



Test Monitoring Center

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MEMORANDUM: 10-058

DATE: November 22, 2010

TO: Jim McCord, Chairman, SCOTE Surveillance Panel

FROM: Jeff Clark

SUBJECT: SCOTE Calibration Testing for the October 2010 ASTM Report Period

The following is a summary of 1K, 1N, 1M-PC, 1P, and 1R reference oil tests completed during the October 2010 ASTM report period, which began on April 1, 2010 and ended on September 30, 2010.

Test Status	TMC Validity Code	Number of Tests				
		1K	1N	1M-PC	1P	1R
Acceptable Calibration Test	AC	3	2	3	2	0
Failed Calibration Test (LTMS Criteria)	OC	0	0	0	1	0
Operationally Invalid Test	RC or LC	0	0	1	0	0
Aborted	XC	1	0	0	0	0
Total		4	2	4	3	0

The aborted 1K test was due to a bushing failure. The invalid 1M-PC test was due to liner and ring scuffing caused by an overspeed during warm-up. The 1P test that failed was due to severe End of Test Oil Consumption.

1K Severity:

Weighted Demerits (WDK), Top Land Heavy Carbon (TLHC), and End of Test Oil Consumption (ETOC) are currently within control chart limits. While Top Groove Fill (TGF) is within chart limits, it is showing evidence of a long-term mild trend. Brake Specific Oil Consumption (BSOC) is currently in a severity warning alarm, in the mild direction; this is a continuation of a long-term trend. Figures 1 through 5, show the current industry EWMA severity, EWMA precision, and cusum charts for TGF, WDK, TLHC, BSOC, and ETOC respectively.

1N Severity:

Top Groove Fill (TGF) and Top Land Heavy Carbon (TLHC) are currently in industry severity alarms, in the mild direction; though not in alarm, Brake Specific Oil Consumption (BSOC) is currently trending mild. Weighted Demerits (WDN) is currently within control chart limits. Figures 6 through 9 show the current industry EWMA severity, EWMA precision, and cusum charts for TGF, WDK, TLHC, and BSOC respectively.

1M-PC Severity:

Top Groove Fill (TGF) and Weighted Deposits (WTD) are both currently within control chart limits. Weighted Deposits (WTD) is showing some evidence of trending mild. Figures 10 and 11 show the current industry EWMA severity and cusum charts for TGF and WTD, respectively.

1P Severity:

Top Groove Carbon (TGC), Weighted Deposits (WD), and Top Land Carbon (TLC) are currently within control chart limits are not exhibiting any pronounced severity trends. Both Oil Consumption (OC) and End of Test Oil Consumption (ETOC) are in industry alarms in the severe direction and both have been in these trends for much of the test history. Figures 12 through 16 show the current industry EWMA severity, EWMA precision, and cusum charts for TGF, TLC, WD, OC, and ETOC respectively.

1R Severity:

It is important to note that only four 1R reference tests have been run in the last 5 years, which restricts the ability to offer meaningful analysis of industry trends. Weighted Deposits (WD), Beginning of Test Oil Consumption (BTOC), and End of Test Oil Consumption (ETOC) are currently within control chart limits. Top Land Carbon (TLC) and Top Groove Carbon (TGC) are both in an industry alarms for precision. Figures 17 through 21, show the current industry EWMA severity, EWMA precision, and cusum charts for WD, TGF, TLC, BTOC, and ETOC respectively.

Reference Test Precision Estimates:

Current test activity levels do not support an evaluation of test precision for the 1K, 1N, 1P, and 1R tests. Precision estimates for the 1M-PC will be provided on an annual basis and are shown in the table below. To date, the 2010 1M-PC precision estimate shows TGF to be within historical levels, while WD shows improvement.

1M-PC Precision Estimates

Parameter	2006	2007	2008	2009	2010
Df	12	10	7	6	4
TGF	17.7	19.1	18.6	8.3	14.3
WD	41.6	47.1	38.7	41.4	23.7

Reference Oil Supply:

The table below shows current reference oil inventories. Based upon these levels, no action regarding reference oil supply is necessary at this time.

Reference Oil Inventory and Estimated Life

Oil	Tests	TMC Inventory ^A	Lab Inventory ^B	Estimated Life ^C
809-1	1K, 1N	2628	6	5+ years
811-1	1K, 1N	9	2	<1 year
811-2	1K, 1N	1395	6	5+ years
820-3	1R	867	0	5+ years
873-2	1M-PC	28	2	4 years
1005-3	1P, 1R	1469	4	4 years

^AInventories are expressed in gallons.

^BTest sample count at active laboratories.

^CTime estimate is based on most recent activity levels.

Information Letters:

No SCOTE information letters were issued this period.

TMC Laboratory Visits:

No laboratory visits were conducted this period.

Quality Index:

No Quality Index deviations were issued this period.

Additional Information:

The SCOTE databases, and timelines can be accessed from the links in the following table. If you have any questions about this information, please contact the TMC.

SCOTE Surveillance Panel Information Links

Test Area	Information Link
1K	ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1k/data/
1N	ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1n/data/
1M-PC	ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1m/data/
1P	ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1p/data/
1R	ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1r/data/

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Attachments

c: F.M. Farber, TMC
SCOTE Surveillance Panel
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/SCOTE-10-2010.pdf>

Distribution: Email

FIGURE 1
CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA



Top Groove Fill

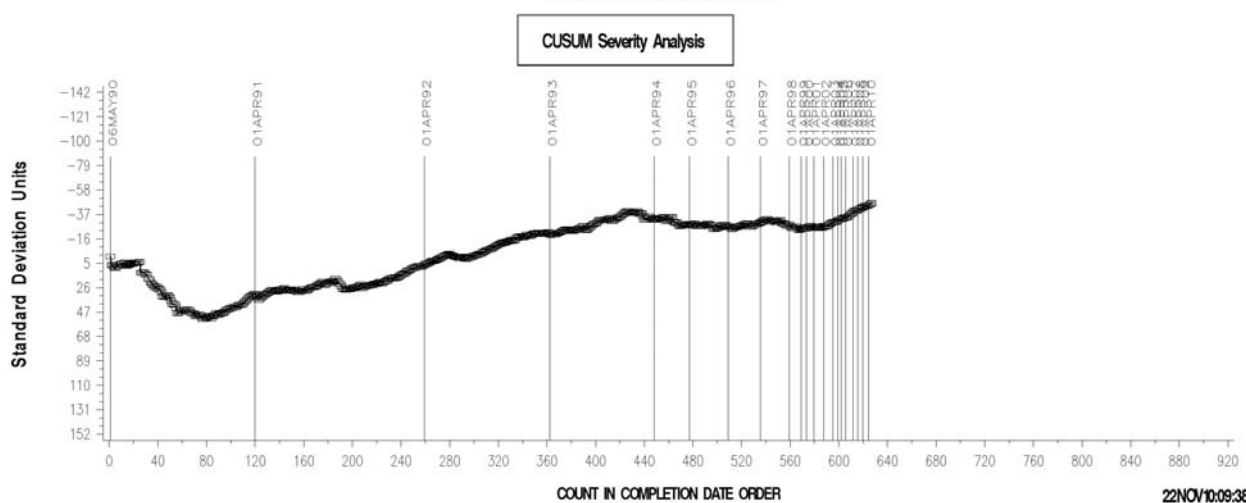
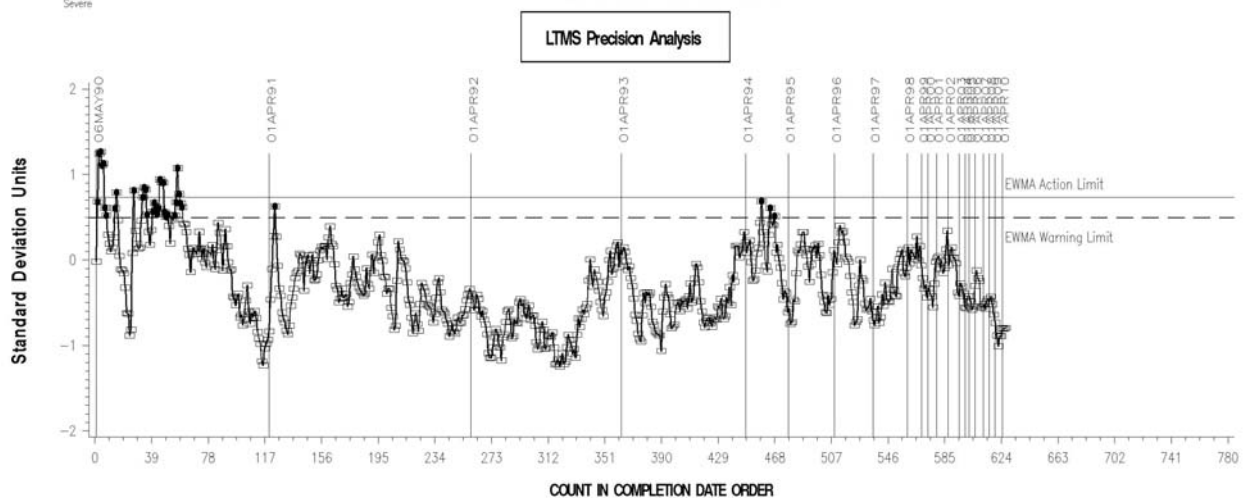
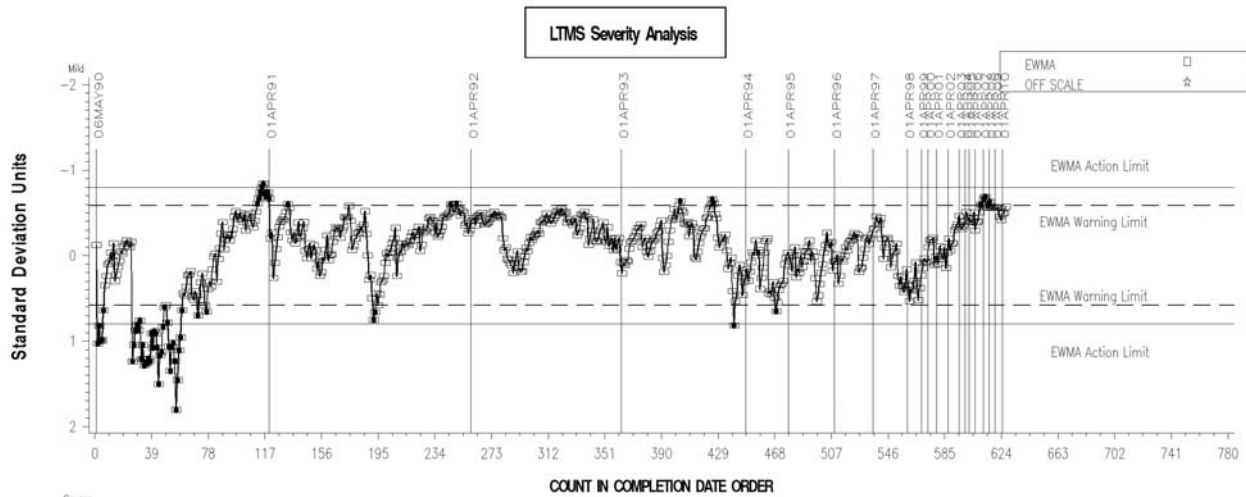


FIGURE 2
CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA



Weighted Total Demerits

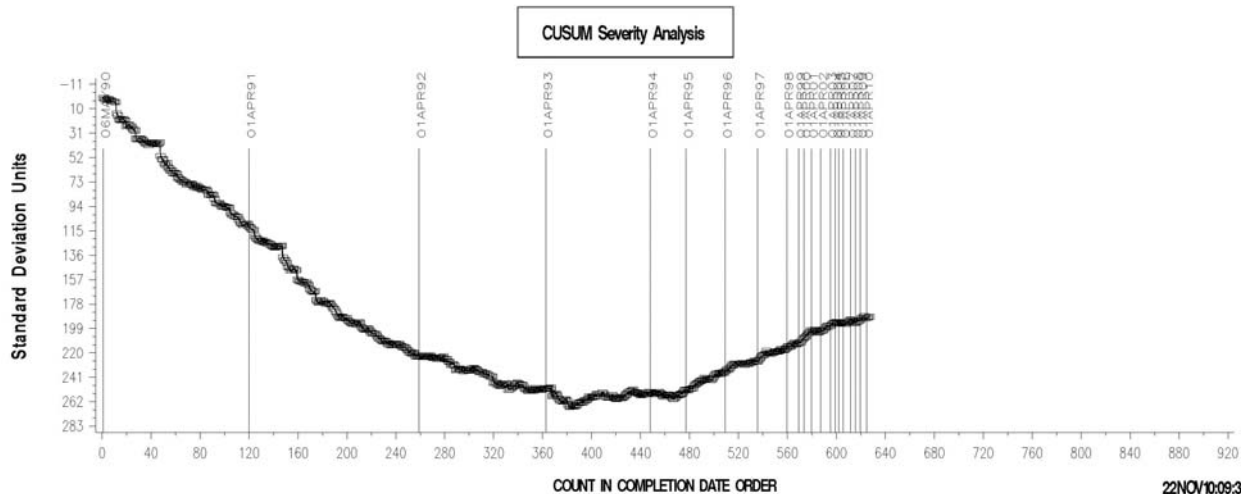
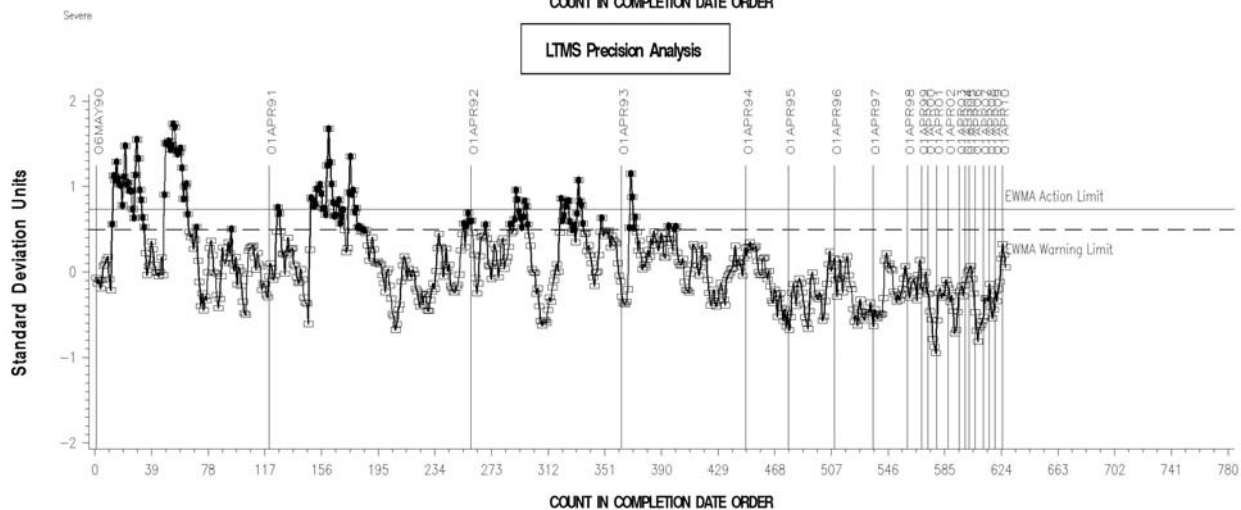
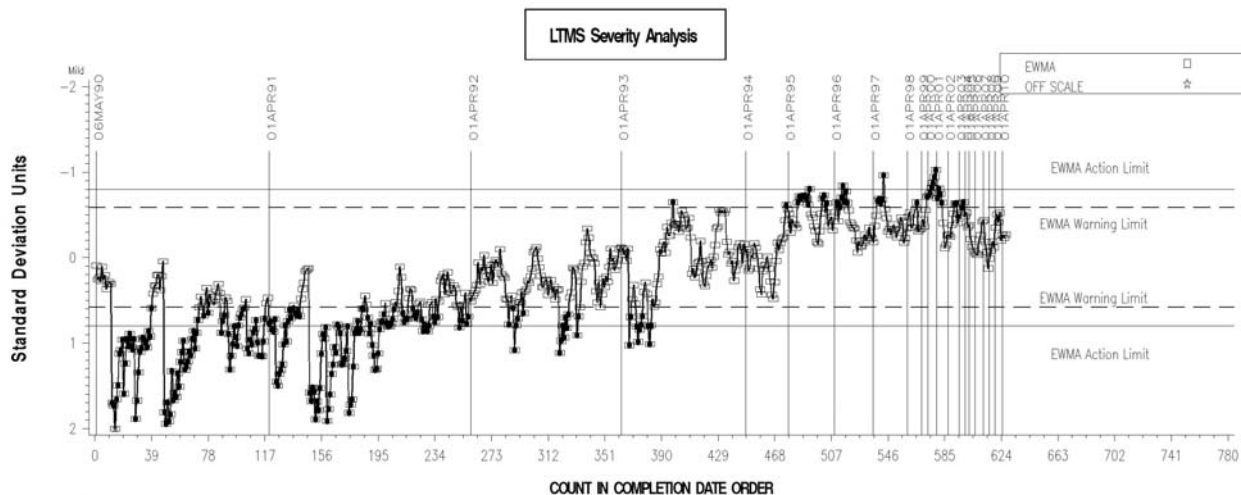


FIGURE 3
CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA



FINAL TRANSFORMED TOP LAND HEAVY CARBON

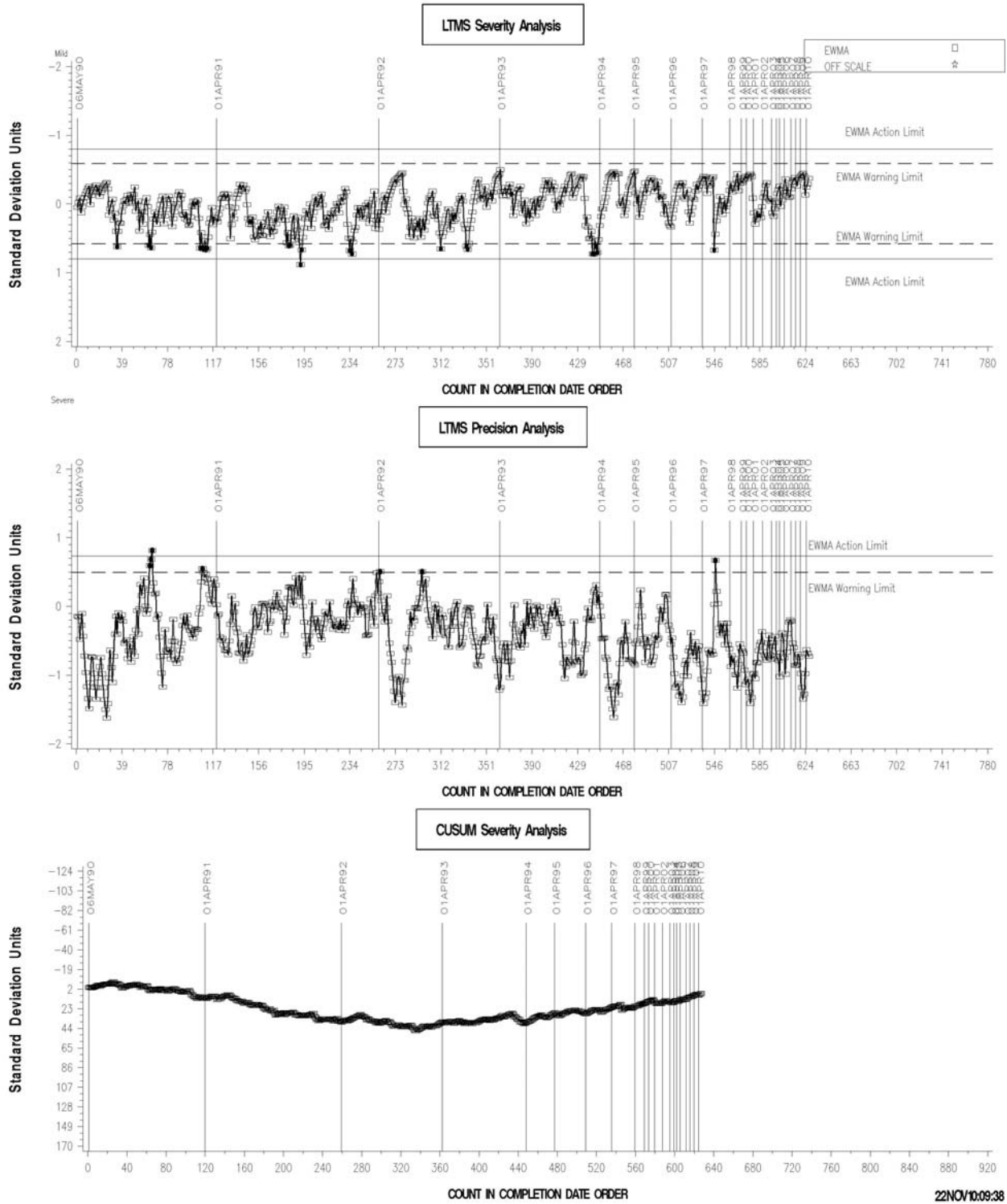


FIGURE 4
CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA



BSOC

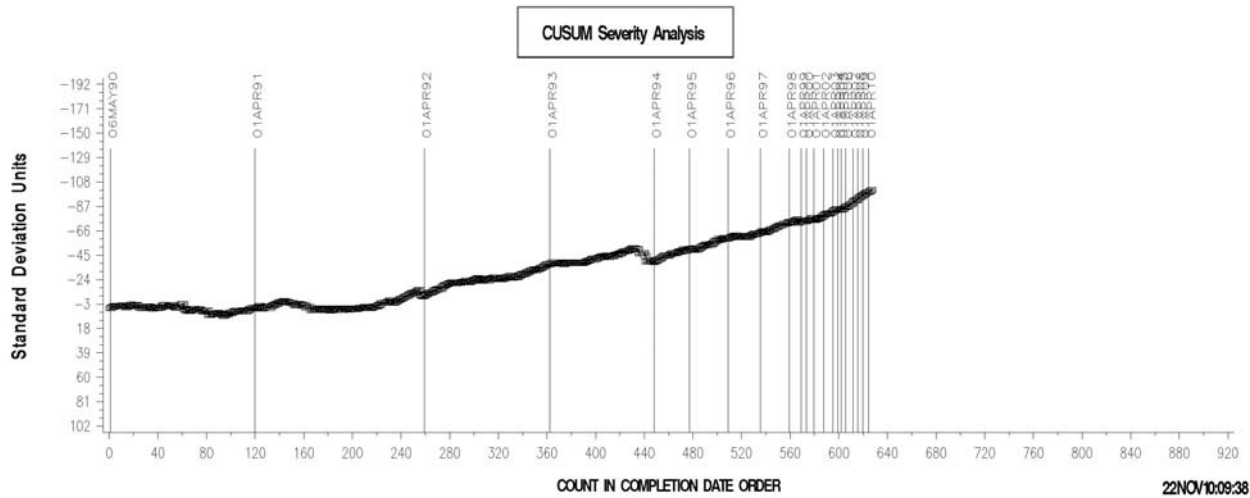
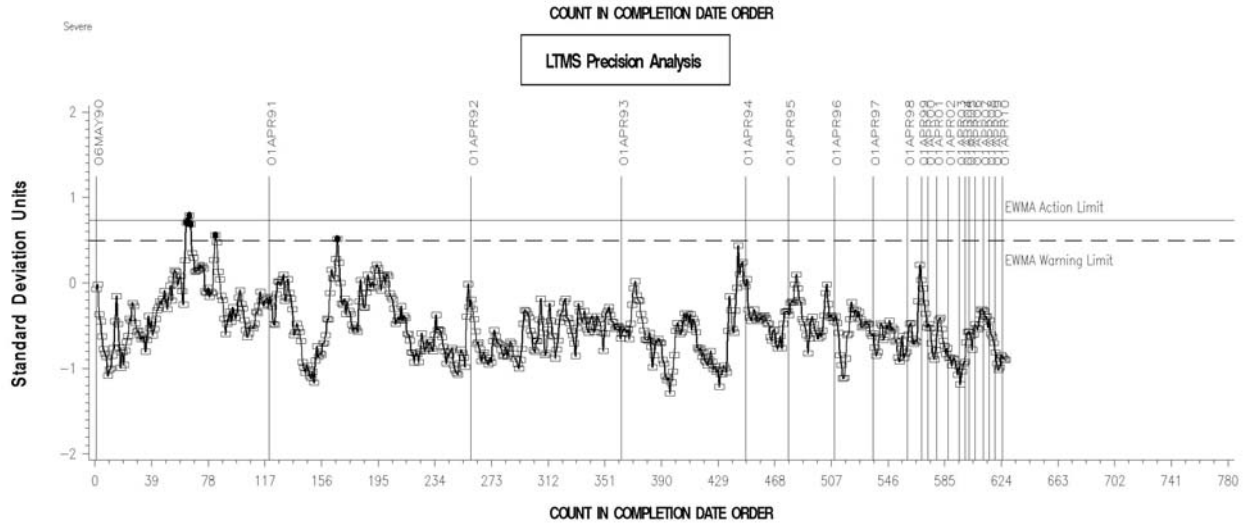
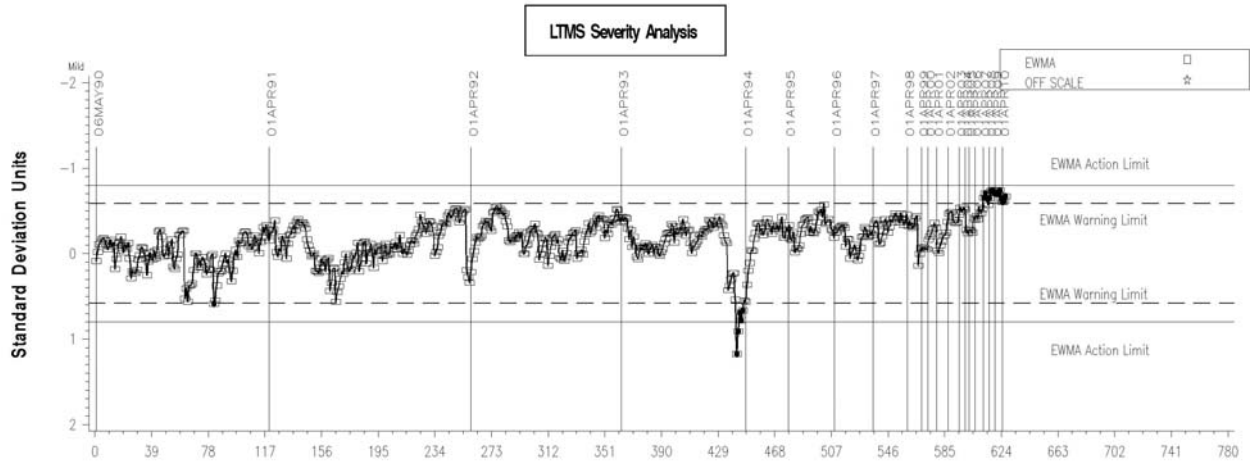


FIGURE 5
CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA



EOTOC

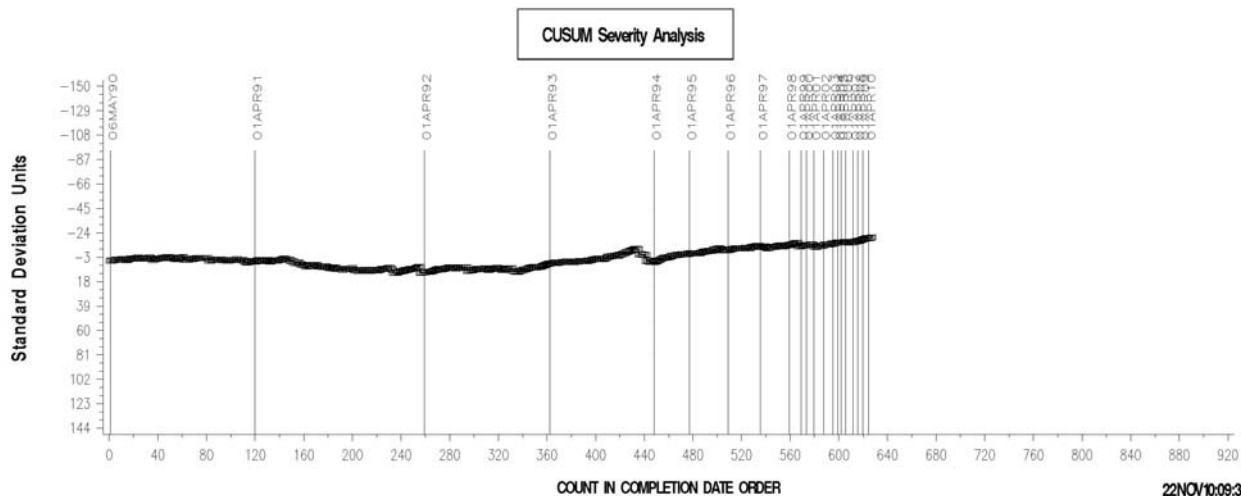
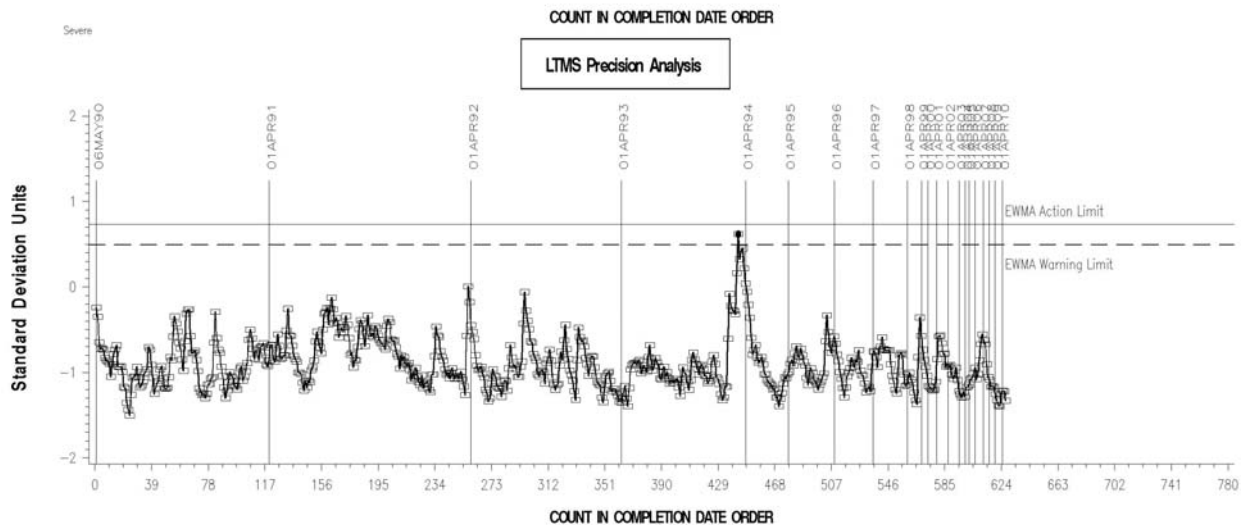
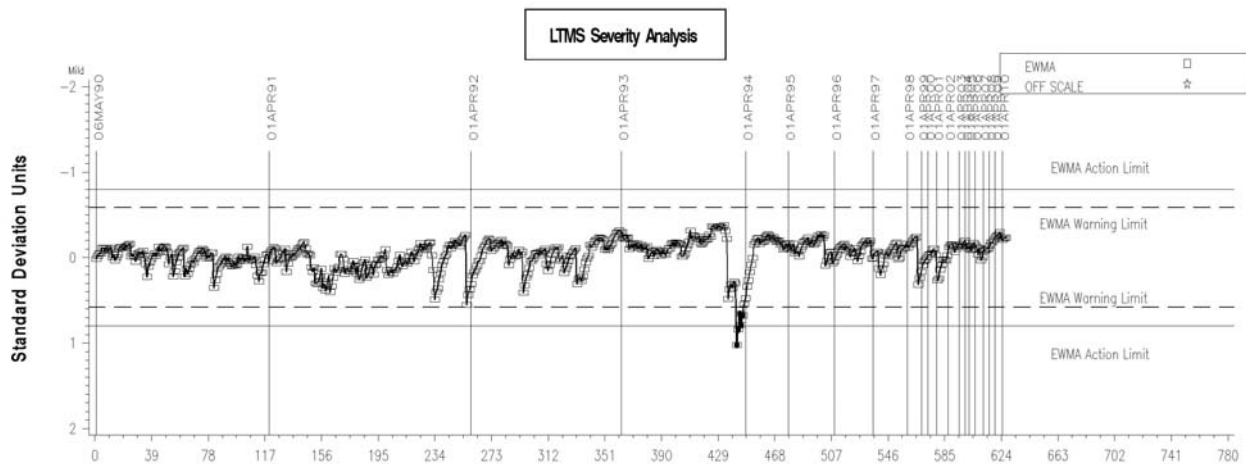


FIGURE 6
CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA



Top Groove Fill

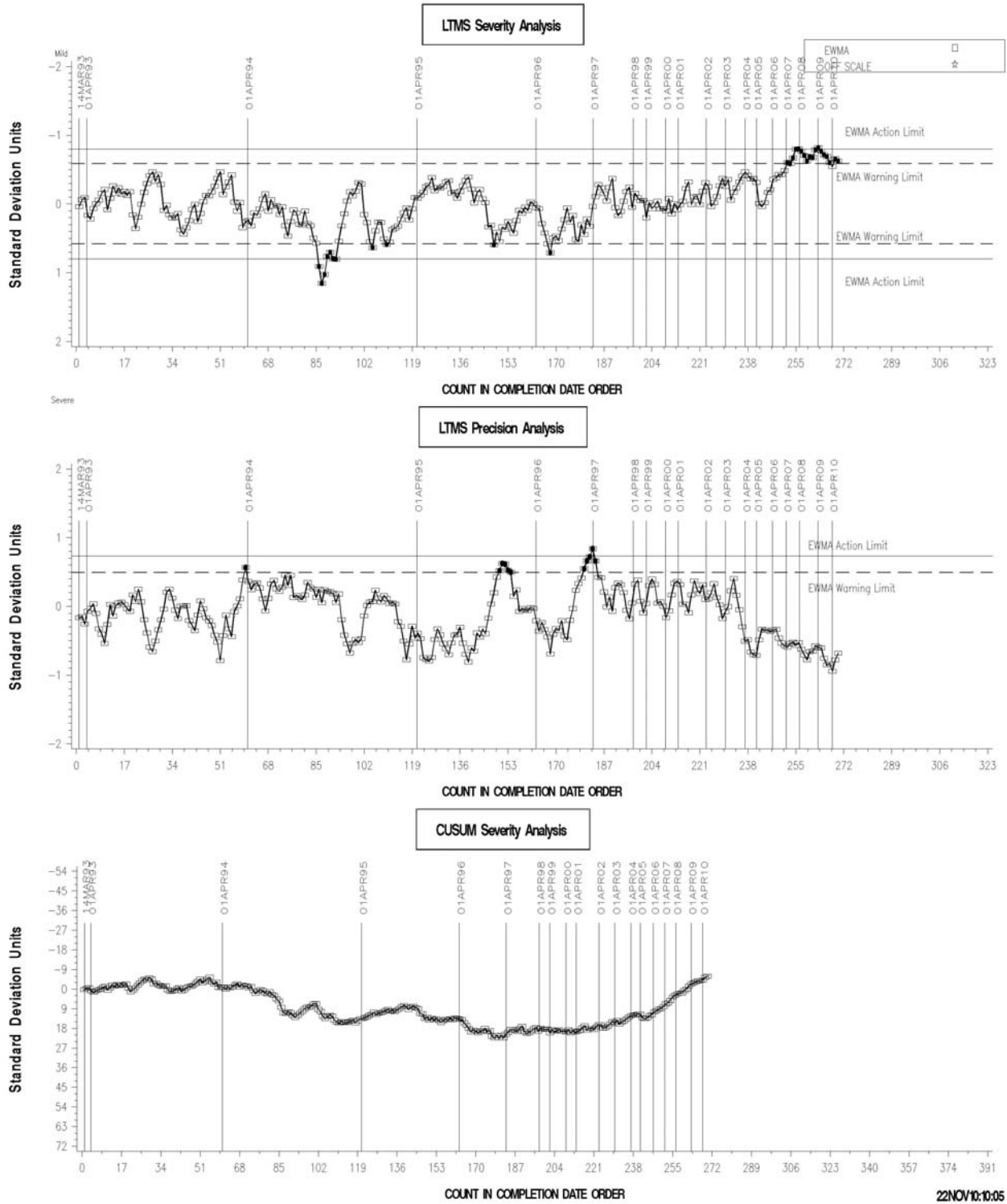


FIGURE 7
CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA



Weighted Total Demerits

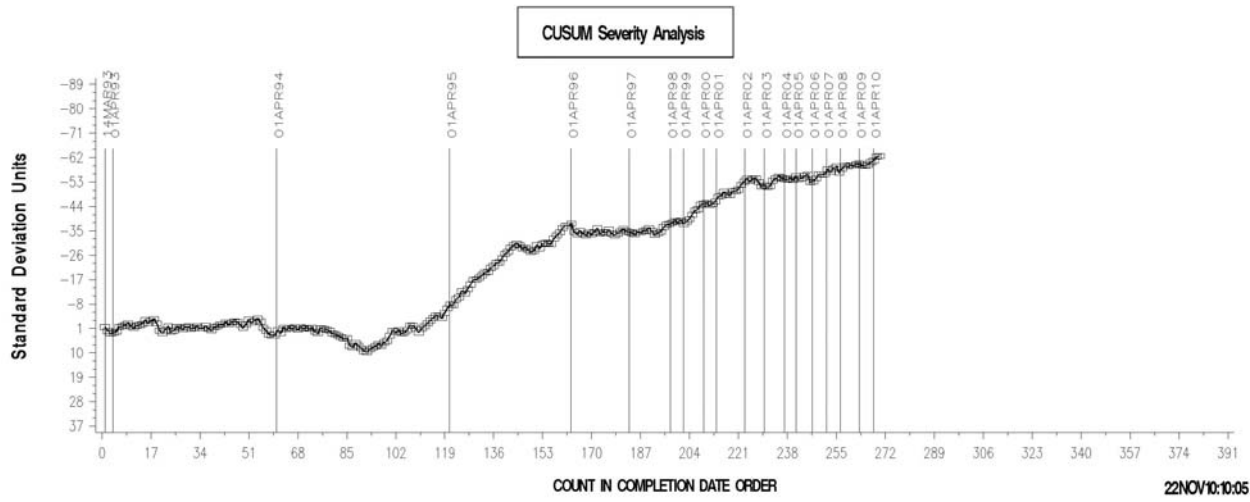
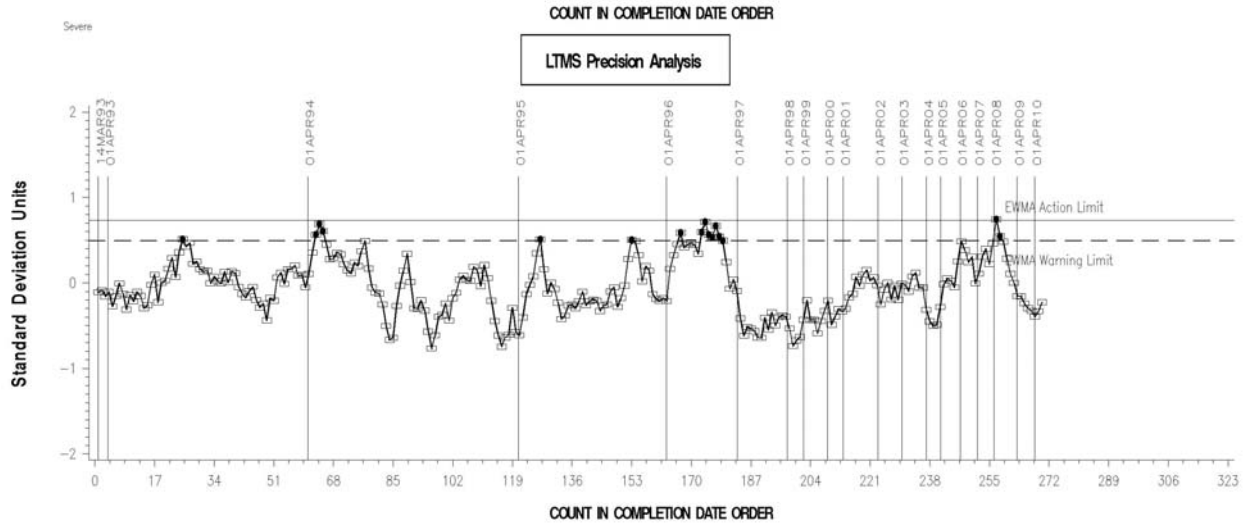
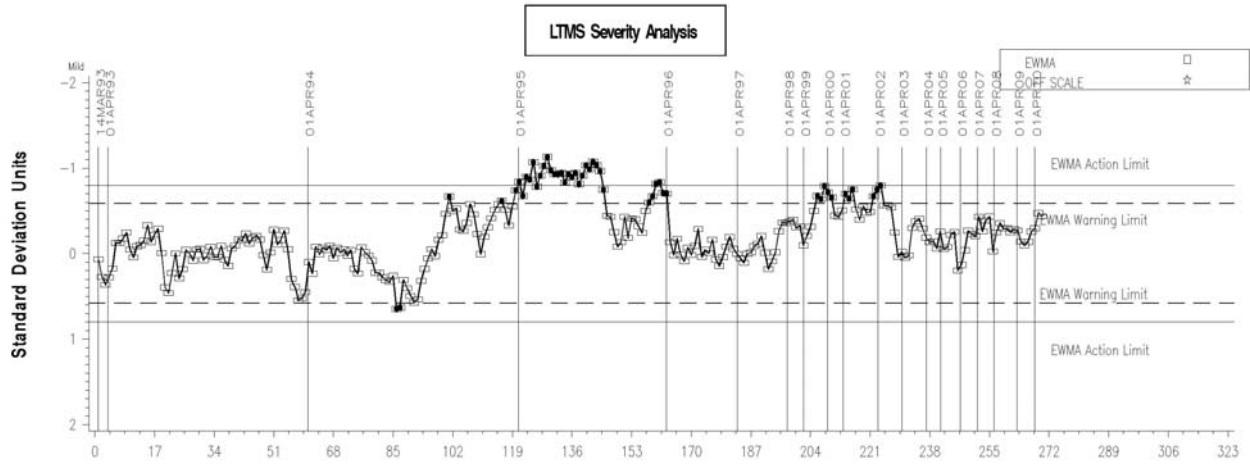


FIGURE 8
CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA
FINAL TRANS. TOP LAND HEAVY CARBON

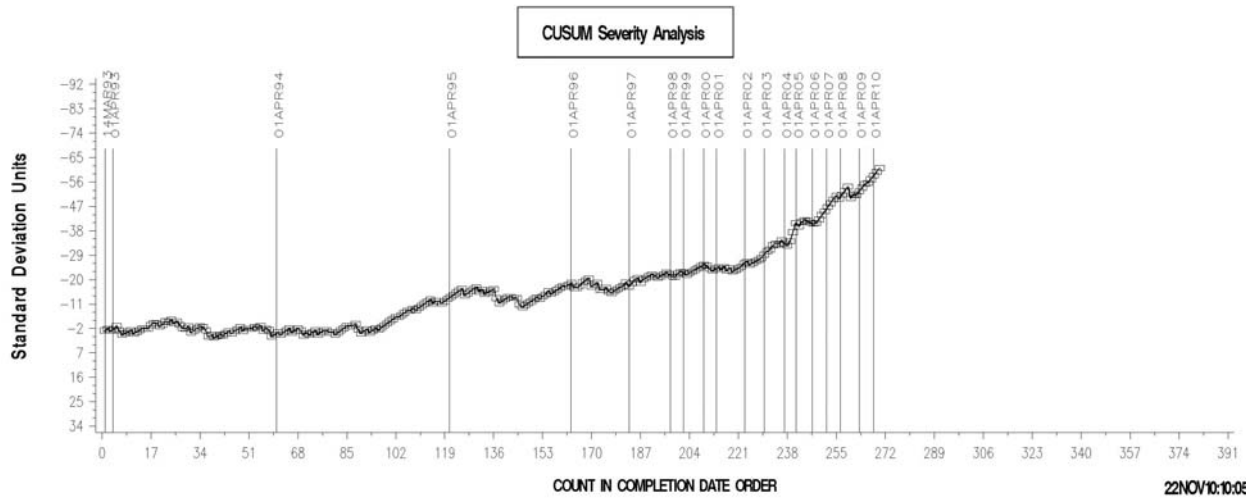
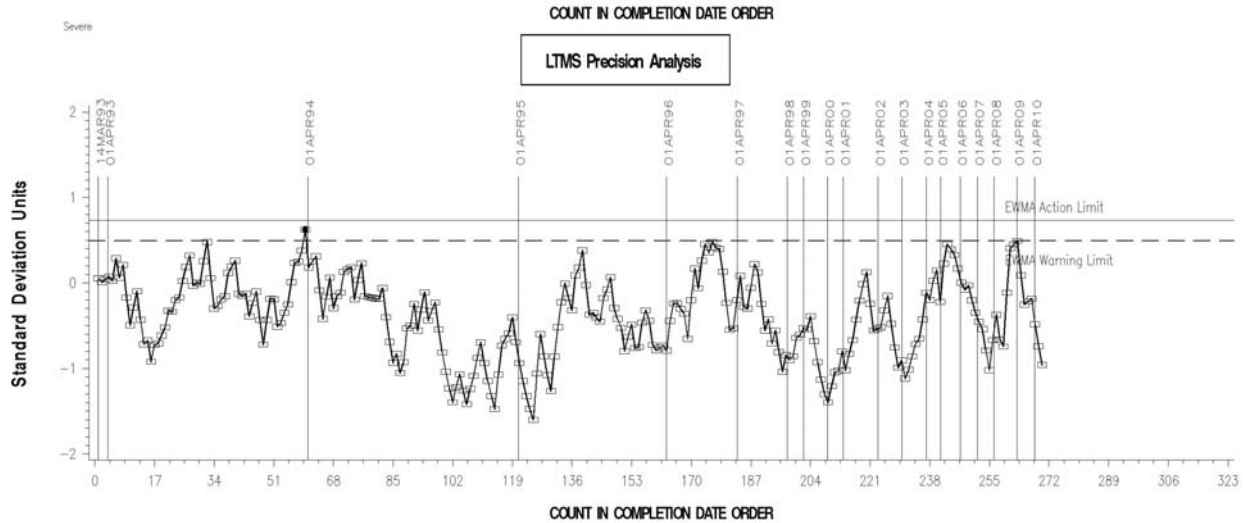
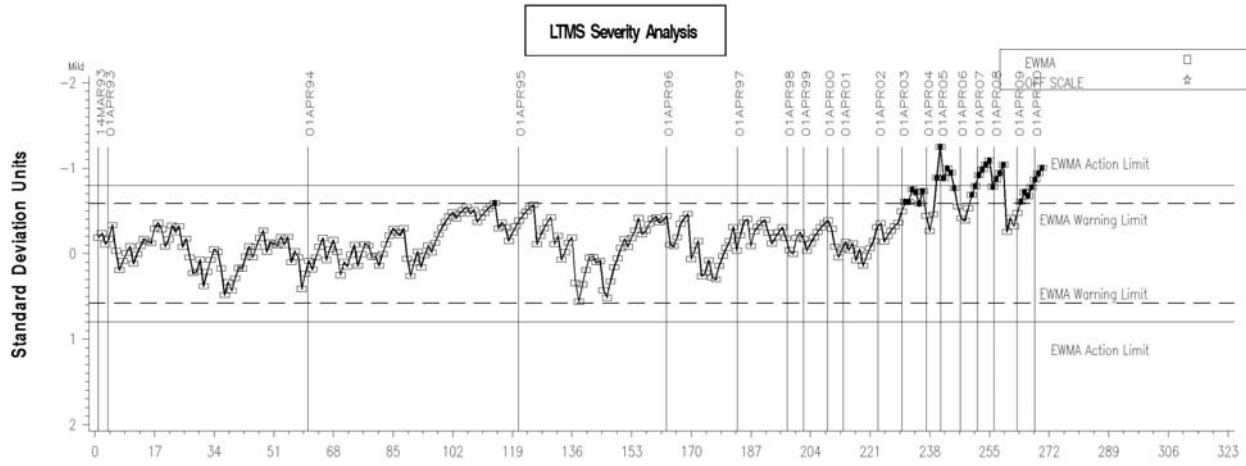


FIGURE 9
CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA



BSOC

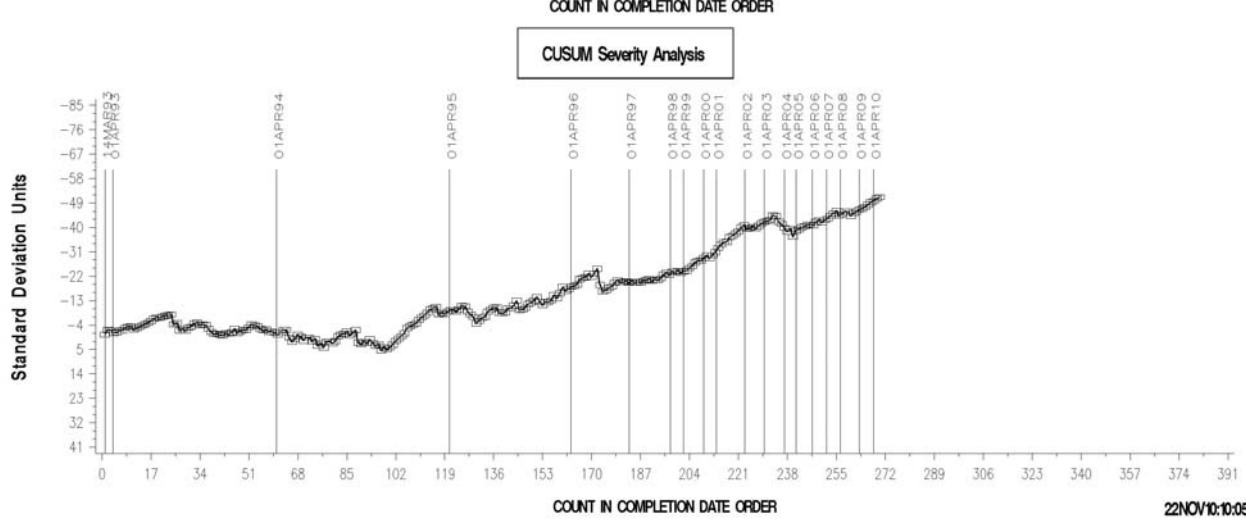
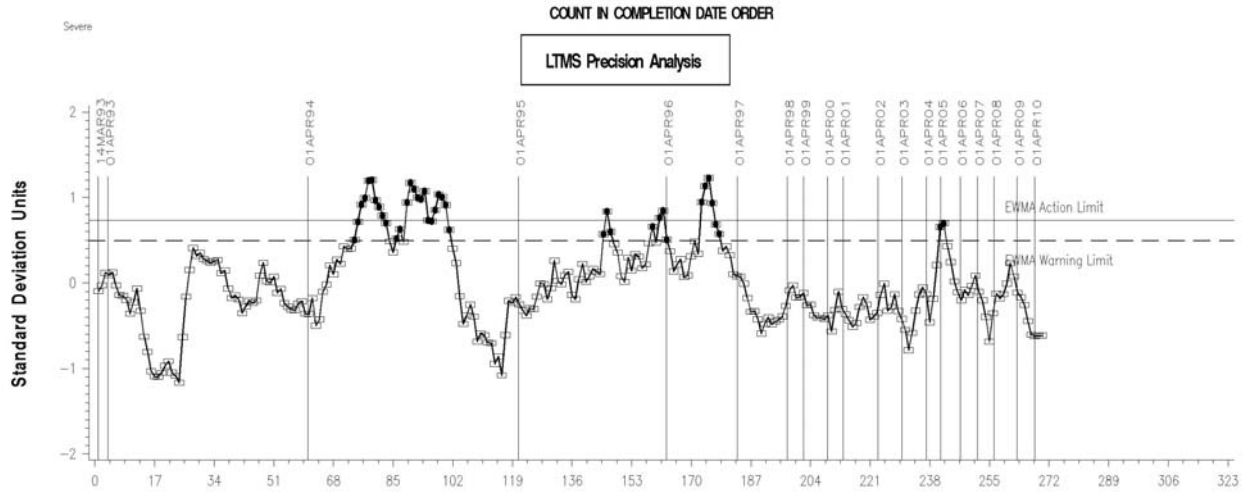
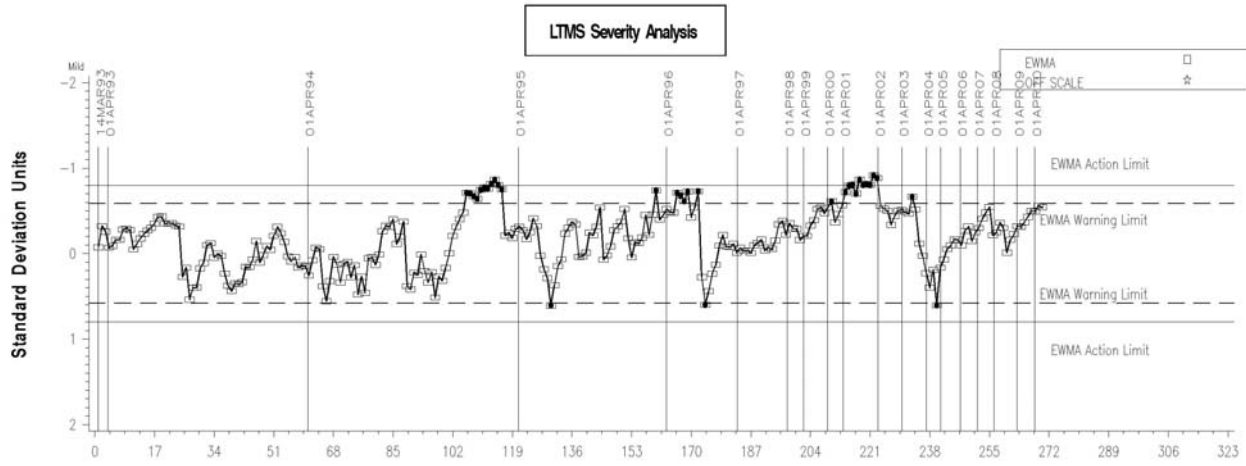


FIGURE 10
CATERPILLAR 1M-PC INDUSTRY OPERATIONALLY VALID DATA



FINAL TOP GROOVE FILLING

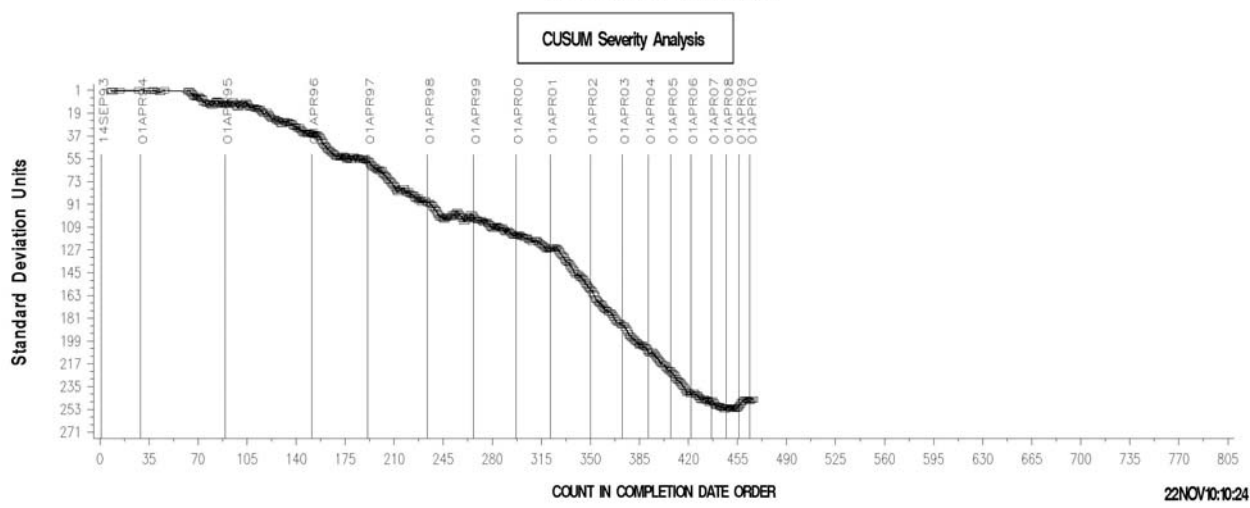
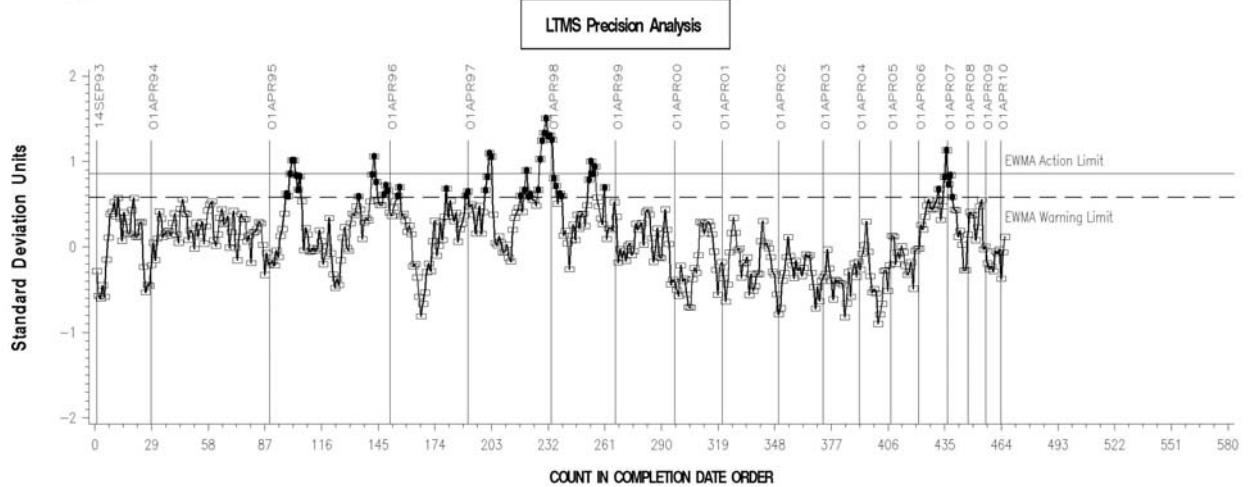
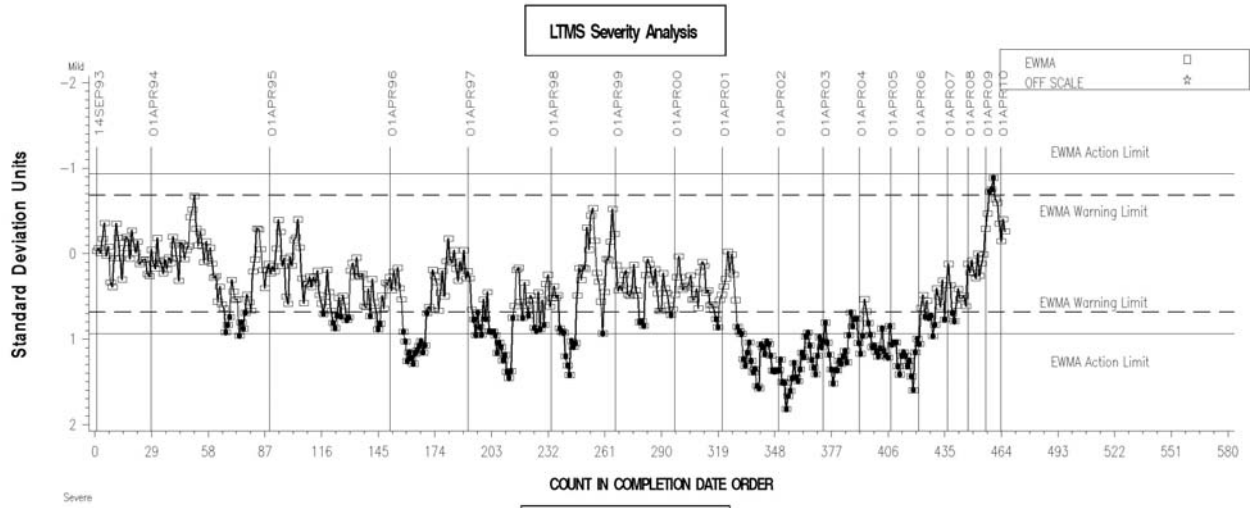


FIGURE 11
CATERPILLAR 1M-PC INDUSTRY OPERATIONALLY VALID DATA



Weighted Total Demerits

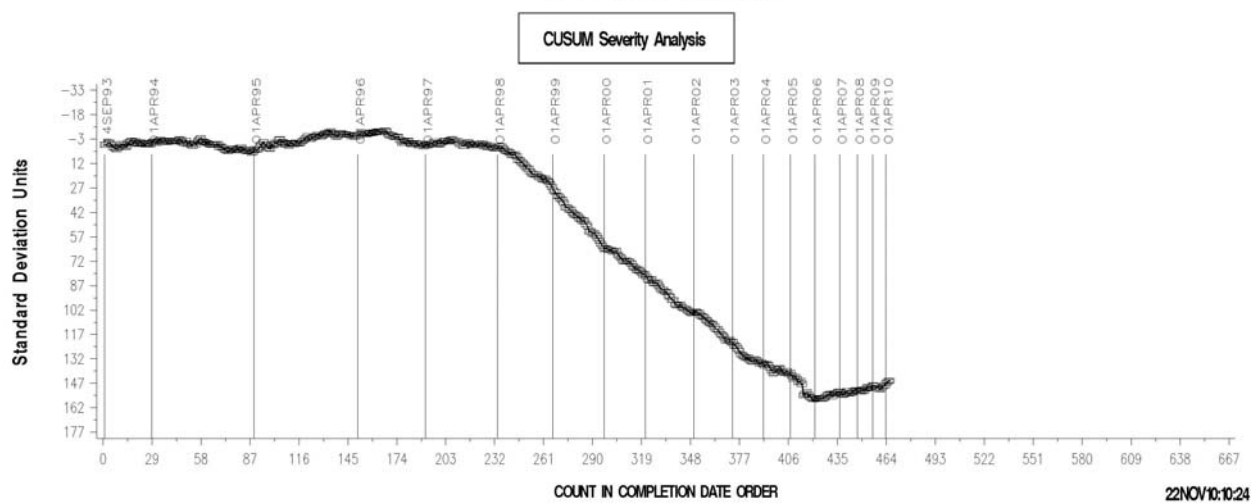
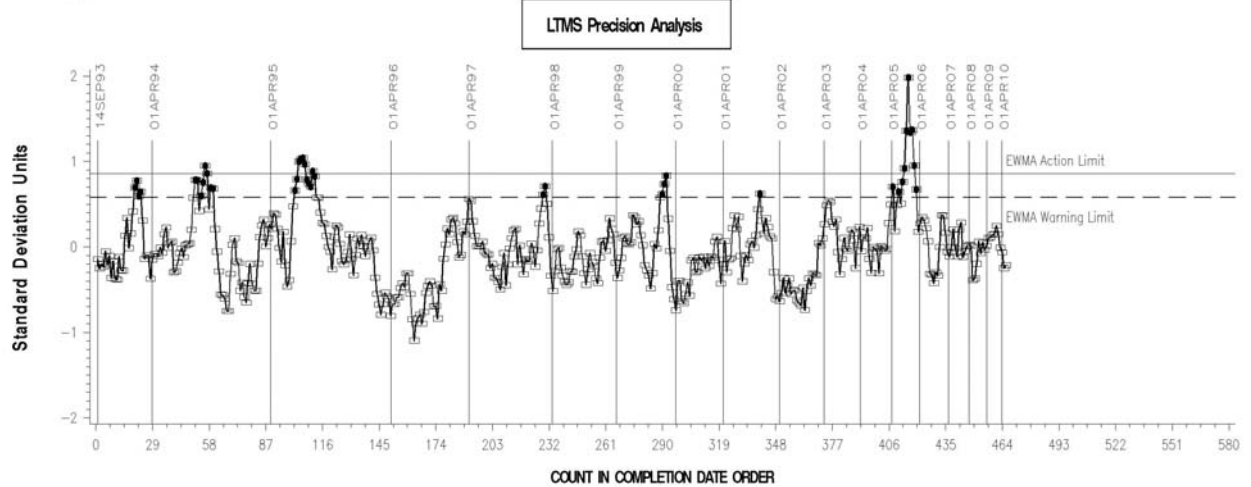
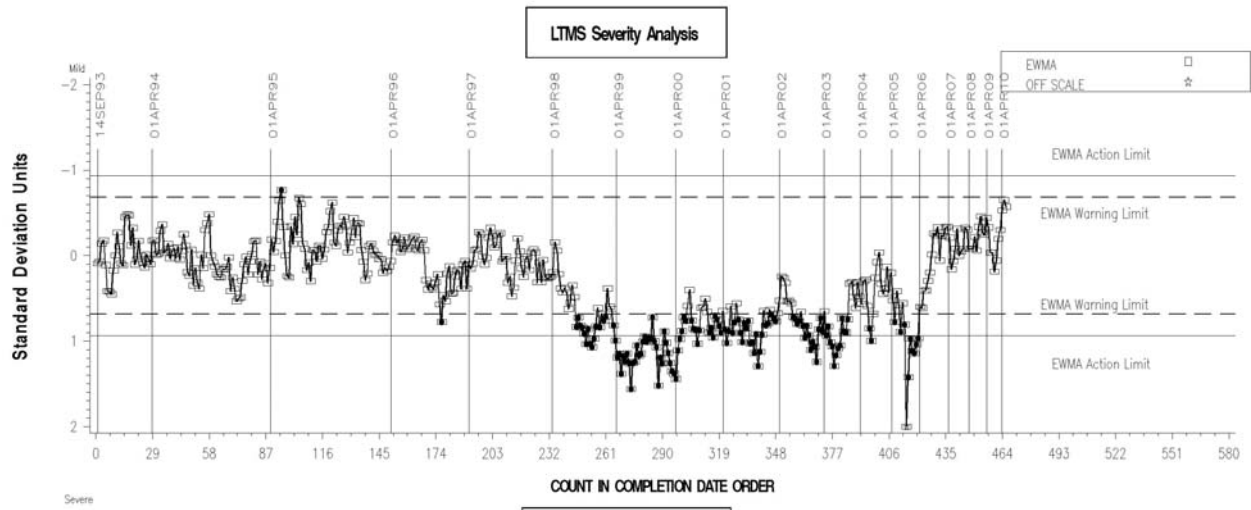


FIGURE 12
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



TOP GROOVE CARBON

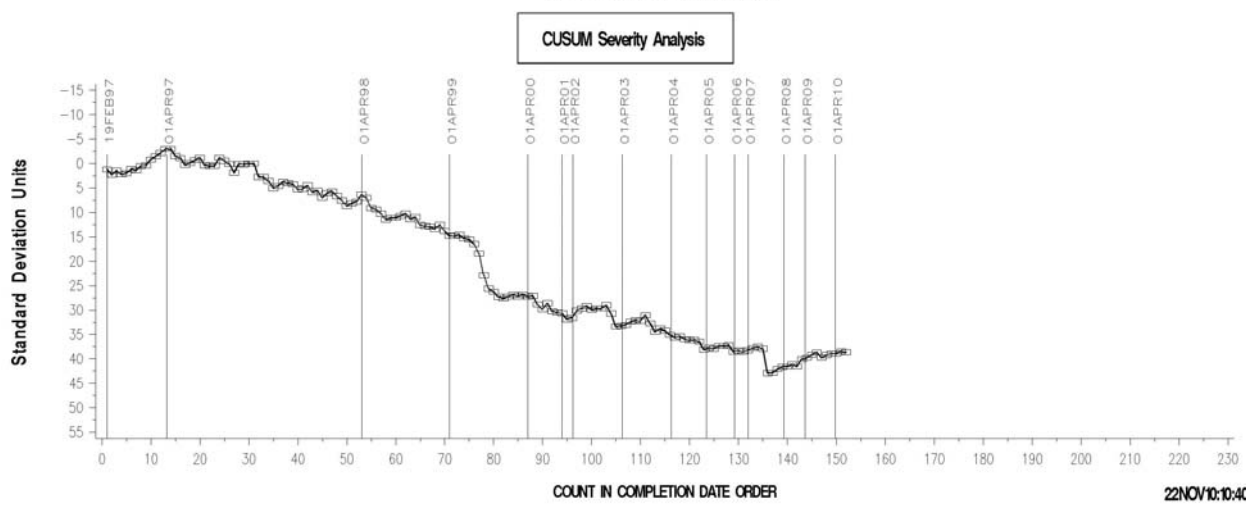
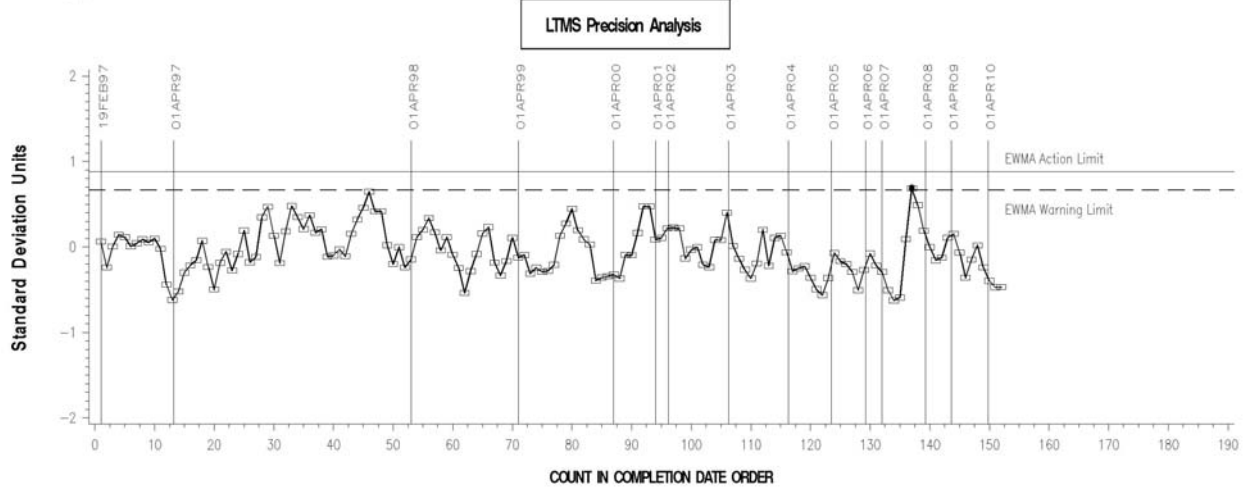
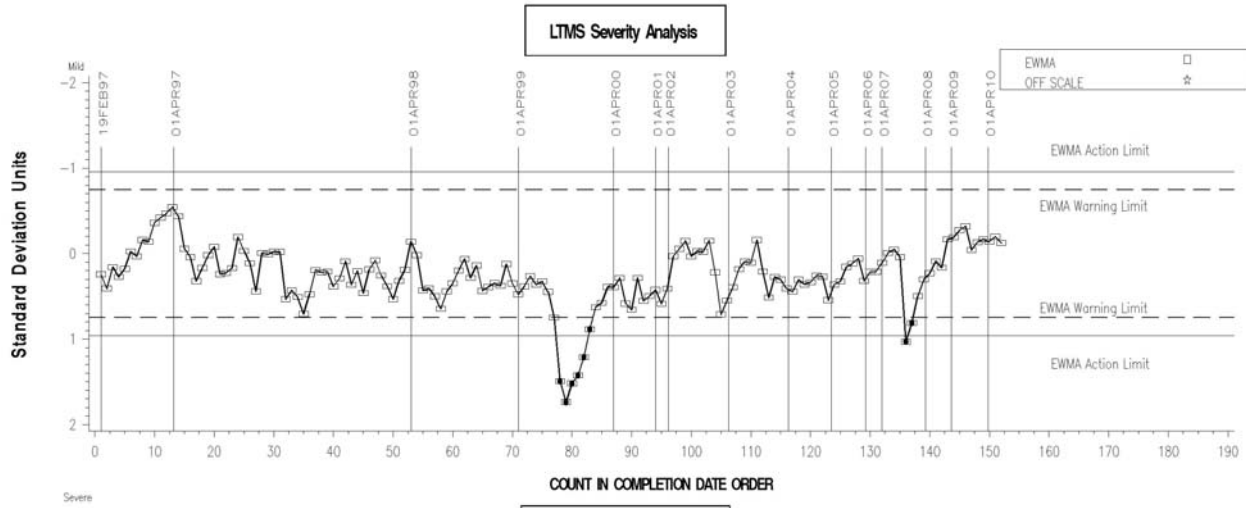


FIGURE 13
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



TOP LAND CARBON

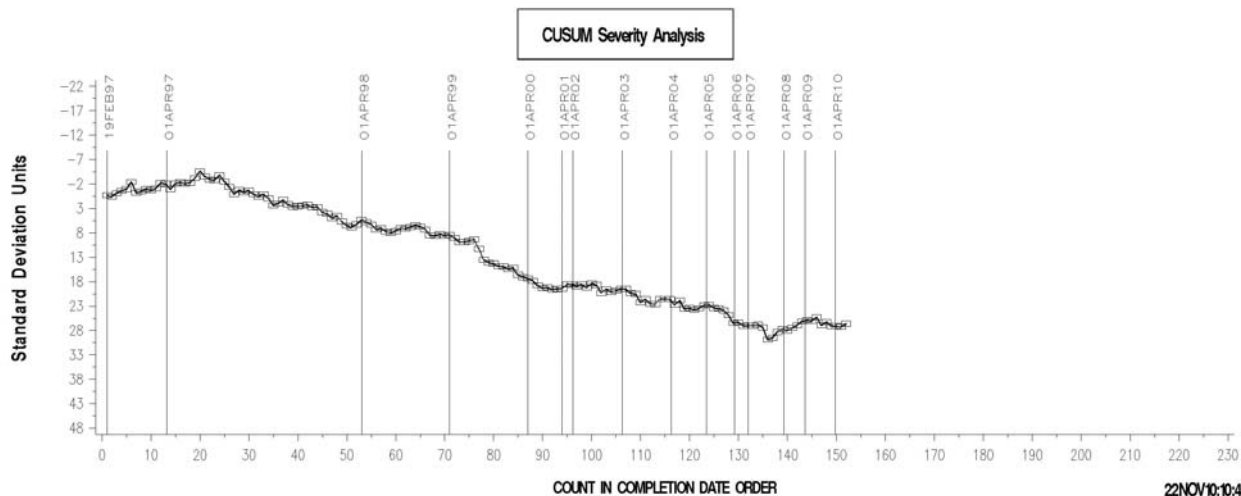
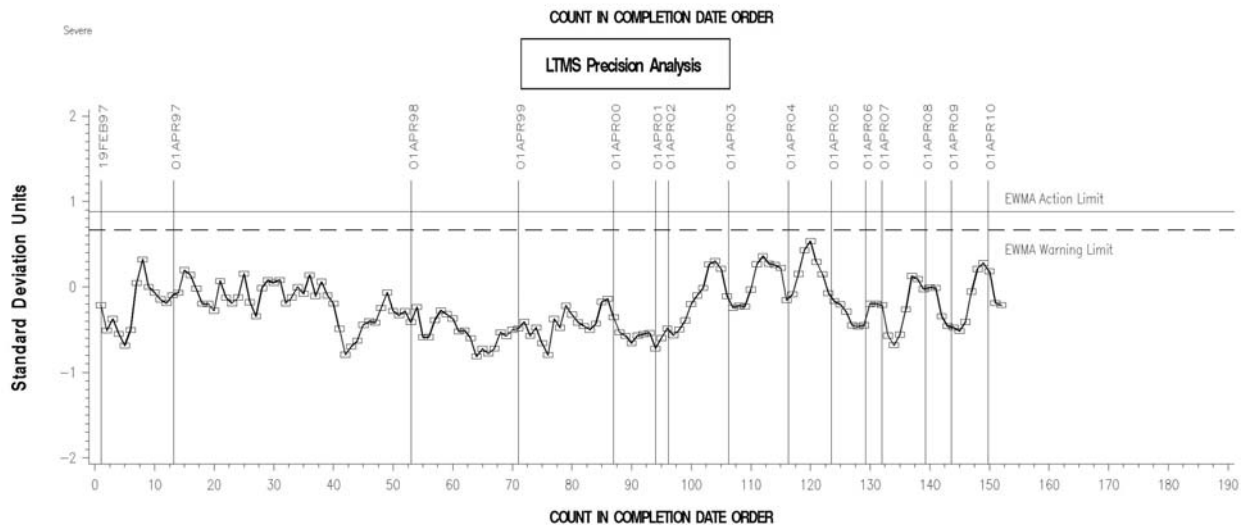
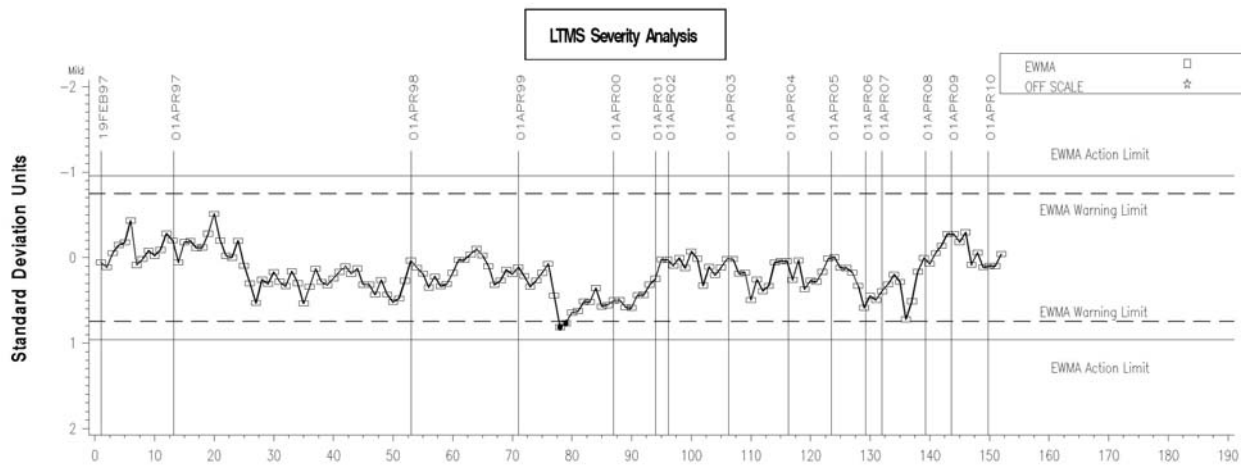


FIGURE 14
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



WEIGHTED TOTAL DEMERITS

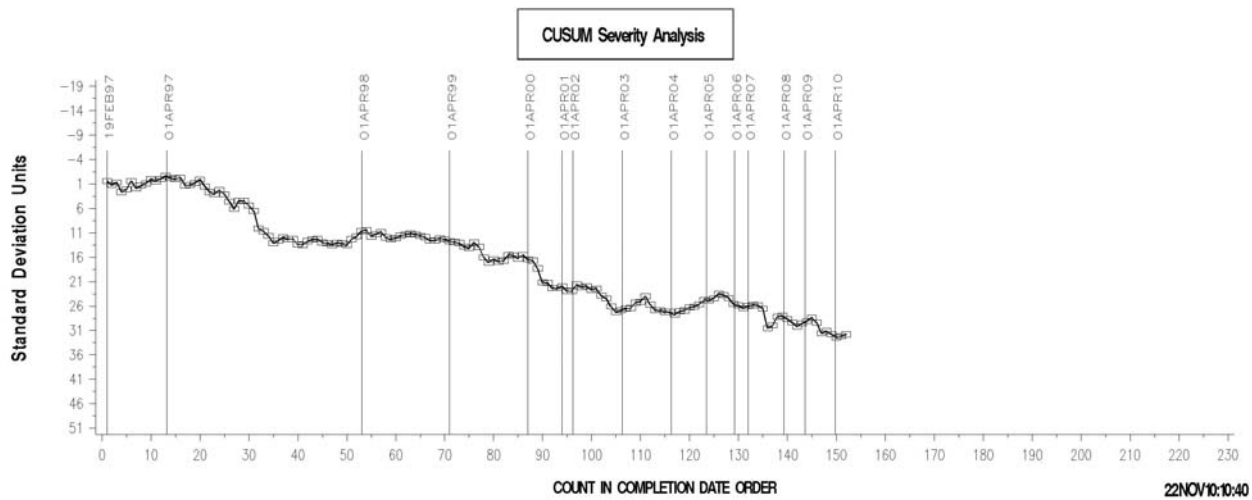
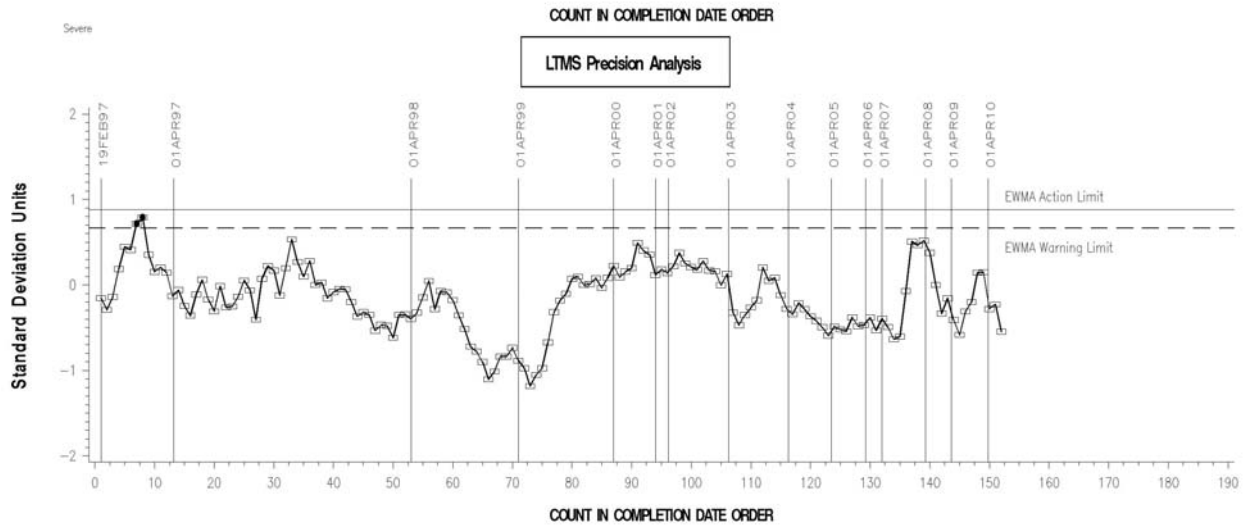
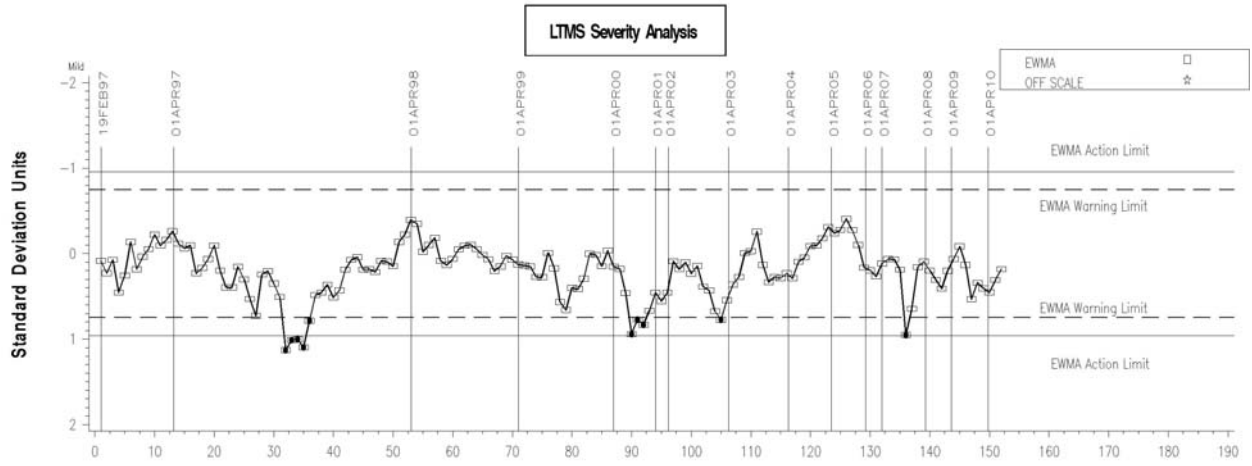


FIGURE 15
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



OIL CONSUMPTION

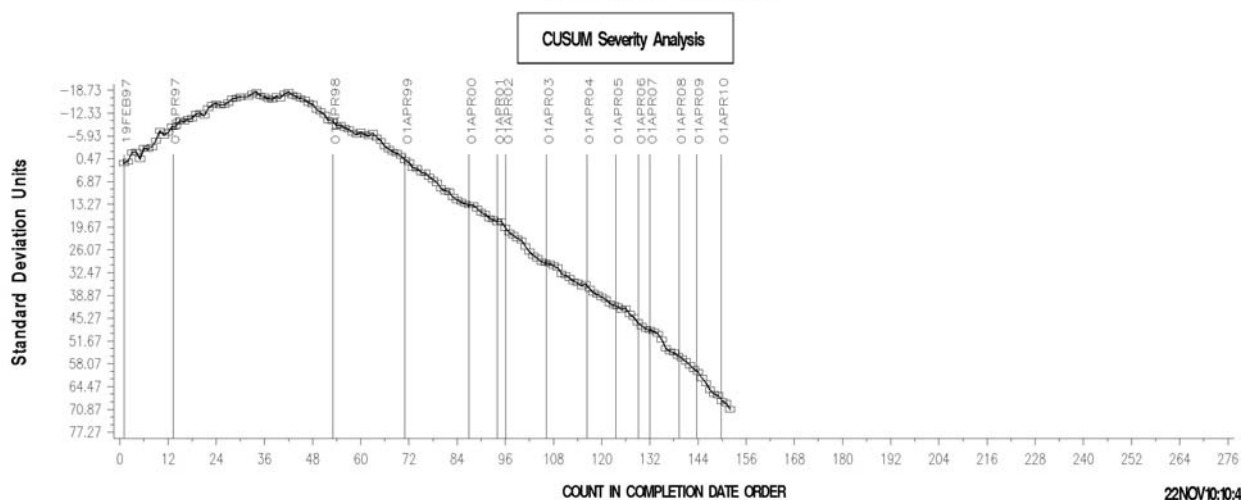
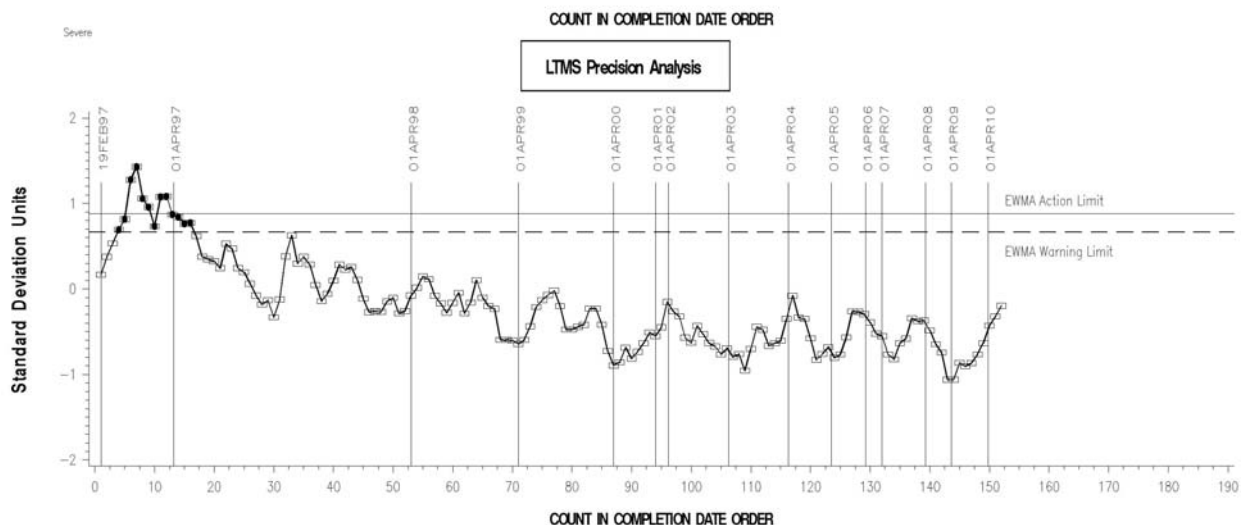
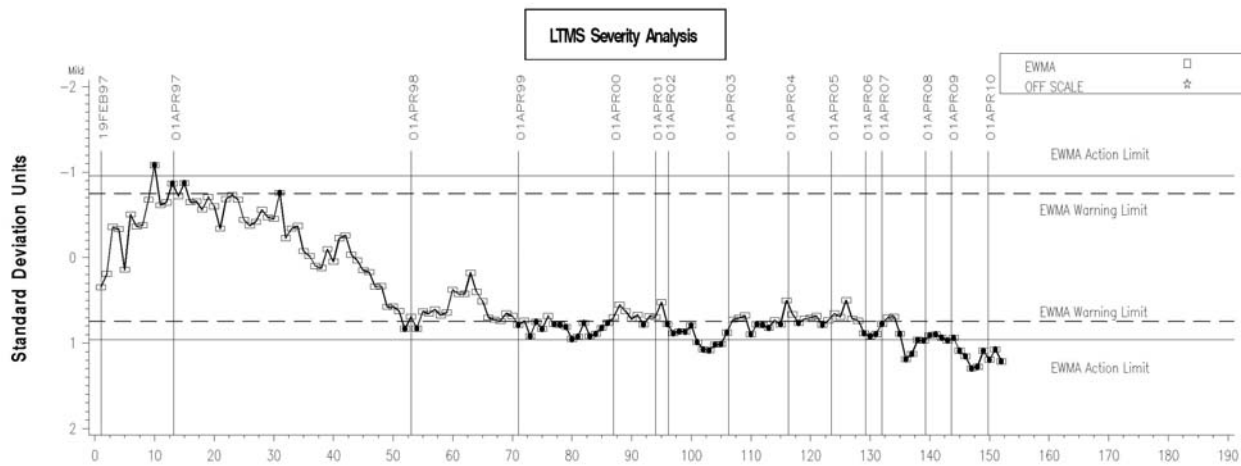


FIGURE 16
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA



EOTOC

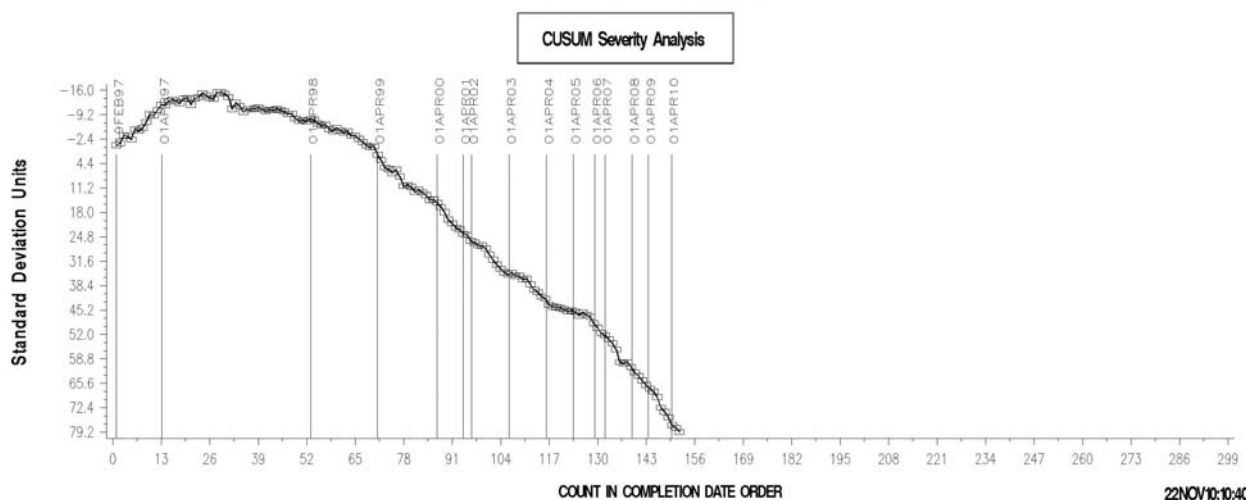
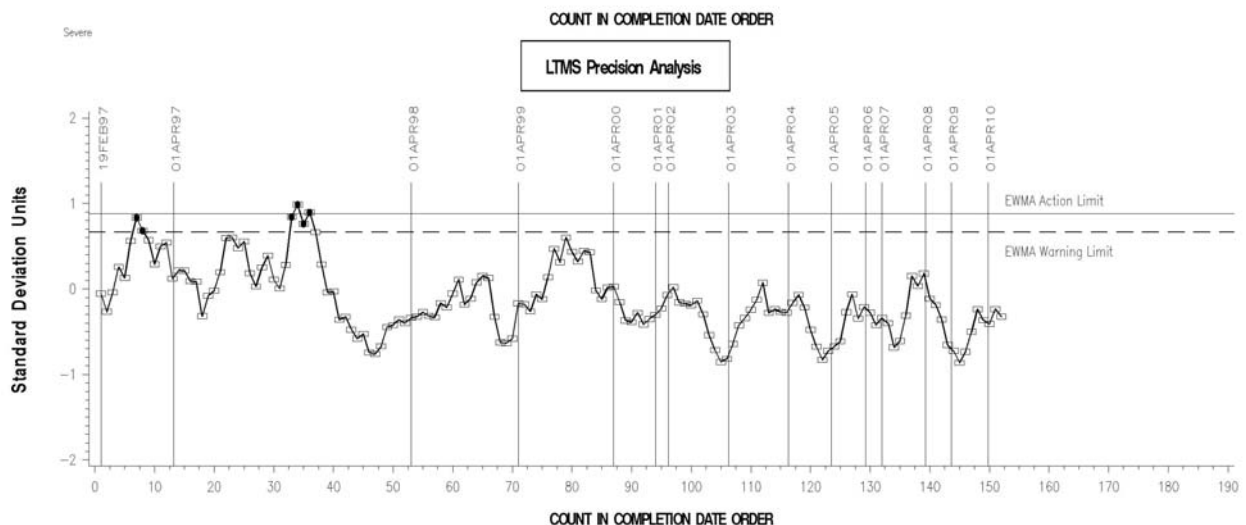
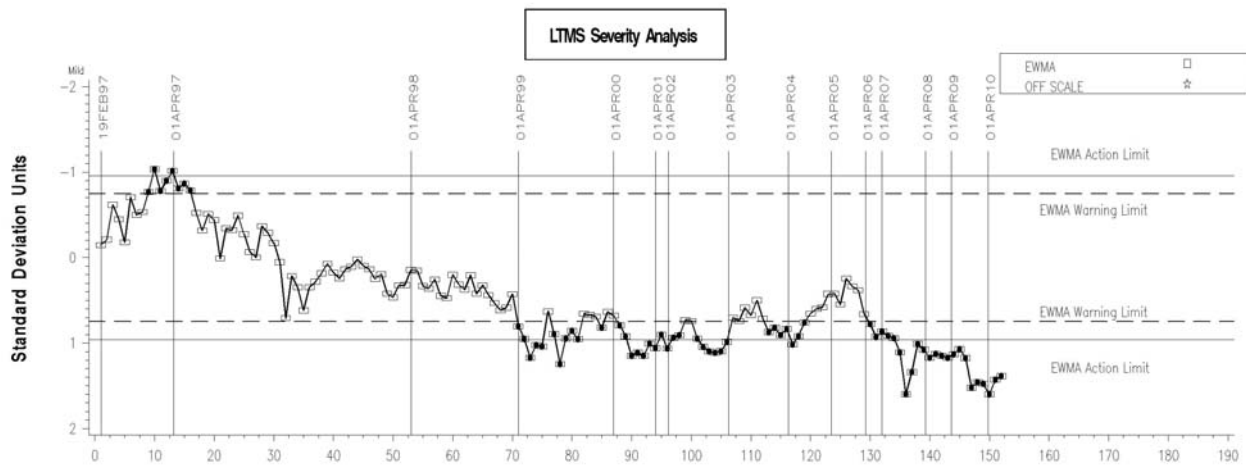


FIGURE 17
CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA
FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)

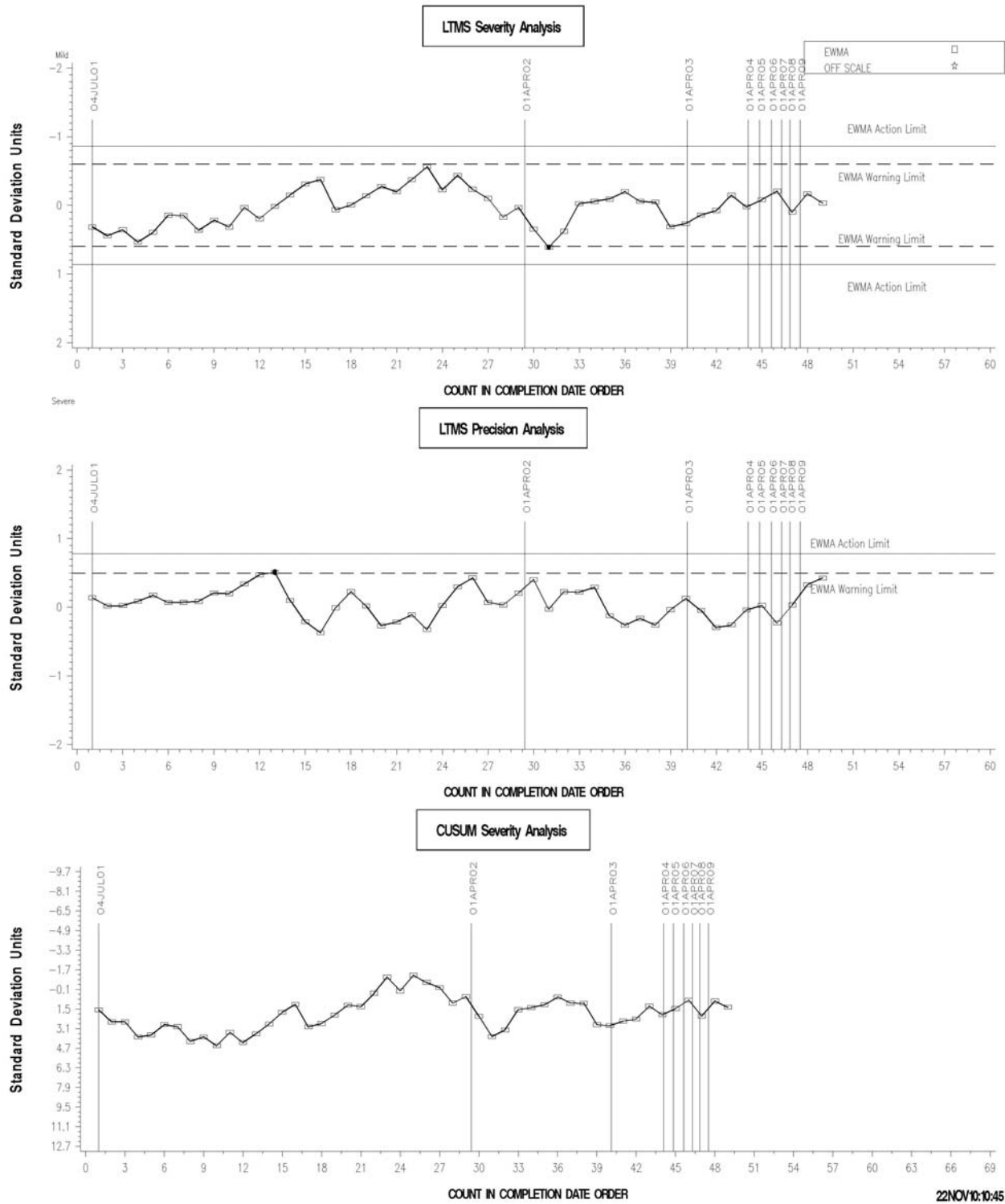


FIGURE 18
CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA
FINAL TOP GROOVE CARBON (DEMERITS)

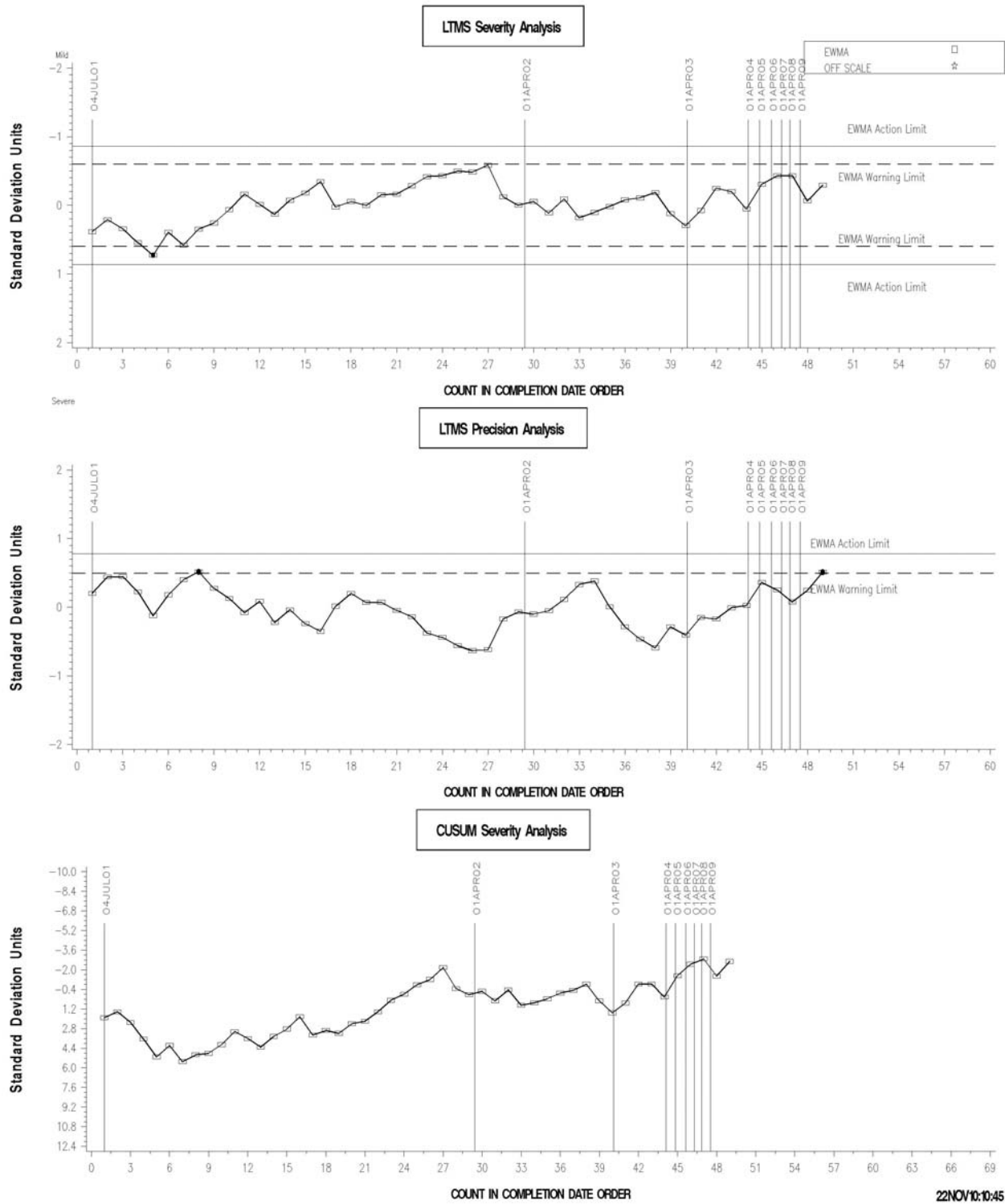


FIGURE 19
CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA
FINAL TOP LAND CARBON (DEMERITS)

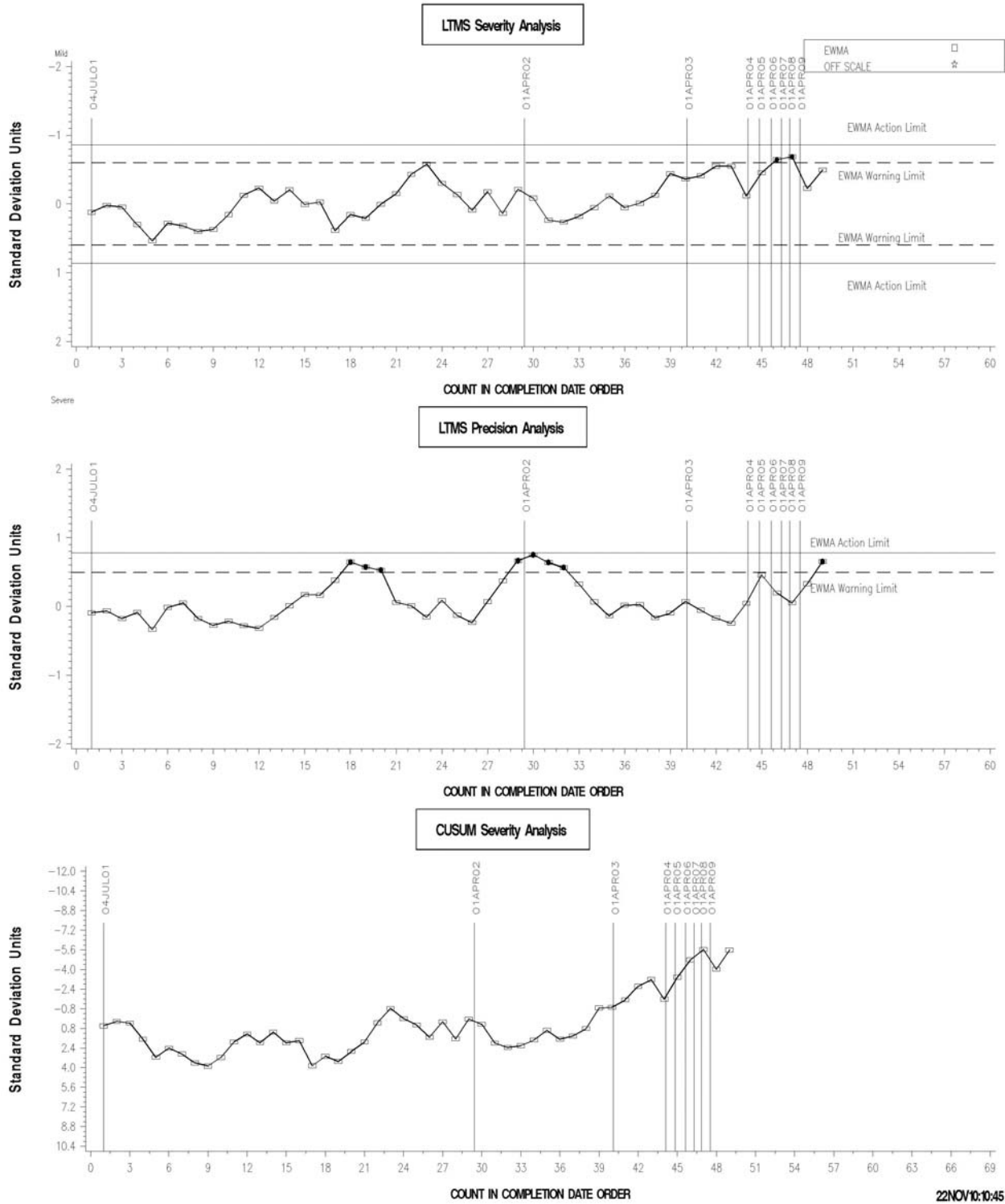


FIGURE 20
CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA



FINAL BOTOC

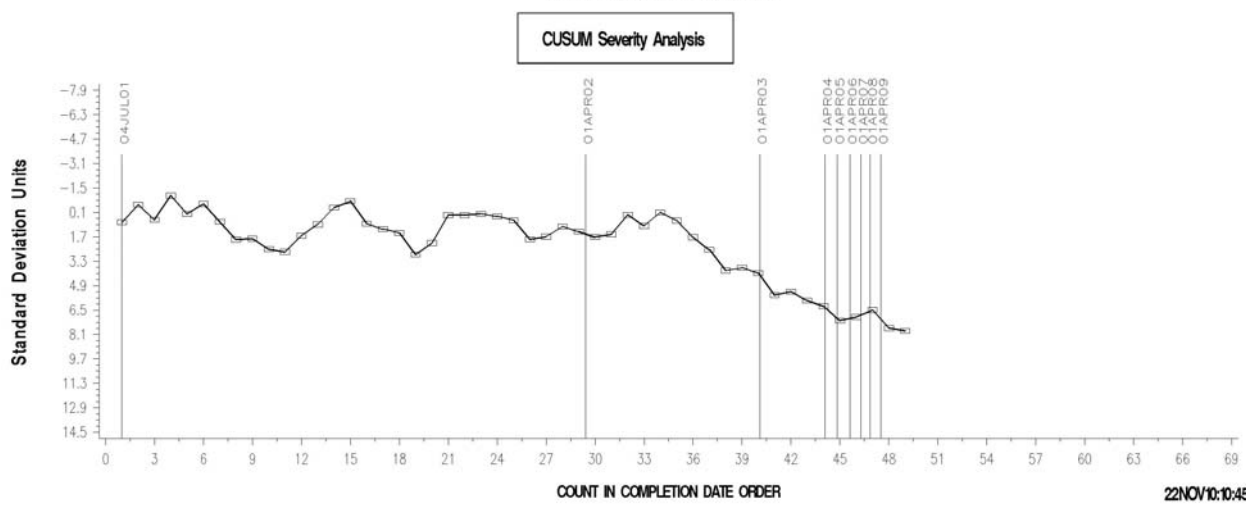
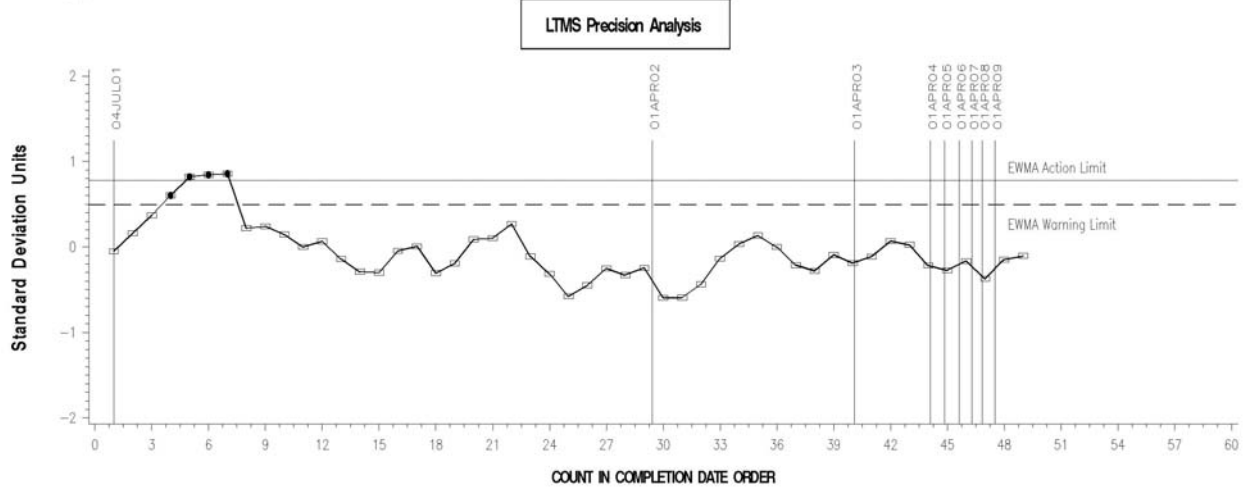
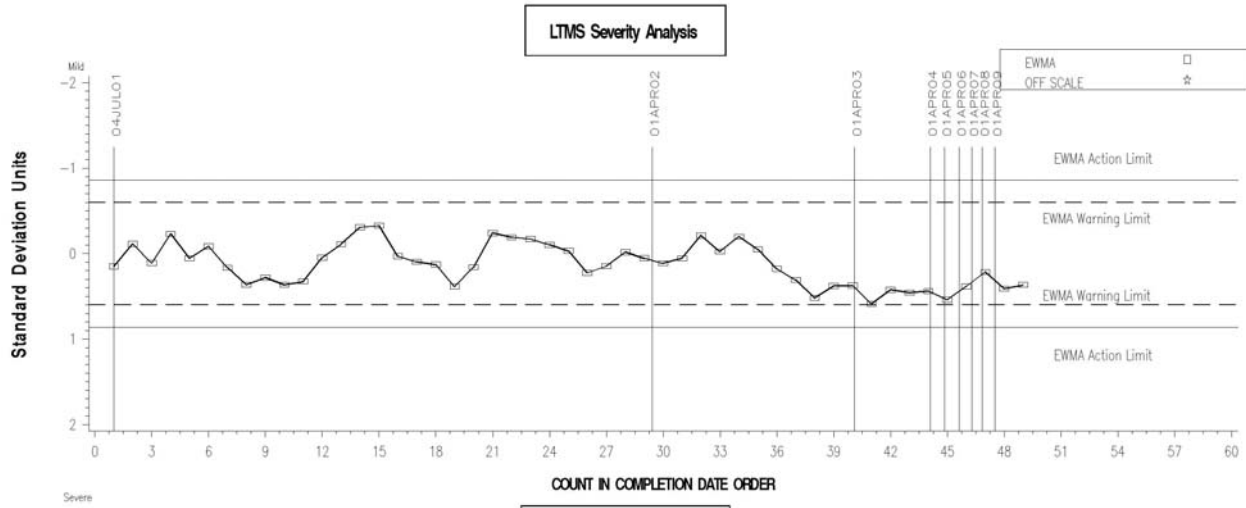


FIGURE 21
CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA



FINAL EOTOC (g/h)

