



Test Monitoring Center

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MEMORANDUM: 07-033
DATE: May 23, 2007
TO: Jim Moritz, Chairman, Cummins Surveillance Panel
FROM: Jeff Clark
SUBJECT: ISB Calibration Testing for the April 2007 ASTM Report Period

The following is a summary of ISB reference oil tests completed during the April 2007 ASTM report period, which began on October 1, 2006 and ended on March 31, 2007.

Test Status	TMC Validity Code	Number of Tests
Acceptable Calibration Test	AC	4
Failed Calibration Test (LTMS Criteria)	OC	0
Operationally Invalid	LC	0
Aborted Test	XC	0
Total		4

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 trending an average of 0.48 Δ/s mild, which is approximately 2.6 μm .

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 trending an average of 0.29 Δ/s severe, which is approximately 4.4 mg.

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. No estimate is yet available for 2007.

ISM Precision Estimates

Parameter	2005	2006	2007	2008	2009
df	15	5			
ACSW	6.69	5.58			
ATWL	14.13	22.29			

Reference Oils:

The current reference oil test targets are shown below:

Oils	N	Parameter	Mean	S
831 (PC10B)	6	ACSW (μm)	42.8	5.4
		ATWL (mg)	94.9	15.3

To date, thirteen tests have been completed on oil 831 (PC10B) and it would be appropriate for the surveillance to consider a test target update. However, two of the tests in the data set are from a lab that has yet to successfully calibrate for the ISB and therefore caution must be used in selecting the data set for any target update. The following table shows the statistics for all results on oil 831 as well as the results only at calibrated labs. The most notable difference between the two data sets is ATWL.

Oils	N	Parameter	Mean	S
831 (all data)	13	ACSW (μm)	41.5	5.4
		ATWL (mg)	102.4	21.8
831 (cal. labs)	11	ACSW (μm)	42.2	5.5
		ATWL (mg)	95.4	14.7

Information Letters:

ISB Information Letter 06-1, Sequence No. 1, was issued December 18, 2006. Topics covered included adding supply information for the Vulkan Driveline coupling, and correcting the specified intake air tube diameter.

ISB Information Letter 07-1, Sequence No. 2, was issued February 2, 2007. Topics covered included using the DACA II Report for accuracy and resolution operational measurements, modifying the ATWL calculation method, and removing D 129 from the list of fuel sulfur measurement methods.

TMC Laboratory Visits:

Two TMC laboratory visits were conducted this ASTM period and no deficiencies were noted.

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.

JAC/jac/mem07-033.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-04-2007.pdf>

Distribution: Email

FIGURE 2

CUMMINS ISB INDUSTRY OPERATIONALLY VALID DATA

AVERAGE TAPPET WEIGHT LOSS

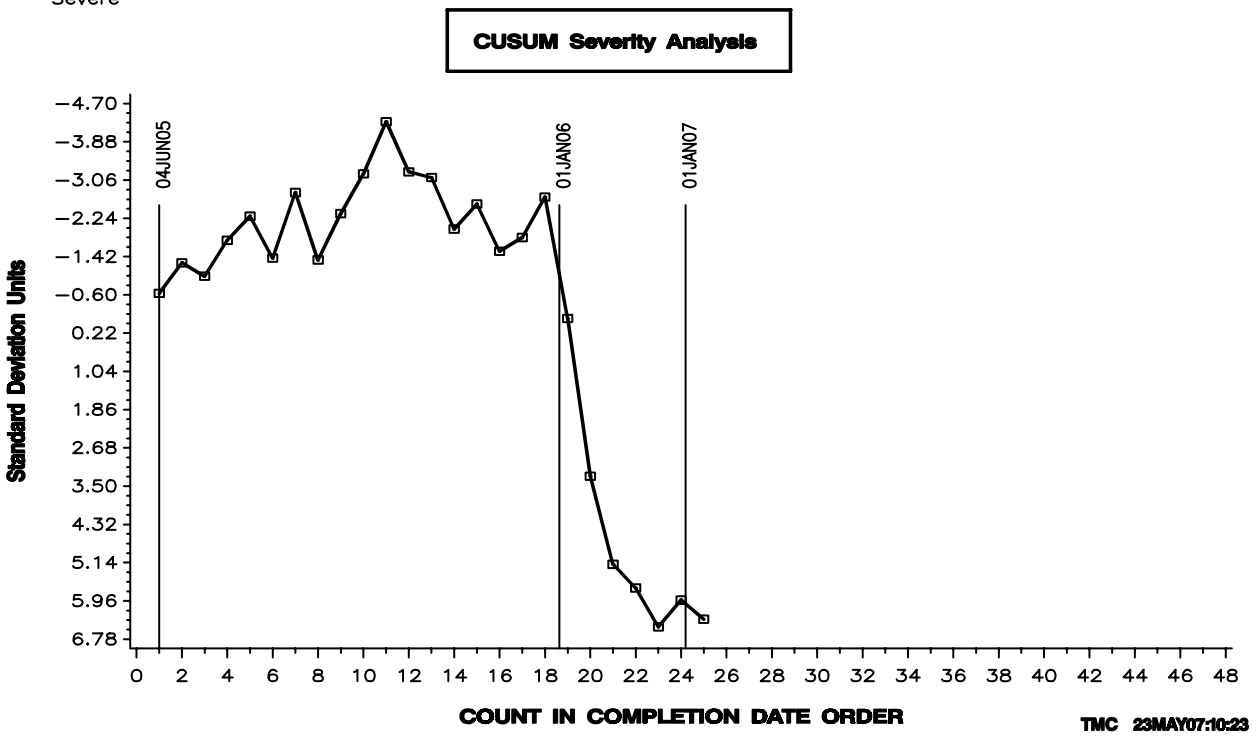
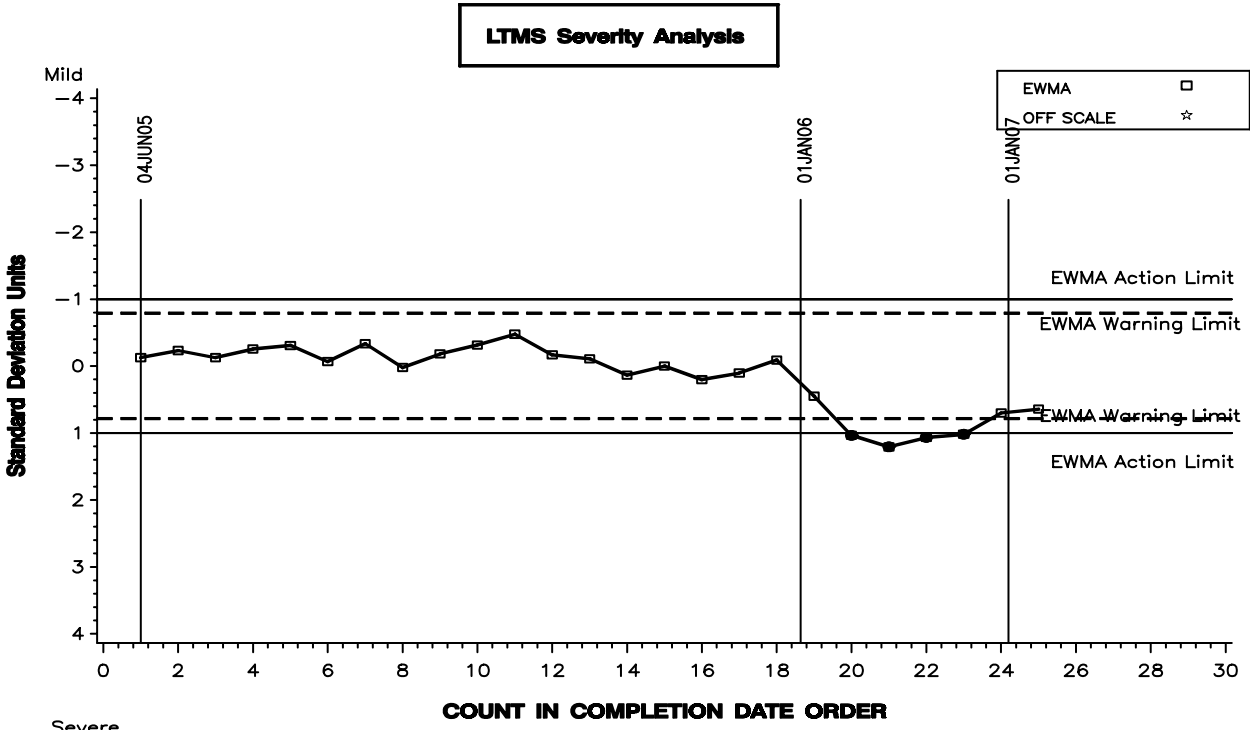


FIGURE 3

ISB Timeline

11:40 Wednesday, May 23, 2007 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.