



Test Monitoring Center

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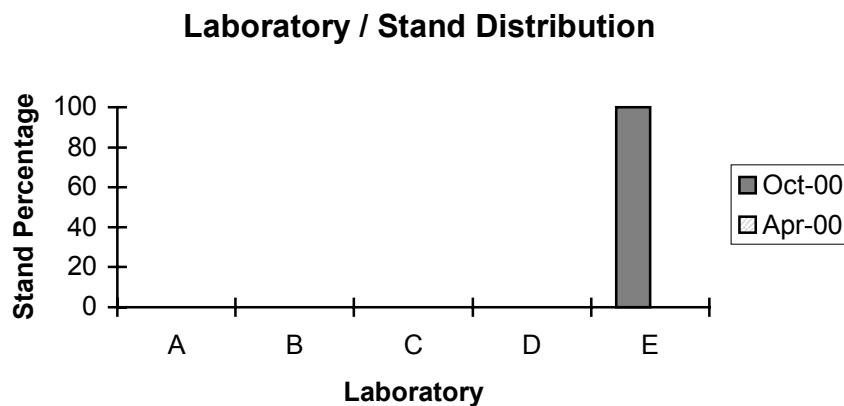
MEMORANDUM: 00-174
DATE: November 20, 2000
TO: Patrick Lai, Chairman, Two-Cycle Diesel Surveillance Panel
FROM: Jeff Clark
SUBJECT: 6V92TA Reference Testing for the October 2000 ASTM Report Period

There were two 6V92TA reference oil tests completed during the October 2000 ASTM period, which began April 1, 2000 and ended September 30, 2000.

Lab / Stand Distribution:

	Reporting Data	Calibrated as of 9/30/00
Number of Laboratories	1	0
Number of Stands	1	0

The following chart shows the laboratory / stand distribution:

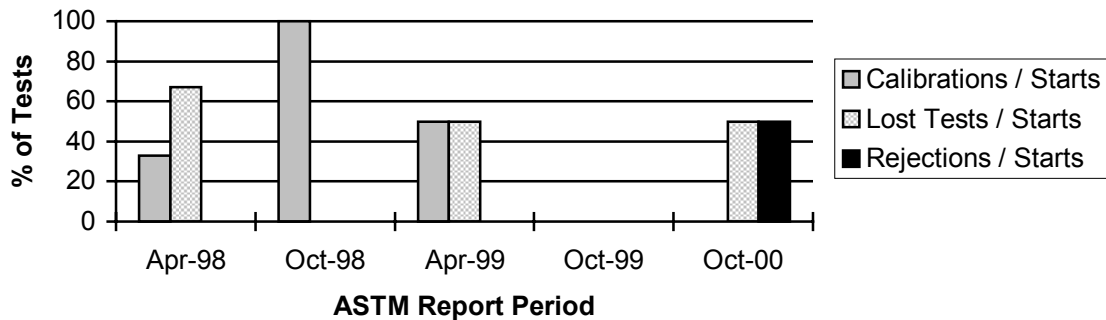


The following summarizes the status of the reference oil tests reported to the TMC:

Test Description	TMC Validity Code	Number of Tests
Operationally and Statistically Acceptable	AC	0
Failed Acceptance Criteria	OC	1
Operationally Invalid	LC	1
Aborted	XC	0
Total		2

One test failed the acceptance criteria due to both mild Average Fire Ring Distress and mild Average 2nd & 3rd Ring Distress. One test was declared operationally invalid due to an excessive oil leak. Calibrations per start, lost tests per start and rejections per start rates are summarized below:

Calibration Attempt Summary



Severity and Precision:

Figures 1, 2, and 3 (attached) show the cusum delta/s for Fire Ring Distress, 2nd & 3rd Ring Distress, and Average Liner Distress. For all three parameters, it is apparent that the industry is continuing a mild trend that began in 1994. Low-test activity makes it difficult to quantify the magnitude of, or attribute a cause to, this long-term mild trend.

The TMC has historically provided yearly pooled (across all reference oils) standard deviation as an estimate of test precision. The precision estimates are shown in the following table. Due to low testing frequency, no estimate of precision can be made for any individual year from 1995 through 1997. Instead, 1995 through 1998 are combined into a single estimate. No estimate of precision is available for 1999. The estimate of test precision for 2000 is also shown, however, please note the small number of degrees of freedom. The continued low frequency of testing prevents any meaningful commentary regarding current precision levels. Note, the degrees of freedom (df) equals $\Sigma(\text{no. obs. per oil} - 1)$.

6V92TA Pooled Precision by Year

Parameter	1992 df = 5	1993 df = 8	1994 df = 8	1995 – 1998 df = 9	2000 df = 2
Average Fire Ring Distress	0.044	0.058	0.113	0.032	0.011
2 nd & 3 rd Ring Distress	0.018	0.036	0.033	0.028	0.029
Liner Distress	8.69	8.22	14.91	7.68	5.40

Reference Oils and Hardware:

The table below shows the current reference oil targets.

6V92TA Reference Oil Targets

Parameter	Oil	N	Mean	s
Avg. Fire Ring Distress	861-1	14	0.297	0.080
2 nd & 3 rd Ring Distress			0.224	0.009
Liner Distress			58.2	7.7
Avg. Fire Ring Distress	862	24	0.155	0.031
2 nd & 3 rd Ring Distress			0.145	0.038
Liner Distress			30.3	9.0
Avg. Fire Ring Distress	862-1	5	0.134	0.018
2 nd & 3 rd Ring Distress			0.128	0.032
Liner Distress			26.2	7.7

TMC Lab Visitations:

No TMC lab visitations were performed during this ASTM period.

Information Letters:

No information letters were issued during this ASTM period.

Additional Information:

Figures 4 through 6 are the industry control charts for the 6V92TA test.

Figure 7 is the 6V92TA Timeline which details changes to the 6V92TA test since 1992.

The 6V92TA database, as well as the current industry cusum and LTMS plots, may be accessed from the TMC home page at www.tmc.astm.cmri.cmu.edu.

JAC/jac/mem00-174.jac.doc

Attachments

c: J.L. Zalar, TMC
 F.M. Farber, TMC
 Two-Cycle Diesel Surveillance Panel
<ftp://tmc.astm.cmri.cmu.edu/docs/diesel/6v92/semiannualreports/6v92-10-2000.pdf>

Figure 1
 6V92 INDUSTRY OPERATIONALLY VALID DATA

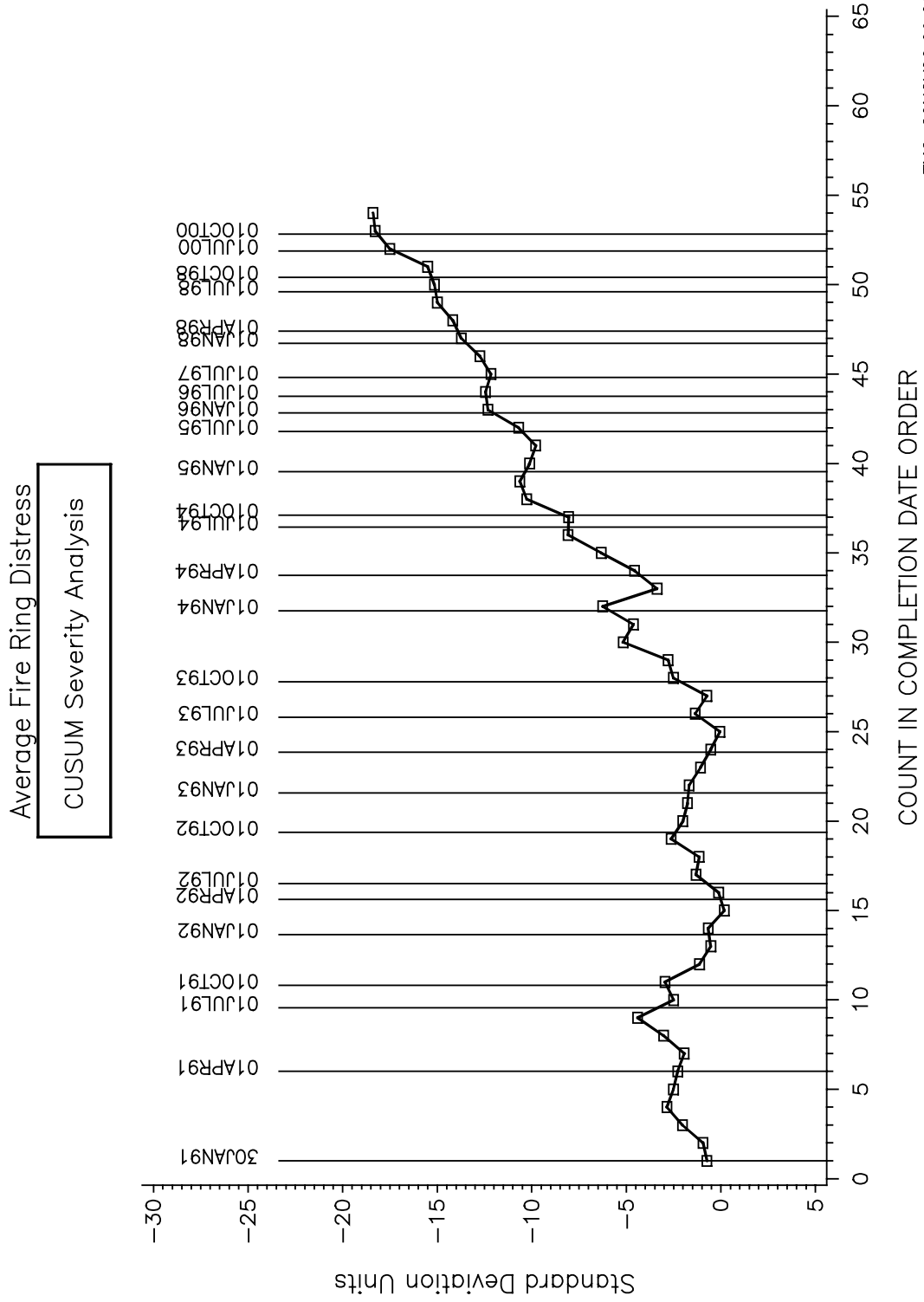


Figure 2
 6V92 INDUSTRY OPERATIONALLY VALID DATA

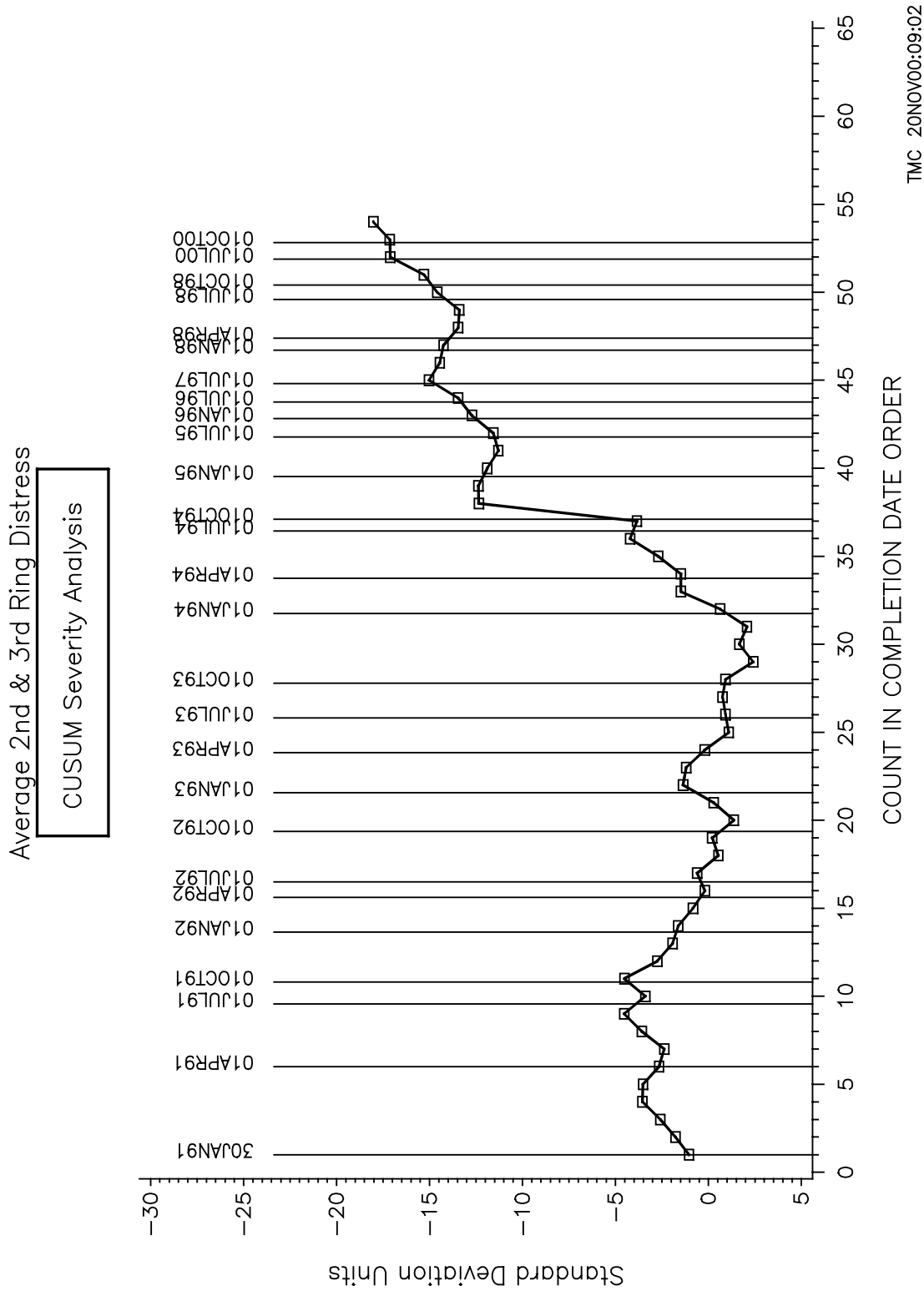


Figure 3
 6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Liner Distress

CUSUM Severity Analysis

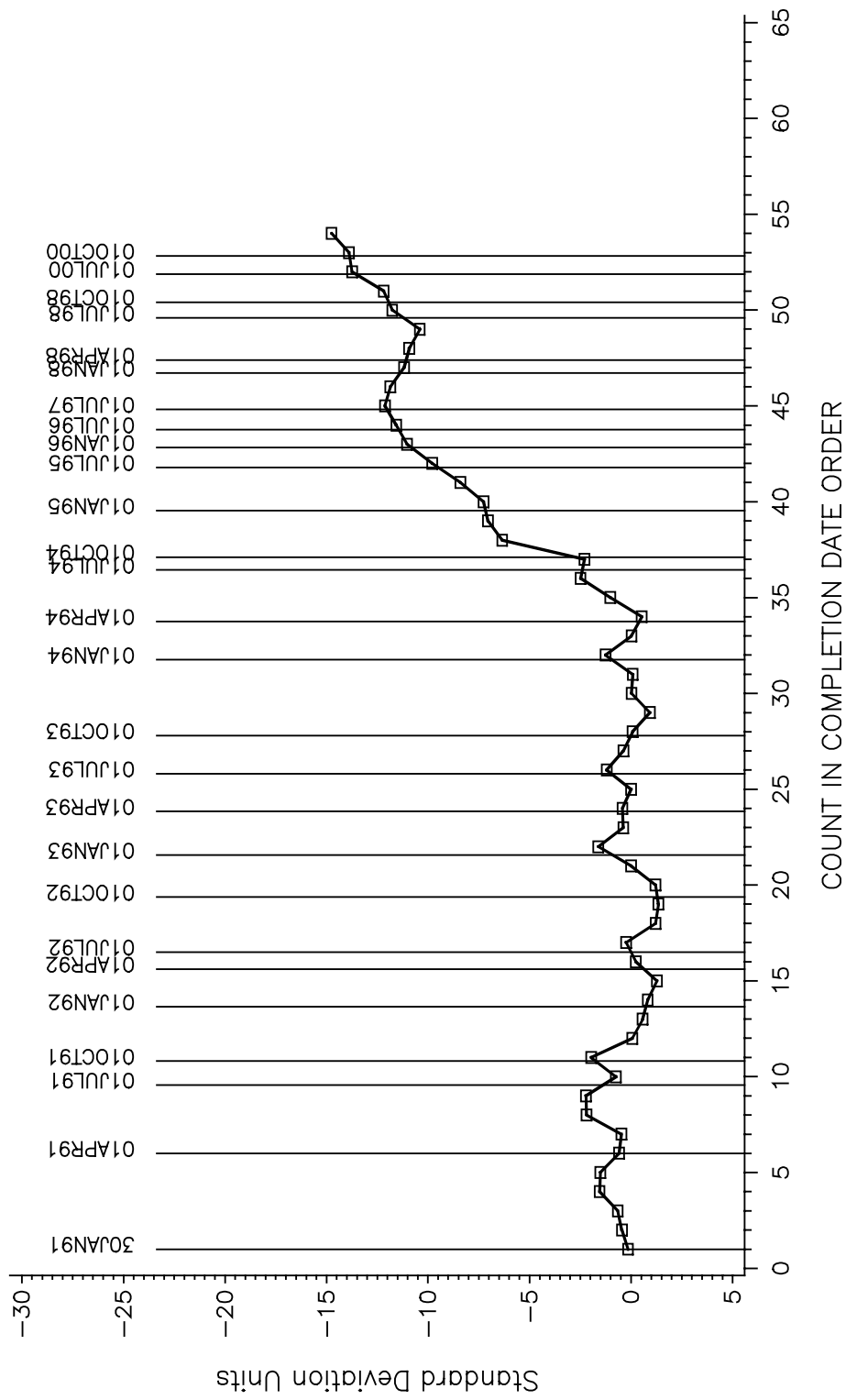


Figure 4
6V92 INDUSTRY OPERATIONALLY VALID DATA

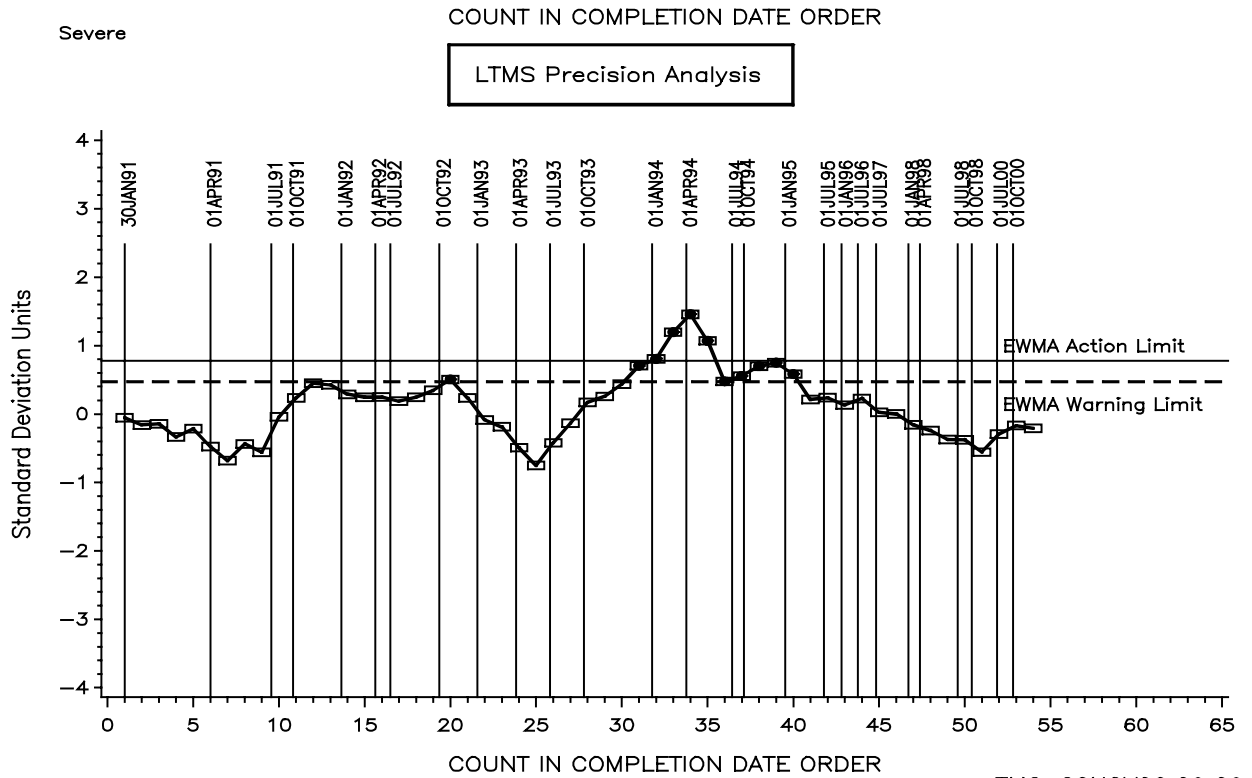
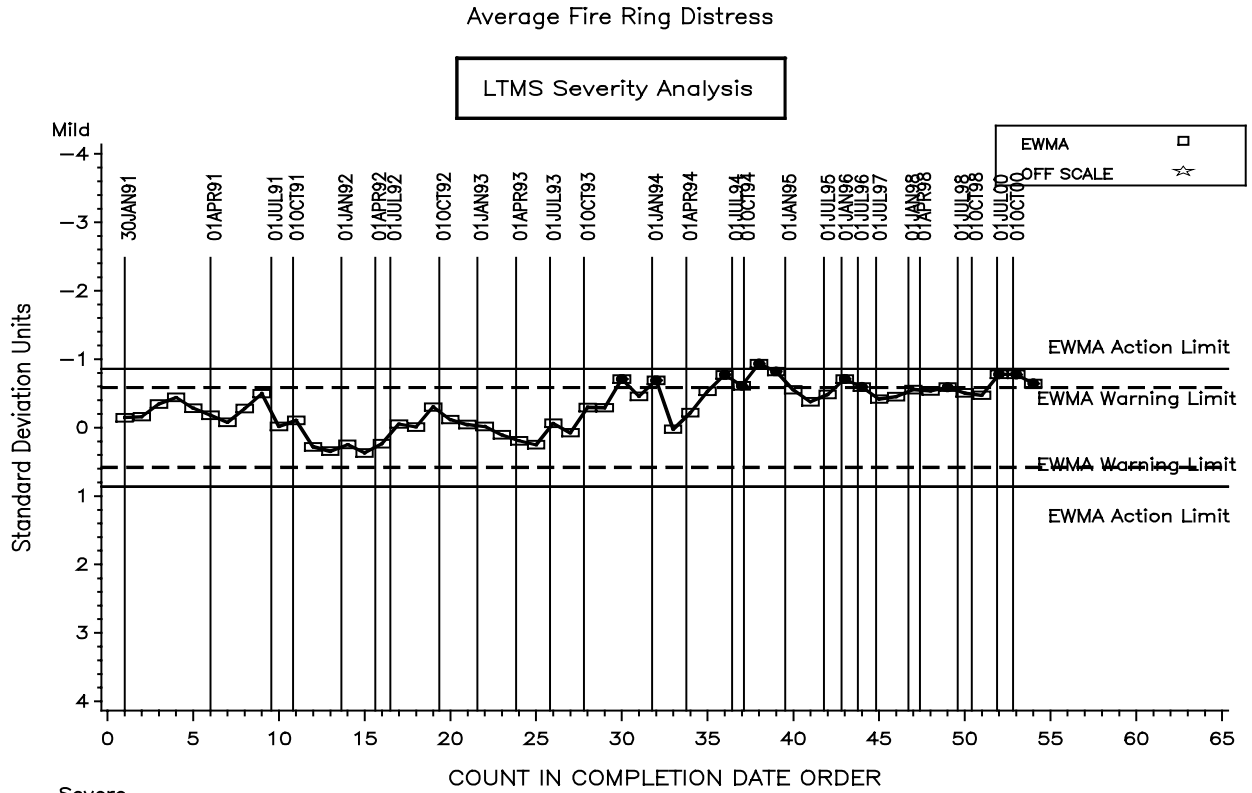


Figure 5
6V92 INDUSTRY OPERATIONALLY VALID DATA

Average 2nd & 3rd Ring Distress

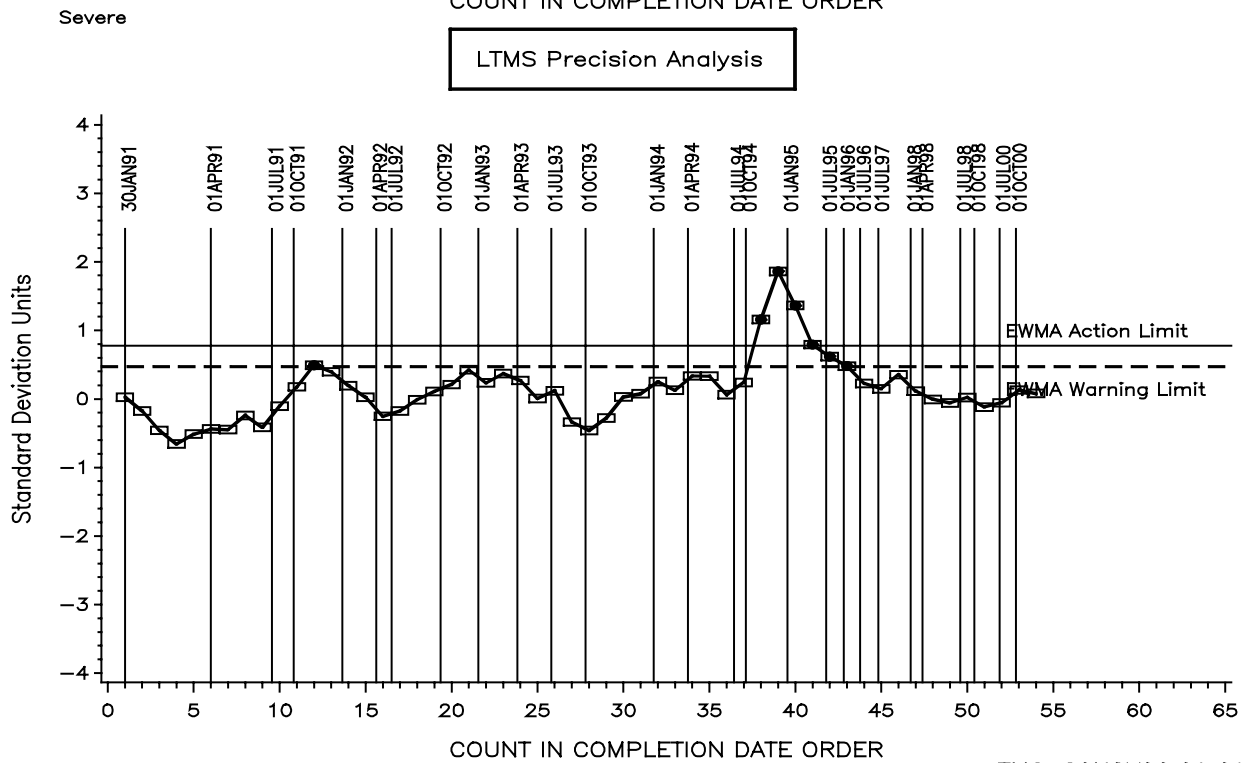
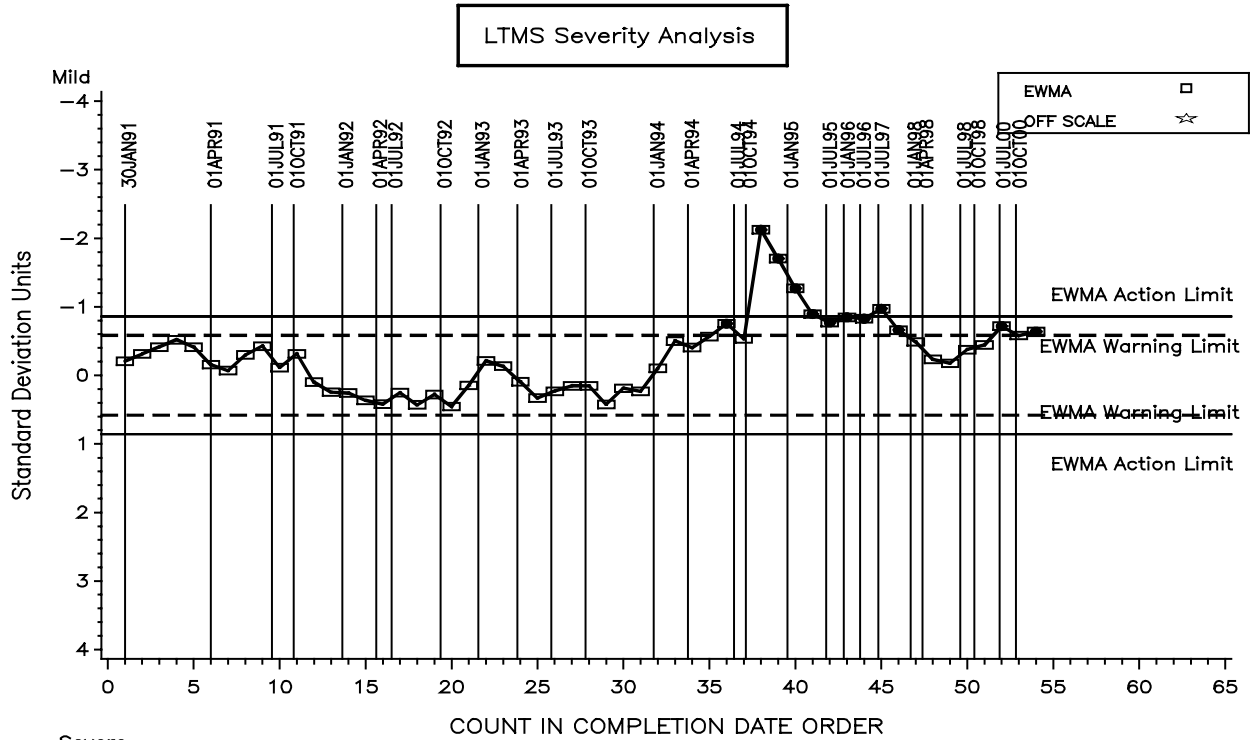


Figure 6

6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Liner Distress

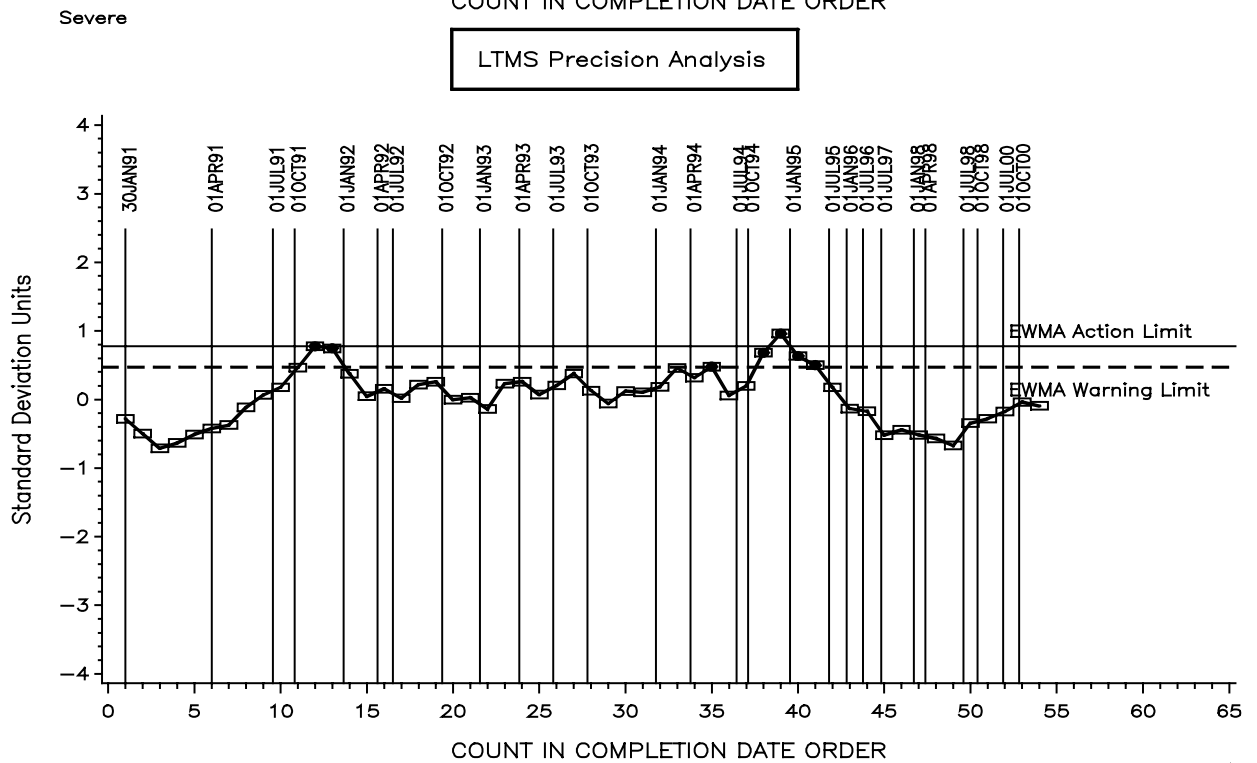
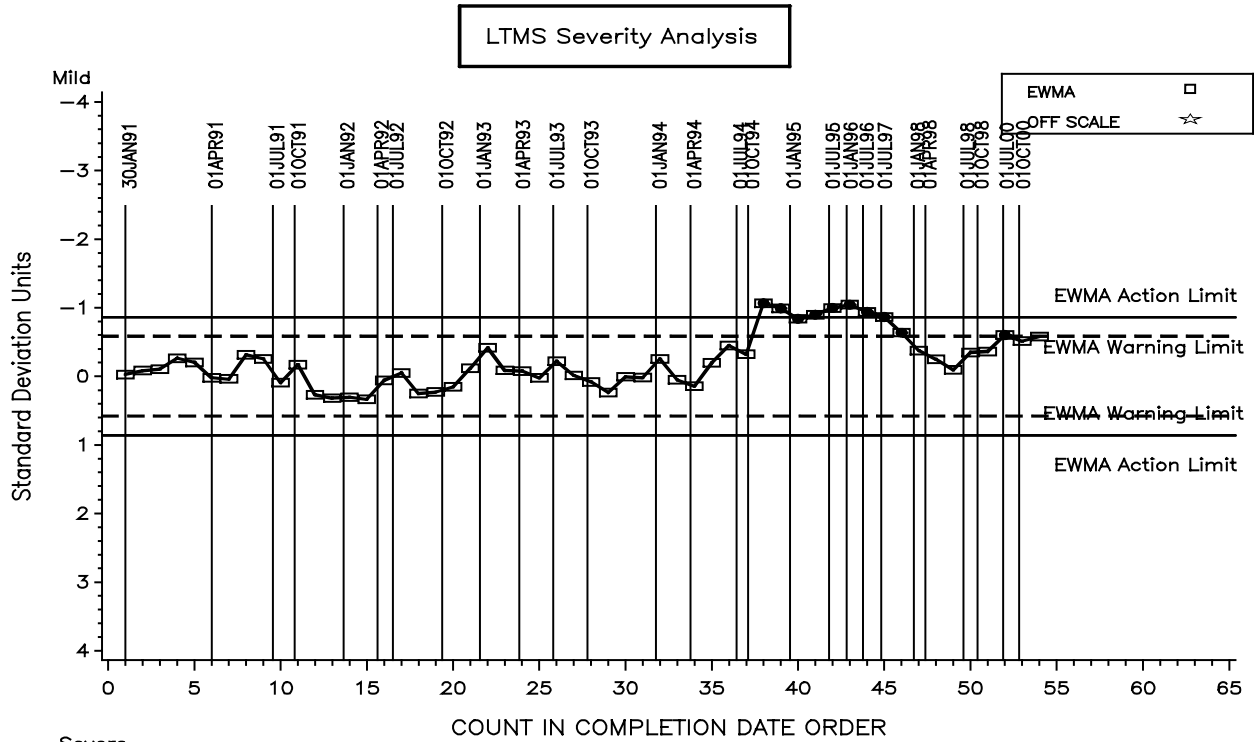


FIGURE 7 6V92TA TIMELINE

Date	Info. Let.	Topic
19920507,		Test Targets introduced - Oils 861 and 862
19920617,		Detroit Diesel specified as single source rebuilt injector supplier
19920903,		Oil system to be pressurized prior to engine cranking
19920928,		Oil 861-1 introduced for testing
19921101,		Test Targets updated
19930401,		Test Targets updated; Oil 861-1 targets introduced
19930423,	93-1	March 1993 Version of Test Procedure Issued
19930701,		Test Targets updated
19930811,	93-2	Data Dictionary and Report Form Revisions
19931102,	94-1	Oil Sump and Oil Gallery Temperature limits revised
19940101,		Test Targets updated
19940119,	94-1	Data Dictionary and Report Form Revisions - Version 19940119
19940322,		EF-411 to be used as build-up oil
19940701,		Test Targets updated
19941129,		Special slipper bushings introduced
19941129,		Fire Rings with improved face lapping process introduced
19950101,		Test Targets updated; Acceptance bands calculated using Shewhart severity $k = 1.80$
19950701,		Test Targets updated
19950921,		Only Oil 862-1 to be assigned for testing; Oils 862 and 861-1 temporarily suspended from testing
19960101,		Test Targets updated
19960202,		Oil 862-1 introduced for testing
19960430,		Build-up oil changed to a 50 weight oil to be supplied by Imperial Oil
19960430,		Uniform ramping procedures adopted
19960430,		Coolant system pressure specified to be a minimum 50 kPa
19960701,		Test Targets updated
19970101,		Test Targets updated
19970701,		Test Targets updated
19980101,		Test Targets updated
19980610,	98-1	Oil filter part number changed to 23518524
19980610,	98-1	New stand may calibrate with two tests on the same reference oil
19980701,		Test Targets updated
19990101,		Test Targets updated
19990301,	99-1	Report forms and data dictionary version 19981208
19990701,	99-2	Report forms and data dictionary version 19990414
19990701,		Test Targets updated