



## Test Monitoring Center

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http://astmtmc.cmu.edu  
412-365-1000

MEMORANDUM: 10-013

DATE: April 30, 2010

TO: Jim McCord, Chairman, SCOTE Surveillance Panel

FROM: Jeff Clark

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

The following is a summary of 1K, 1N, 1M-PC, 1P, and 1R reference oil tests completed during the April 2010 ASTM report period, which began on October 1, 2009 and ended on March 31, 2010.

Test Status	TMC Validity Code	Number of Tests				
		1K	1N	1M-PC	1P	1R
Acceptable Calibration Test	AC	2	2	3	2	0
Failed Calibration Test (LTMS Criteria)	OC	0	0	0	1	0
Operationally Invalid Test	RC or LC	0	0	0	0	0
Aborted	XC	0	0	0	2	0
<b>Total</b>		2	2	3	5	0

Both aborted 1P tests were due to high oil consumption.

### 1K Severity:

Top Groove Fill (TGF), Weighted Demerits (WDK), Top Land Heavy Carbon (TLHC), and End of Test Oil Consumption (ETOC) are currently within control chart limits. Brake Specific Oil Consumption (BSOC) is currently in an EWMA 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 Land Heavy Carbon (TLHC) is currently in industry severity action alarm, in the mild direction; Top Groove Fill (TGF) and Brake Specific Oil Consumption (BSOC) are currently within control chart limits; regardless of current alarm status, all three parameters are continuing long-term mild trends. Weighted Demerits (WDN) is currently within control chart limits and is not exhibiting any pronounced severity trend. 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 currently within industry control chart limits and are not exhibiting any pronounced severity trends. 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 action 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 4 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 warning alarm 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. The 2010 1M-PC precision estimate shows improvement for TGF while WD is within historical levels. No estimates are yet available for 2010.

**1M-PC Precision Estimates**

<b>Parameter</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>
Df	18	12	10	7	6
TGF	15.0	17.7	19.1	18.6	8.3
WD	93.7	41.6	47.1	38.7	41.4

**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 <sup>A</sup>	Lab Inventory <sup>B</sup>	Estimated Life <sup>C</sup>
809-1	1K, 1N	2668	4	5+ years
811-1	1K, 1N	9	2	<1 year
811-2	1K, 1N	1445	6	5+ years
820-3	1R	1177	0	5+ years
873-2	1M-PC	318	3	4 years
1005-3	1P, 1R	1813	2	5+ years

<sup>A</sup>Inventories are expressed in gallons.

<sup>B</sup>Test sample count at active laboratories.

<sup>C</sup>Time estimate is based on most recent activity levels.

**Information Letters:**

Four SCOTE information letters were issued this period. All four letters added a note to their respective procedures regarding the oil pressure specification for viscosity grades other than 15W-40 oils. The letters issued were: 1K/1N Information Letter 10-1, Seq. 31; 1M-PC Information Letter 10-1, Seq. 13; 1P Information Letter 10-1, Seq. 7; and 1R Information Letter 10-1, Seq. 5.

**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**

<b>Test Area</b>	<b>Information Link</b>
<b>1K</b>	<a href="ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1k/data/">ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1k/data/</a>
<b>1N</b>	<a href="ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1n/data/">ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1n/data/</a>
<b>1M-PC</b>	<a href="ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1m/data/">ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1m/data/</a>
<b>1P</b>	<a href="ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1p/data/">ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1p/data/</a>
<b>1R</b>	<a href="ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1r/data/">ftp://ftp.astmtmc.cmu.edu/refdata/diesel/1r/data/</a>

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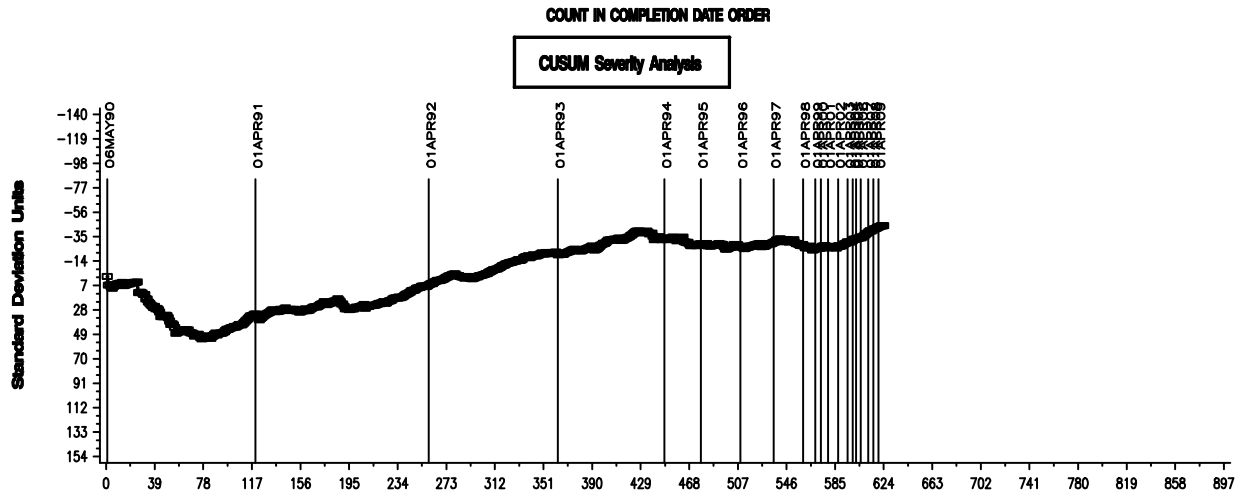
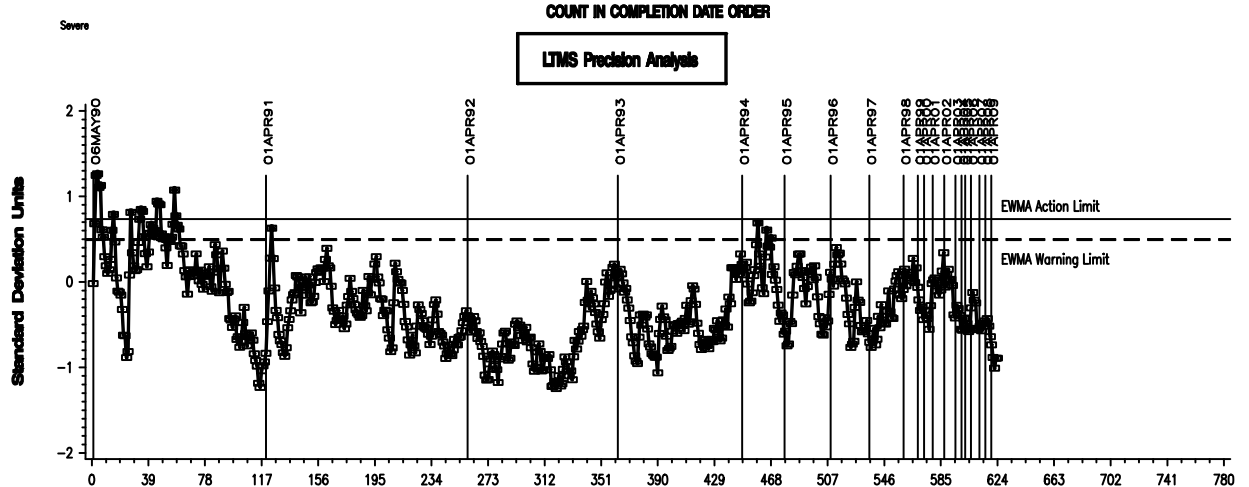
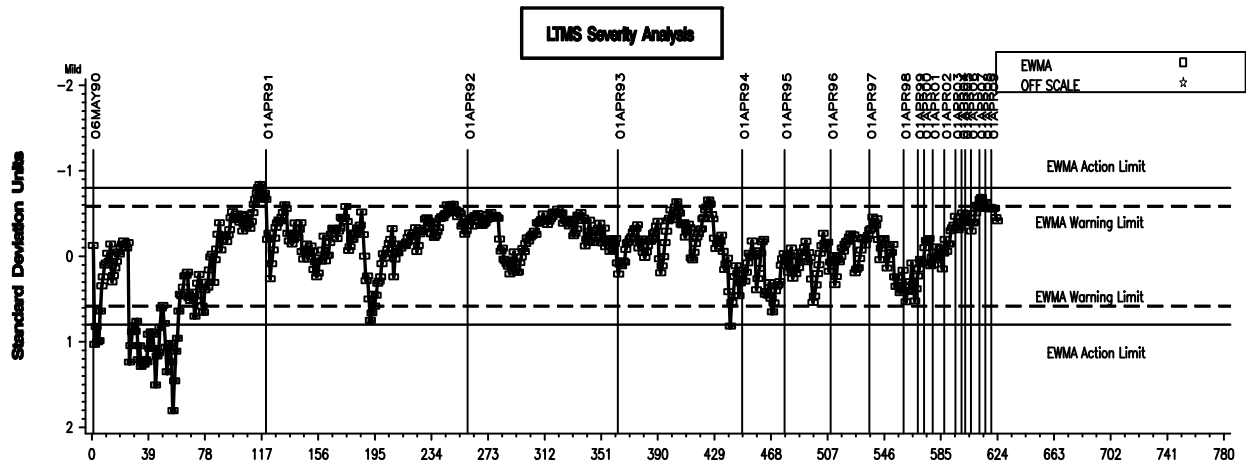
Attachments

c: F.M. Farber, TMC  
SCOTE Surveillance Panel  
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/SCOTE-04-2010.pdf>

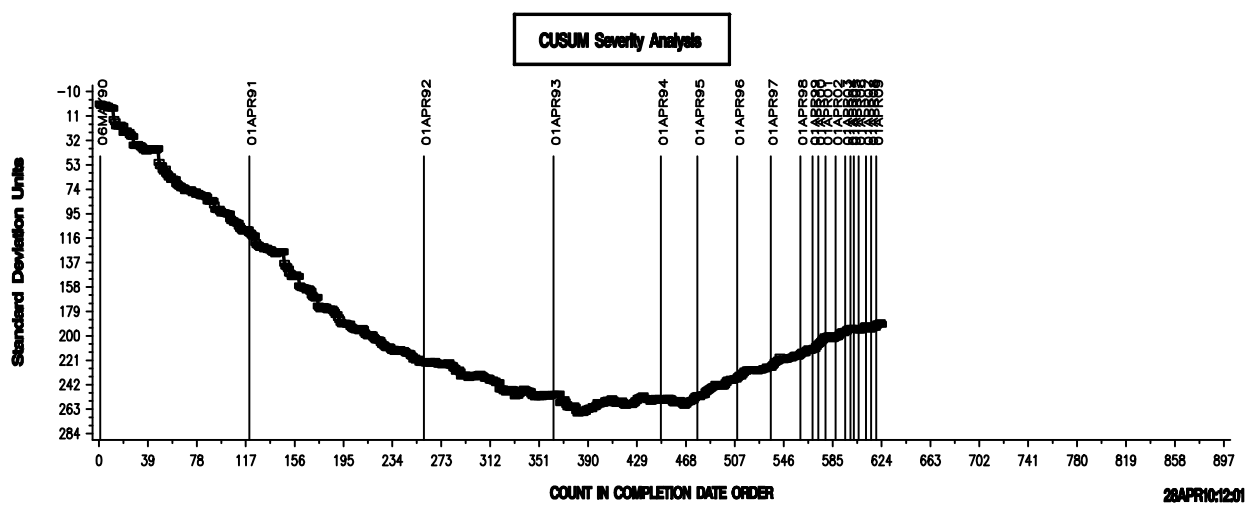
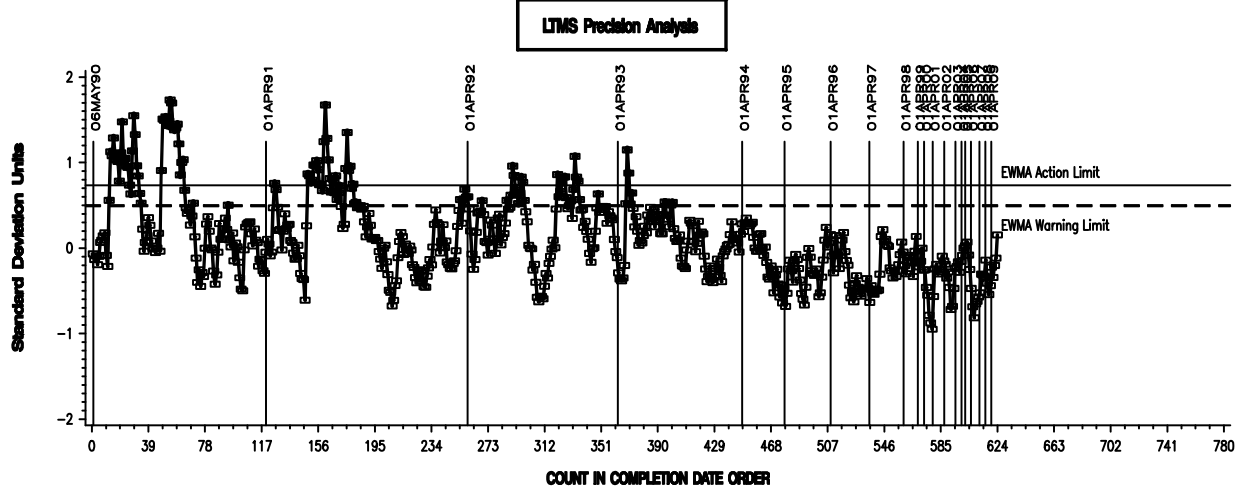
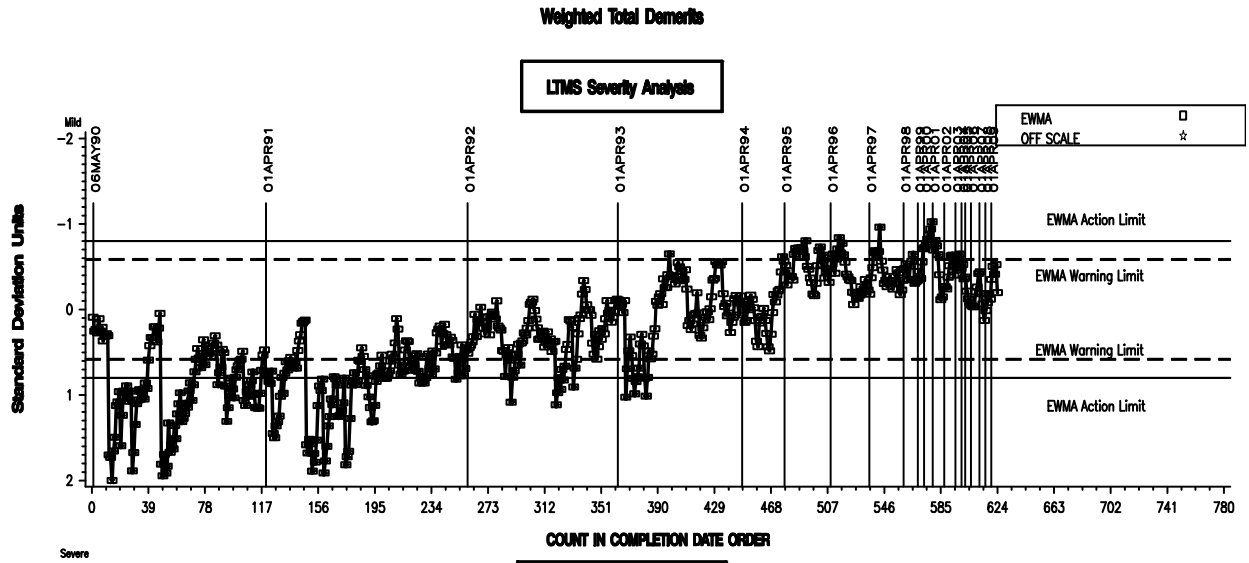
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**FIGURE 1**  
**CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA**

**Top Groove Fill**



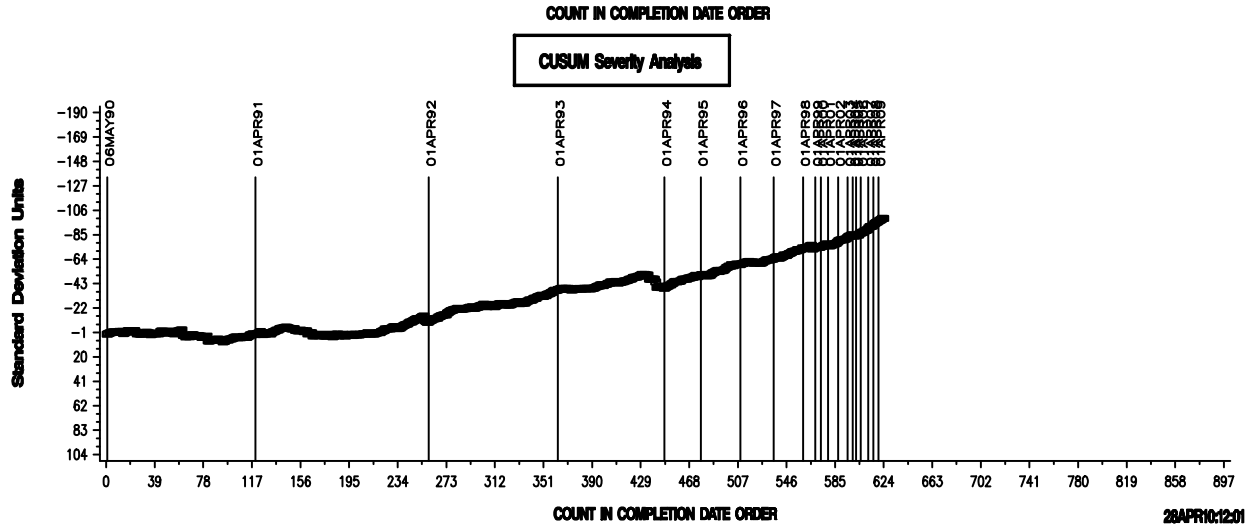
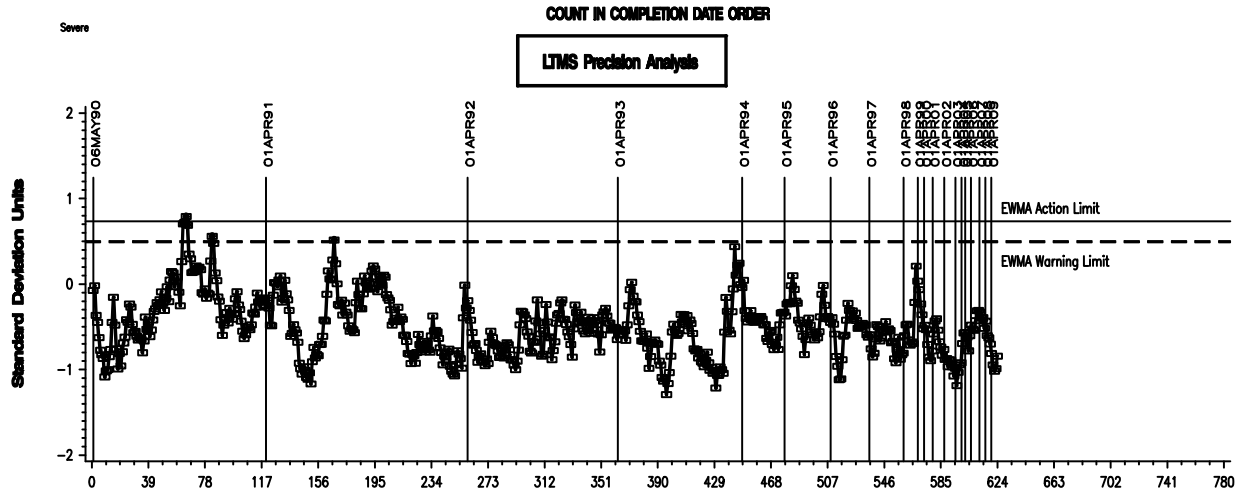
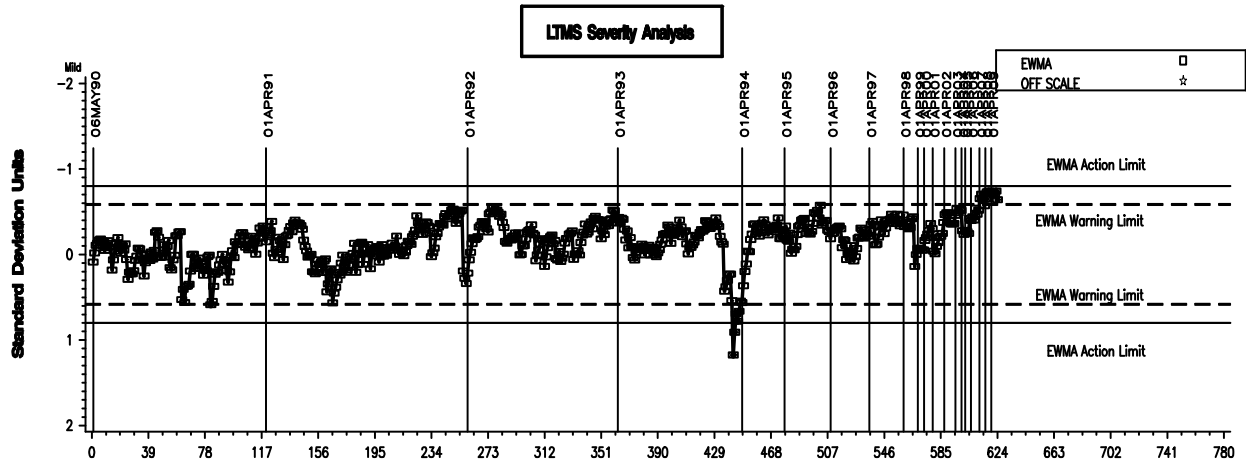
**FIGURE 2**  
**CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA**





**FIGURE 4**  
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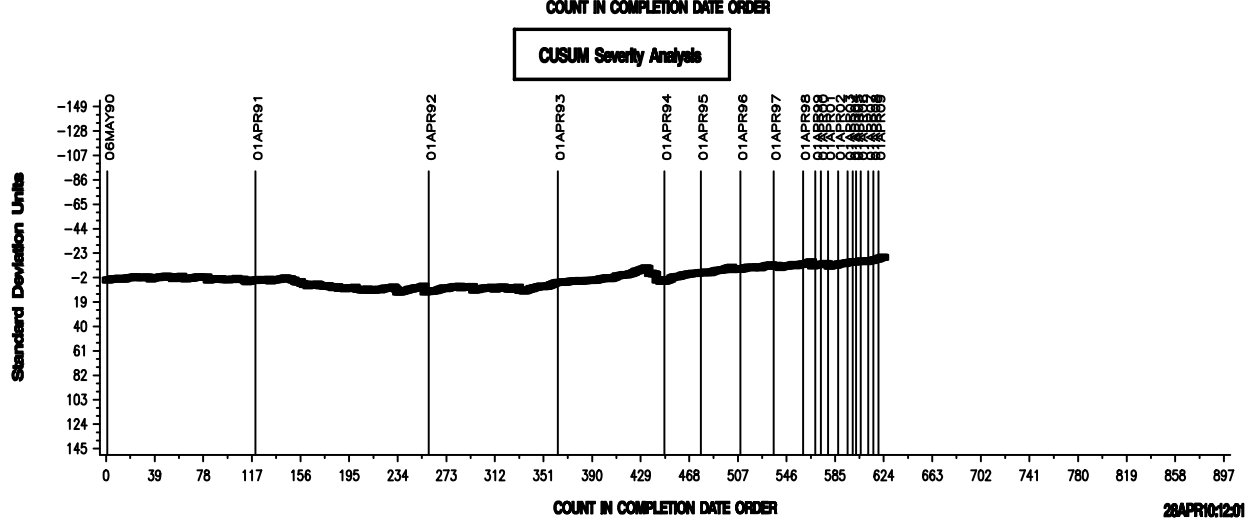
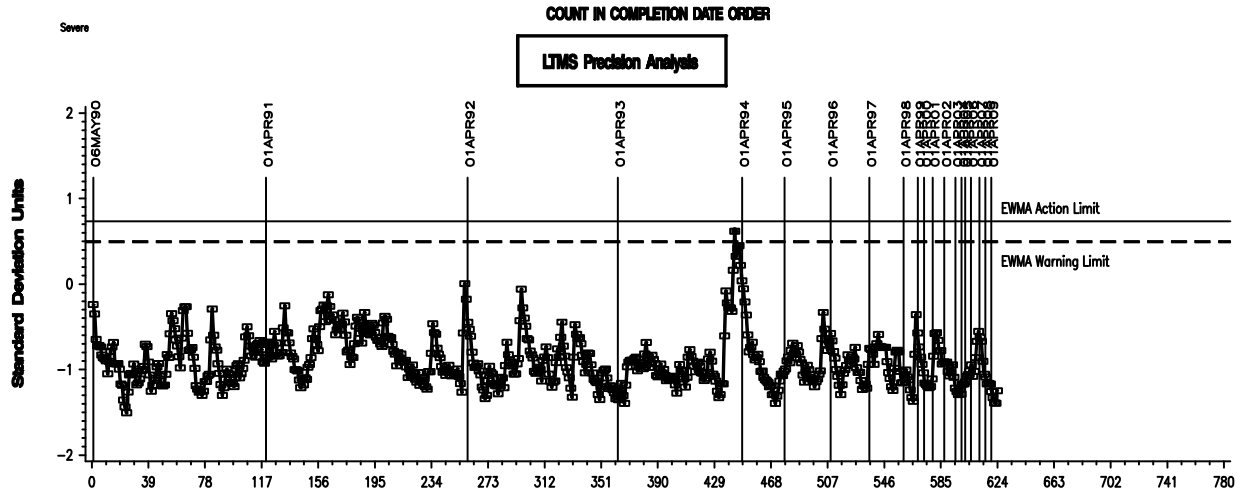
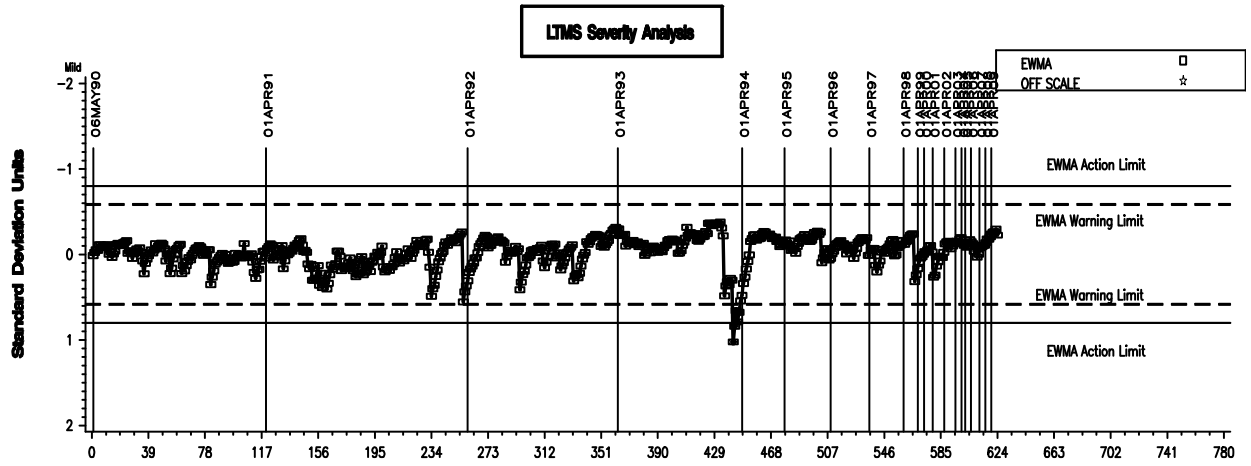
BSOC





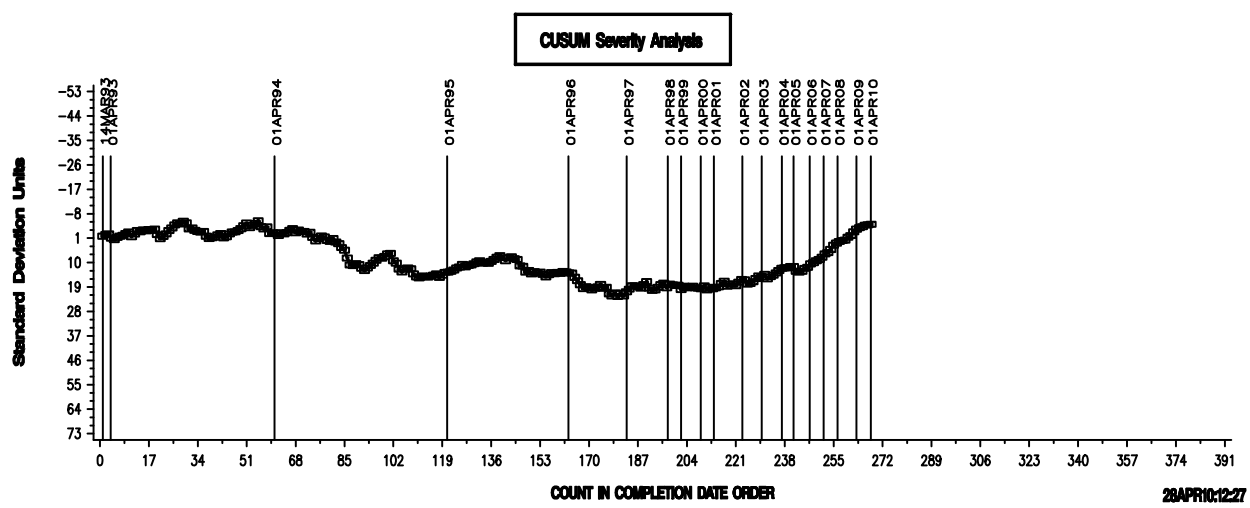
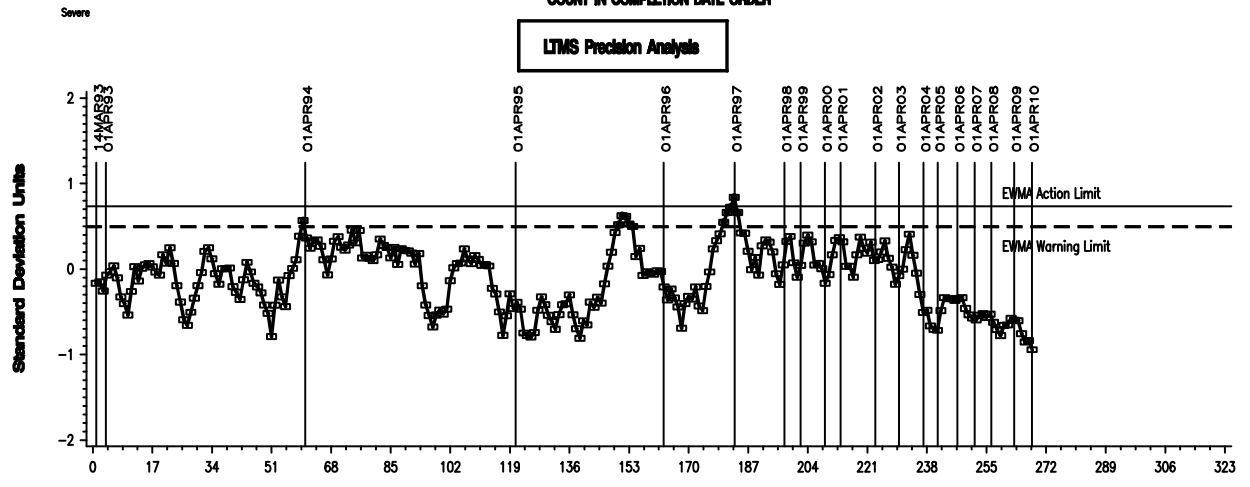
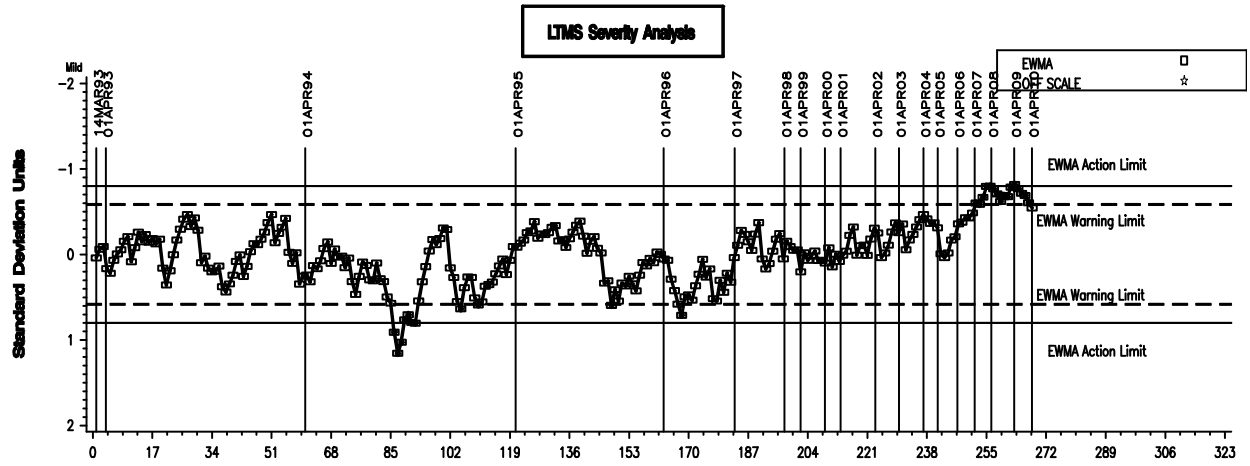
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EOTOC

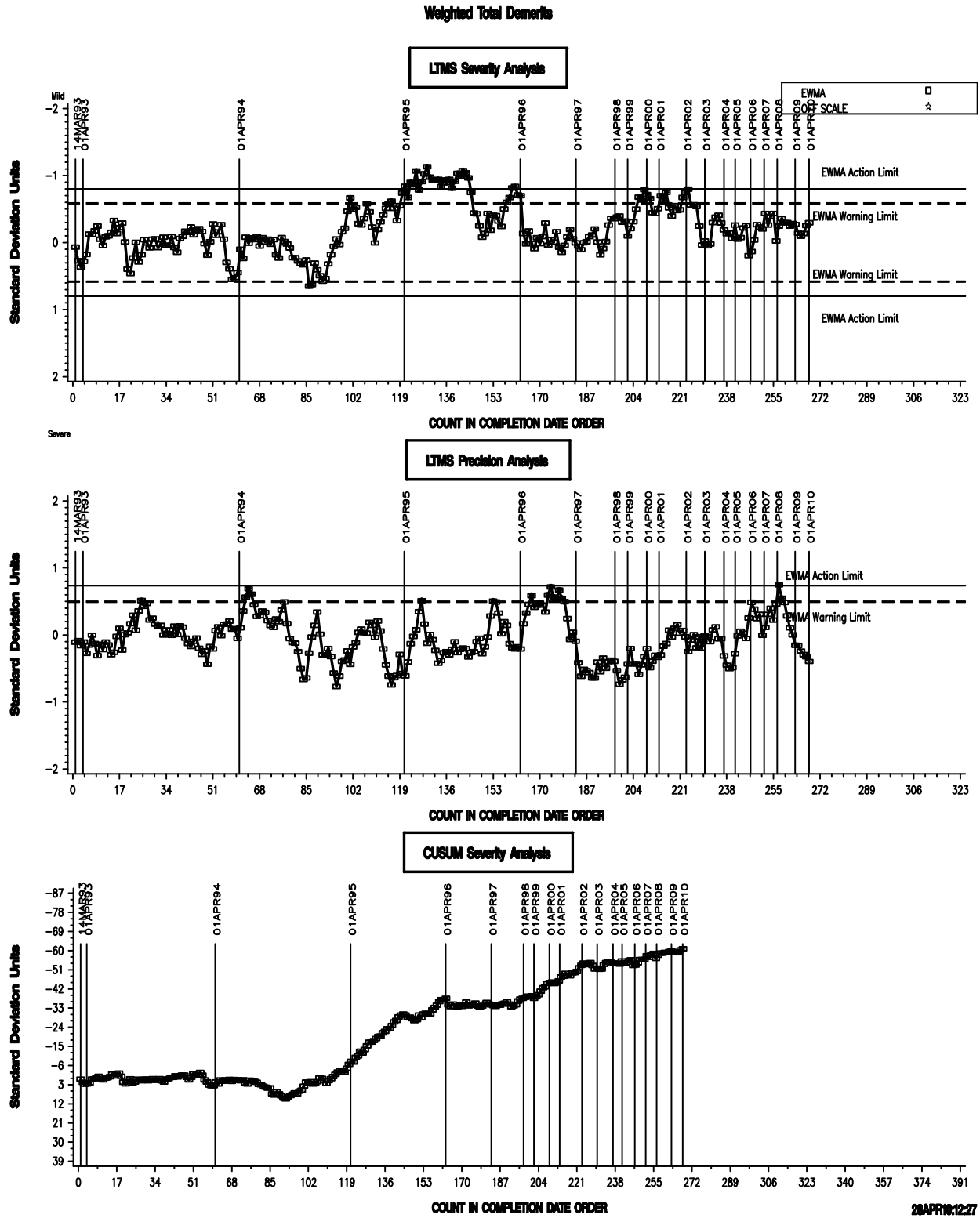


**FIGURE 6**  
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**Top Groove Fill**

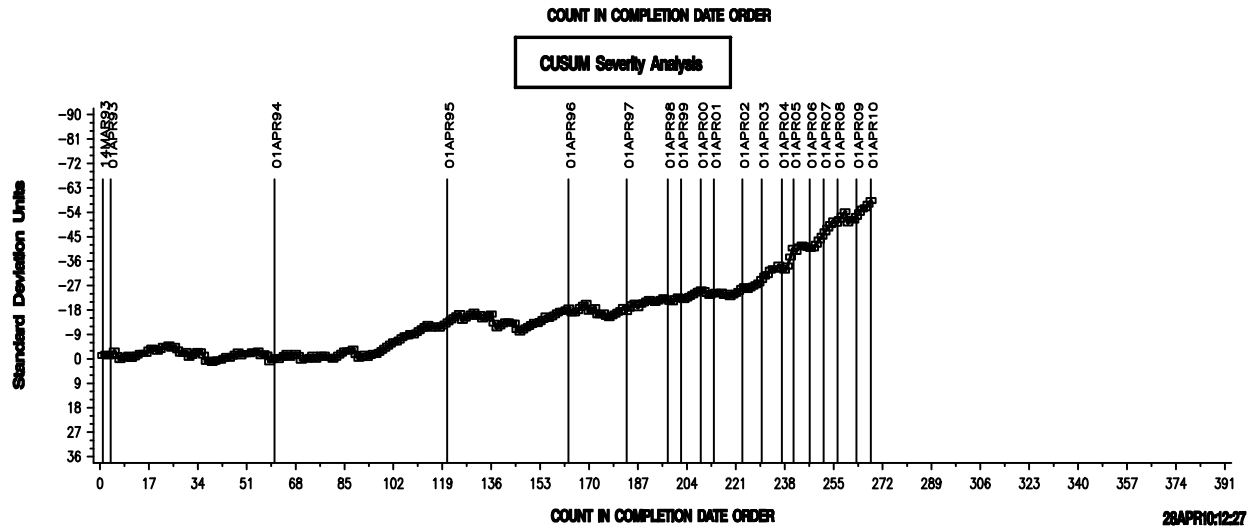
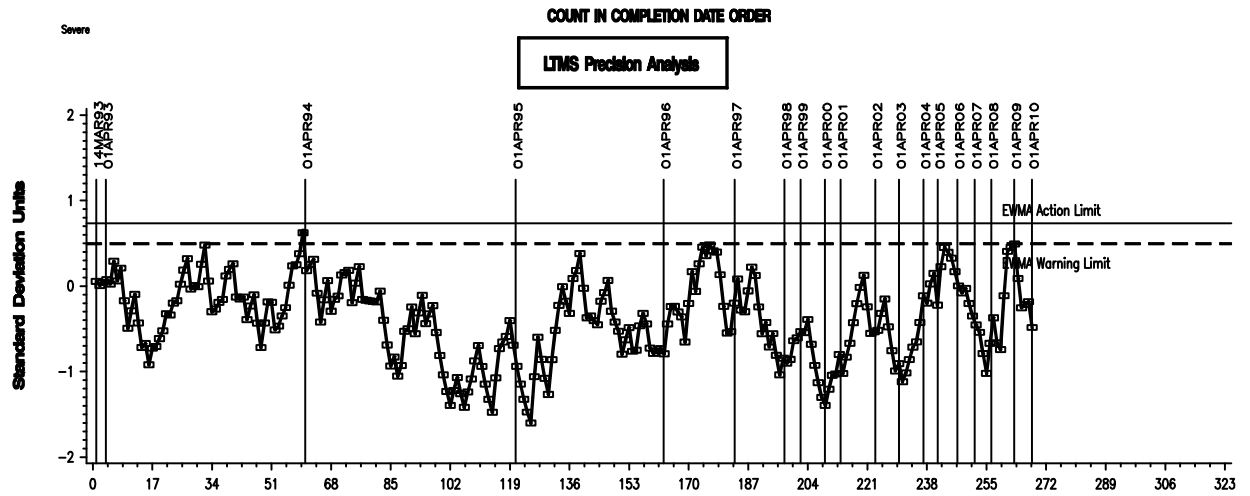
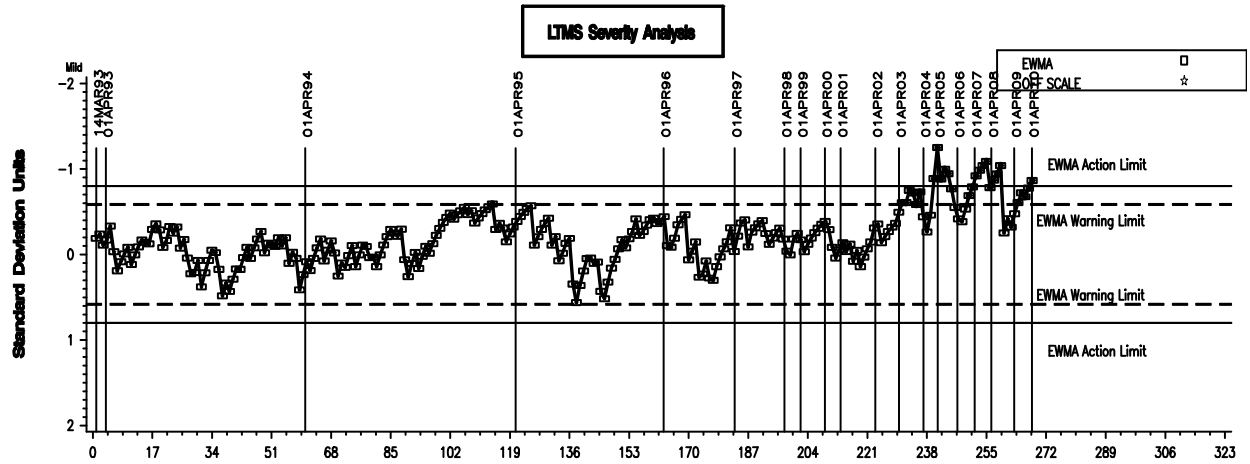


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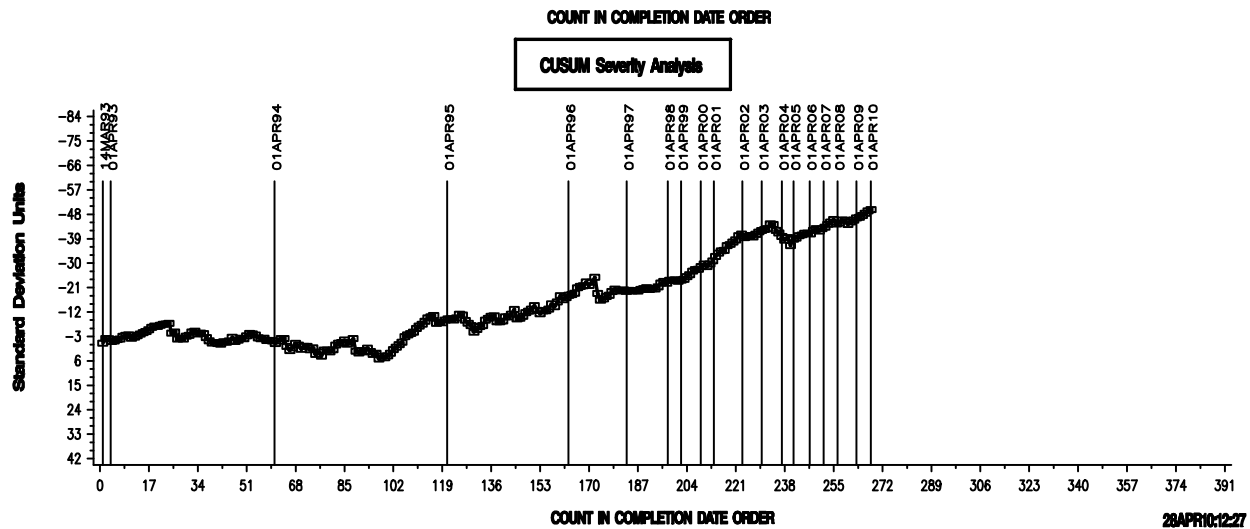
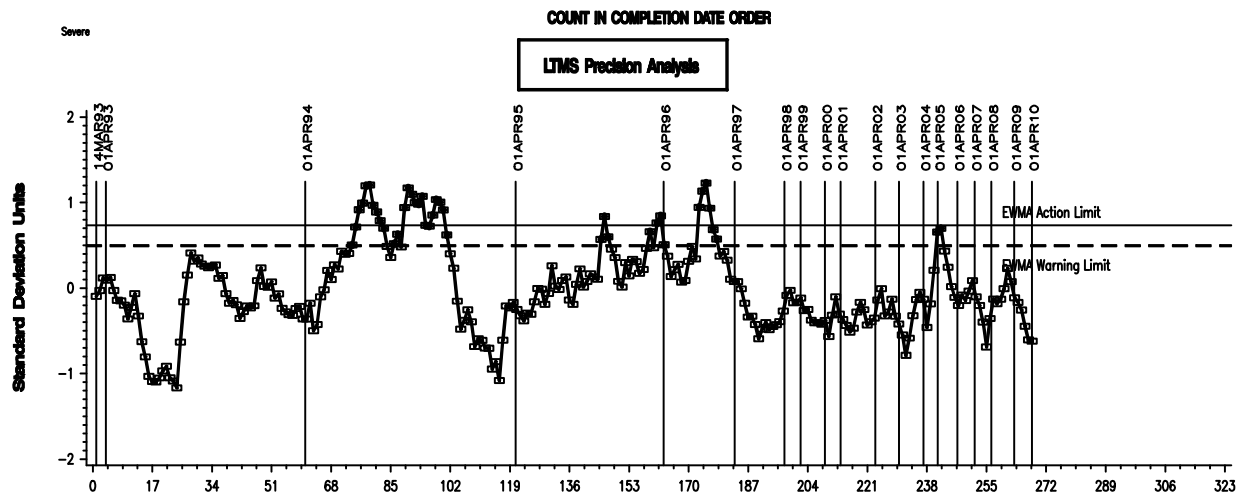
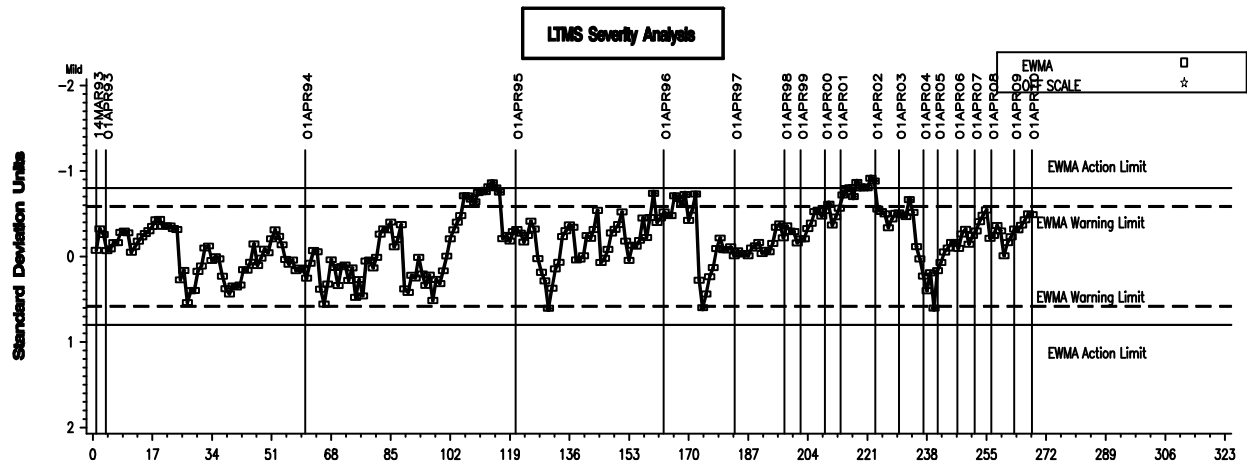
**FIGURE 8**  
**CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA**

FINAL TRANS. TOP LAND HEAVY CARBON



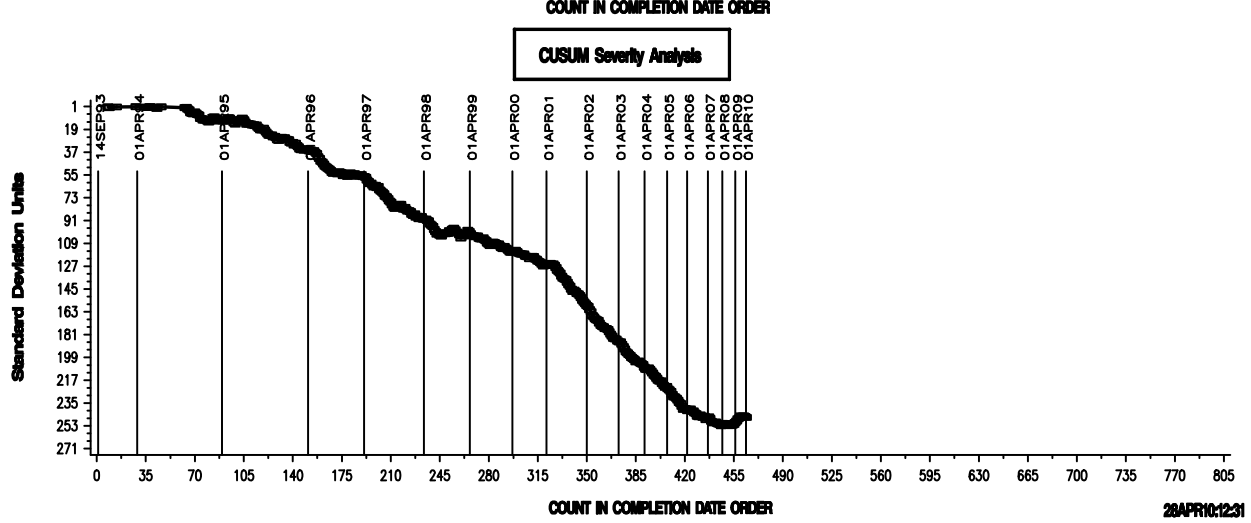
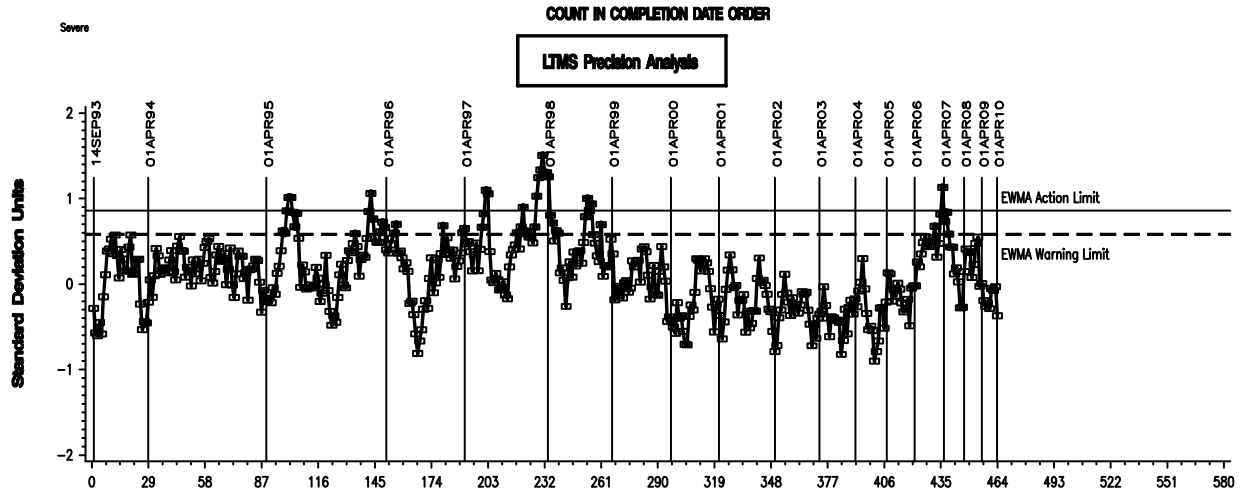
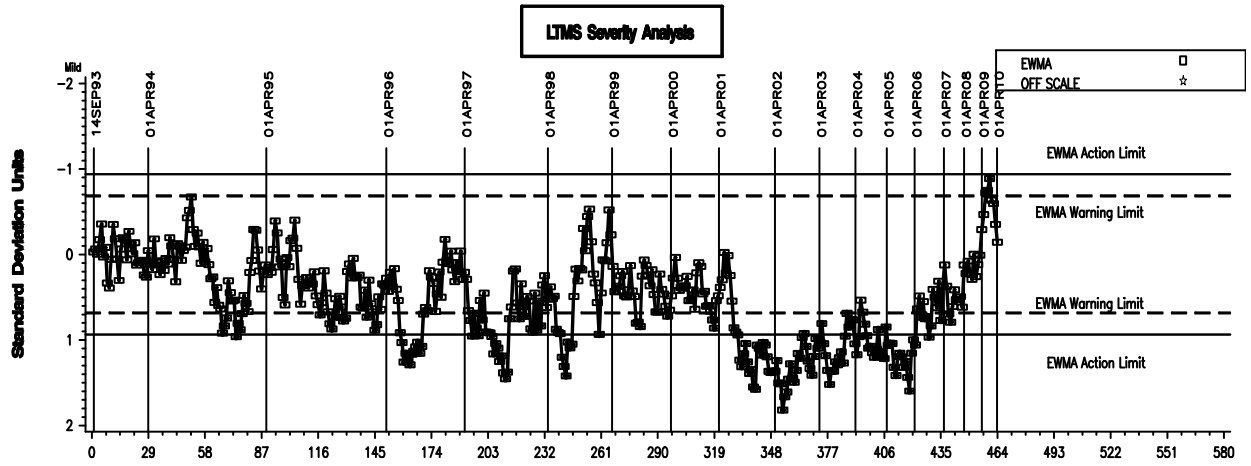
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**CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA**

BSOC



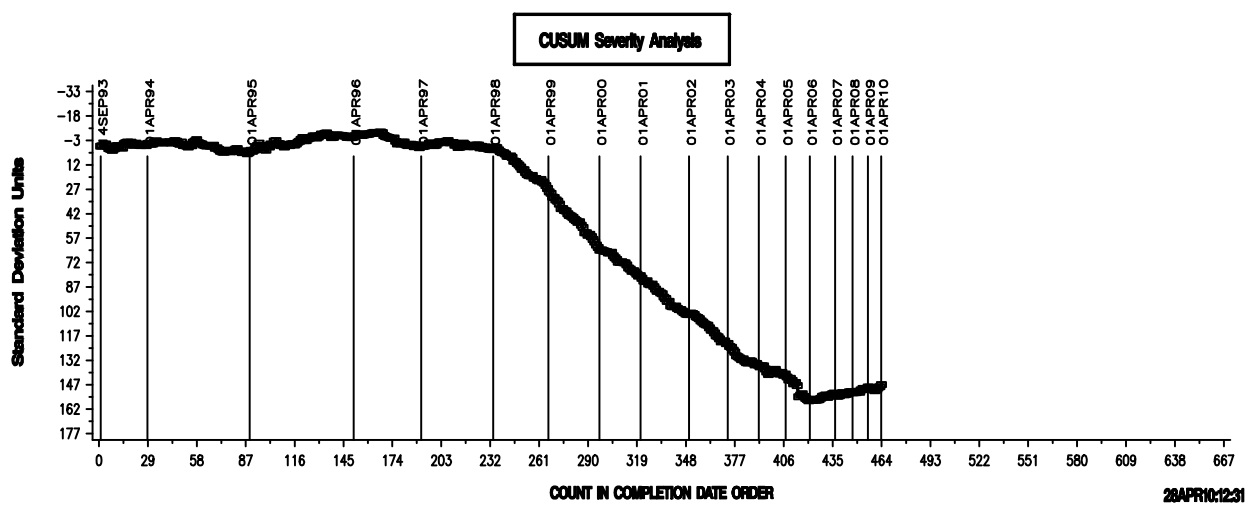
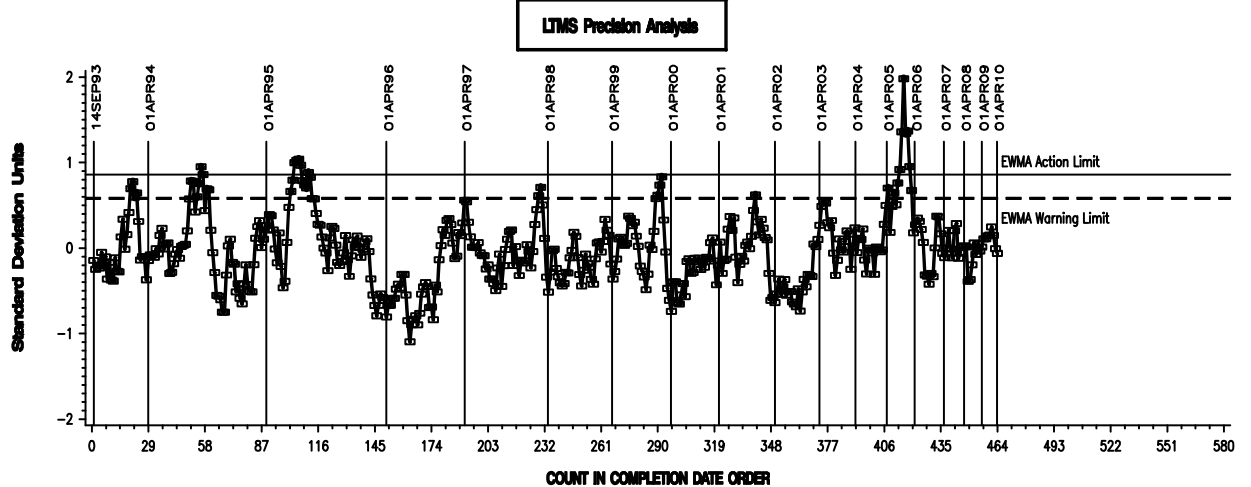
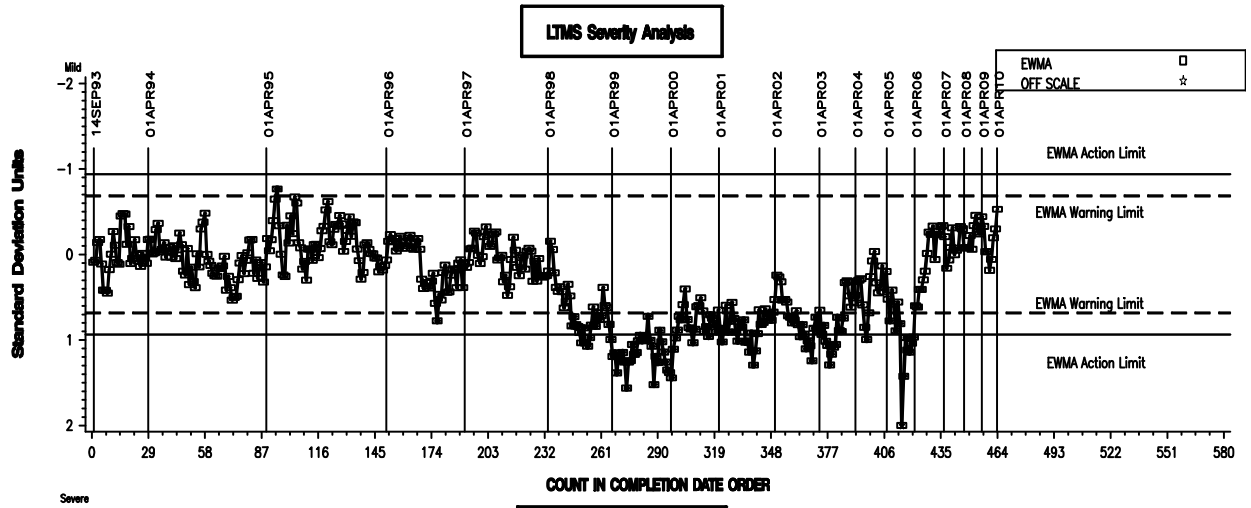
**FIGURE 10**  
**CATERPILLAR 1M-PC INDUSTRY OPERATIONALLY VALID DATA**

**FINAL TOP GROOVE FILLING**



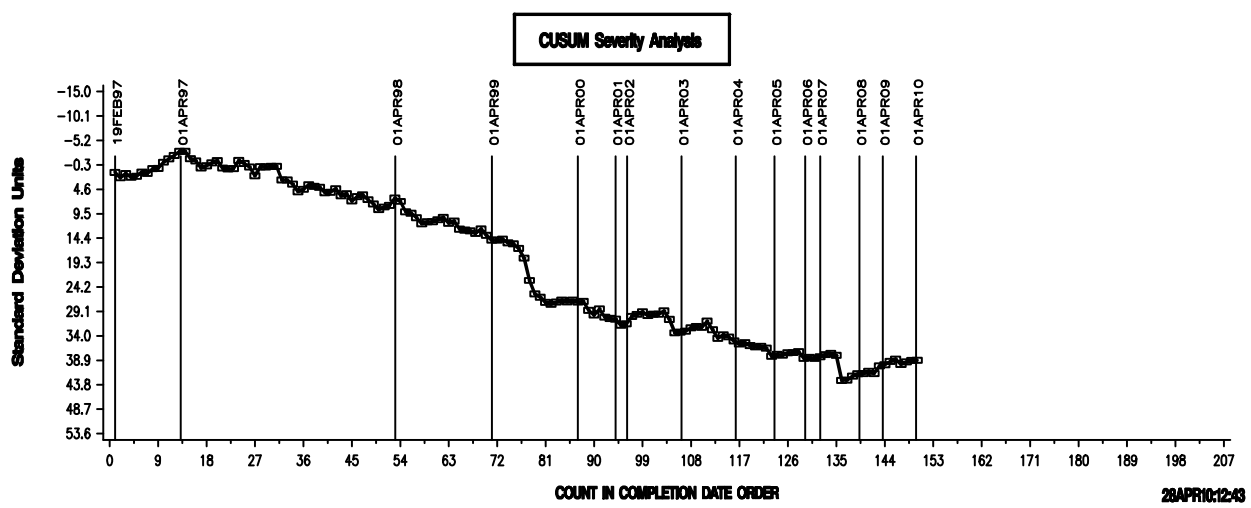
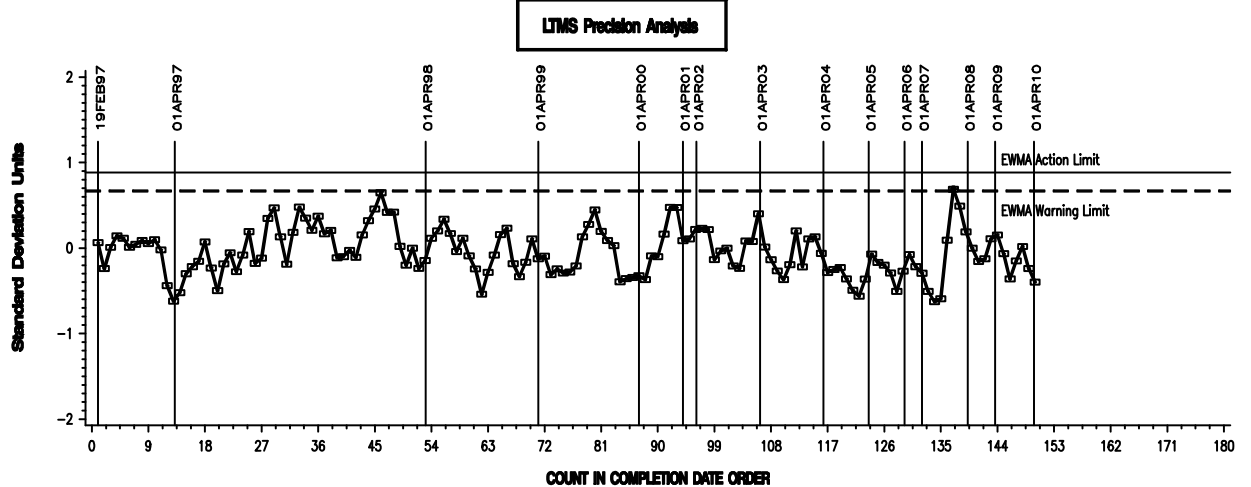
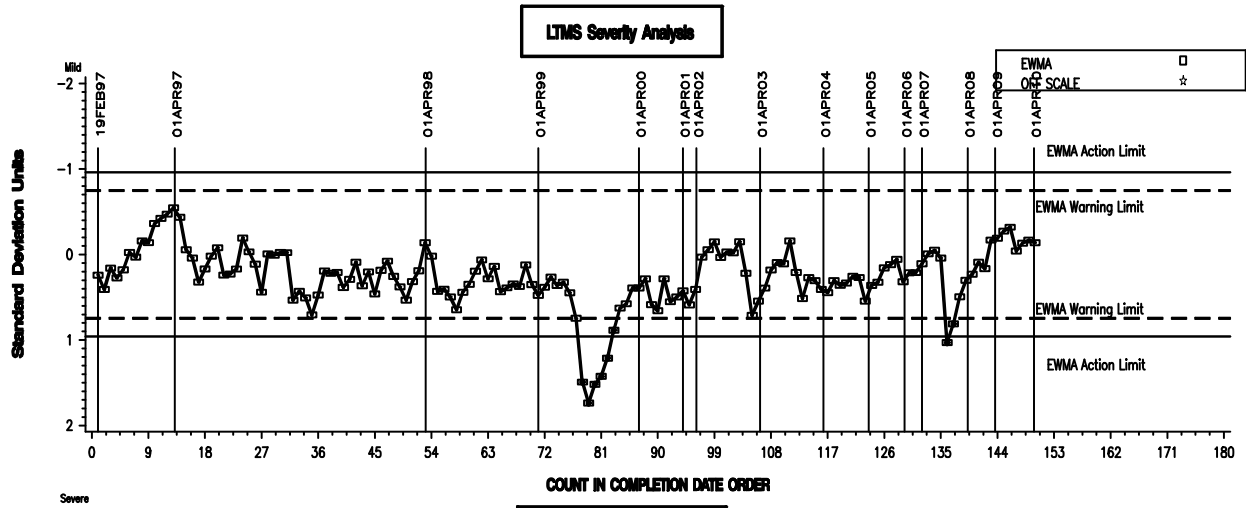
**FIGURE 11**  
**CATERPILLAR 1M-PC INDUSTRY OPERATIONALLY VALID DATA**

**Weighted Total Demerits**



**FIGURE 12**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

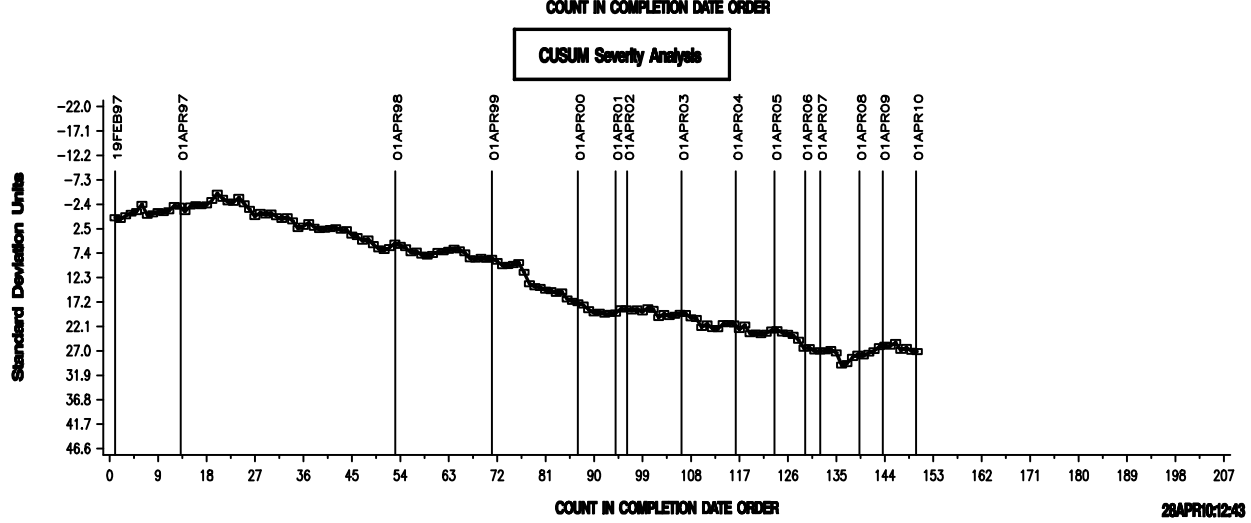
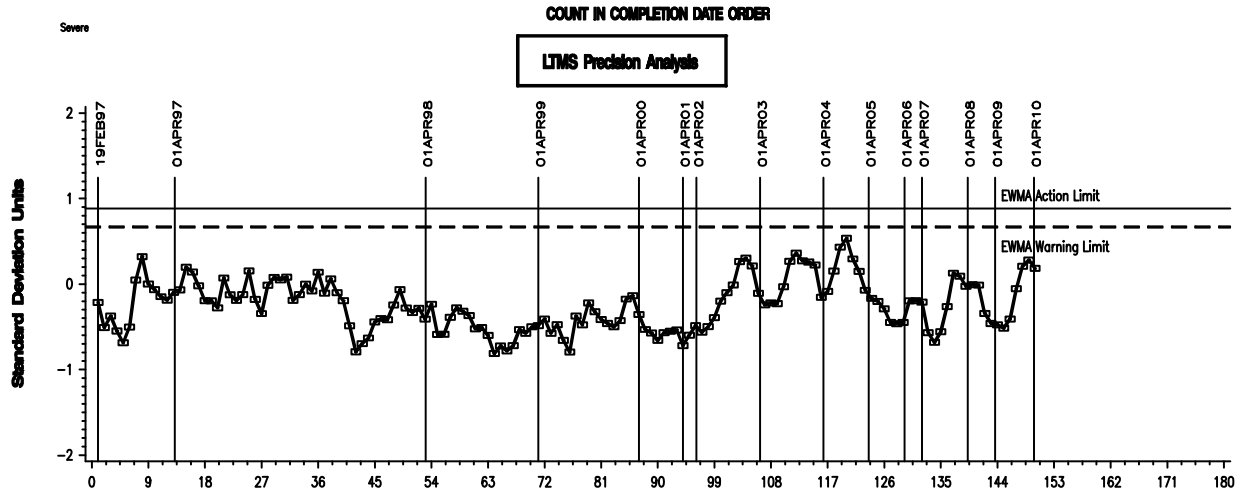
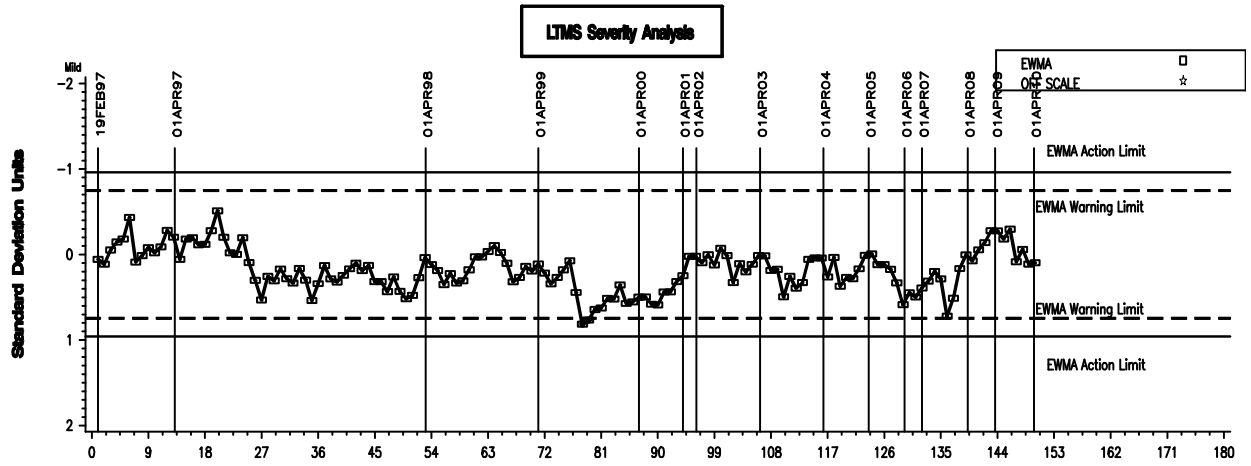
**TOP GROOVE CARBON**





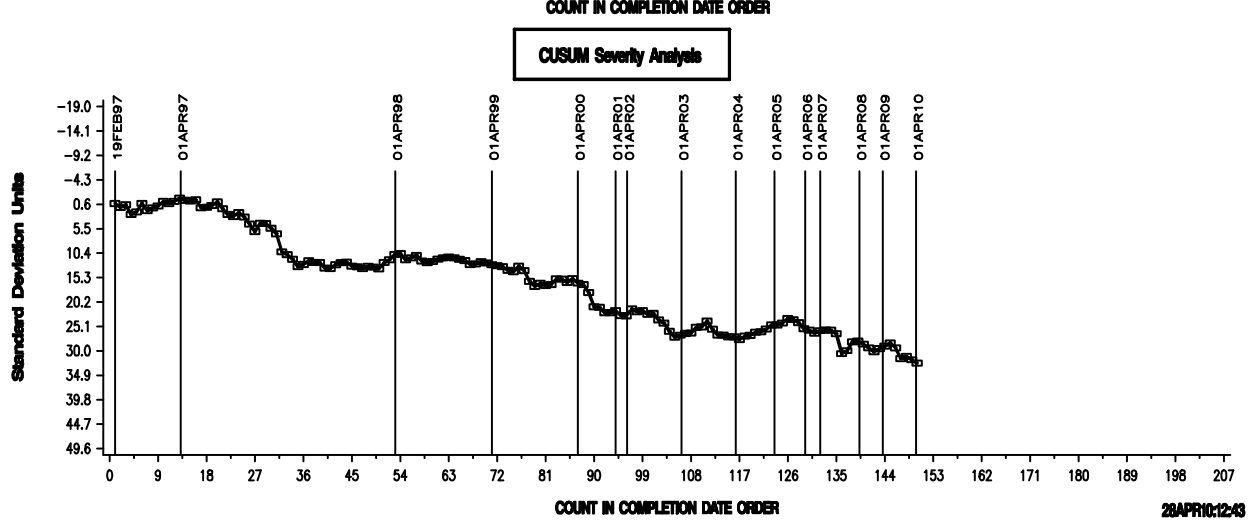
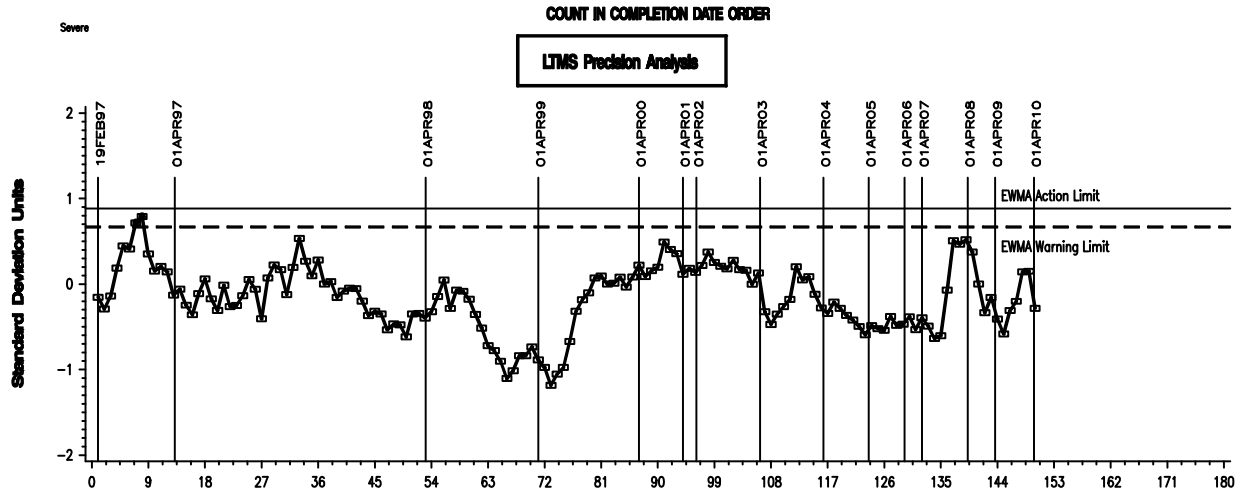
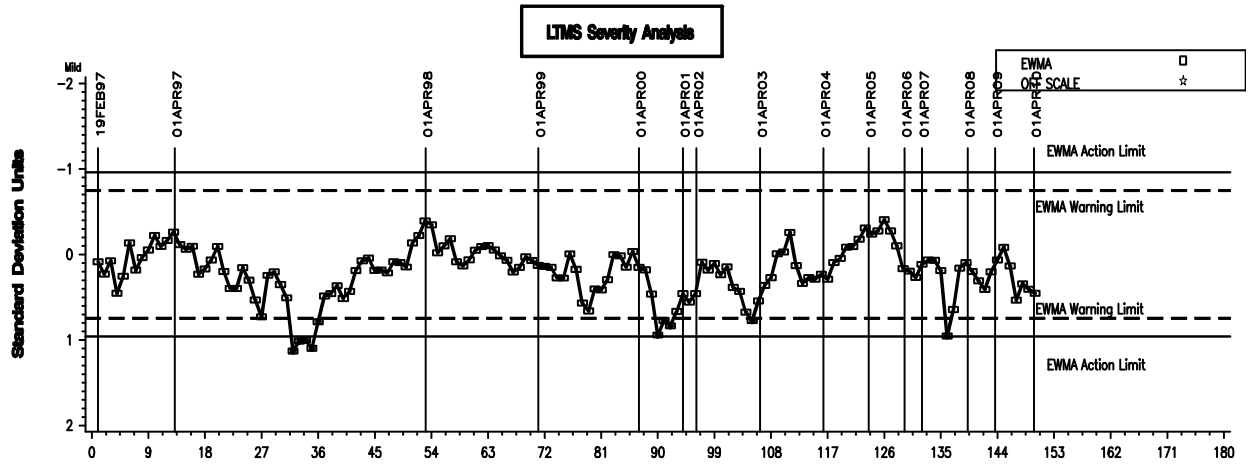
**FIGURE 13**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

**TOP LAND CARBON**



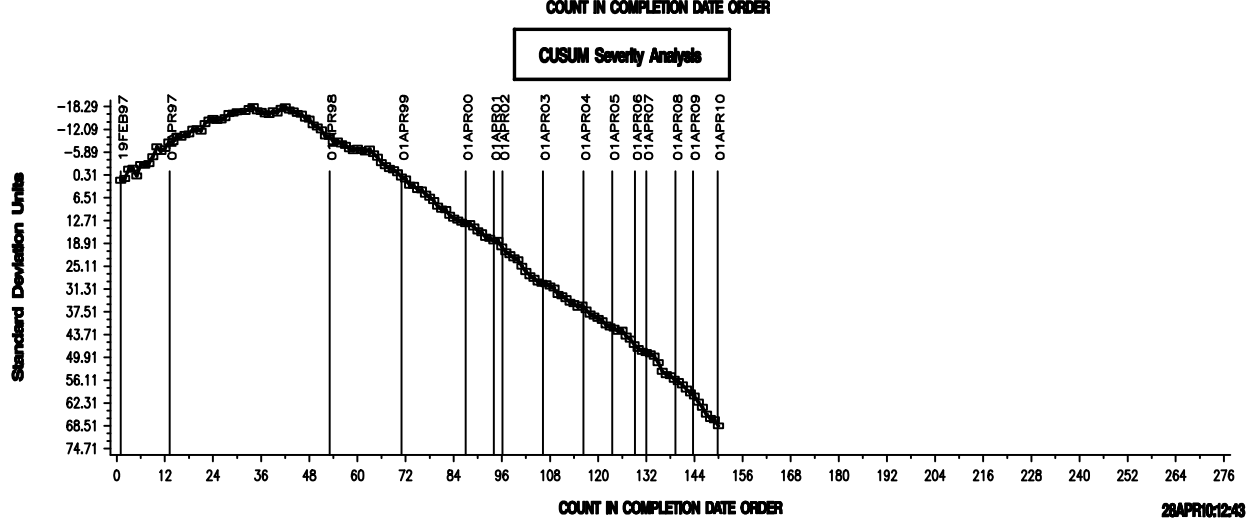
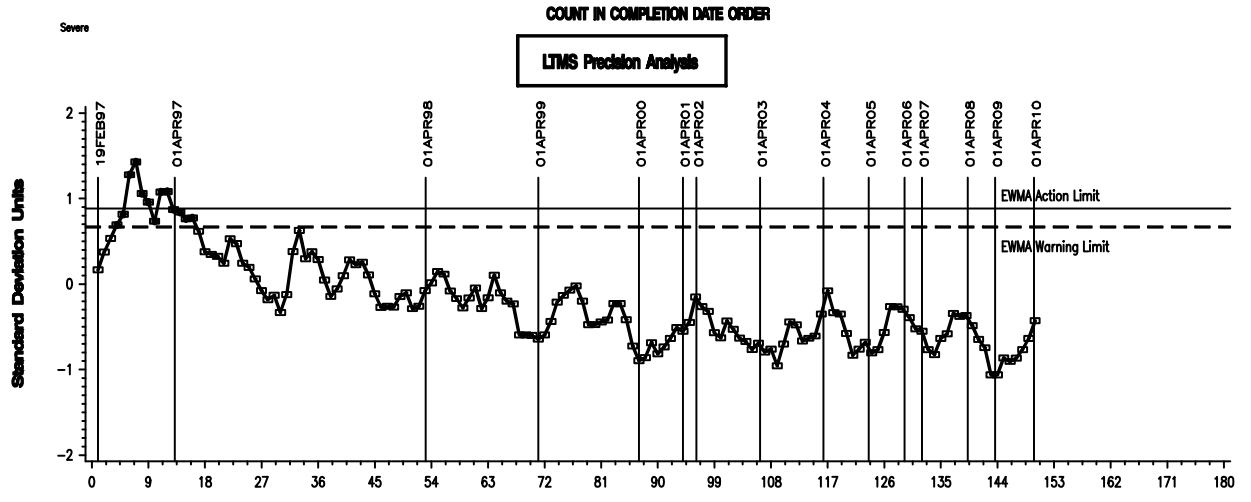
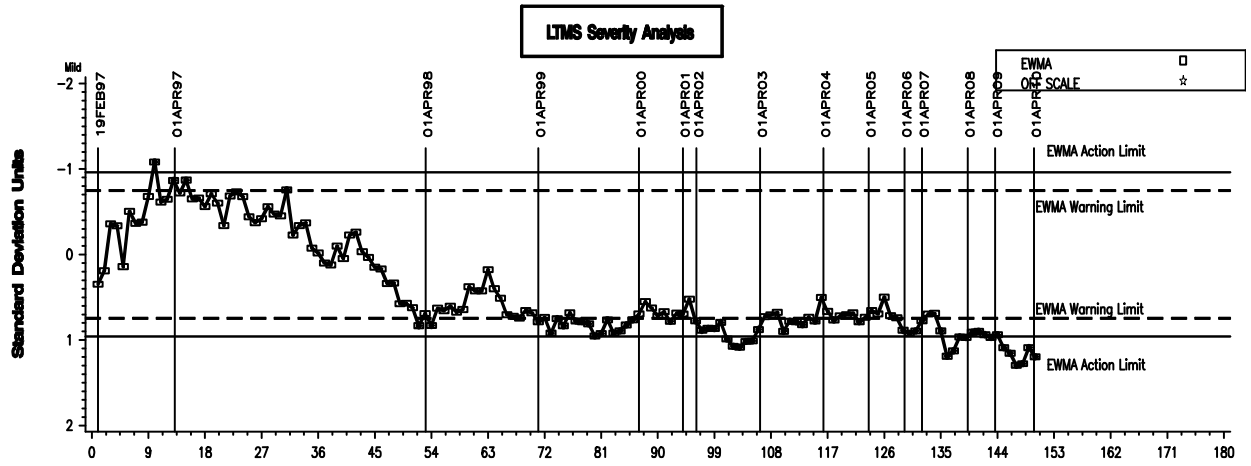
**FIGURE 14**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

**WEIGHTED TOTAL DEMERITS**



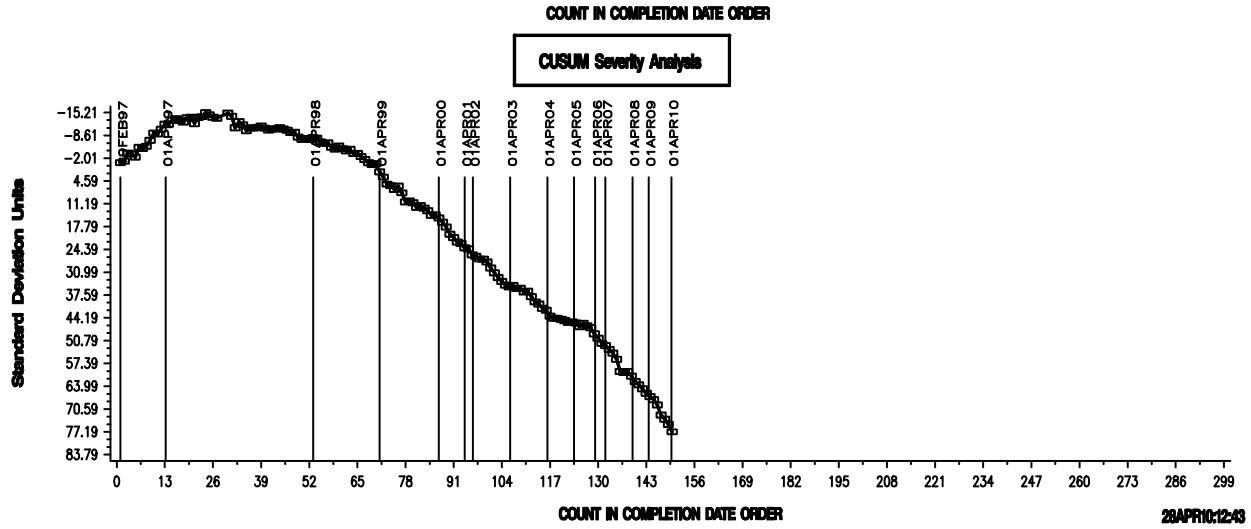
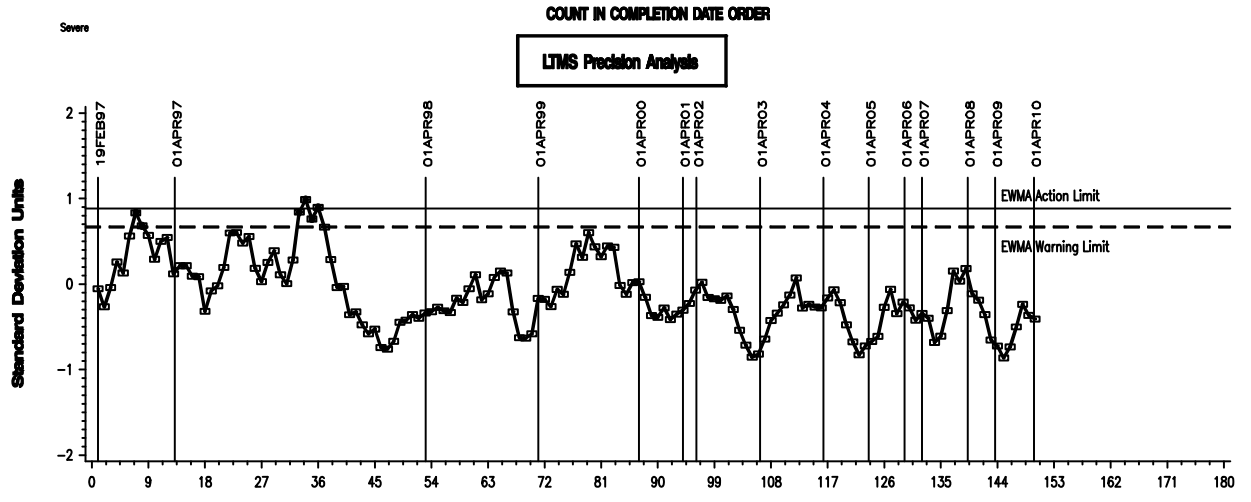
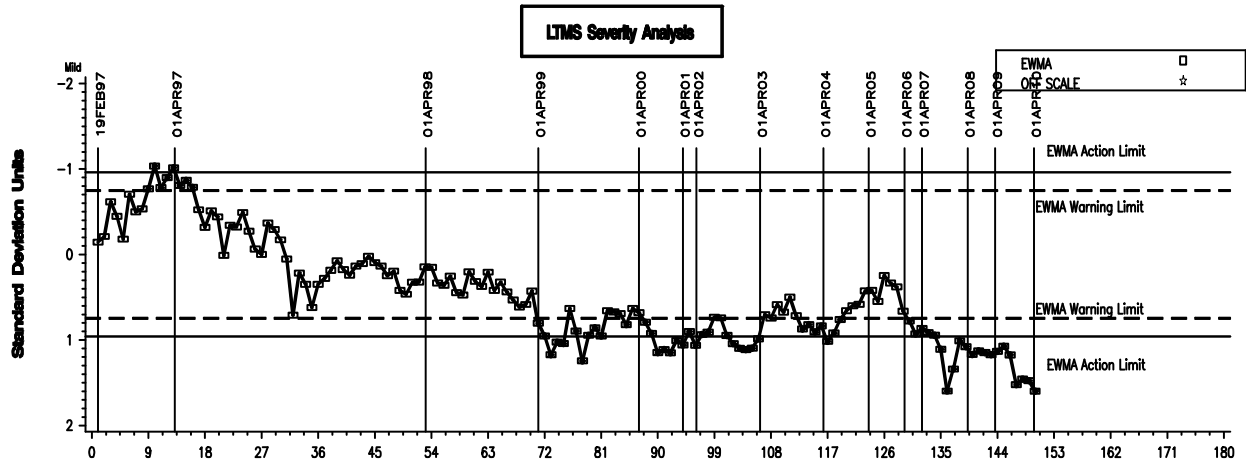
**FIGURE 15**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

**OIL CONSUMPTION**



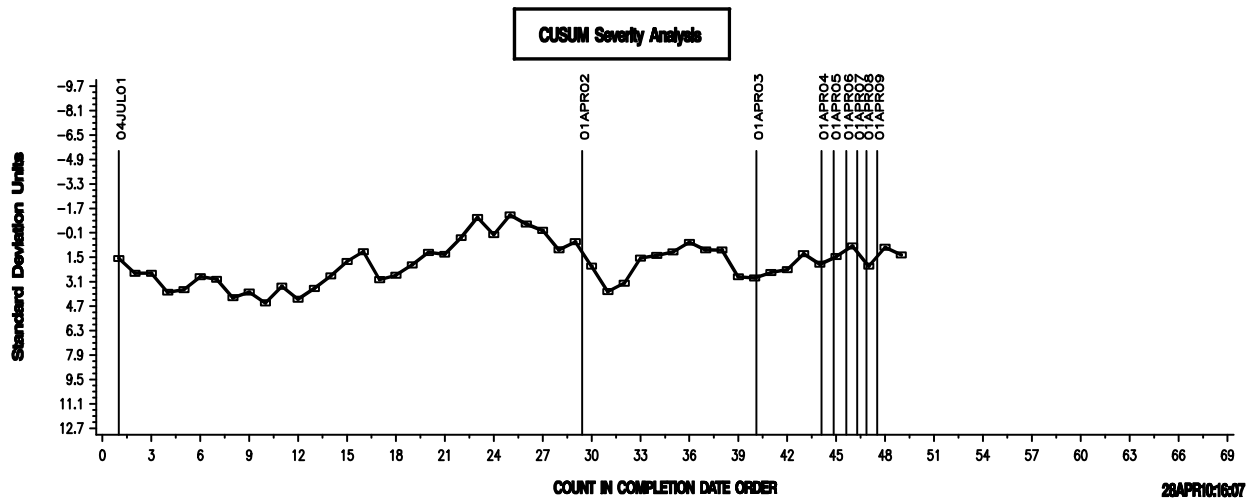
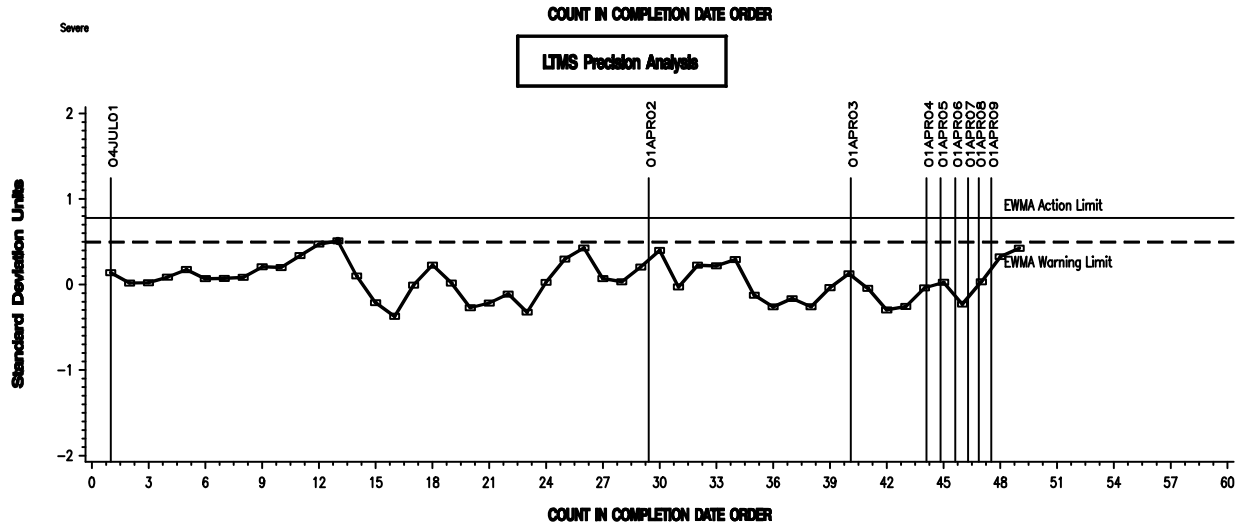
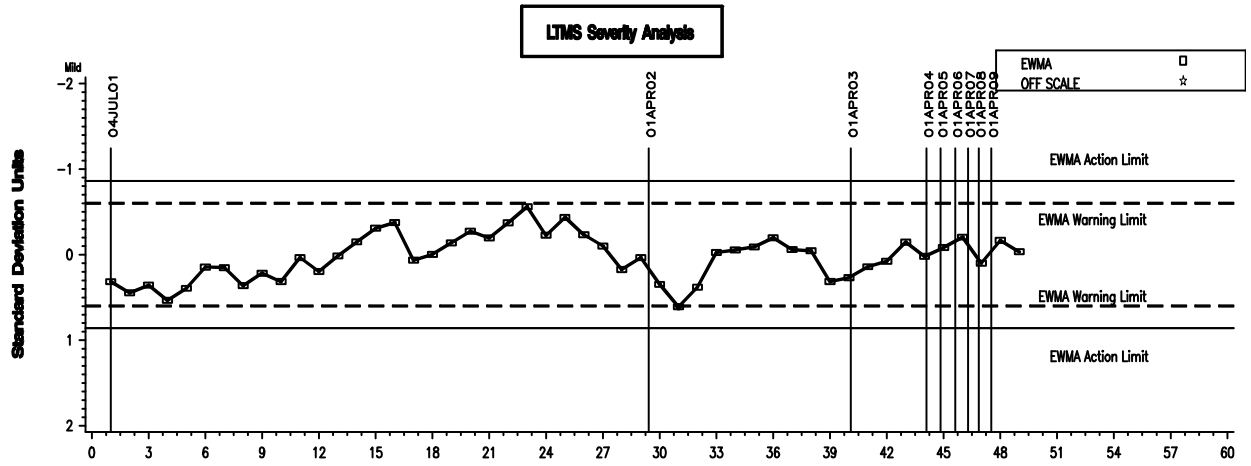
**FIGURE 16**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

**EOTOC**

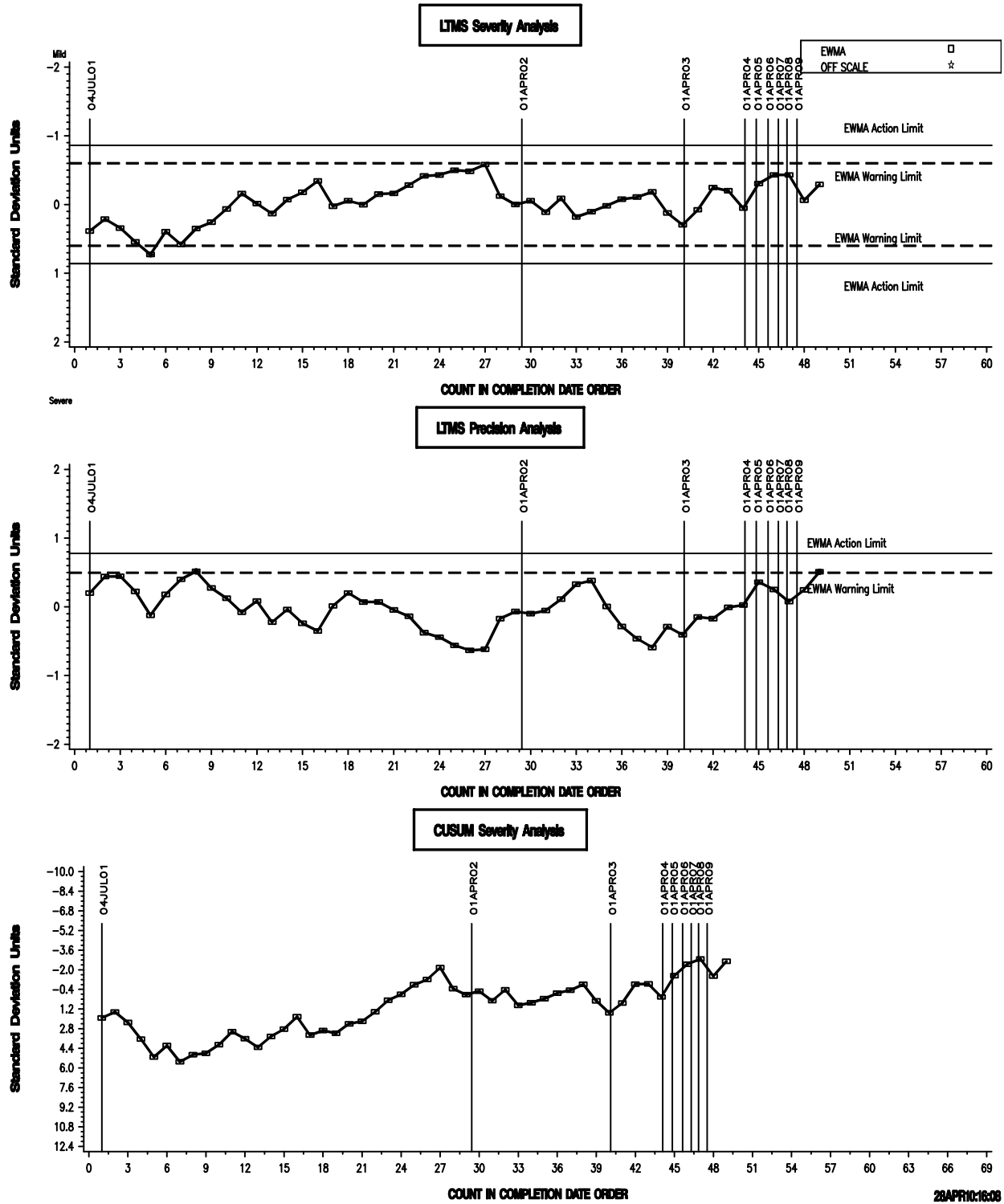


**FIGURE 17**  
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

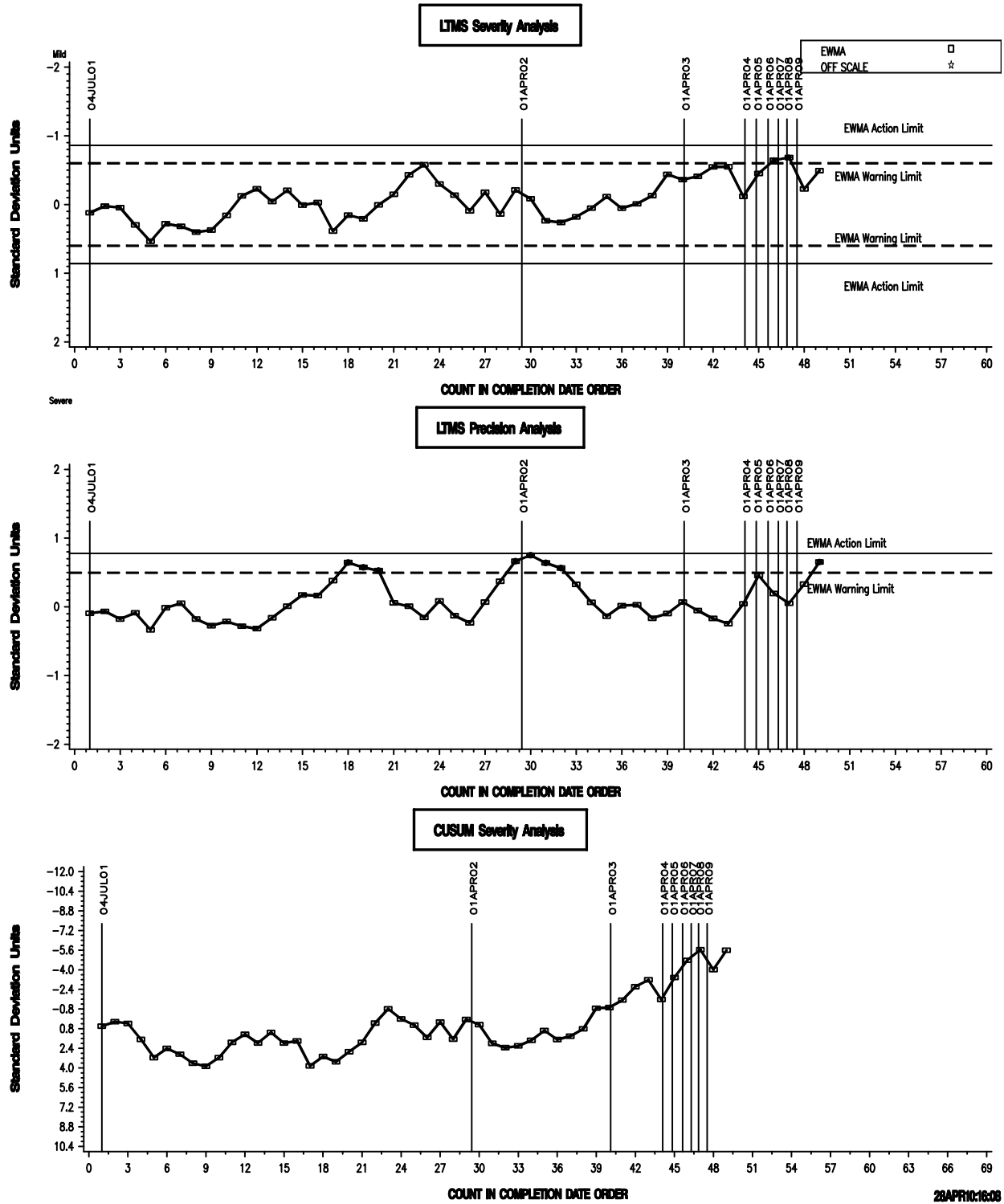
**FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)**



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

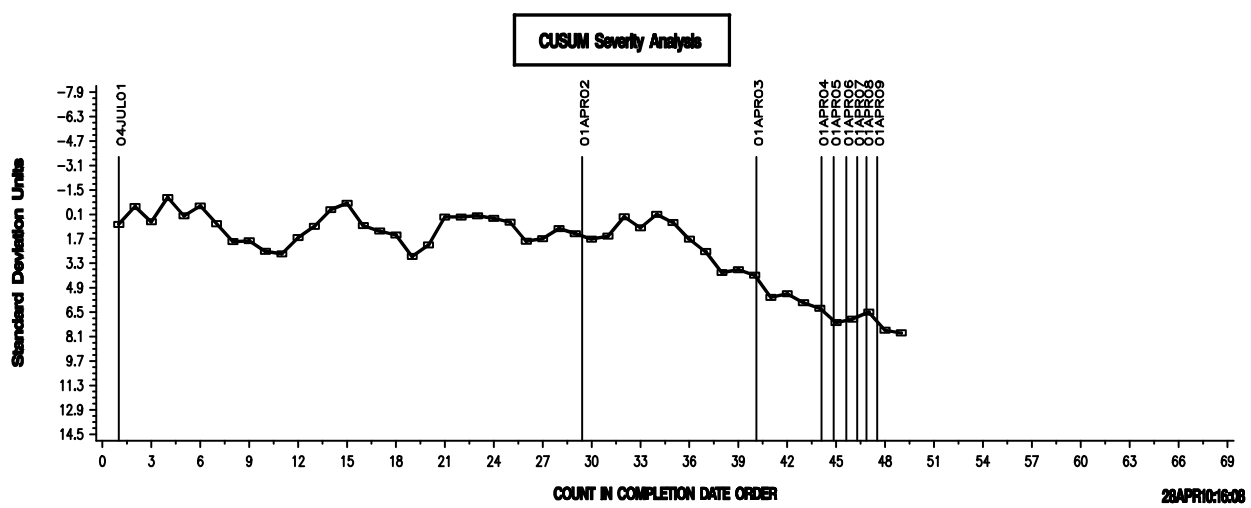
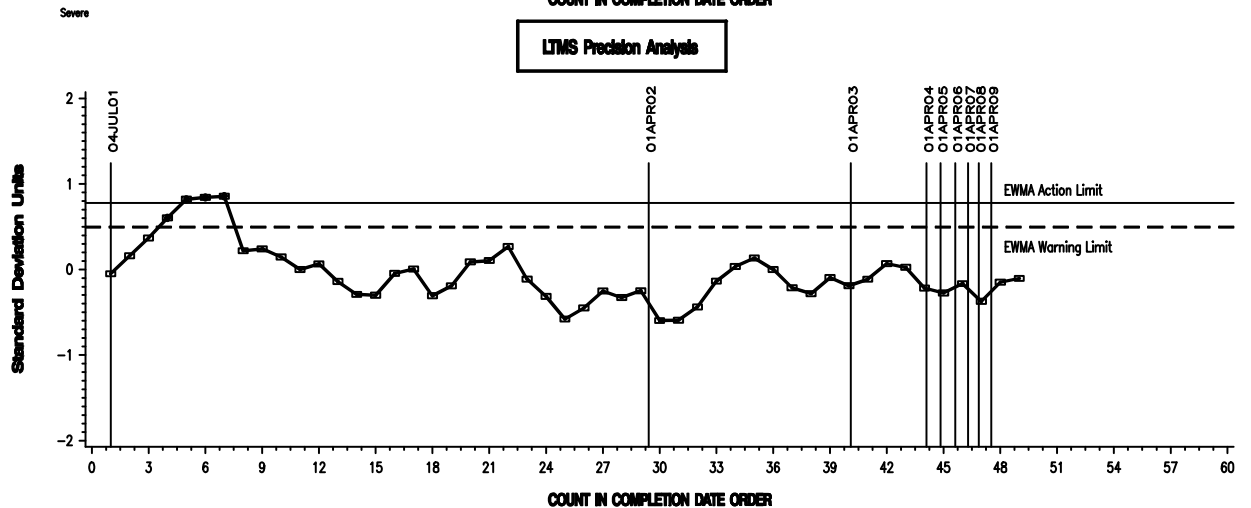
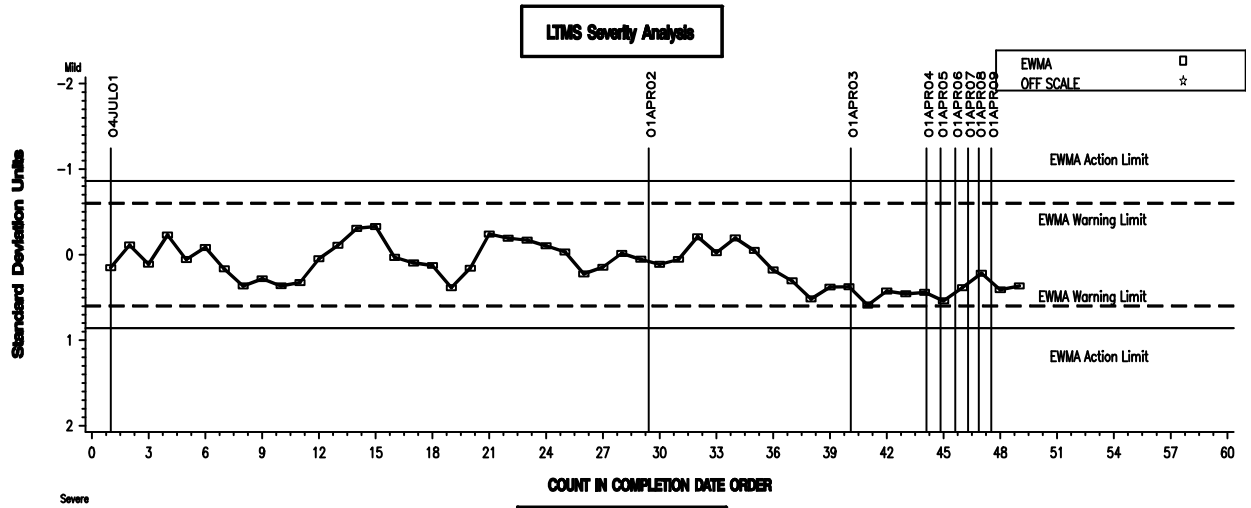


**FIGURE 19**  
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**  
**FINAL TOP LAND CARBON (DEMERITS)**



**FIGURE 20**  
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

**FINAL BOTOC**





**FIGURE 21**  
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

