



Test Monitoring Center

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MEMORANDUM: 03-119
DATE: November 17, 2003
TO: Wim Van Dam, Chairman, Mack Surveillance Panel
FROM: Jeff Clark
SUBJECT: T-10 / T-10A Calibration Testing for the October 2003 ASTM Report Period

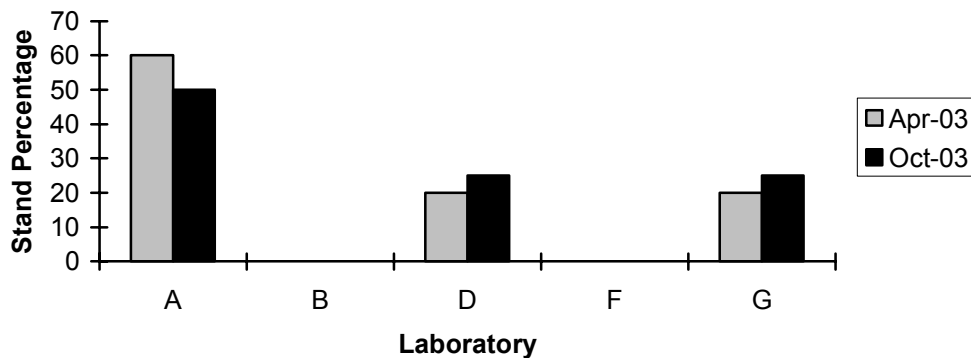
The following is a summary of T-10 reference oil tests completed during the October 2003 ASTM report period, which began on April 1, 2003 and ended on September 30, 2003.

Lab / Stand Distribution:

	Reporting Data	Calibrated as of 9/30/03
Number of Laboratories	3	2
Number of Stands	4	3

The figure below shows the T-10 laboratory / stand distribution for tests completed the current and previous report periods:

Laboratory / Stand Distribution

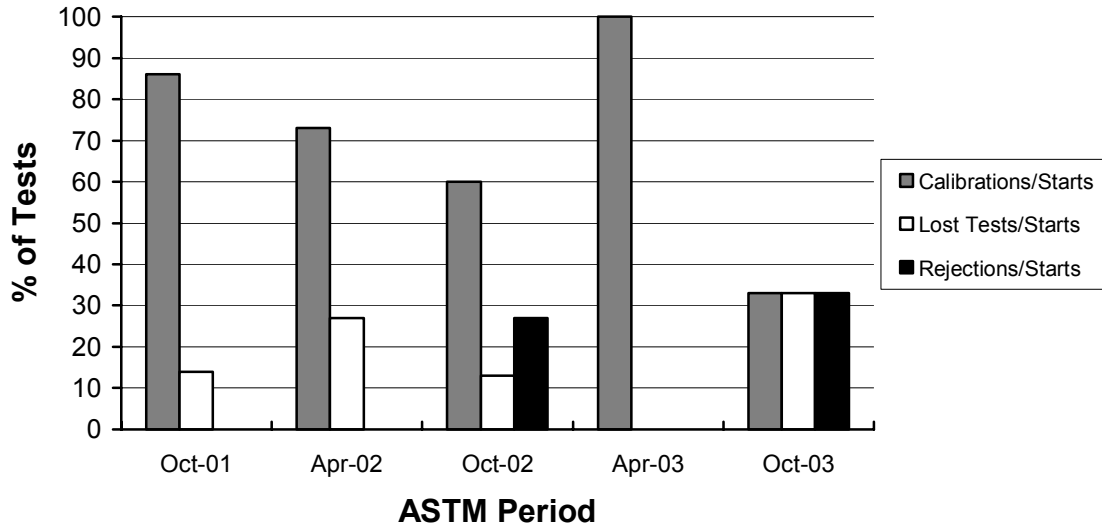


The table below summarizes the status of the reference oil tests reported to the TMC this ASTM report period:

Test Status	TMC Validity Code	Number of T-10 Tests
Acceptable Calibration Test	AC	1
Failed Calibration Test (LTMS Criteria)	OC	0
Operationally Invalid Calibration Test	LC	1
Aborted Calibration Test	XC	1
Acceptable Donated Test	AG	2
Total		5

The two donated tests were on a new batch of conrod bearings. The Mack Surveillance Panel has determined that this new batch will not be used for further testing. Another batch of conrod bearings is currently undergoing testing. The calibrations per start, lost tests per start and rejections per start rates are summarized in the figure below:

Calibration Attempt Summary



A detailed list of reasons tests failed the acceptance criteria (OC validity) is shown in Table 1. Table 2 lists the operationally invalid tests (LC validity) and Table 3 lists the aborted tests (XC validity).

Severity and Precision:

Figures 1 through 5 (attached) show the current industry EWMA severity, EWMA precision, and cusum charts Delta Pb @ EOT (PB), Cylinder Liner Wear (CLW), Top Ring Weight Loss (TRWL), Oil Consumption (OC), and Delta Pb 250-300 Hours (PB2). Low-test activity makes it difficult to offer any meaningful commentary regarding severity trends.

Precision, as estimated by the pooled standard deviation, is shown in the following table. Precision estimates are presented on an annual basis. However, any conclusions drawn from a comparison between current and previous estimates are of little value due to the reduced number of degrees of freedom. Please note, that the degrees of freedom (df) equals $\Sigma(n \text{ observations per oil} - 1)$.

T-10 Pooled Precision By Year

Parameter	2001	2002	2003	2004
df	13	20	2	
PB	0.2660	0.2530	0.3678	
CLW	3.31	4.94	2.78	
TRWL	26.7	17.99	4.58	
OC	6.36	7.02	6.67	
PB2	4.69	3.49	3.52	

Reference Oils:

The current reference oil test targets are shown below:

Oil	N	Parameter	Mean (cSt)	S
820-2	20	PB	3.2106	0.2339
		CLW	32.0	4.2
		TRWL	109	18
		OC	52.9	7.2
		PB2	9.0	3.5

Once 30 tests on oil 820-2 have been completed, the TMC will provide a target update for surveillance panel consideration.

Abbreviated Length Test T-10A:

The TMC monitors the T-10A for the determination of laboratory severity adjustments for MRV viscosity. Figure 6 (attached) shows the current industry EWMA severity, EWMA precision, and CUSUM charts for MRV viscosity.

Information Letters:

T-10 Information Letter 03-2, Sequence No. 4 was issued September 8, 2003. Topics included system time responses and quality index calculation constants.

TMC Laboratory Visits:

No TMC laboratory visits were conducted this ASTM period.

Quality Index:

No Quality Index deviations were issued this ASTM report period. For the history of the T-10, no QI deviations have been issued.

Additional Information:

The T-10 and T-10A databases, industry timeline, and industry 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/mem03-119.jac.doc

Attachments

c: J.L. Zalar, TMC
F.M. Farber, TMC
Mack Surveillance Panel
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/mack/semiannualreports/T10-10-2003.pdf>

Distribution: Email

Table 1
Summary of Reasons for Rejected Tests

	No. of Tests
No rejected tests	-

Table 2
Summary of Reasons for Invalid Tests

	No. of Tests
Piston scuffing	1

Table 3
Summary of Reasons for Aborted Tests

	No. of Tests
Failed EGR heat exchanger	1

FIGURE 1
T-10 INDUSTRY OPERATIONALLY VALID DATA
DELTA PB @ EOT

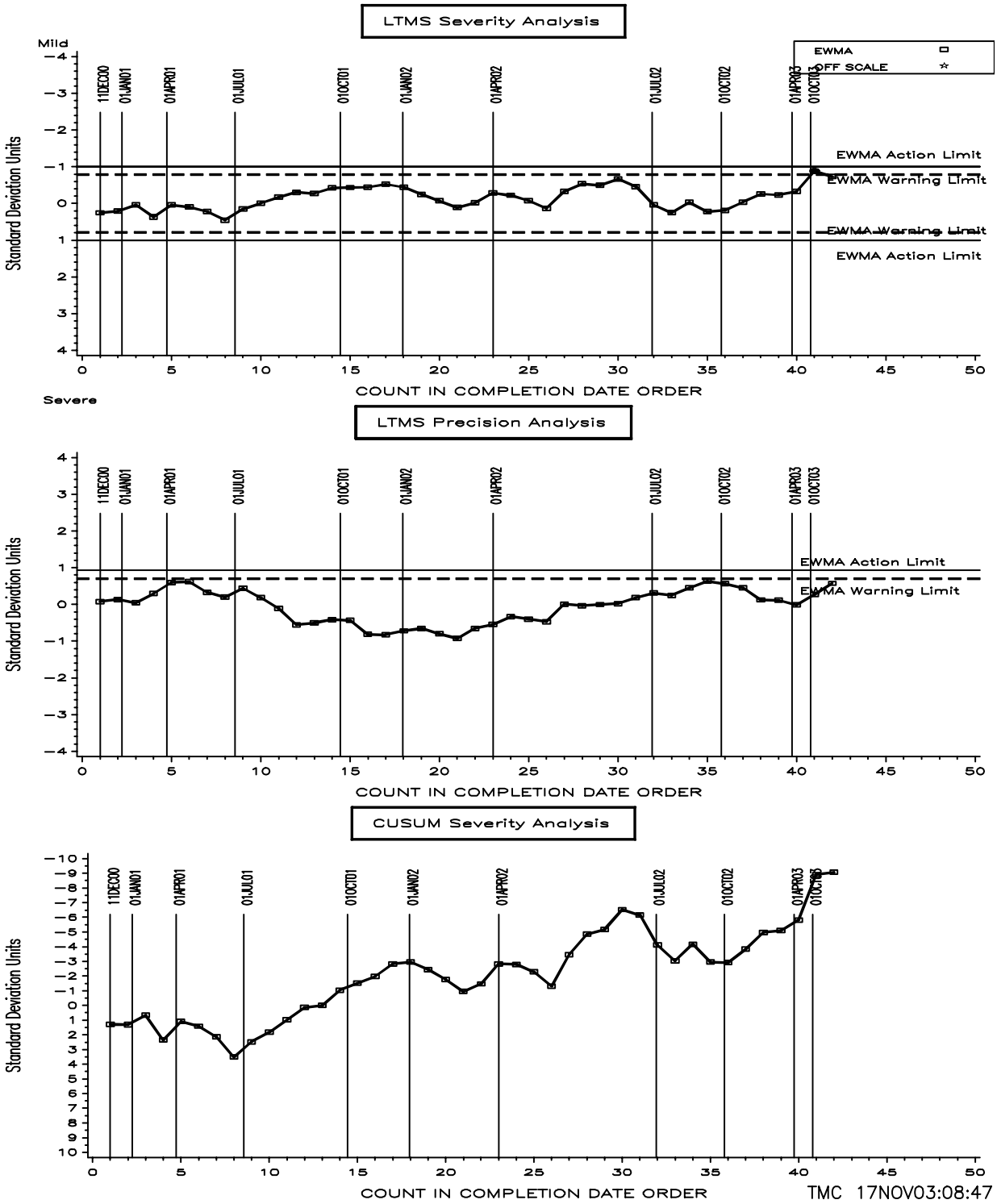


FIGURE 2
T-10 INDUSTRY OPERATIONALLY VALID DATA
CYLINDER LINER WEAR

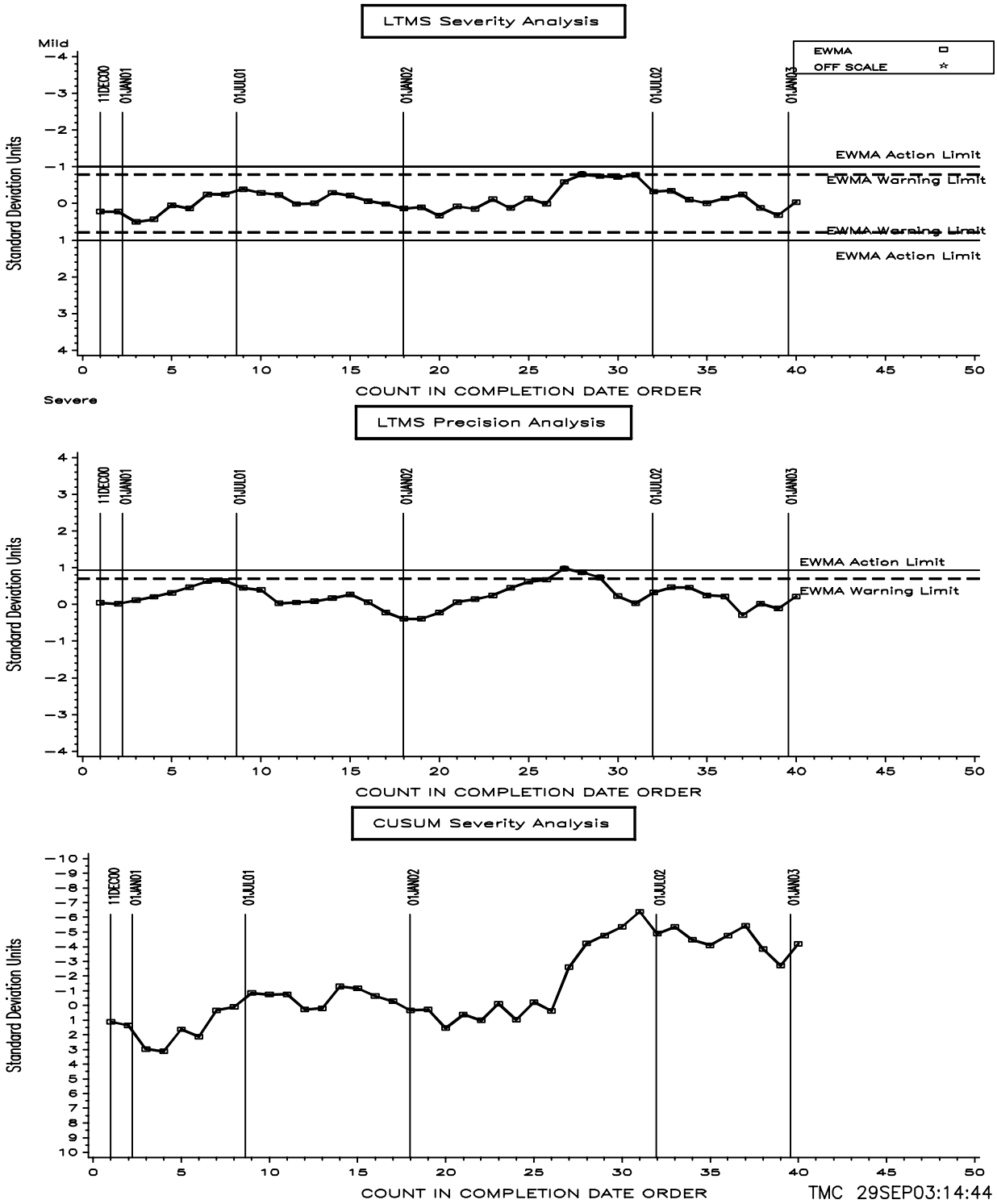


FIGURE 3
 T-10 INDUSTRY OPERATIONALLY VALID DATA
 TOP RING WEIGHT LOSS

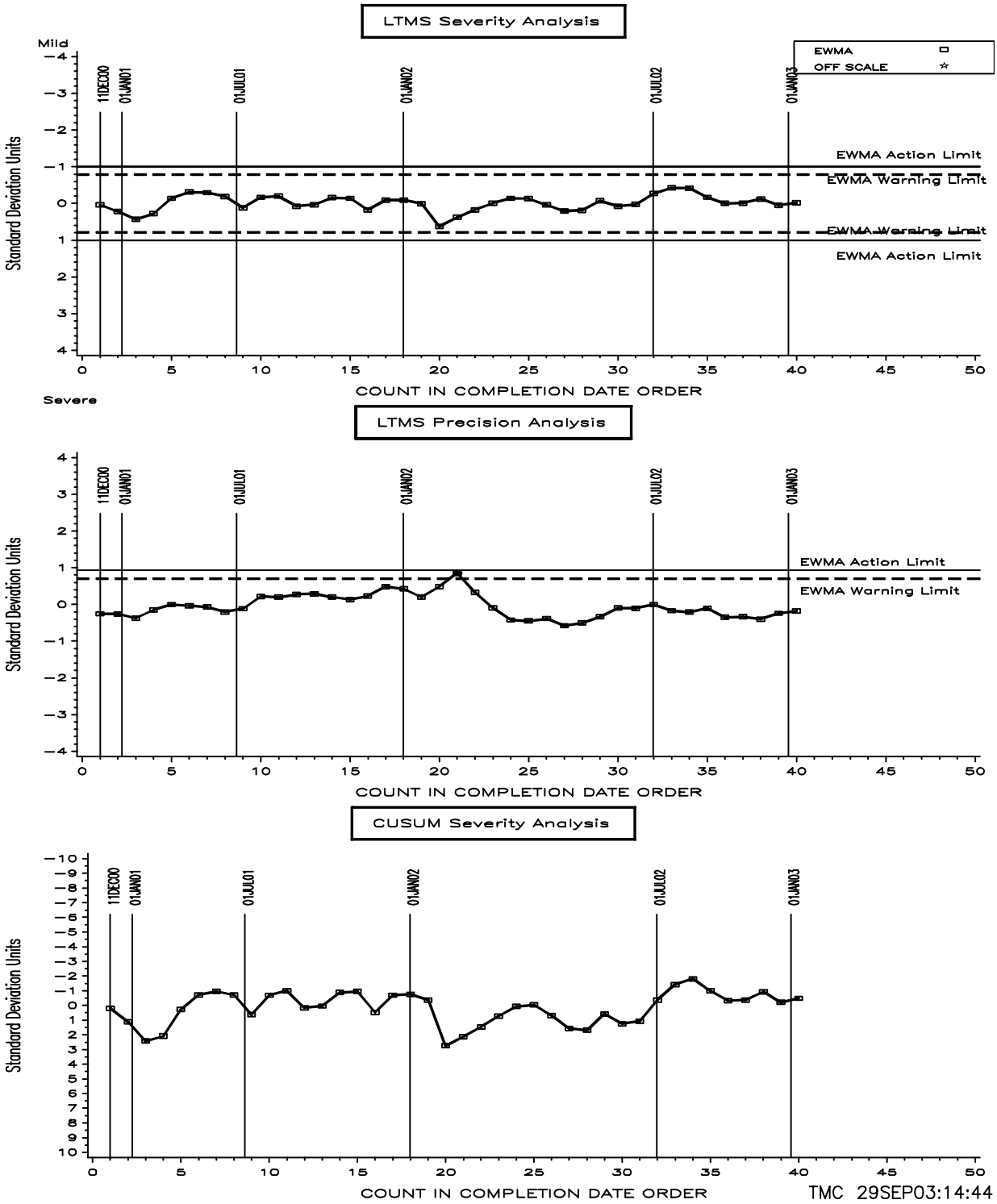


FIGURE 4
T-10 INDUSTRY OPERATIONALLY VALID DATA
OIL CONSUMPTION

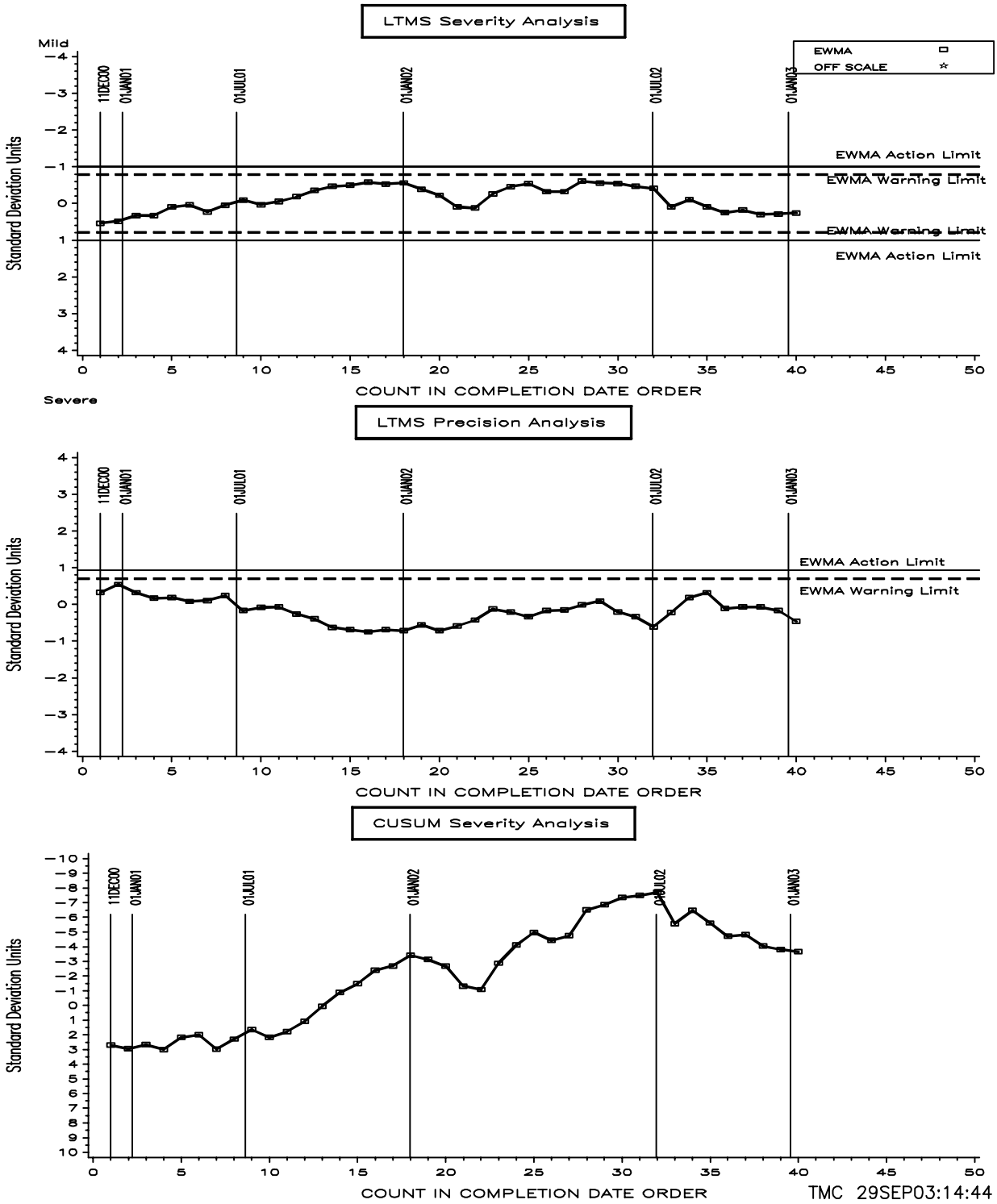


FIGURE 5
T-10 INDUSTRY OPERATIONALLY VALID DATA
DELTA PB 250-300 HOURS

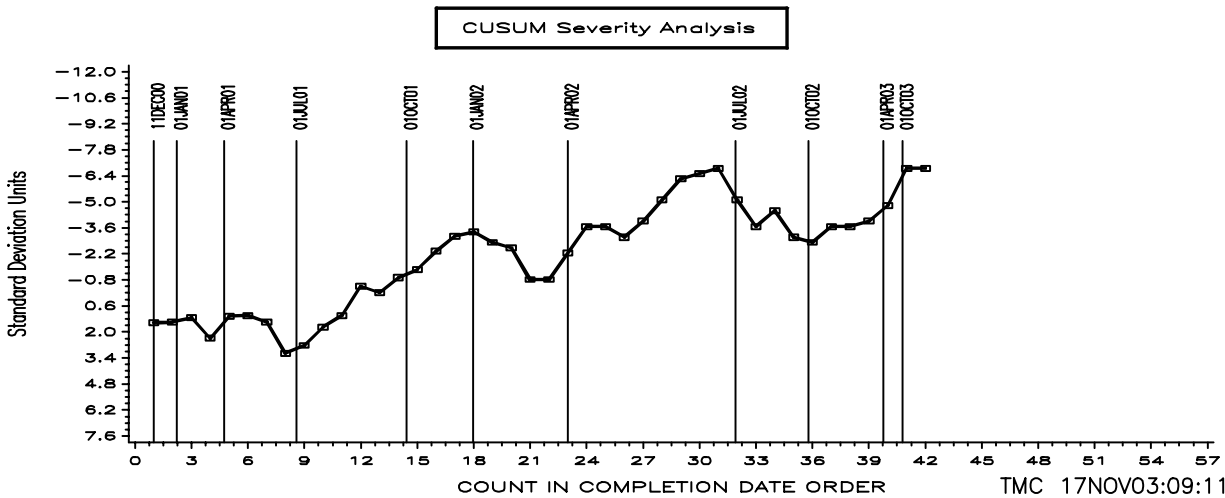
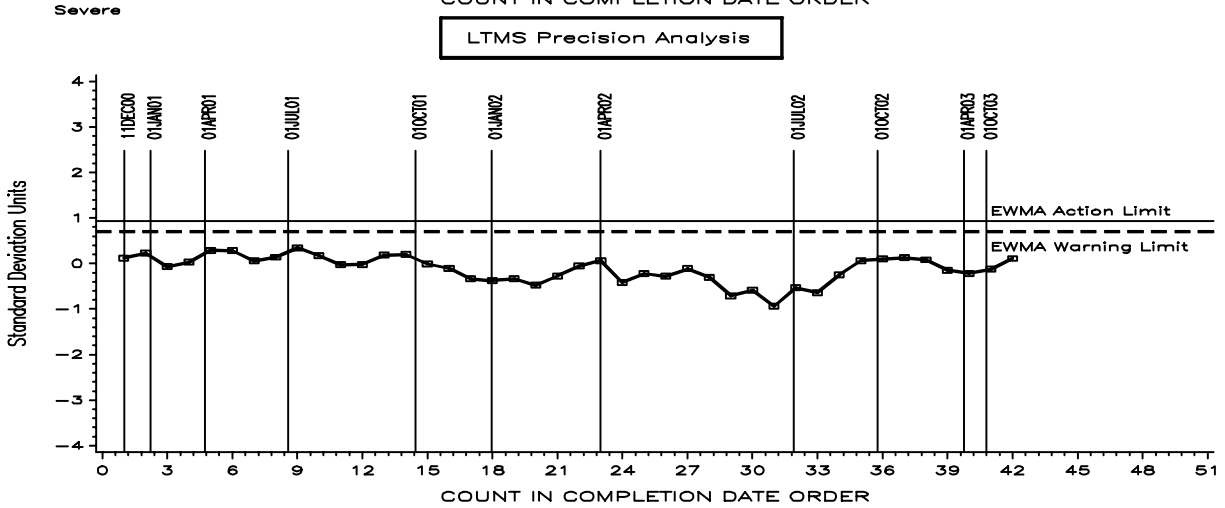
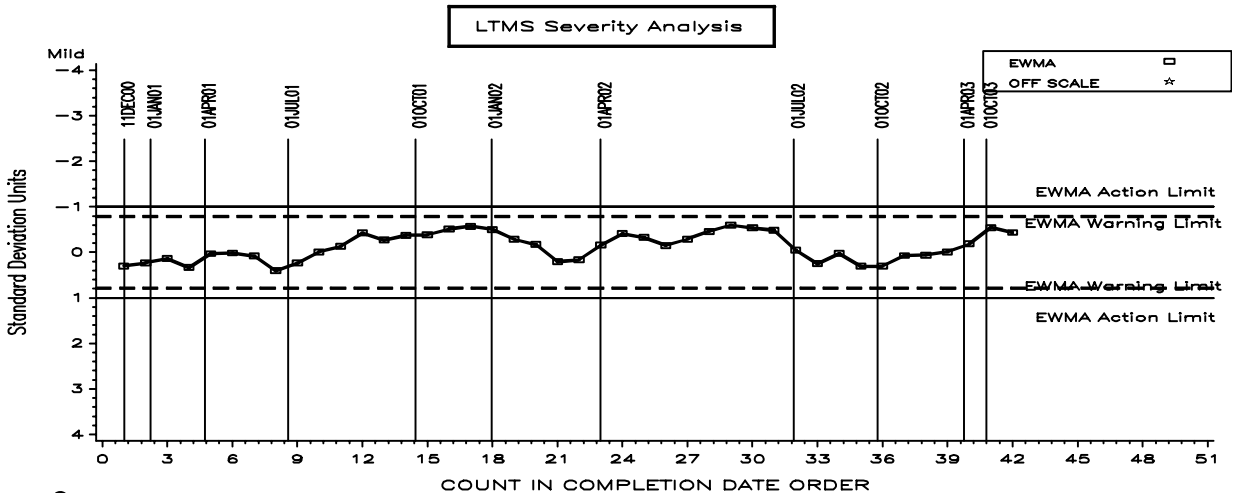


FIGURE 6
T10A INDUSTRY OPERATIONALLY VALID DATA
 MRV VISCOSITY @ 75H

