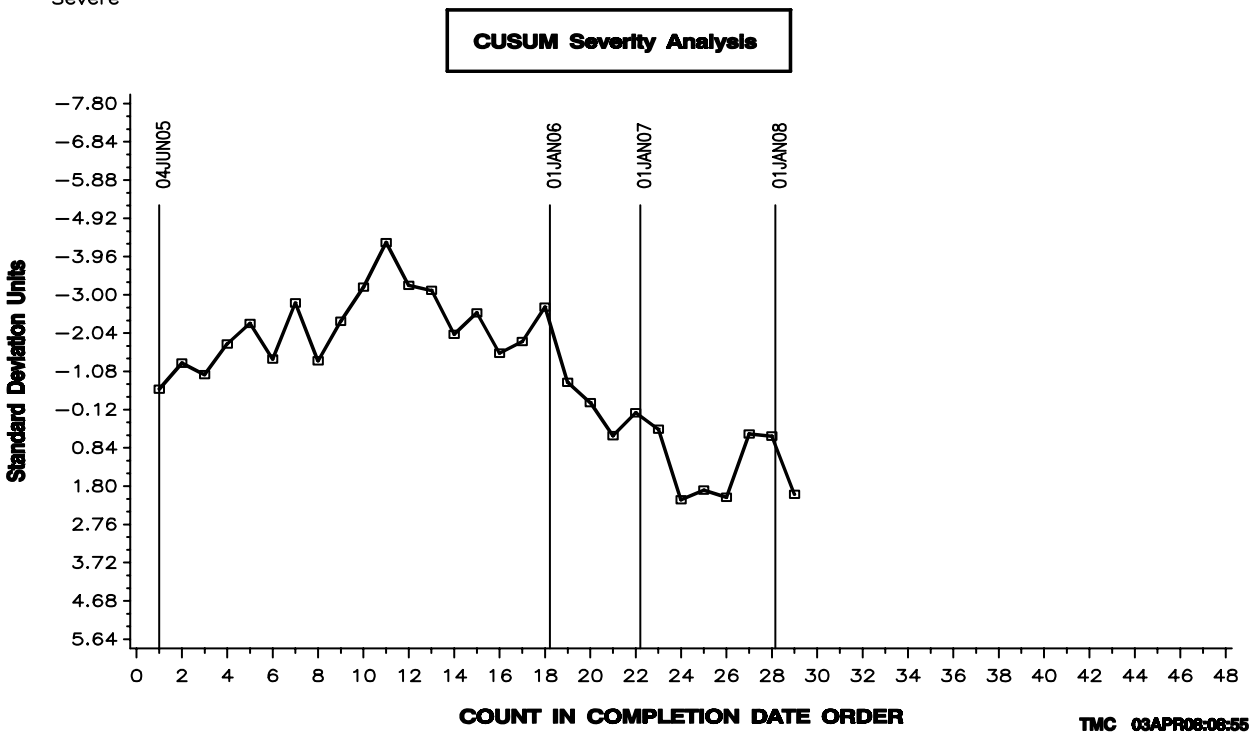
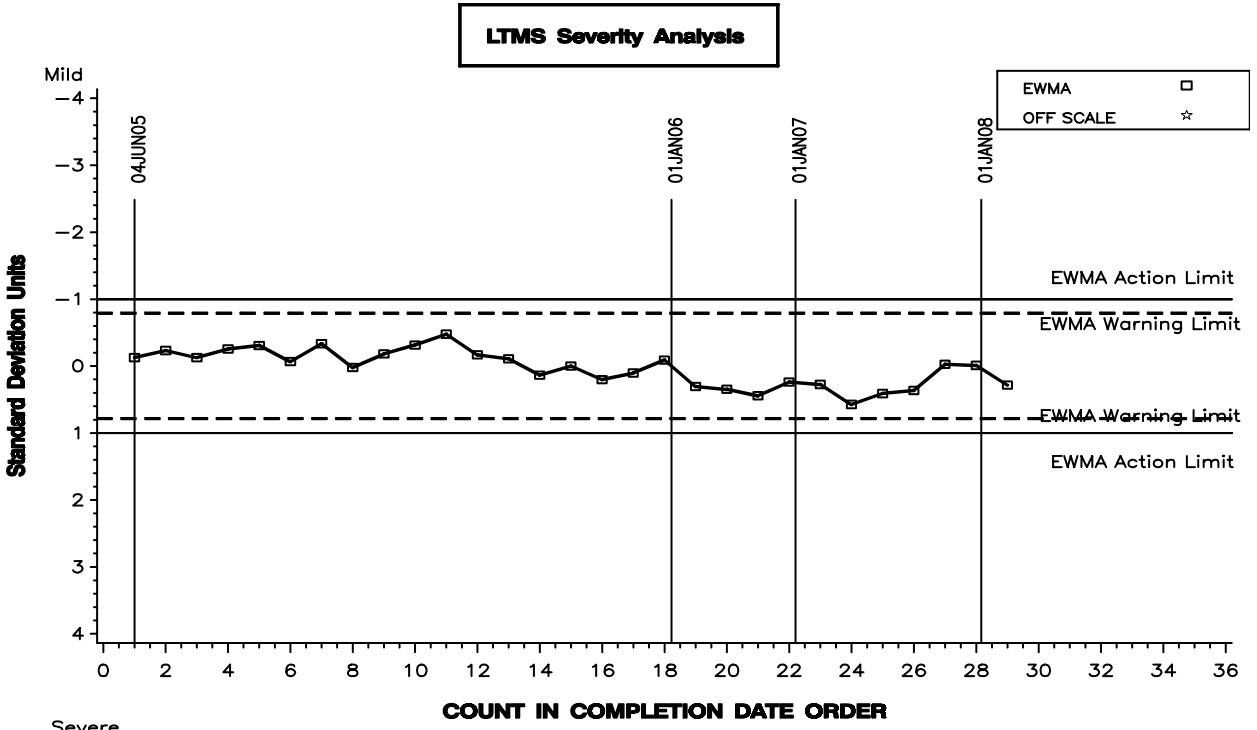


FIGURE 3

ISB Timeline

09:02 Thursday, April 3, 2008 1

| Obs | effective_date | info_letter_number | event |
|-----|----------------|--------------------|--|
| 1 | 20050520 | | BEGINNING OF PC-10 MATRIX |
| 2 | 20050915 | | COMPLETION OF PC-10 MATRIX |
| 3 | 20051123 | | LTMS IMPLEMENTED |
| 4 | 20060804 | | ISB Procedure Draft - August 4, 2006 issued. |
| 5 | 20061128 | | ISB Procedure Draft - November 28, 2006 issued. |
| 6 | 20061218 | 06-1 | Vulkan Driveline coupling supply information added. |
| 7 | 20061218 | 06-1 | Intake Air Tube diameter corrected from 3.5" to 4.0". |
| 8 | 20070125 | 07-1 | Soot adjustment calculation modified for ATWL. |
| 9 | 20070129 | | ISB Procedure Draft - January 29, 2007 issued. |
| 10 | 20070202 | 07-1 | D 129 removed from fuel sulfur measurement methods. |
| 11 | 20070202 | 07-1 | DACA II Report specified for accuracy and resolution of measurement systems. |
| 12 | 20070807 | | 14 TEST TARGETS FOR OIL 831 (PC-10B). |
| 13 | 20080309 | | OIL 831-1 INTRODUCED. |