



Test Monitoring Center

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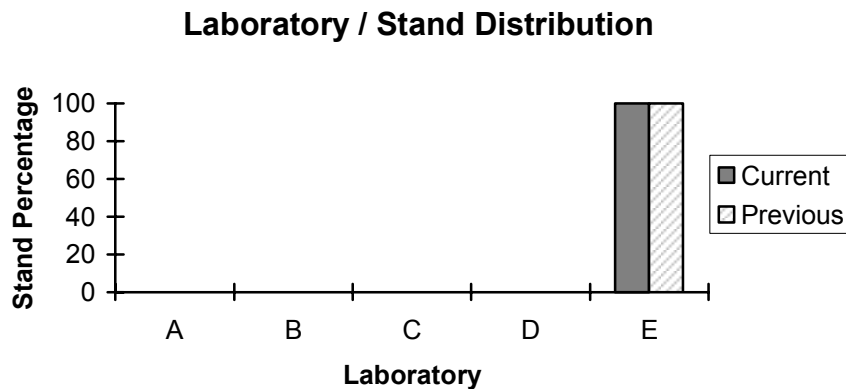
MEMORANDUM: 03-029
DATE: April 7, 2003
TO: Patrick Lai, Chairman, Two-Cycle Diesel Surveillance Panel
FROM: Jeff Clark
SUBJECT: 6V92TA Reference Testing for the April 2003 ASTM Report Period

There were two 6V92TA reference oil tests completed during the April 2003 ASTM period, which began October 1, 2002 and ended March 31, 2003.

Lab / Stand Distribution:

	Reporting Data	Calibrated as of 3/31/03
Number of Laboratories	1	1
Number of Stands	1	1

The following chart shows the laboratory / stand distribution for the current and previous ASTM periods:



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	1
Failed Acceptance Criteria	OC	1
Operationally Invalid	LC	0
Aborted	XC	0
Total		2

The failed test was mild for all three parameters.

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 appears as though the industry mild trend that began in 1994 may be resuming. Low-test activity makes it difficult to determine if this is indeed the case or if the long-term mild trend will abate.

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 since 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 - 2002 df = 4
Average Fire Ring Distress	0.044	0.058	0.113	0.032	0.018
2 nd & 3 rd Ring Distress	0.018	0.036	0.033	0.028	0.026
Liner Distress	8.69	8.22	14.91	7.68	6.14

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	15	0.301	0.079
2 nd & 3 rd Ring Distress			0.225	0.009
Liner Distress			58.6	7.5
Avg. Fire Ring Distress	862-1	12	0.120	0.022
2 nd & 3 rd Ring Distress			0.117	0.031
Liner Distress			22.3	7.4

TMC Lab Visitations:

No TMC lab visitations were performed during this ASTM period.

Information Letters:

No information letters were issued during this ASTM period.

LTMS Deviations:

No LTMS Deviations 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. If you have any questions on accessing this information, contact the TMC.

JAC/jac/mem03-029.jac.doc

Attachments

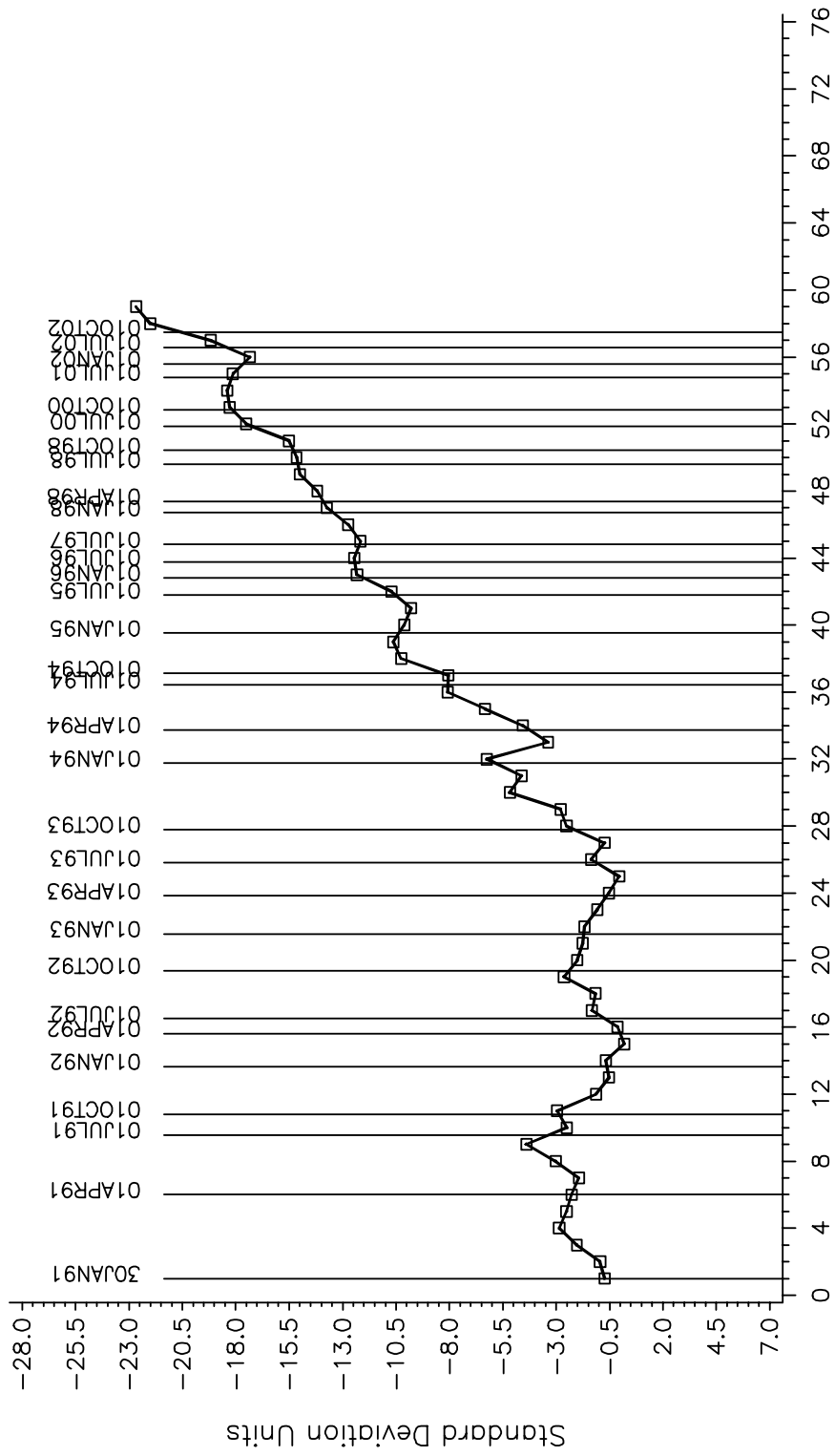
c: J.L. Zalar, TMC
F.M. Farber, TMC
Two-Cycle Diesel Surveillance Panel
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/6v92/semiannualreports/6v92-04-2003.pdf>

Distribution: Email

Figure 1
6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Fire Ring Distress

CUSUM Severity Analysis



COUNT IN COMPLETION DATE ORDER

TMC 07APR03:15:12

Figure 2
6V92 INDUSTRY OPERATIONALLY VALID DATA

Average 2nd & 3rd Ring Distress

CUSUM Severity Analysis

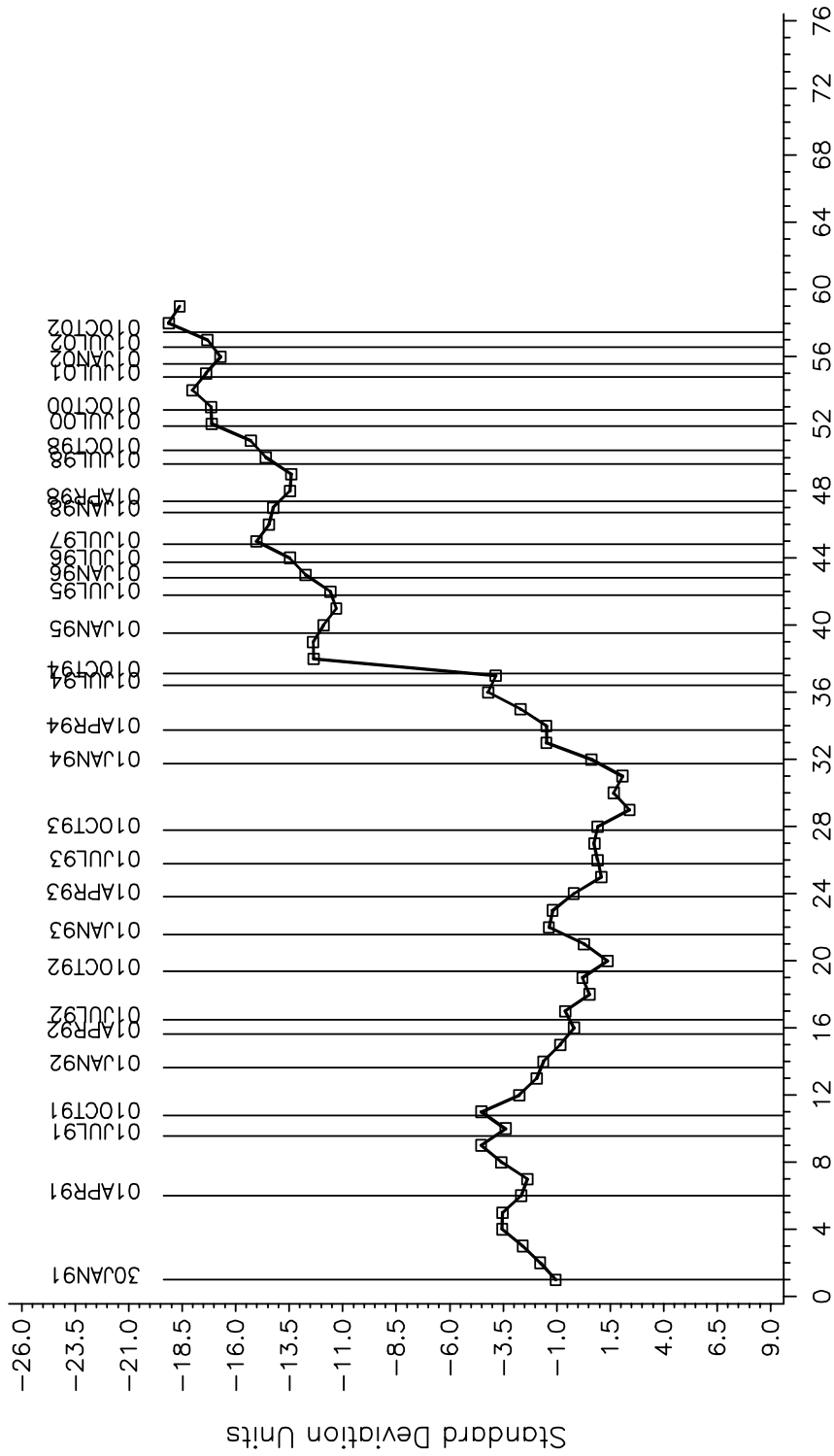


Figure 3

6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Liner Distress

CUSUM Severity Analysis

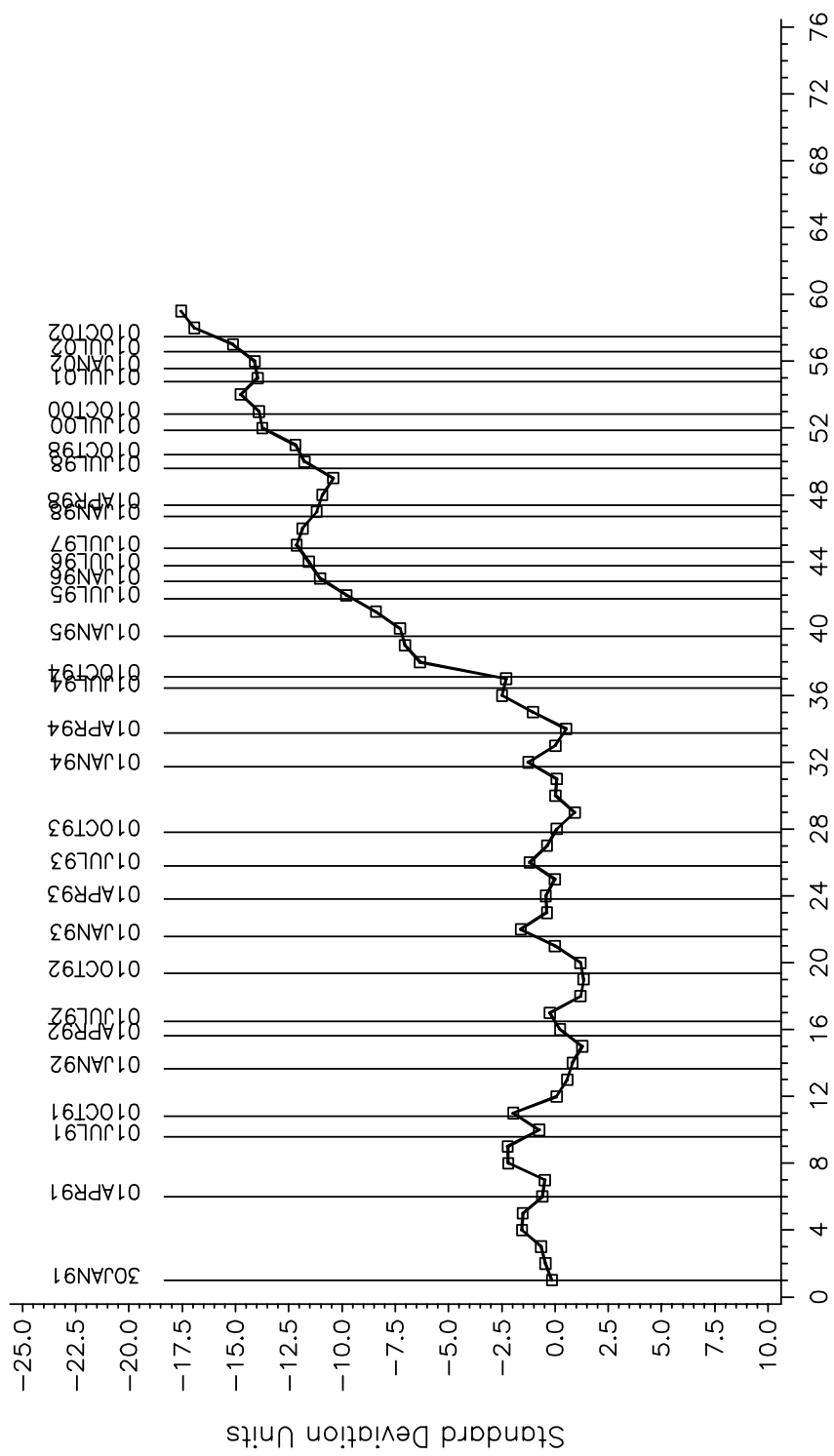


Figure 4 6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Fire Ring Distress

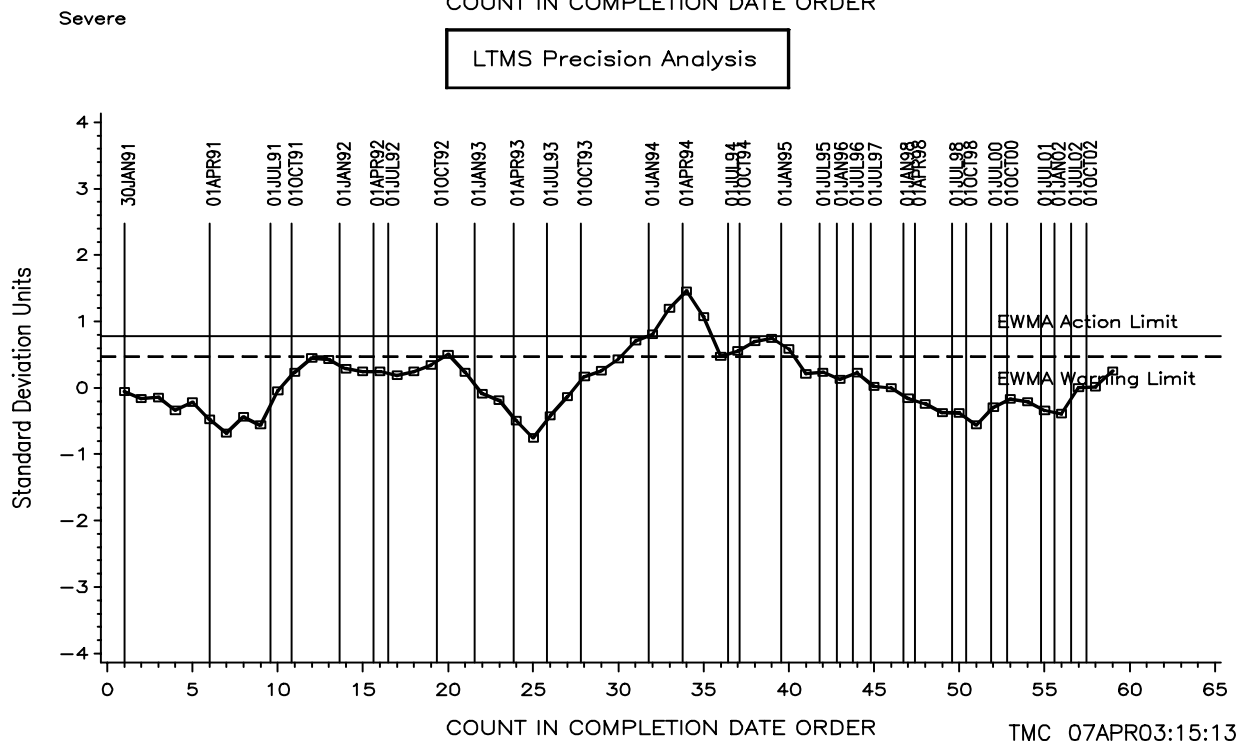
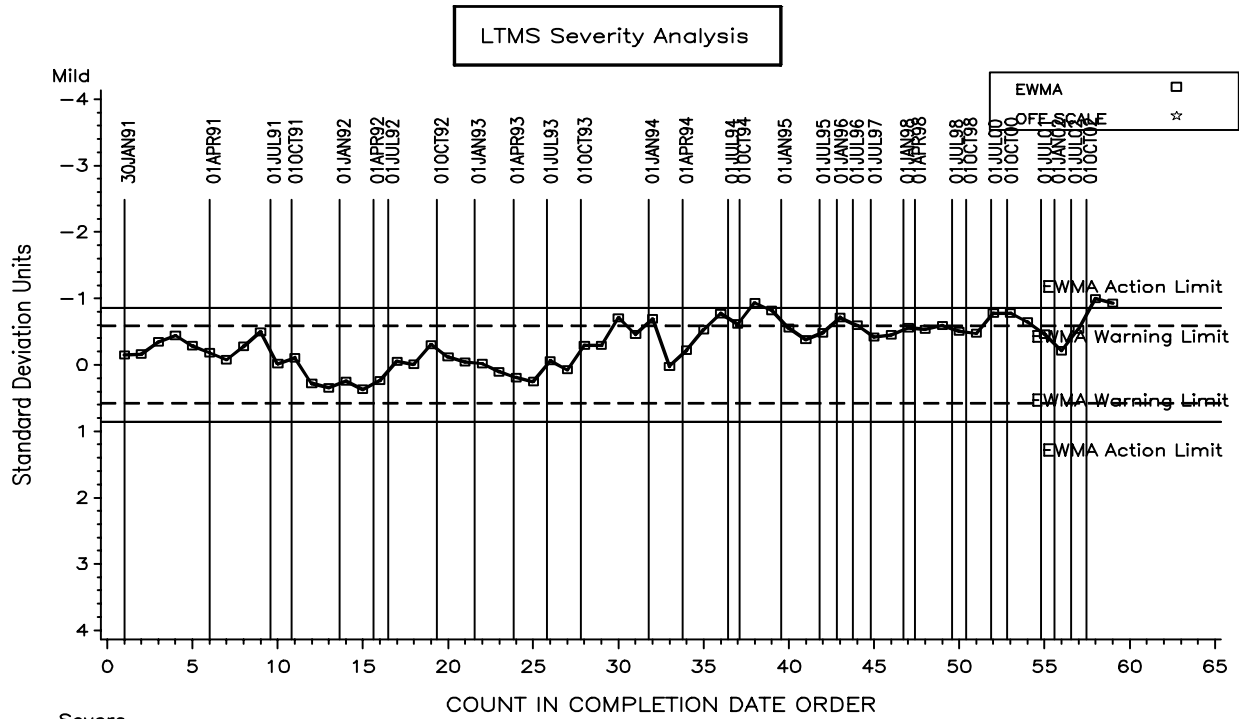


Figure 5 6V92 INDUSTRY OPERATIONALLY VALID DATA

Average 2nd & 3rd Ring Distress

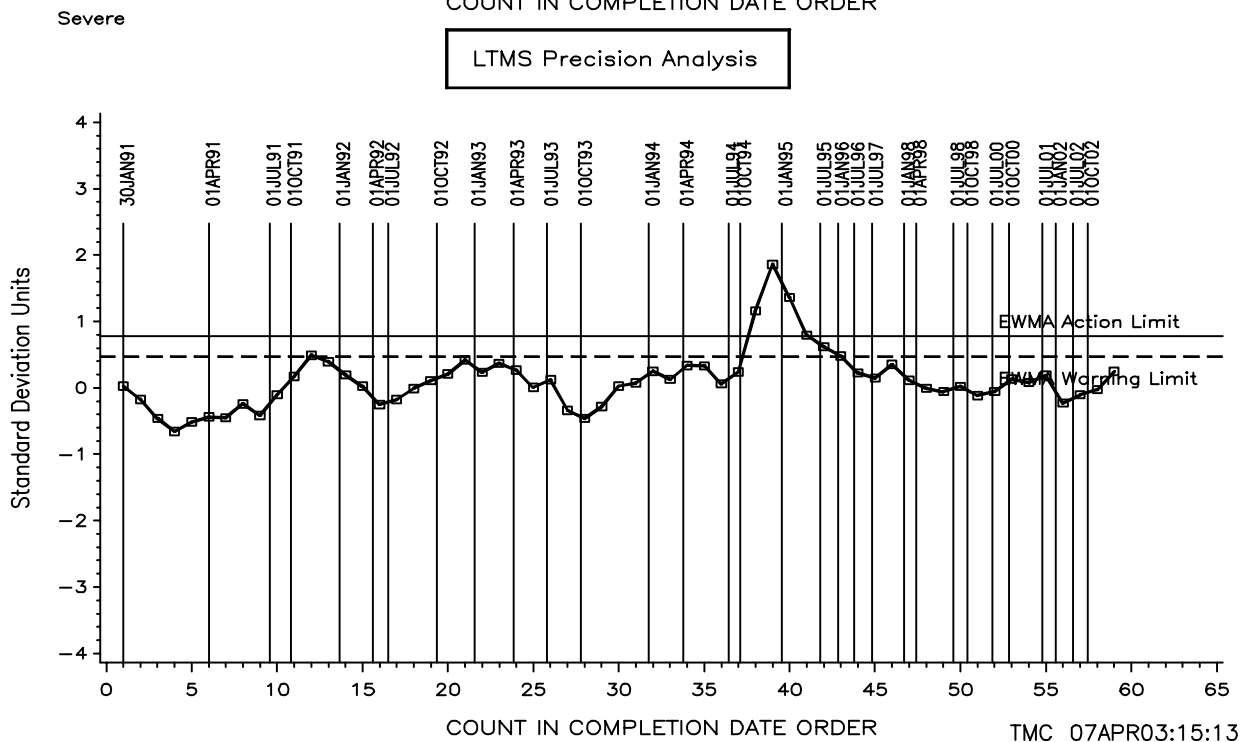
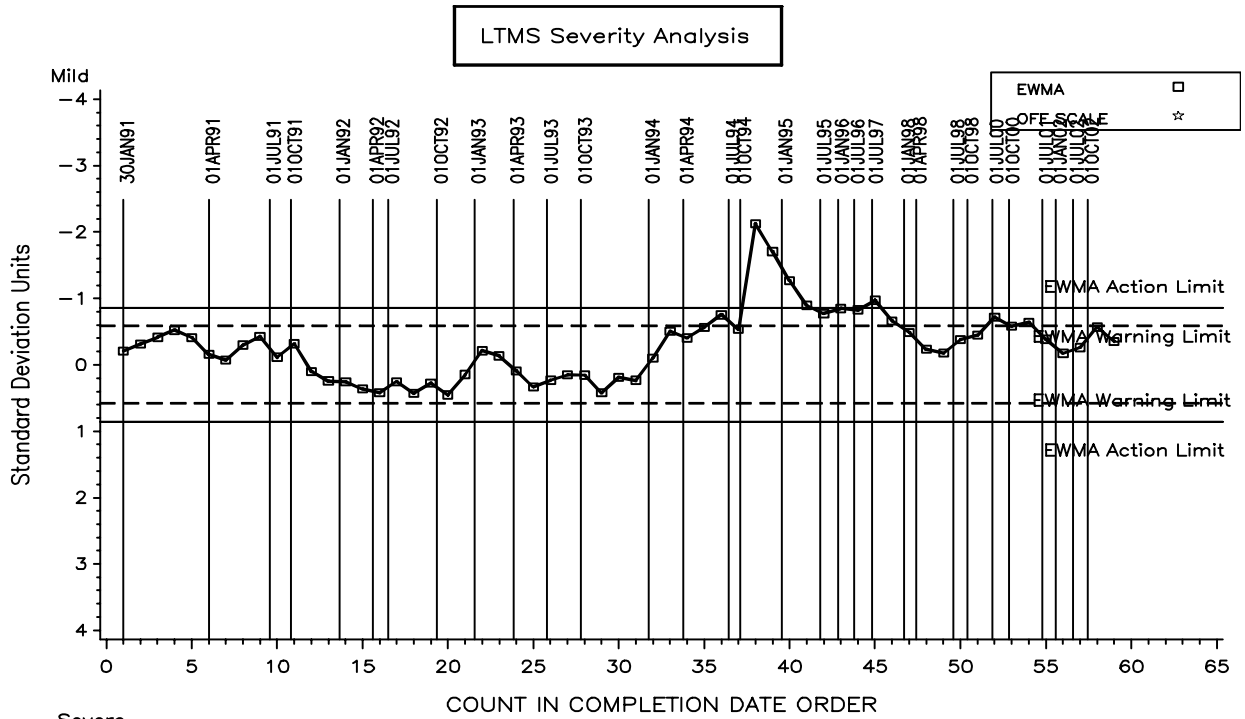
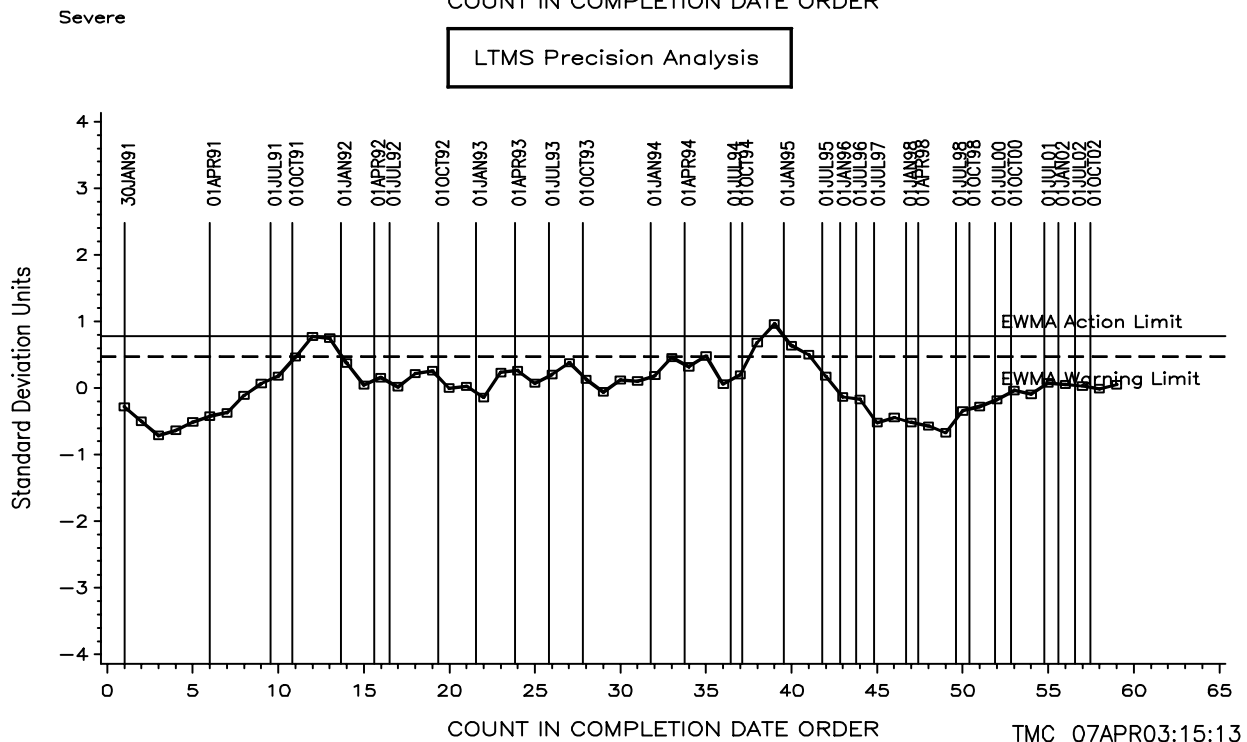
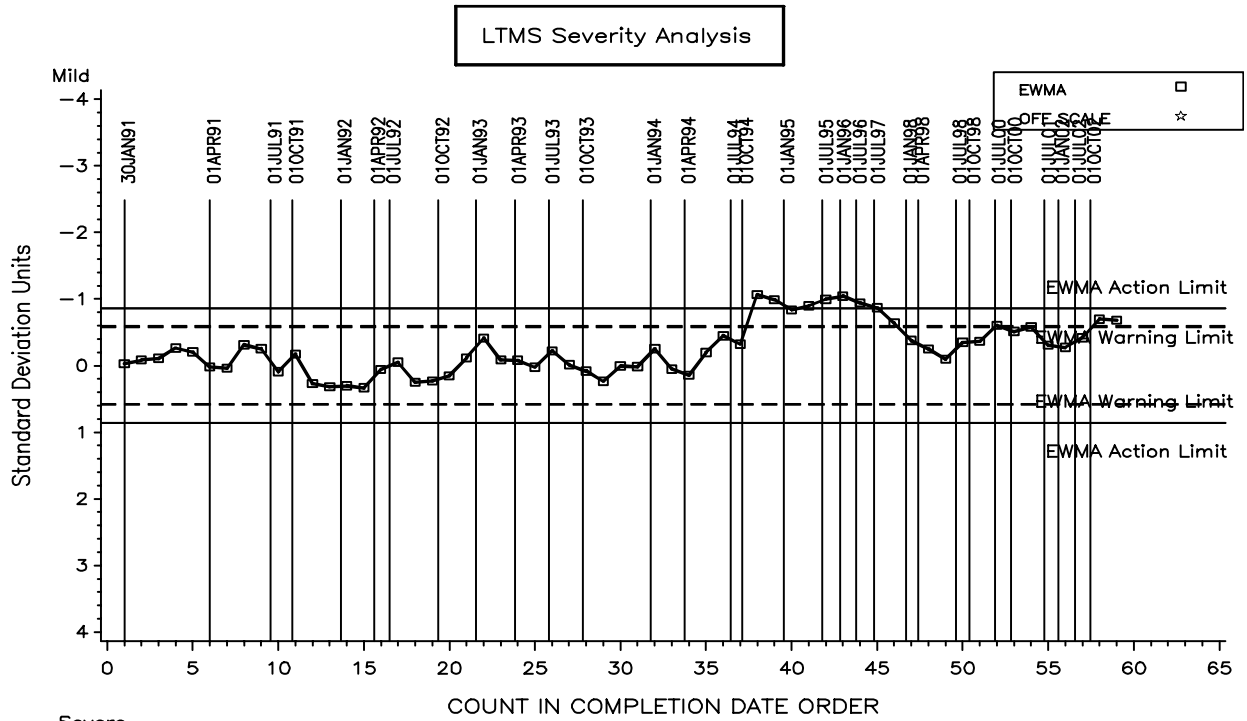


Figure 6

6V92 INDUSTRY OPERATIONALLY VALID DATA

Average Liner Distress



**FIGURE 7
6V92TA TIMELINE**

Date	Info. Letter	Event
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		March 1993 Version of Test Procedure Issued
19930701	93-1	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		Test Targets updated
19990701	99-2	Report forms and data dictionary version 19990414
20010101		Test Targets updated
20020101		Test Targets updated
20020701		Test Targets updated
20030101		Test Targets updated