



Test Monitoring Center

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MEMORANDUM: 02-071

DATE: October 1, 2002

TO: Robert Stockwell, Chairman, Roller Follower Wear Test Surveillance Panel

FROM: Jeff Clark

SUBJECT: Roller Follower Wear Reference Testing for the October 2002 ASTM Report Period

The following is a summary of Roller Follower Wear reference oil tests that were completed during the October 2002 ASTM period which began April 1, 2002 and ended September 30, 2002. It should be noted that since August 1997, all data has been generated at one laboratory.

The following summarizes the status of the reference oil tests completed this ASTM report period:

Test Description	TMC Validity Code	Number of Tests
Operationally and Statistically Acceptable	AC	2
Failed Acceptance Criteria	OC	0
Operationally Invalid	RC	1
Aborted	XC	0
Non-blind, information	NN	0
Total		3

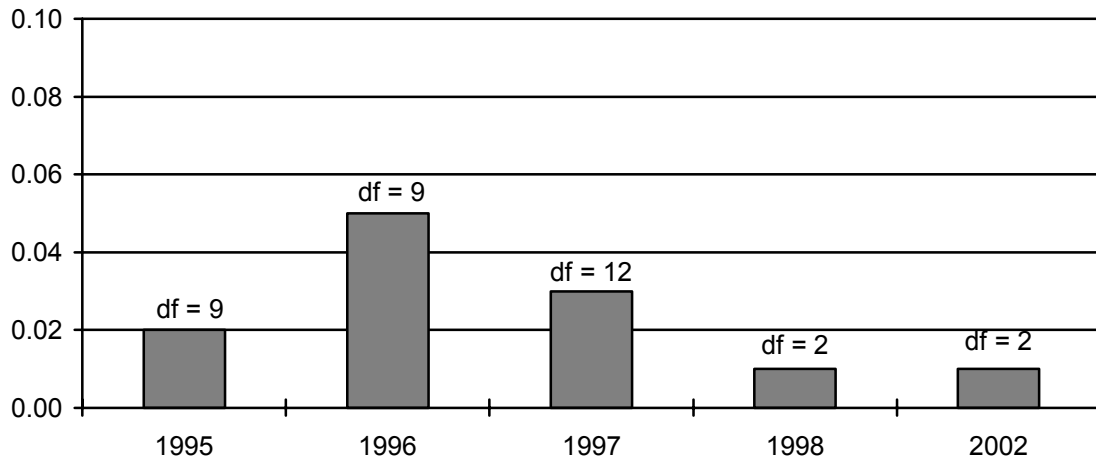
The invalid test was due to fuel flow control problems.

Severity and Precision:

Figure 1 (attached) shows the current industry severity and precision EWMA control charts and the industry cusum chart for average follower wear (AFW). AFW is currently within the industry severity and precision limits. For a history of AFW industry alarms, refer to the industry alarm log shown in Table 1.

Since testing frequency is low, an estimate of precision by ASTM period will not be presented. Instead, the TMC will provide yearly pooled (across all reference oils) standard deviation as an estimate of test precision as shown on the following chart.

Pooled Precision by Year



Due to low test activity, precision estimates are not available for 1999 through 2001. Precision for 1998 and 2002 show improvement versus historical levels. This apparent improvement may be due to all data since August 1997 being generated at only one laboratory. Note, the degrees of freedom (df) equals $\Sigma(\text{no. obs. per oil} - 1)$.

Reference Oils and Hardware:

The table below shows the current AFW test targets.

Parameter	Reference Oil	N	Mean (mils)	S
AFW	1004-2	10	0.33	0.05
	1004-3	-	0.33	0.05
	1005	-	0.20	0.06
	1005-1	5	0.20	0.05

The current test target mean for oil 1005 will be updated with every test. The test target standard deviation will remain 0.06. Test targets for oil 1004-2 on the 6.5L engine will be updated at twenty tests. Oils 1004-3 and 1005-1 have been distributed for reference testing. The first five tests for oil 1004-3 will be judged against the targets for oils 1004-2. To date no tests have been completed on oil 1004-3. New targets for oil 1004-3 will be generated once five tests have been completed. To date, nine tests have been completed on oil 1005-1. The test targets for oil 1005-1 will be updated again at ten tests.

Information Letters:

No information letters were issued this report period.

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Additional Information:

Table 2 (attached) contains the RFWT Timeline which details changes to the Roller Follower Wear Test since January 1, 1993.

The RFWT database, the industry LTMS plots, industry alarm log, and the RFWT Timeline may all be accessed from the TMC home page at www.astmtmc.cmu.edu.

JAC/jac/mem02-071.jac.doc

Attachments

c: J.L. Zalar, TMC
F.M. Farber, TMC
Roller Follower Wear Test Surveillance Panel
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/rfwt/semiannualreports/rfwt-10-2002.pdf>

Distribution: Email

Figure 1

RFTW INDUSTRY OPERATIONALLY VALID DATA

Average Follower Wear – Mils

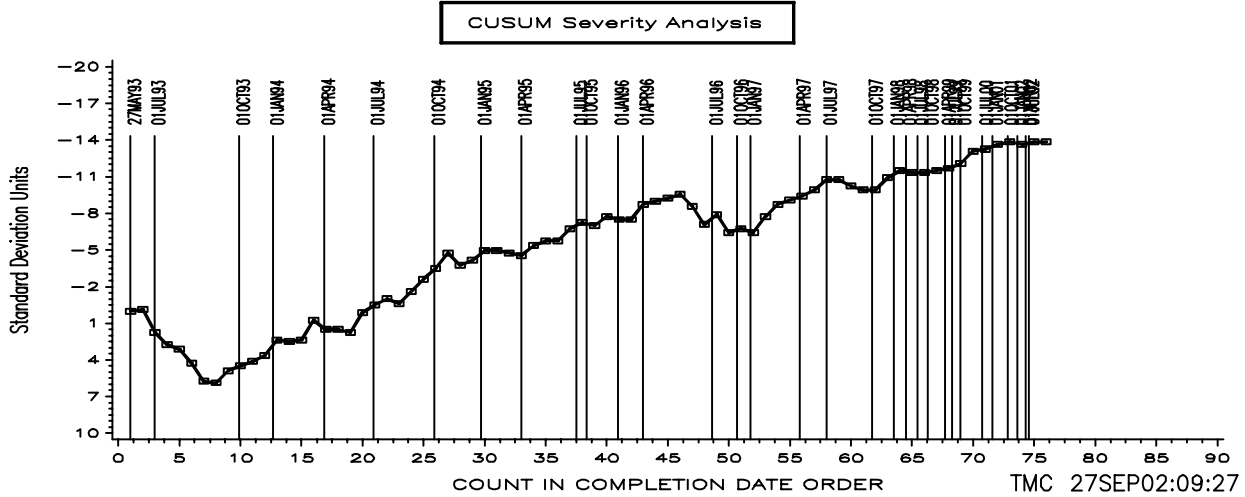
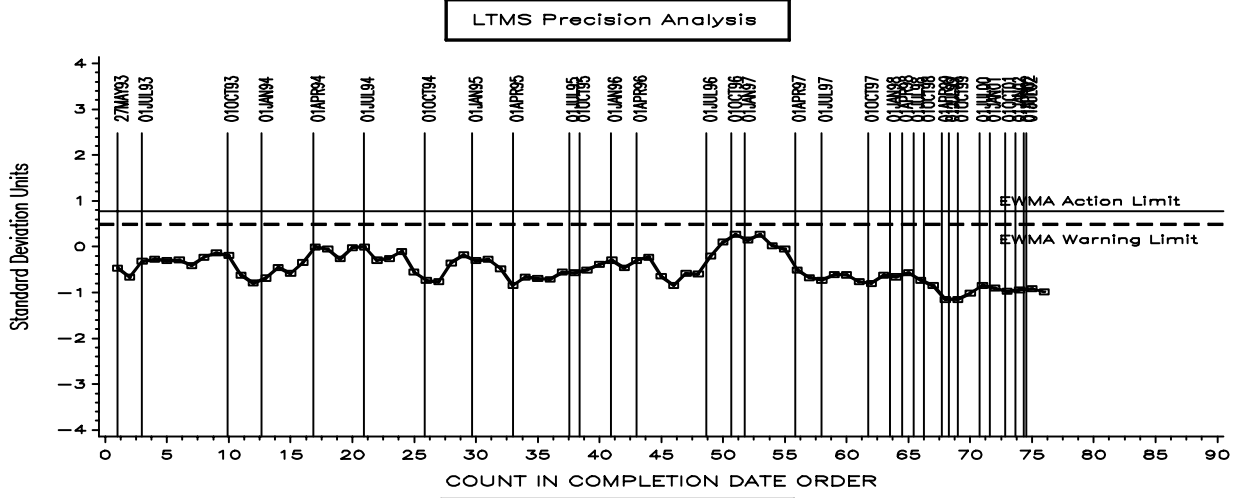
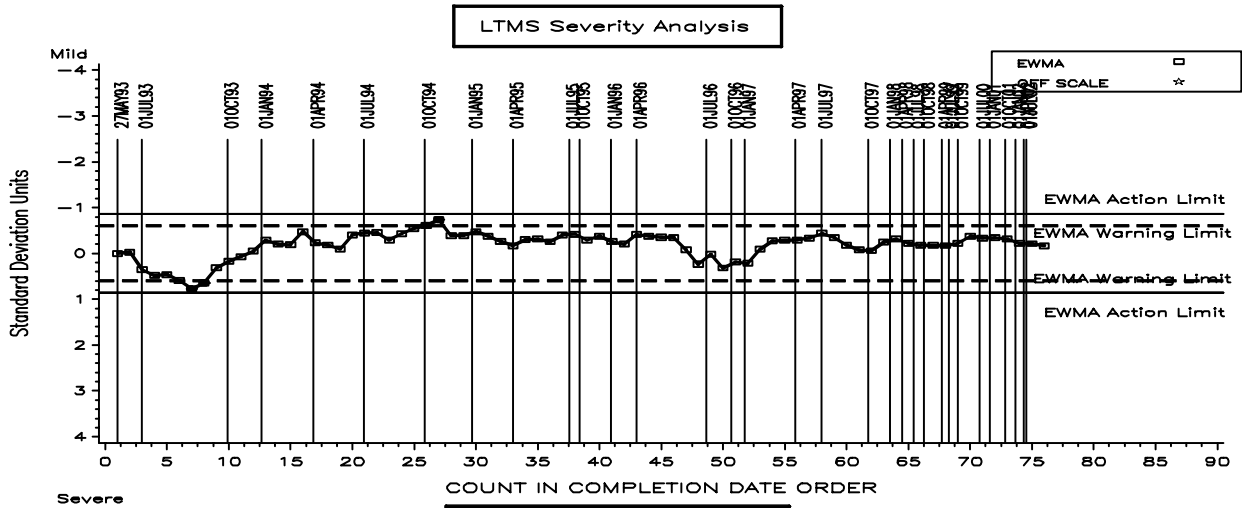


TABLE 1

AVERAGE FOLLOWER WEAR INDUSTRY ALARM LOG

August 30, 1993 to September 24, 1993 (Severity, Severe direction)

A two-test excursion occurs. No industry related problem.

October 13, 1994 to October 30, 1994 (Severity, Mild direction)

A one-test excursion occurs. No industry related problem.

Updated 9/30/02

TABLE 2
Roller Follower Wear Test Timeline

Date	Info. Letter	Topic
19930527,		Oil 1004 15-test Targets
19940201,		Oil 1004-1 introduced
19940309,	94-1	Use a CG-4 quality oil following solvent flush to prevent rust during engine lay up
19940401,	94-1	LTMS used for test acceptance
19940401,	94-1	Discrimination tests to be run on oil 1001; once per year per stand
19940727,	94-2	Kinematic Viscosity at 100°C Measurement Procedure added to test procedure
19940727,	94-2	Enhanced Detroit Diesel TGA Procedure added to test procedure
19940901,	94-1	Data Dictionary and Report Form Revisions - Version 199400503
19941017,		Oil 1004-1 10-test Targets
19950405,	95-1	Viscosity measurement bath soak window changed to ± 30 seconds
19950626,		Oil 1004-1 21-test Targets
19950901,		Oil 1004-2 introduced
19950904,	95-1	Data Dictionary and Report Form Revisions - Version 19950606
19960601,		Oil 1004-1 targets for 6.5L
19960601,		Oil 1004-2 targets for 6.5L
19960701,	96-1	Data Dictionary and Report Form Revisions - Version 19960323
19961201,	96-2	Data Dictionary and Report Form Revisions - Version 19960828
19970414,		Oil 1005 introduced as a reference oil
19980101,		Oil 1004-2 targets for 6.5L - 10 test targets
19980502,		Oil 1005-1 introduced
19980930,	98-1	Requirement to run discrimination tests eliminated
20001101,		Oil 1005-1 targets for 6.5 L - 5 test targets
20011004,	01-1	Calibration period lengthened to 9 months from EOT date