



# Test Monitoring Center

Carnegie Mellon University  
6555 Penn Avenue, Pittsburgh, PA 15206, USA

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

MEMORANDUM: 08-066

DATE: November 10, 2008

TO: Jim McCord, Chairman, SCOTE Surveillance Panel

FROM: Jeff Clark

SUBJECT: SCOTE Calibration Testing for the October 2008 ASTM Report Period

The following is a summary of 1K, 1N, 1M-PC, 1P, and 1R reference oil tests completed during the October 2008 ASTM report period, which began on April 1, 2008 and ended on September 30, 2008.

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

## 1K Severity:

While Top Groove Fill (TGF) is currently within control chart limits, it still appears to be in the midst of a long term mild trend. Weighted Demerits (WDK), Top Land Heavy Carbon (TLHC), and End of Test Oil Consumption (ETOC) are all currently within control chart limits and are not exhibiting any pronounced severity trends. Brake Specific Oil Consumption (BSOC) is currently in an EWMA severity warning alarm, in the mild direction. 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) is currently in an industry warning alarm, in the mild direction. Top Land Heavy Carbon (TLHC) is in an industry action alarm, in the mild direction; a mild trend that has continued since 2001. Weighted Demerits (WDN), and Brake Specific Oil Consumption (BSOC) are currently within control chart limits and are not exhibiting any pronounced severity trends. 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 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 Fill (TGF), Top Land Carbon (TLC), and Weighted Deposits (WD) are currently within control chart limits and 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 most 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:**

Weighted Deposits (WD), Top Groove Fill (TGF), Beginning of Test Oil Consumption (BTOC), and End of Test Oil Consumption (ETOC) are currently within control chart limits and are not exhibiting any pronounced severity trends. Top Land Carbon (TLC) is in an industry warning alarm, in the mild direction, which appears to be a continuation of the trend that began in 2002. 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 preliminary 2008 1M-PC precision estimate shows precision for both TGF and WD to be comparable to recent years.

**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	6	
TGF	15.0	17.7	19.1	18.2	
WD	93.7	41.6	47.1	39.1	

**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	2718	9	5+ years
811-1	1K, 1N	9	2	0.5 years
811-2	1K, 1N	1515	5	5+ years
820-3	1R	1712	0	5+ years
873-2	1M-PC	386	8	4.6 years
1004-3	1N, 1P	29	3	1 year
1005-2	1P, 1R	474	6	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:**

1K/1N Information Letter 08-1, Sequence No. 28, which detailed clarifications to the calibration period expiration, was issued August 25, 2008.

**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, timelines, and alarm logs 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>

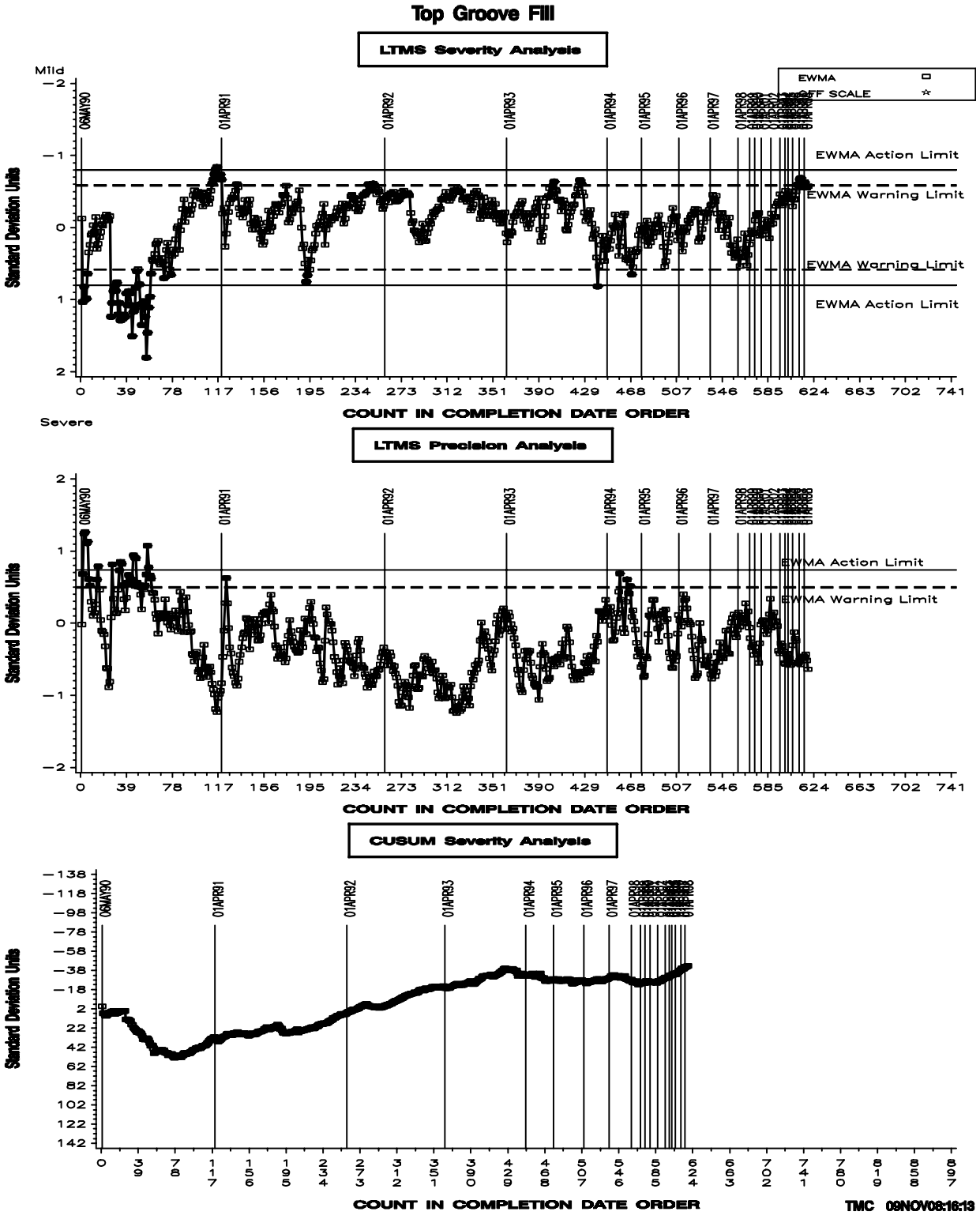
JAC/jac/mem08-066.jac.doc

Attachments

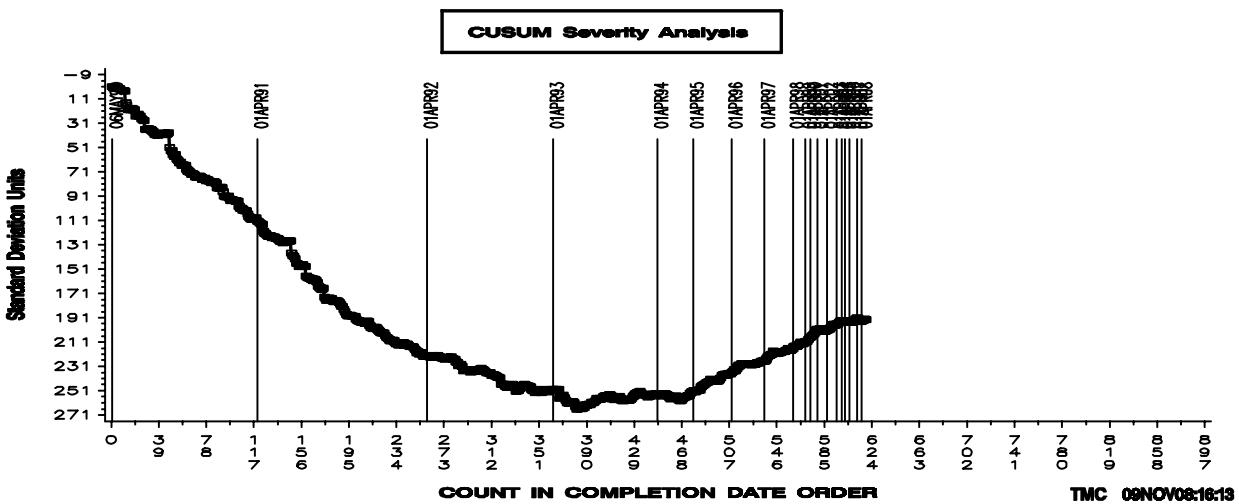
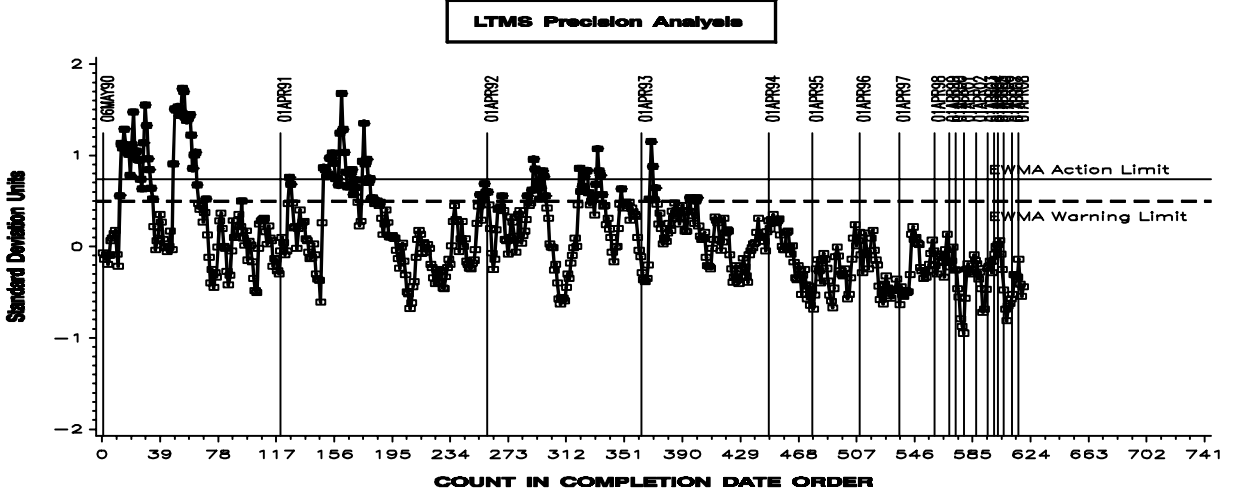
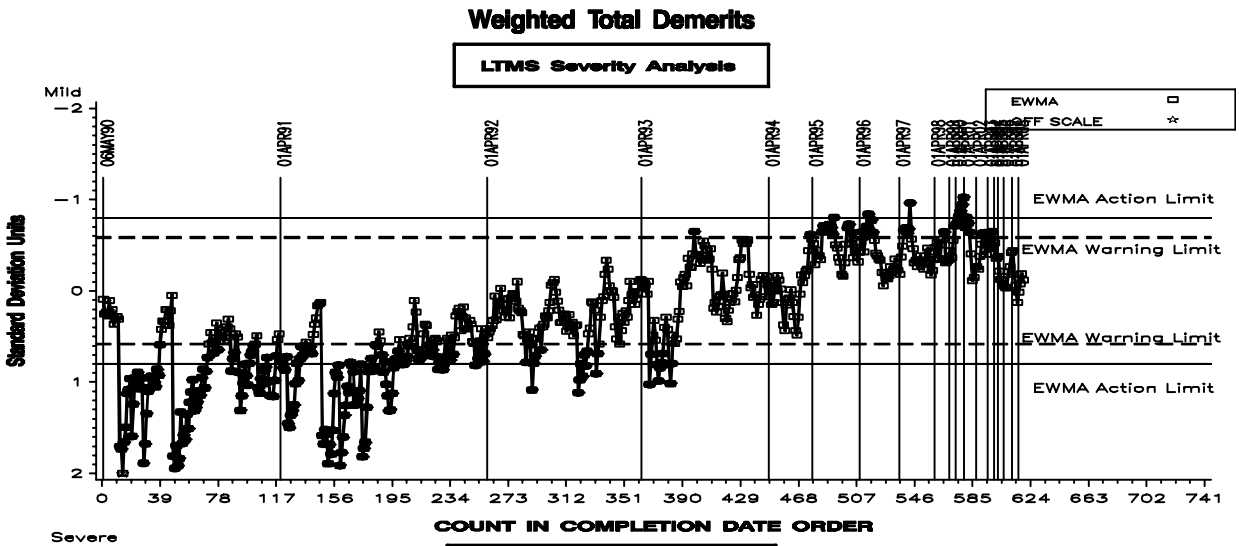
c: J.L. Zalar, TMC  
F.M. Farber, TMC  
SCOTE Surveillance Panel  
<ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/SCOTE-10-2008.pdf>

Distribution: Email

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

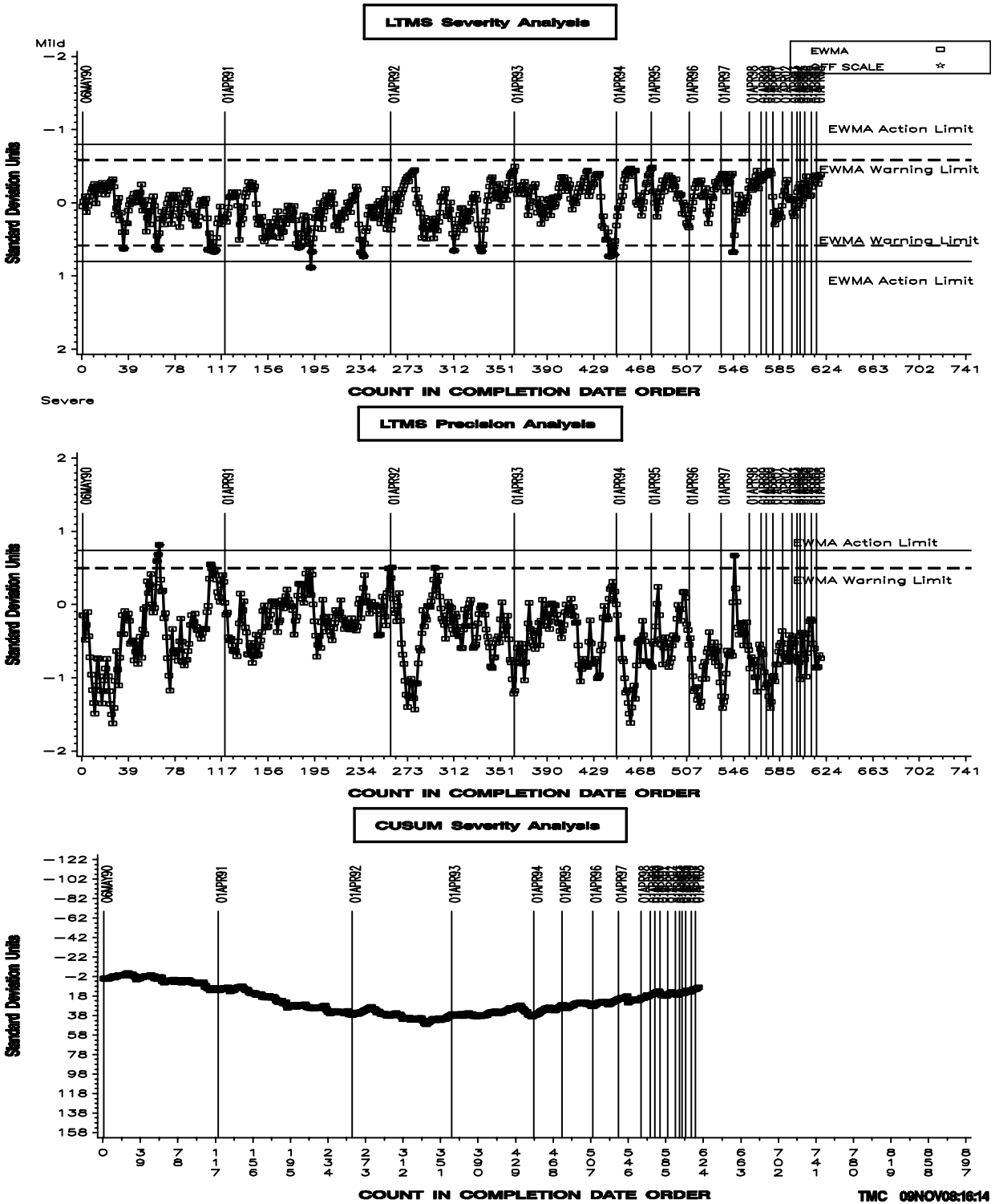


**FIGURE 2**  
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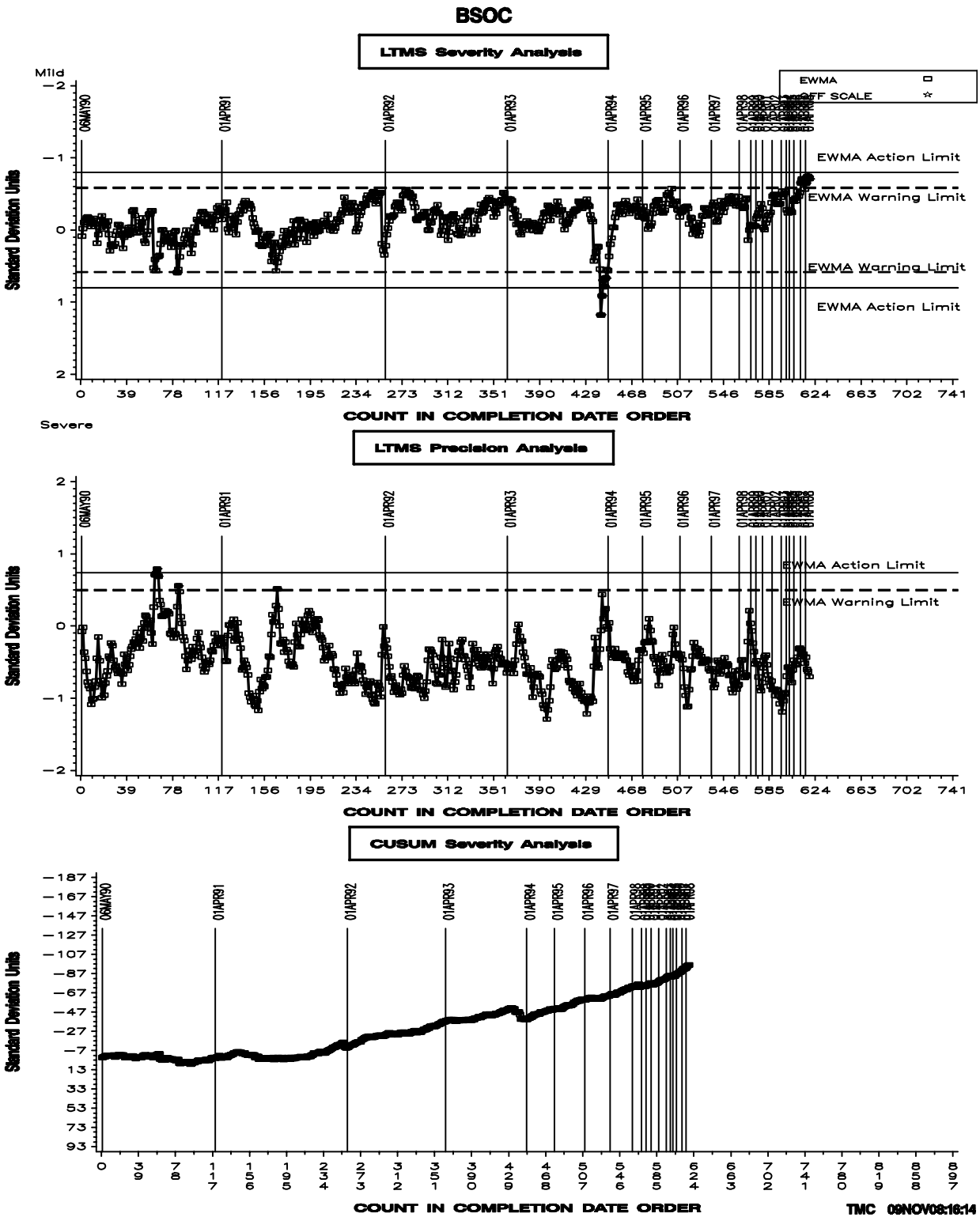


# FIGURE 3 CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA

## FINAL TRANSFORMED TOP LAND HEAVY CARBON

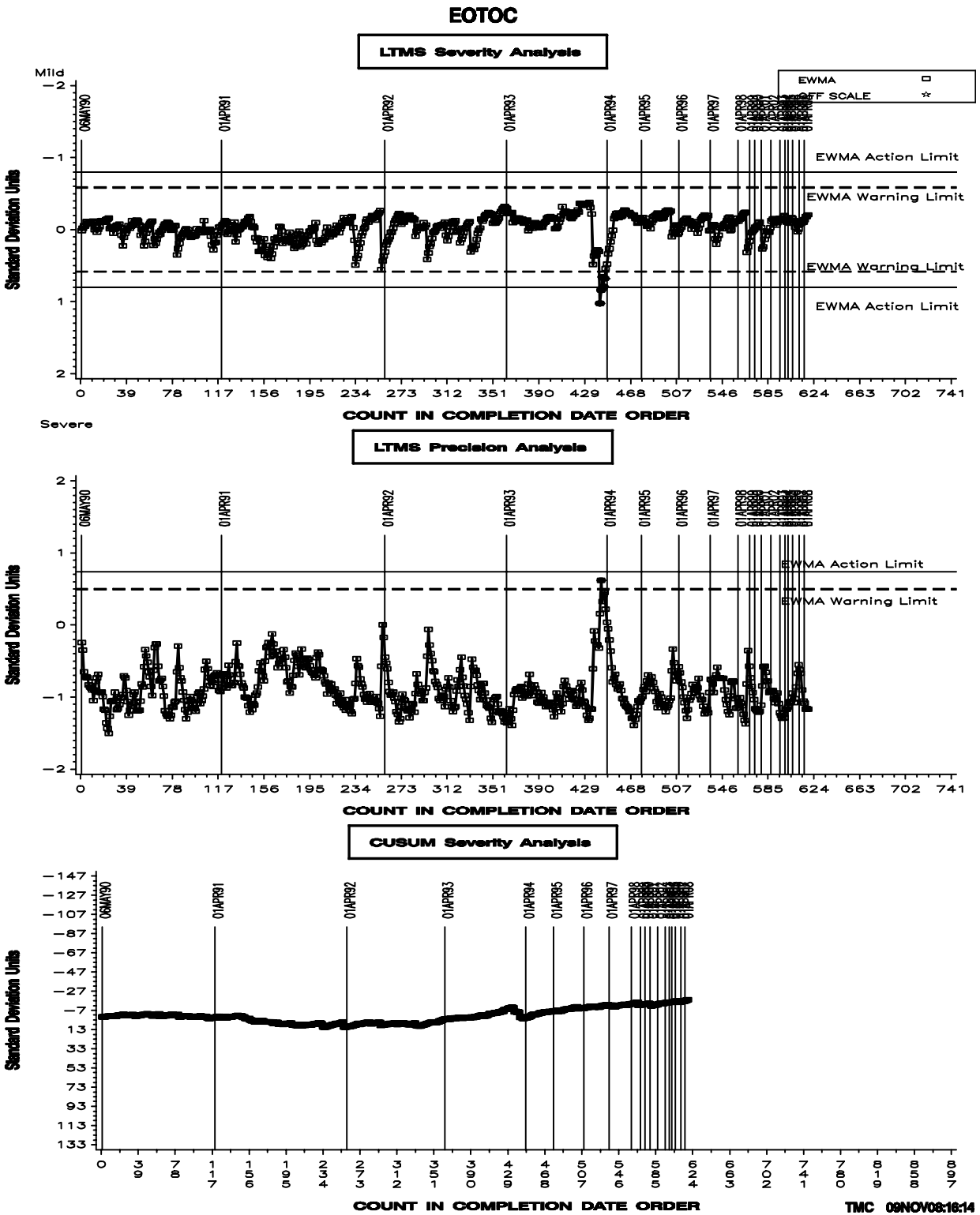


**FIGURE 4**  
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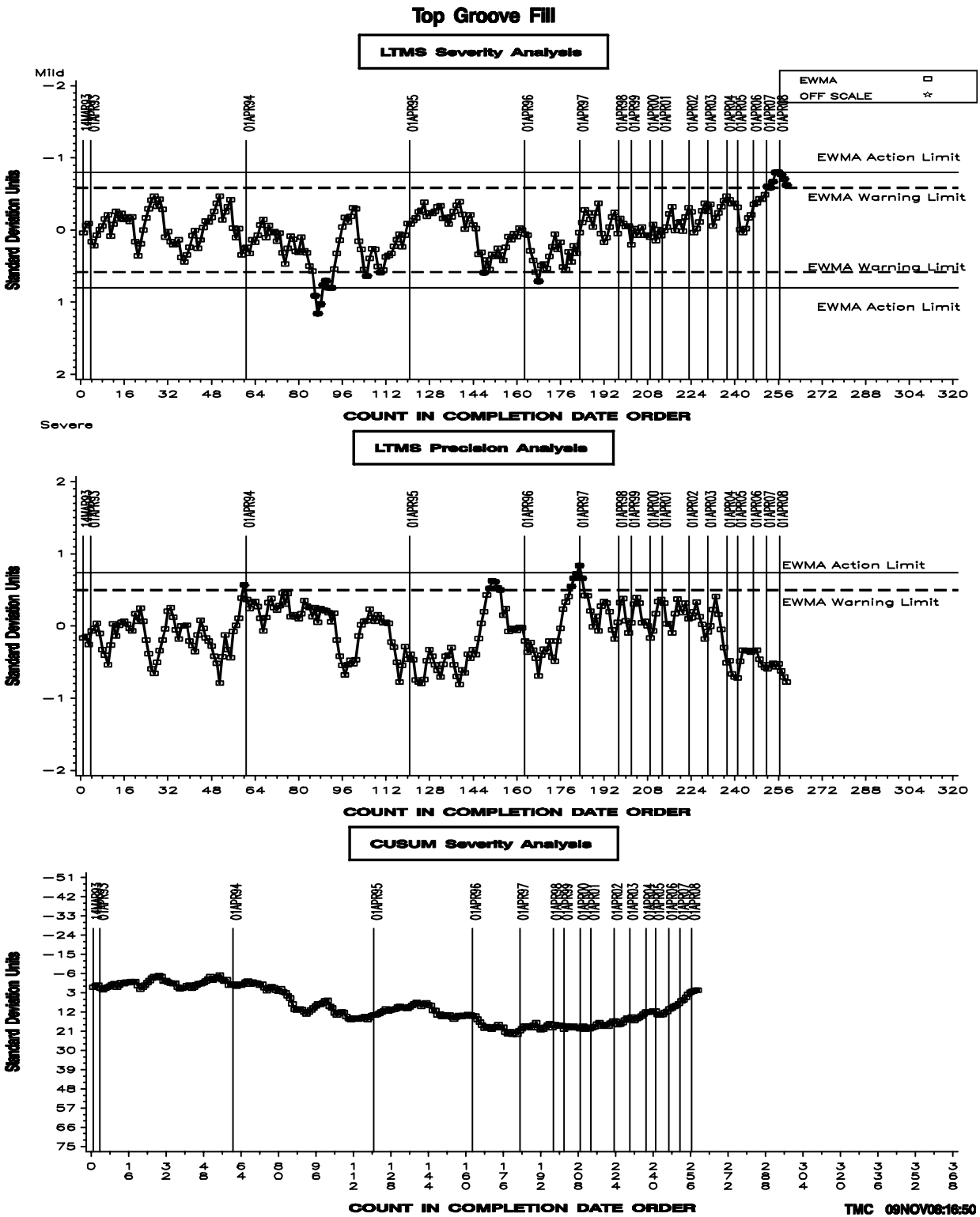




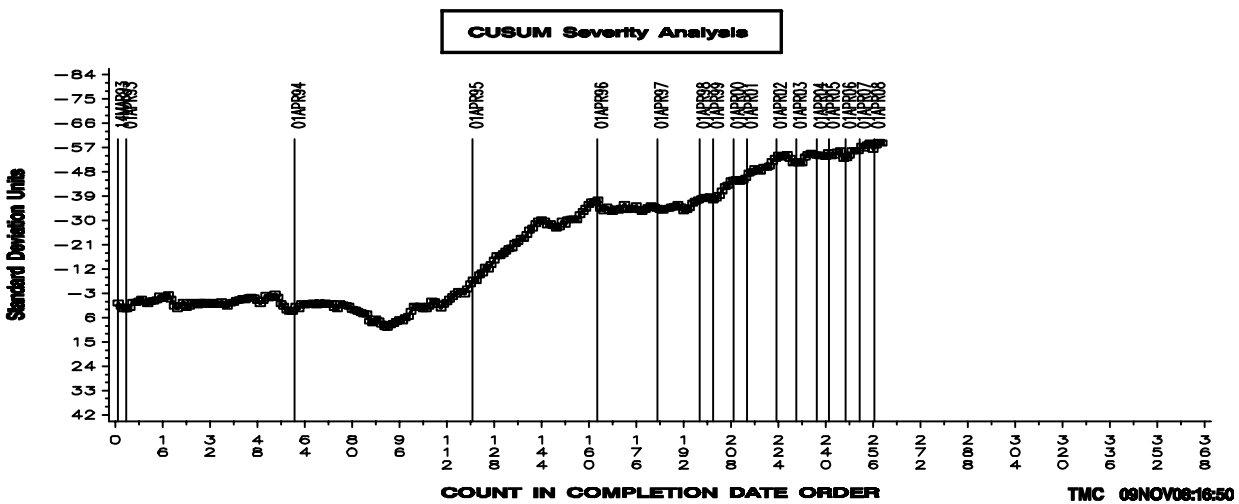
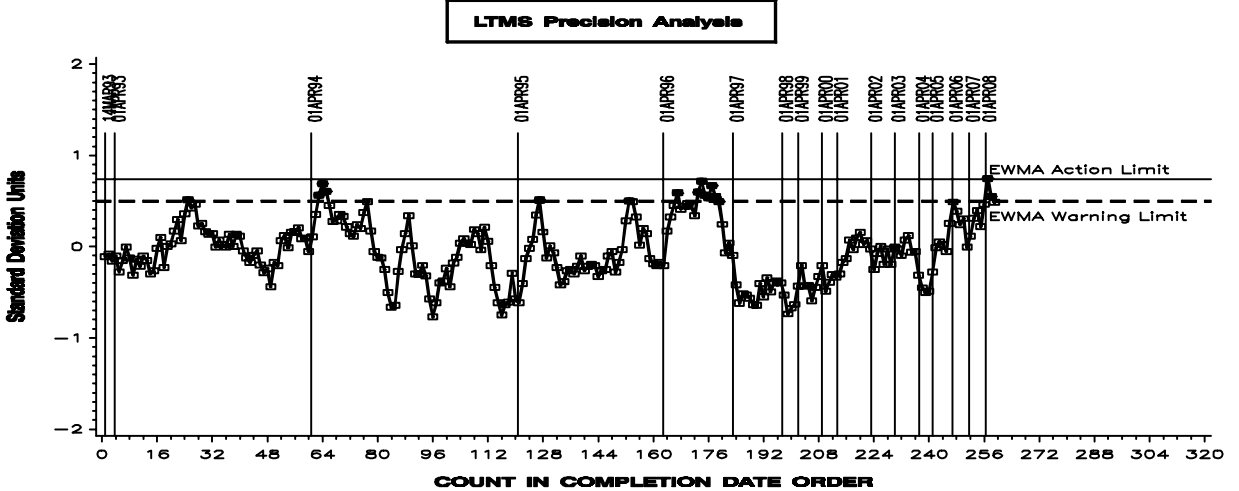
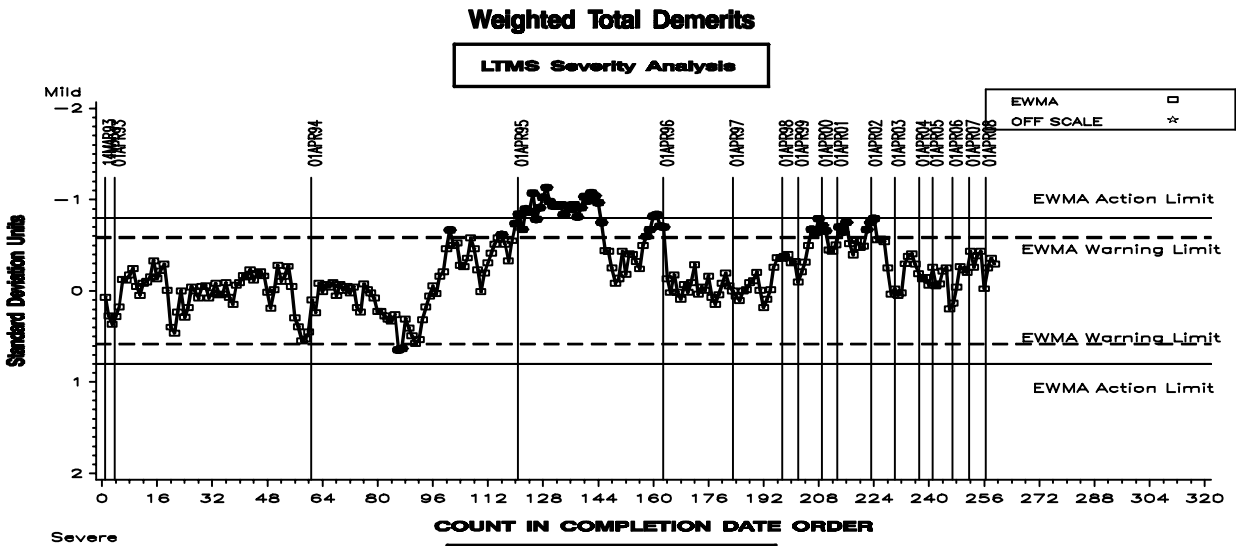
**FIGURE 5**  
**CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA**



**FIGURE 6**  
**CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA**

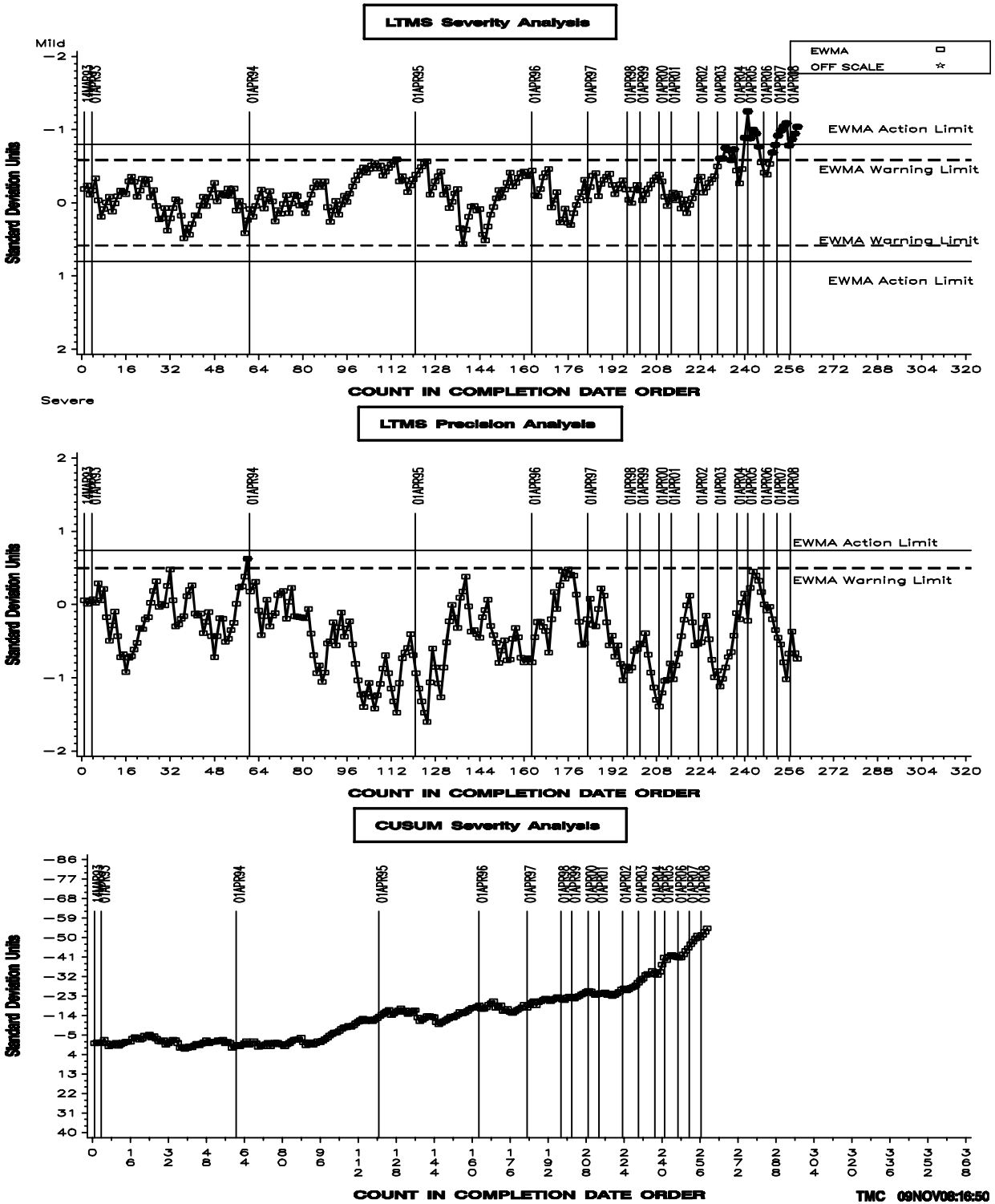


**FIGURE 7**  
**CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA**

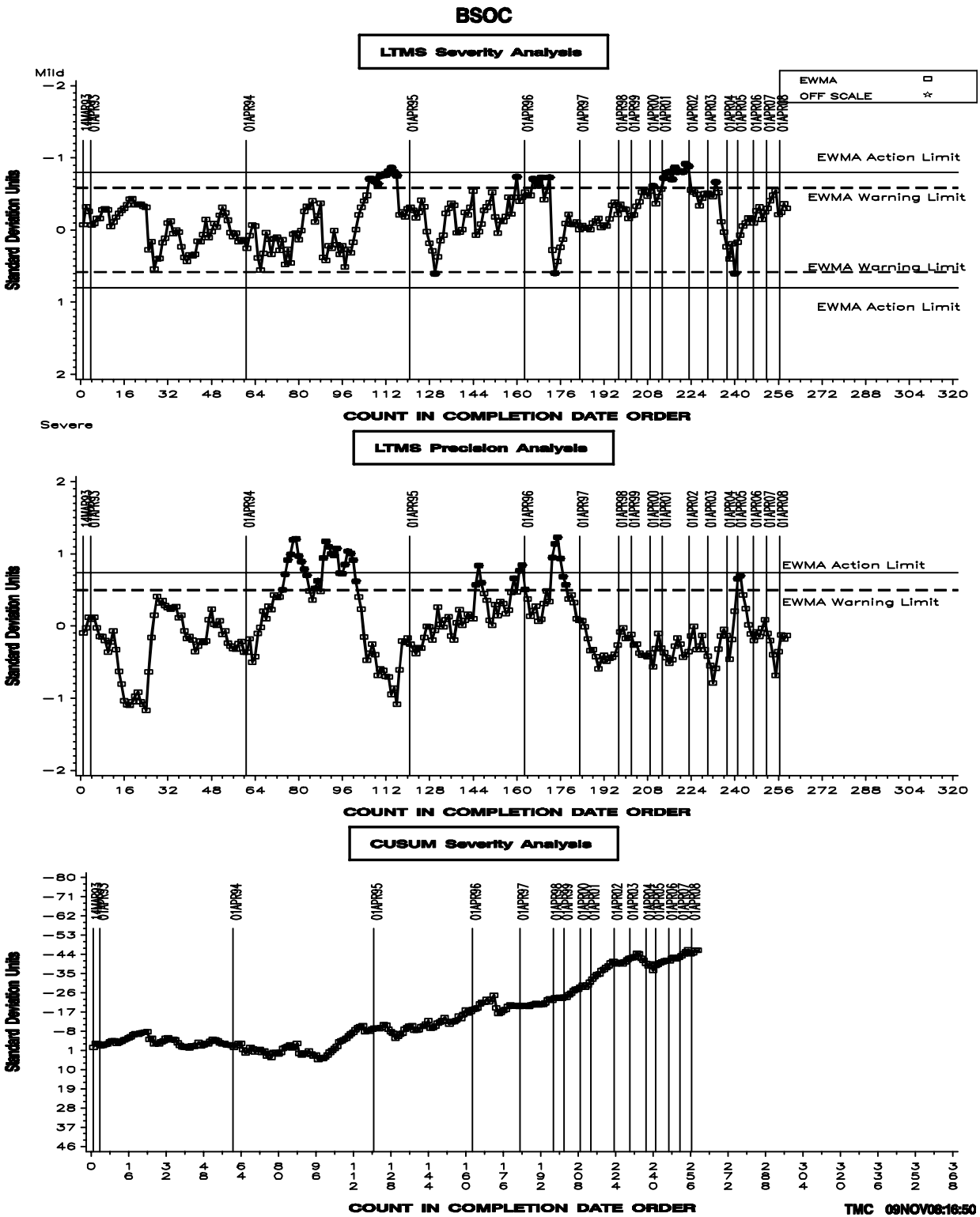


# FIGURE 8 CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA

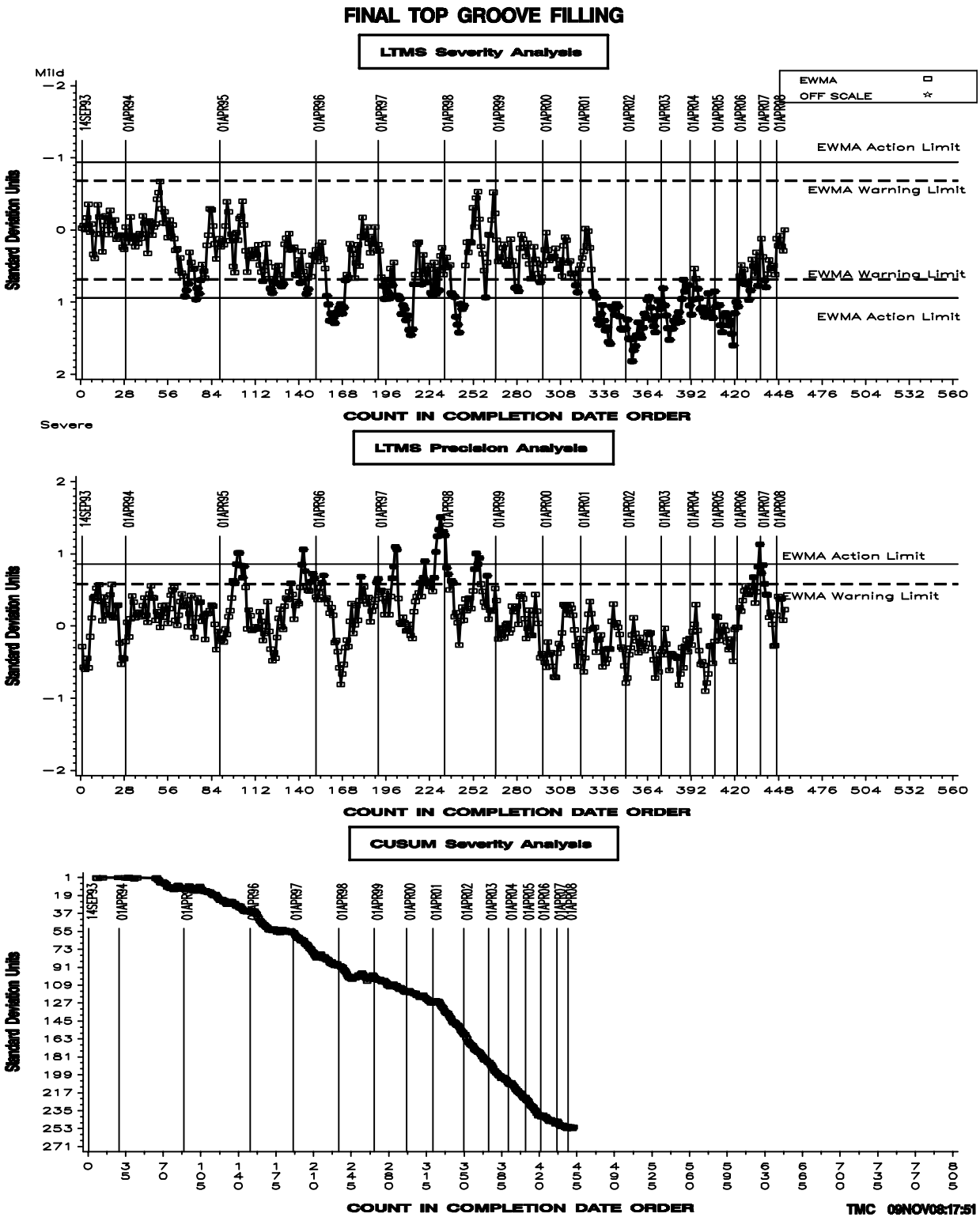
## FINAL TRANSFORMED TOP LAND HEAVY CARBON



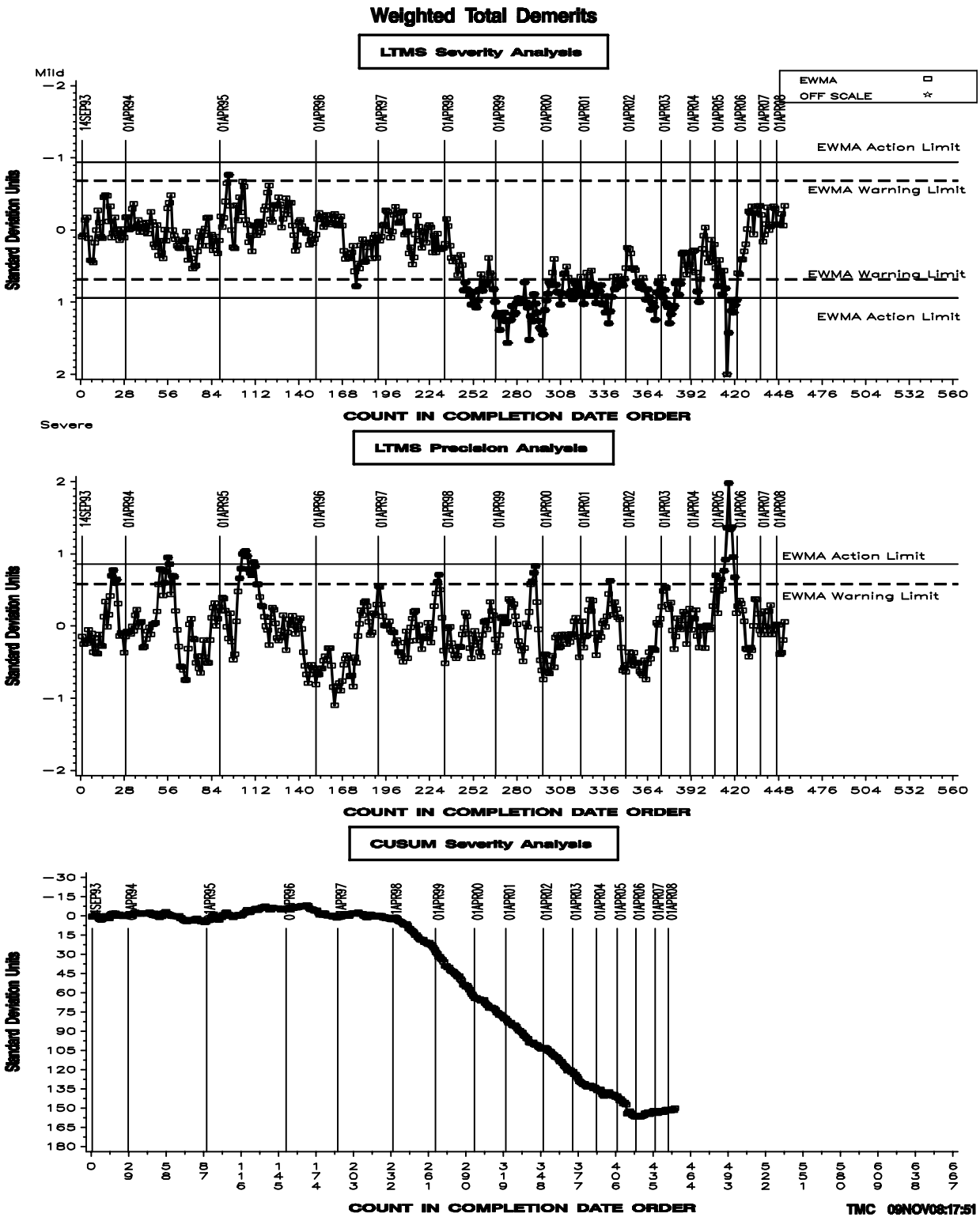
**FIGURE 9**  
**CATERPILLAR 1N INDUSTRY OPERATIONALLY VALID DATA**



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



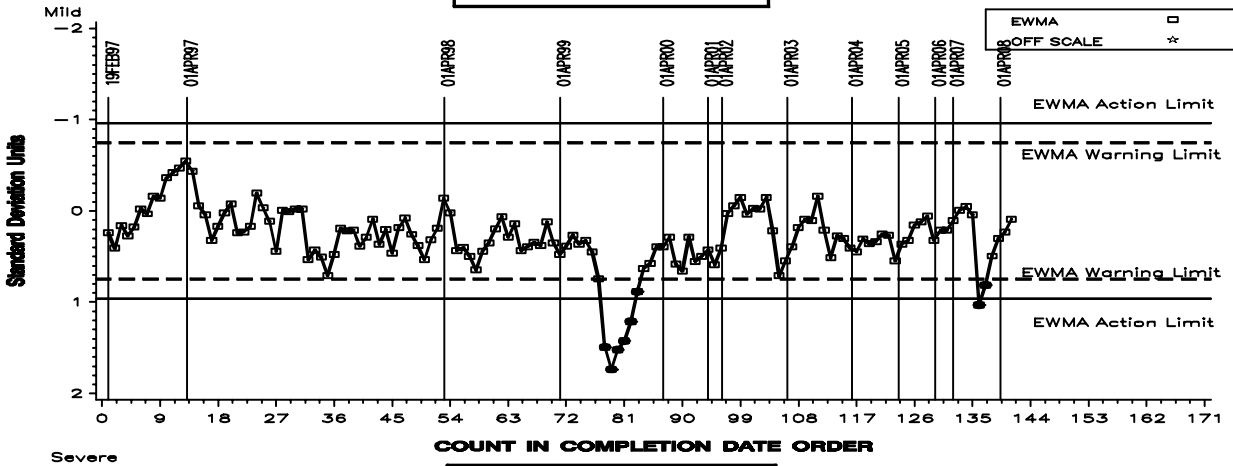
**FIGURE 11**  
**CATERPILLAR 1M-PC INDUSTRY OPERATIONALLY VALID DATA**



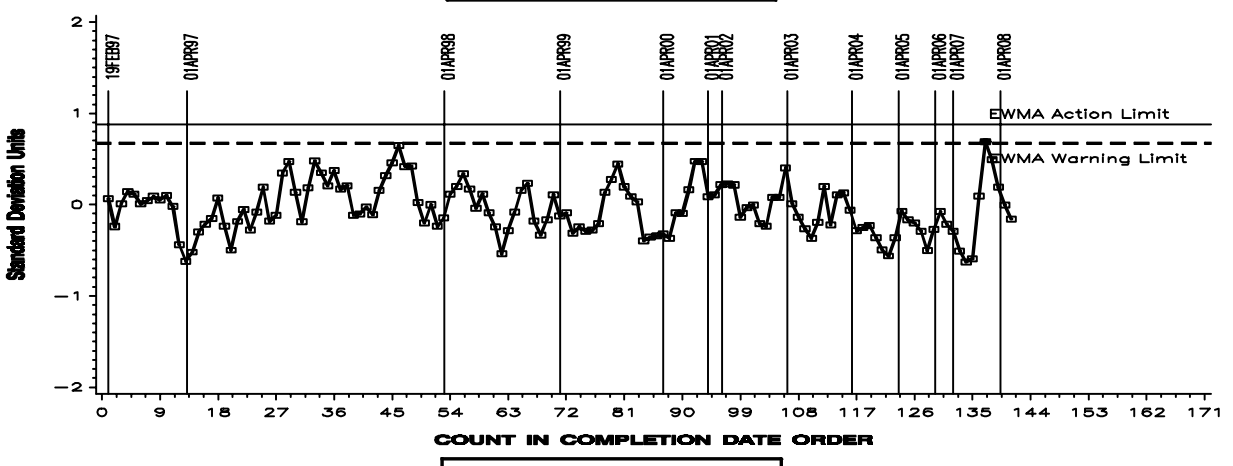
# FIGURE 12 CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA

## TOP GROOVE CARBON

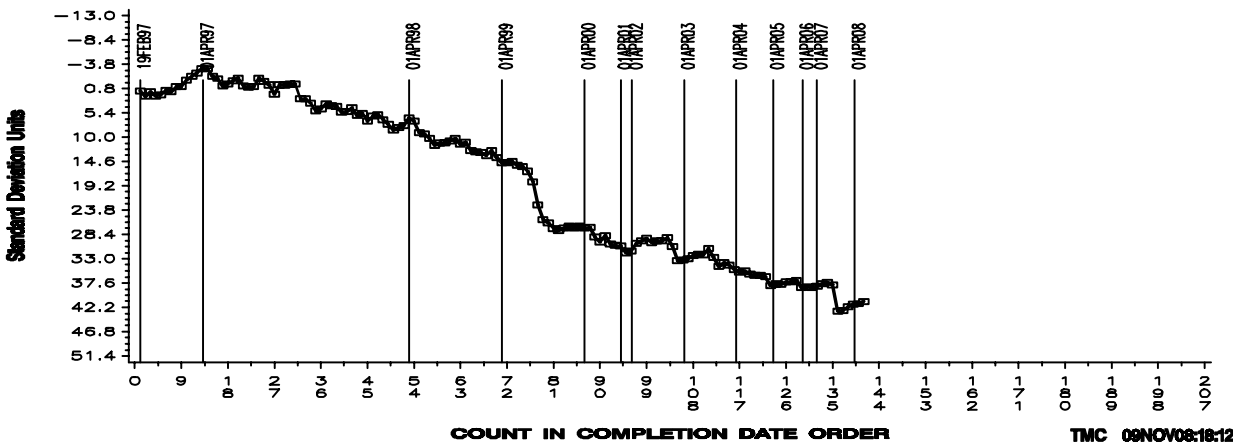
### LTMS Severity Analysis



### LTMS Precision Analysis

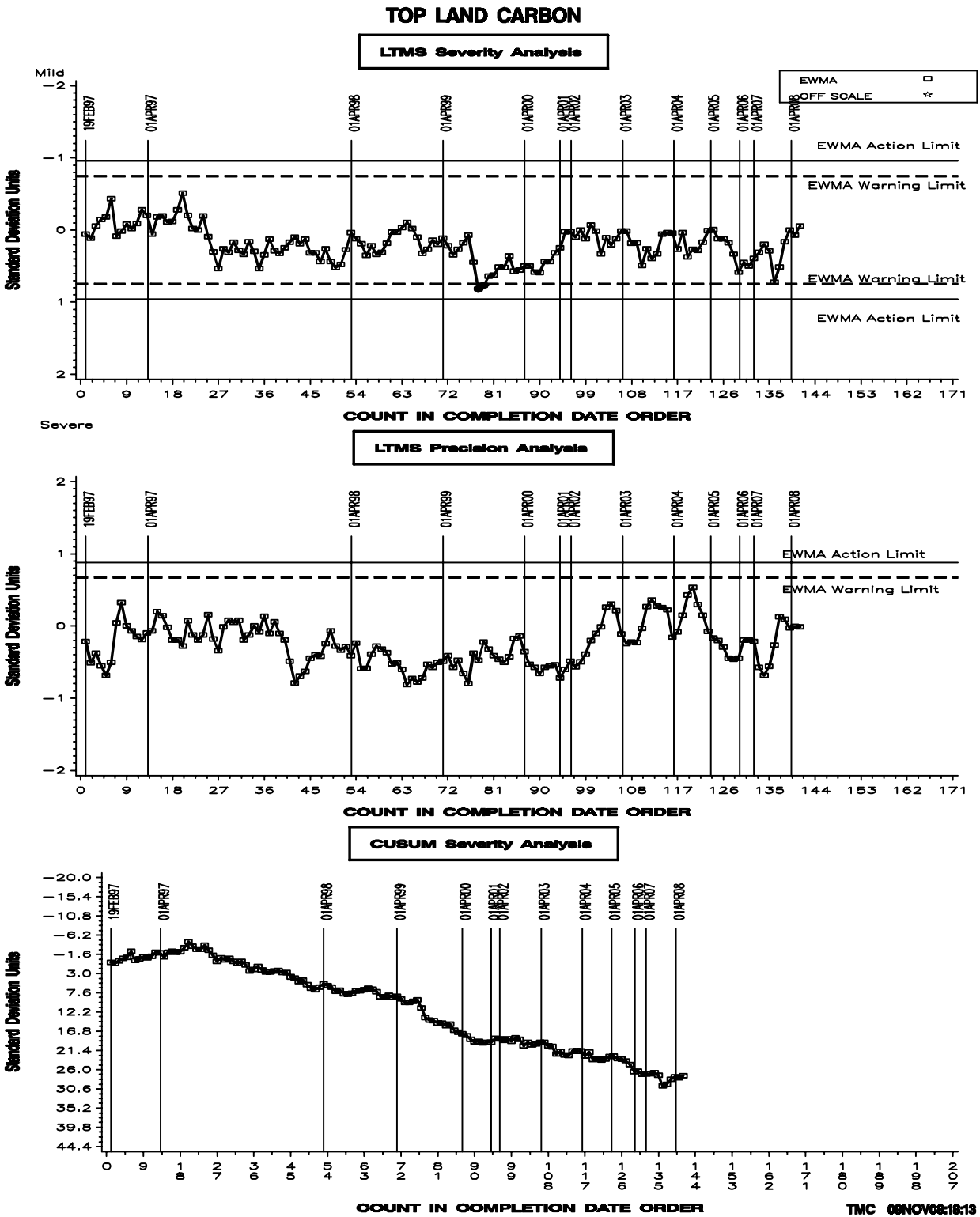


### CUSUM Severity Analysis

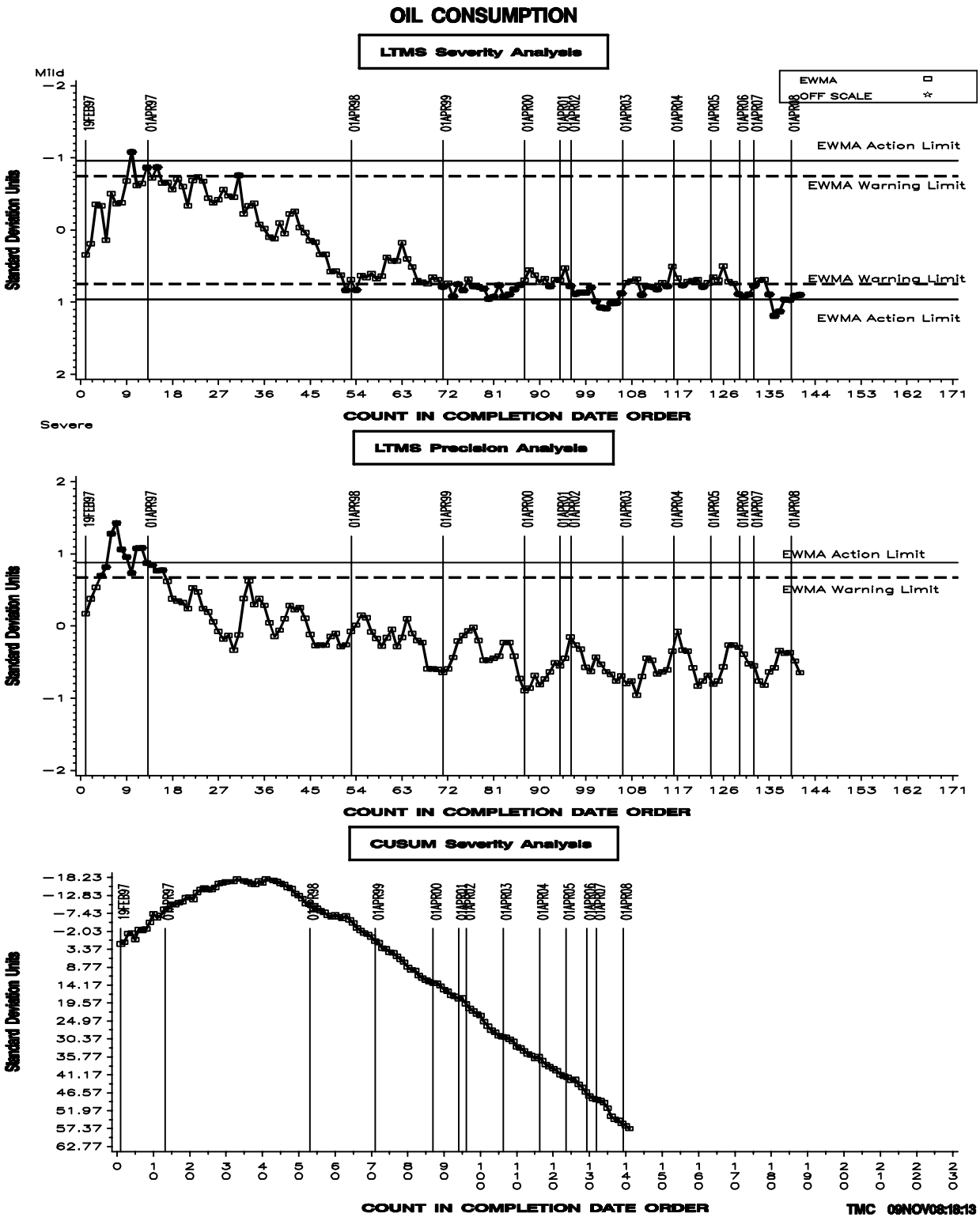




**FIGURE 13  
CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

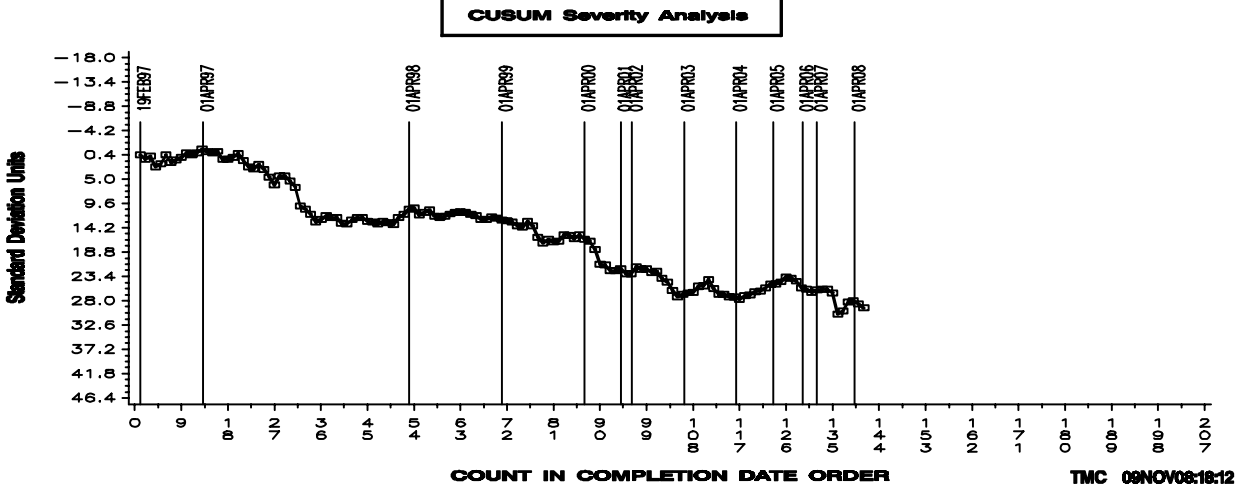
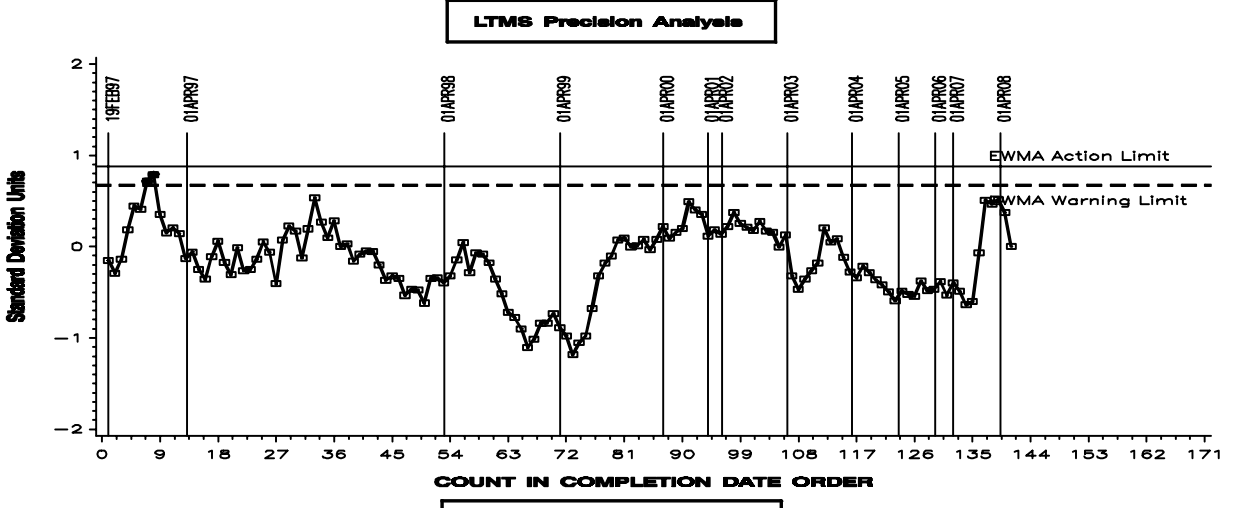
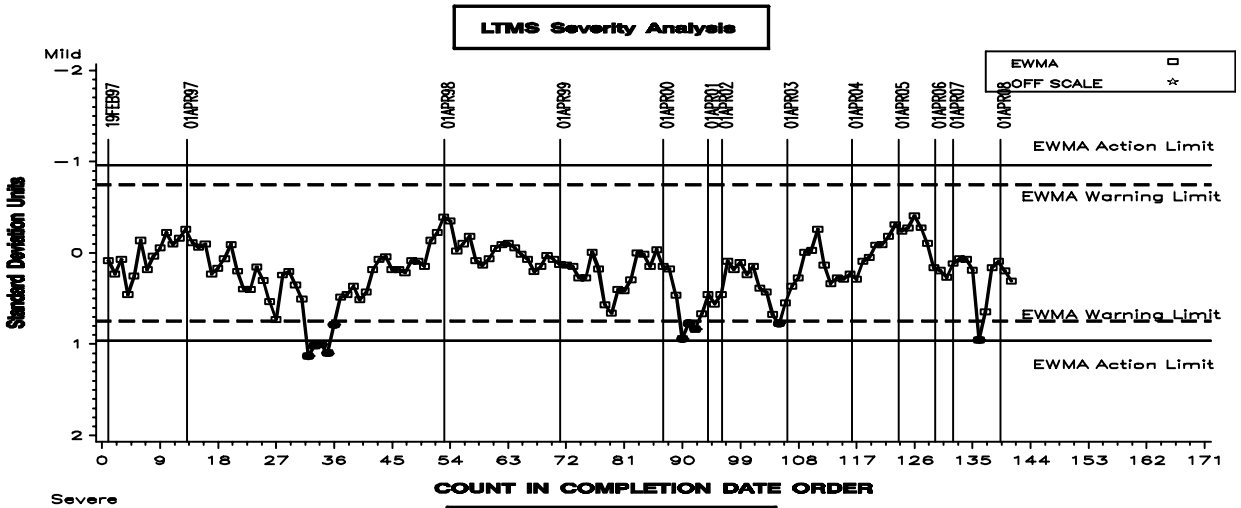


**FIGURE 14**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**

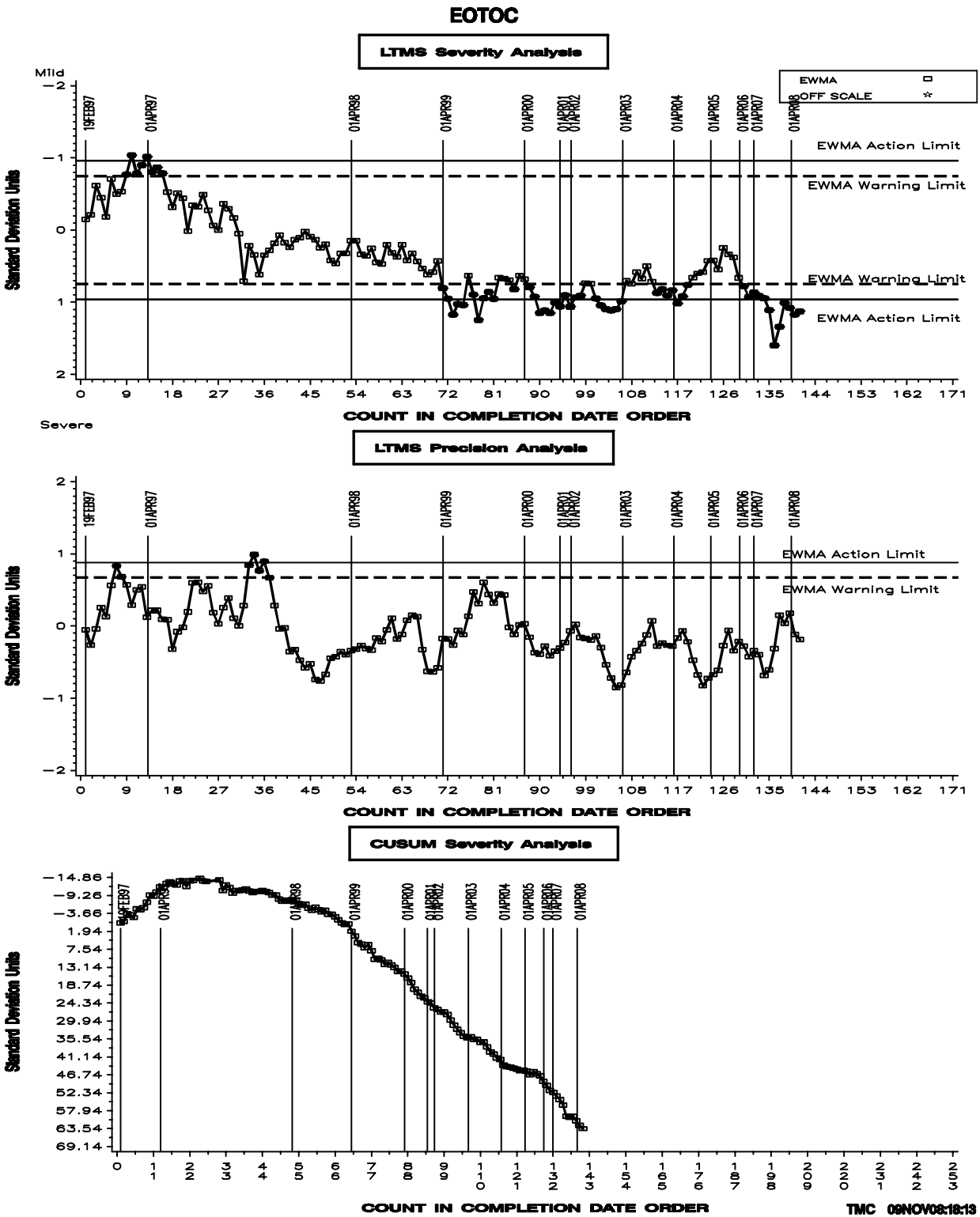


# FIGURE 15 CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA

## WEIGHTED TOTAL DEMERITS

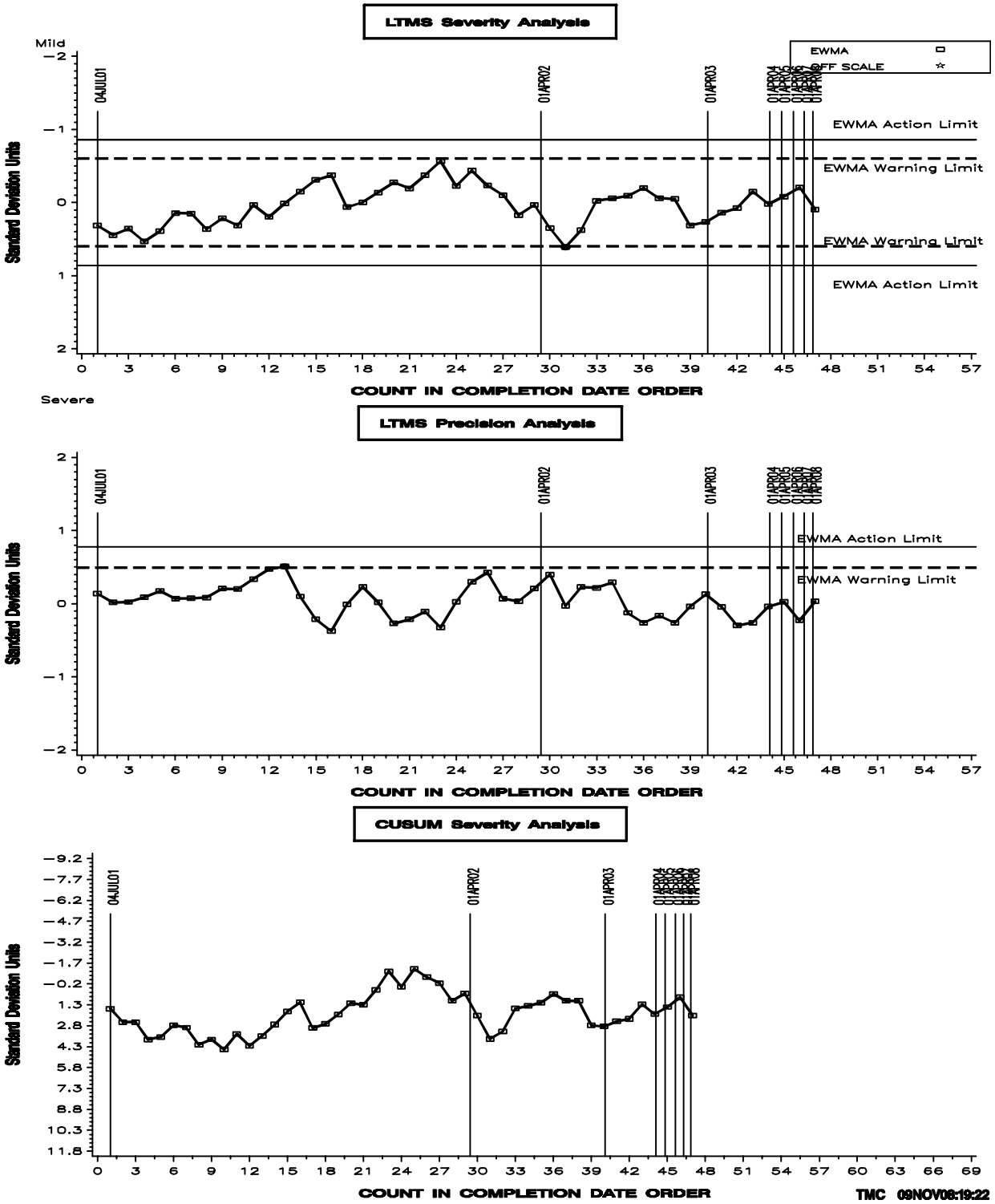


**FIGURE 16**  
**CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA**



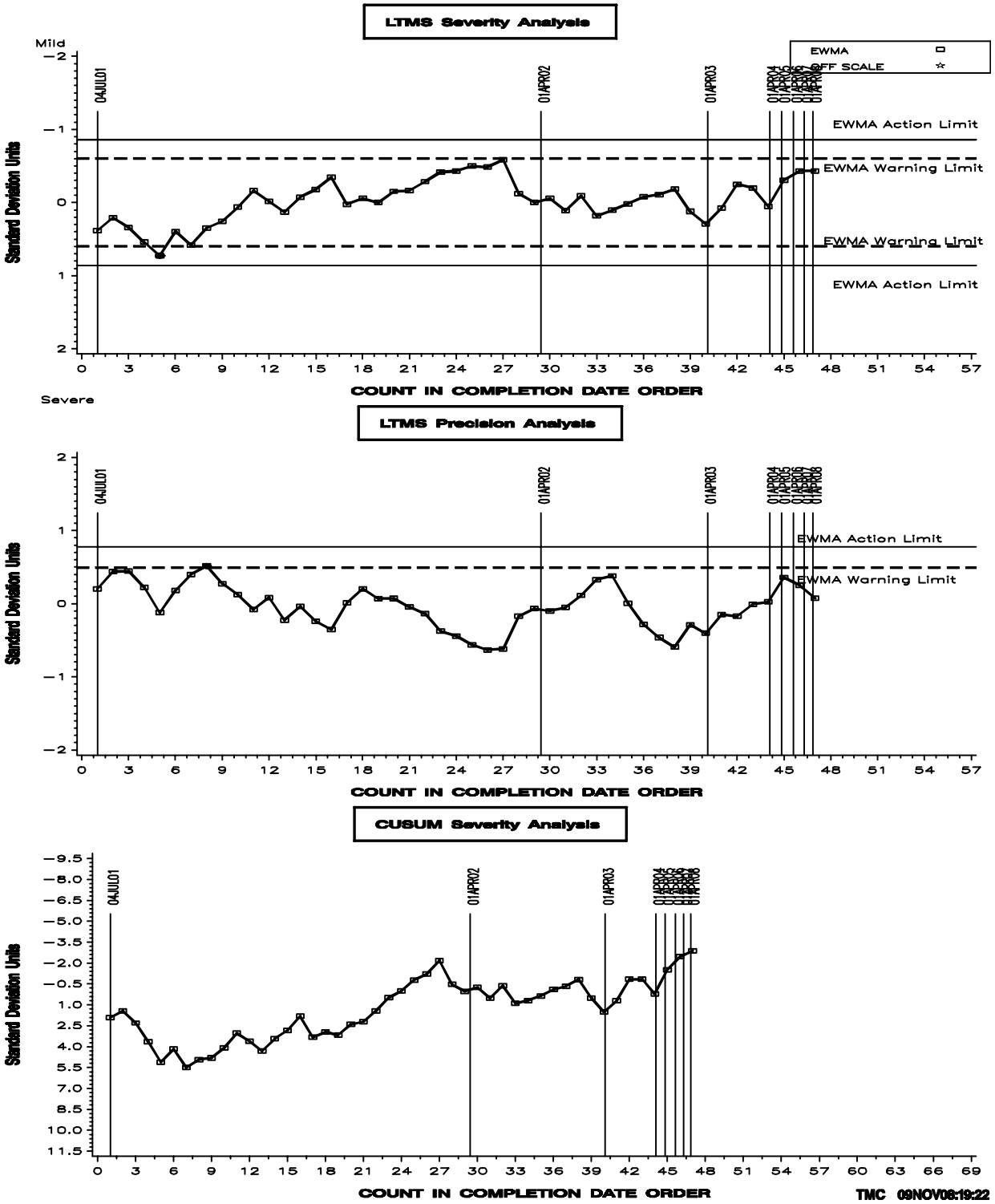
# FIGURE 17 CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

## FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)



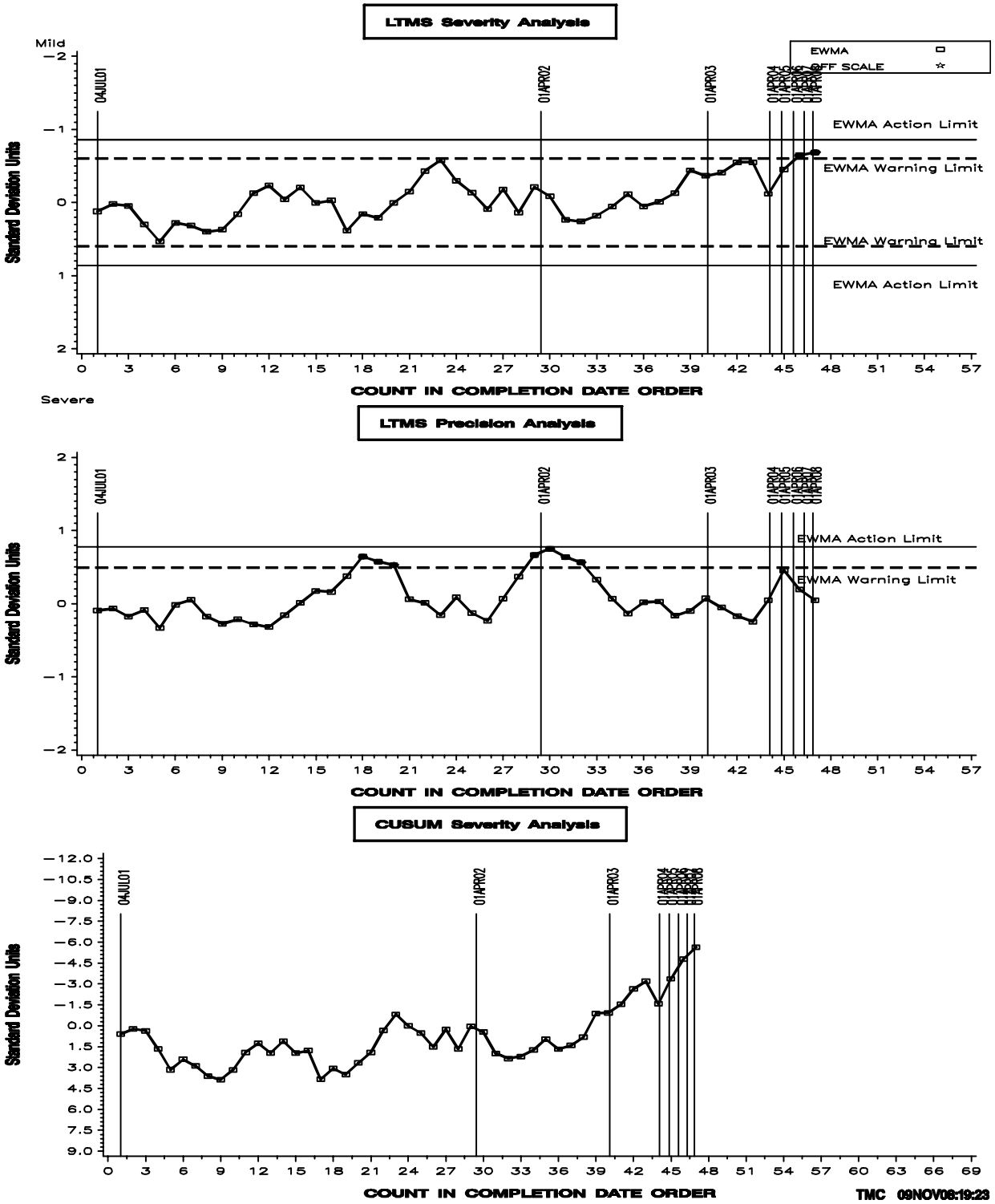
# FIGURE 18 CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

## FINAL TOP GROOVE CARBON (DEMERTS)



# FIGURE 19 CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

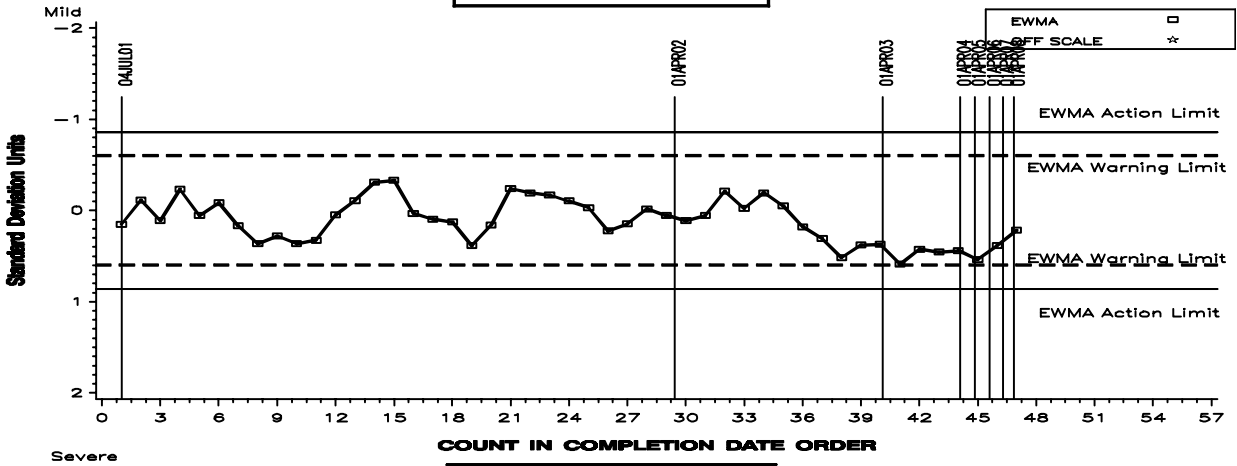
## FINAL TOP LAND CARBON (DEMERITS)



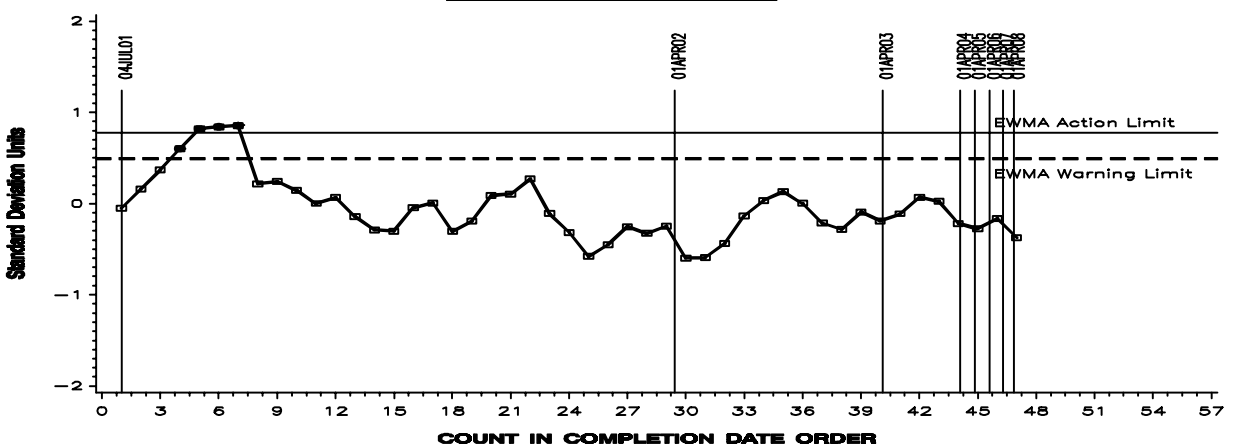
**FIGURE 20**  
**CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA**

**FINAL BOTOC**

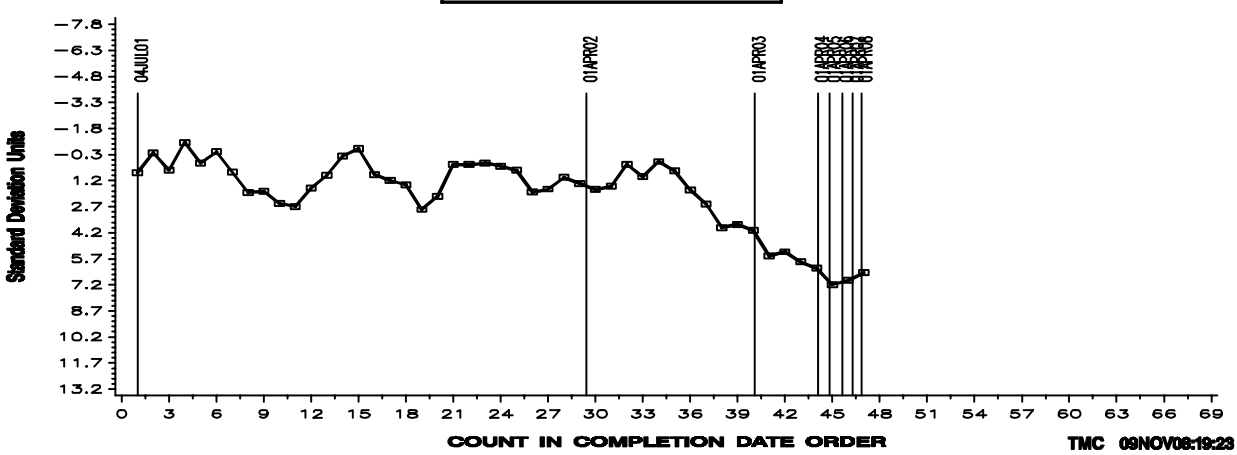
**LTMS Severity Analysis**



**LTMS Precision Analysis**



**CUSUM Severity Analysis**





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

