A Program of ASTM International

Test Monitoring Center

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412-365-1000

MEMORANDUM: 09-051

DATE: October 23, 2009

TO: Jim McCord, Chairman, SCOTE Surveillance Panel

FROM: Jeff Clark

SUBJECT: SCOTE Calibration Testing for the October 2009 ASTM Report Period

The following is a summary of 1K, 1N, 1M-PC, 1P, and 1R reference oil tests completed during the October 2009 ASTM report period, which began on April 1, 2009 and ended on September 30, 2009.

Test Status	**TMC Validity Code**	Number of Tests				
		1K	**1N**	**1M-PC**	**1P**	**1R**
Acceptable Calibration Test	AC	3	3	5	3	0
Failed Calibration Test (LTMS Criteria)	OC	0	0	0	0	0
Operationally Invalid Test	RC or LC	1	0	0	0	0
Aborted	XC	0	1	0	0	0
Total		4	4	5	3	0

The invalid 1K was due to air in the coolant as the result of a combustion chamber leak. The aborted 1N was due to a lost oil charge.

1K Severity:

While Top Groove Fill (TGF) and Weighted Demerits (WDK) are currently within control chart limits, they appear to be in the midst of long term mild trends. Top Land Heavy Carbon (TLHC), and End of Test Oil Consumption (ETOC) are 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) and Top Land Heavy Carbon (TLHC) are both currently in industry severity warning alarms, in the mild direction; mild trends that have continued since 2005 and 2001, respectively. 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) is currently in an industry severity warning alarm and is trending mild for the period. Weighted Deposits (WTD) is currently within industry control chart limits and is 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 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 no 1R reference tests have been run in the last 15 months, and only one test has been run in the last 3 years. Weighted Deposits (WD), Top Groove Carbon (TGC), Beginning of Test Oil Consumption (BTOC), and End of Test Oil Consumption (ETOC) are currently within control chart limits 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 2009 1M-PC precision estimate shows improvement for TGF while WD is within historical levels.

1M-PC Precision Estimates

Parameter	2005	2006	2007	2008	2009
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[A]	Lab Inventory[B]	Estimated Life[C]
809-1	1K, 1N	2678	6	5+ years
811-1	1K, 1N	9	2	0.5 years
811-2	1K, 1N	1475	6	5+ years
820-3	1R	1371	0	5+ years
873-2	1M-PC	338	4	4 years
1004-3	1N, 1P	29	1	0.5 years
1005-2	1P, 1R	0	3	0.5 years

[A]Inventories are expressed in gallons.
[B]Test sample count at active laboratories.
[C]Time estimate is based on most recent activity levels.

The TMC is currently processing approximately 2000 gallons of 1005-3, which will become available once it has completed Quality Assurance analysis.

Information Letters:

Five SCOTE information letters were issued this period. They are summarized in the table below.

SCOTE Information Letters

Test	Information Letter	Date	Topic
1K/1N	09-01, Seq. 29	6/9/09	Corrected tolerance for top ring end gap clearance
	09-02, Seq. 30	8/24/09	Correction to 1K/1N cylinder liner requirements
	09-02, Seq. 30	8/24/09	Removal of requirement to provide hard copy reports
1M-PC	09-01, Seq. 12	8/24/09	Use of 1Y3995 and 5H5657 cylinder liners
	09-01, Seq. 12	8/24/09	Removal of requirement to provide hard copy reports
1P	09-01, Seq. 6	8/24/09	Use of 1Y3997 cylinder liners
	09-01, Seq. 6	8/24/09	Removal of cylinder liner surface finish spec
1R	09-01, Seq. 4	8/24/09	Use of 1Y3997 cylinder liners
	09-01, Seq. 4	8/24/09	Removal of cylinder liner surface finish spec

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/

JAC/jac/mem09-051.jac.doc

Attachments

c: F.M. Farber, TMC
SCOTE Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/diesel/scote/semiannualreports/SCOTE-10-2009.pdf

Distribution: Email

FIGURE 1

CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA

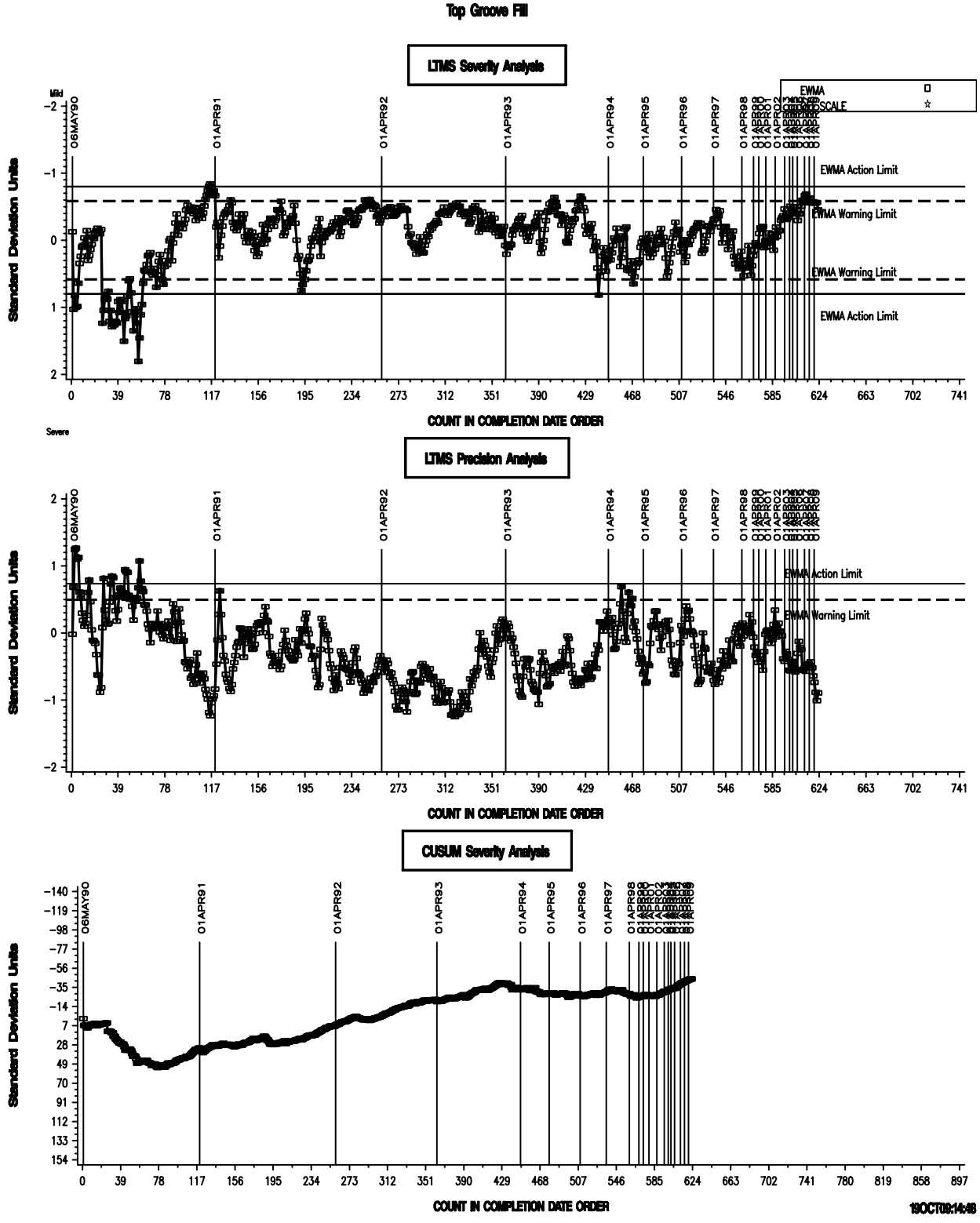

FIGURE 2

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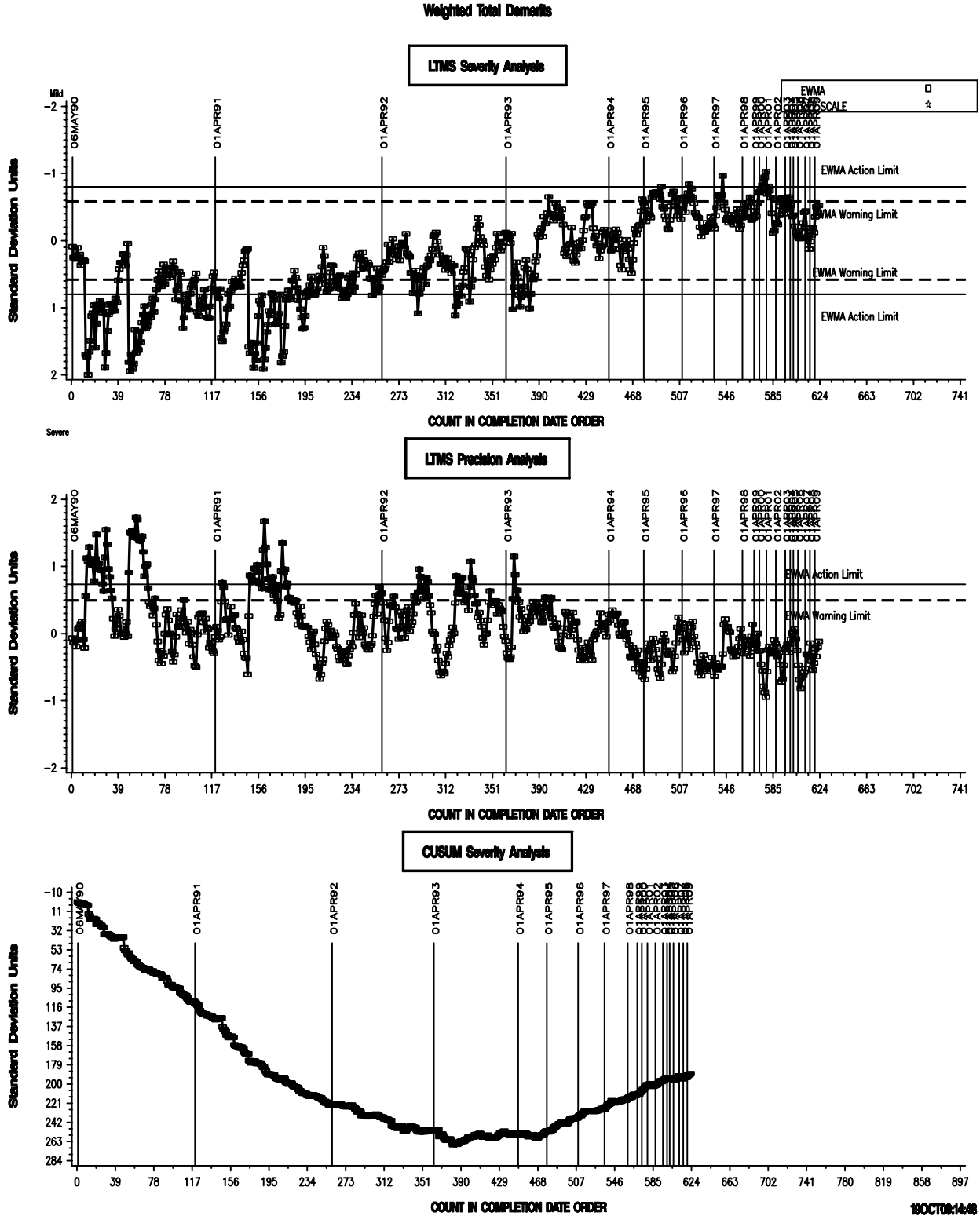

FIGURE 3

CATERPILLAR 1K INDUSTRY OPERATIONALLY VALID DATA

FINAL TRANSFORMED TOP LAND HEAVY CARBON

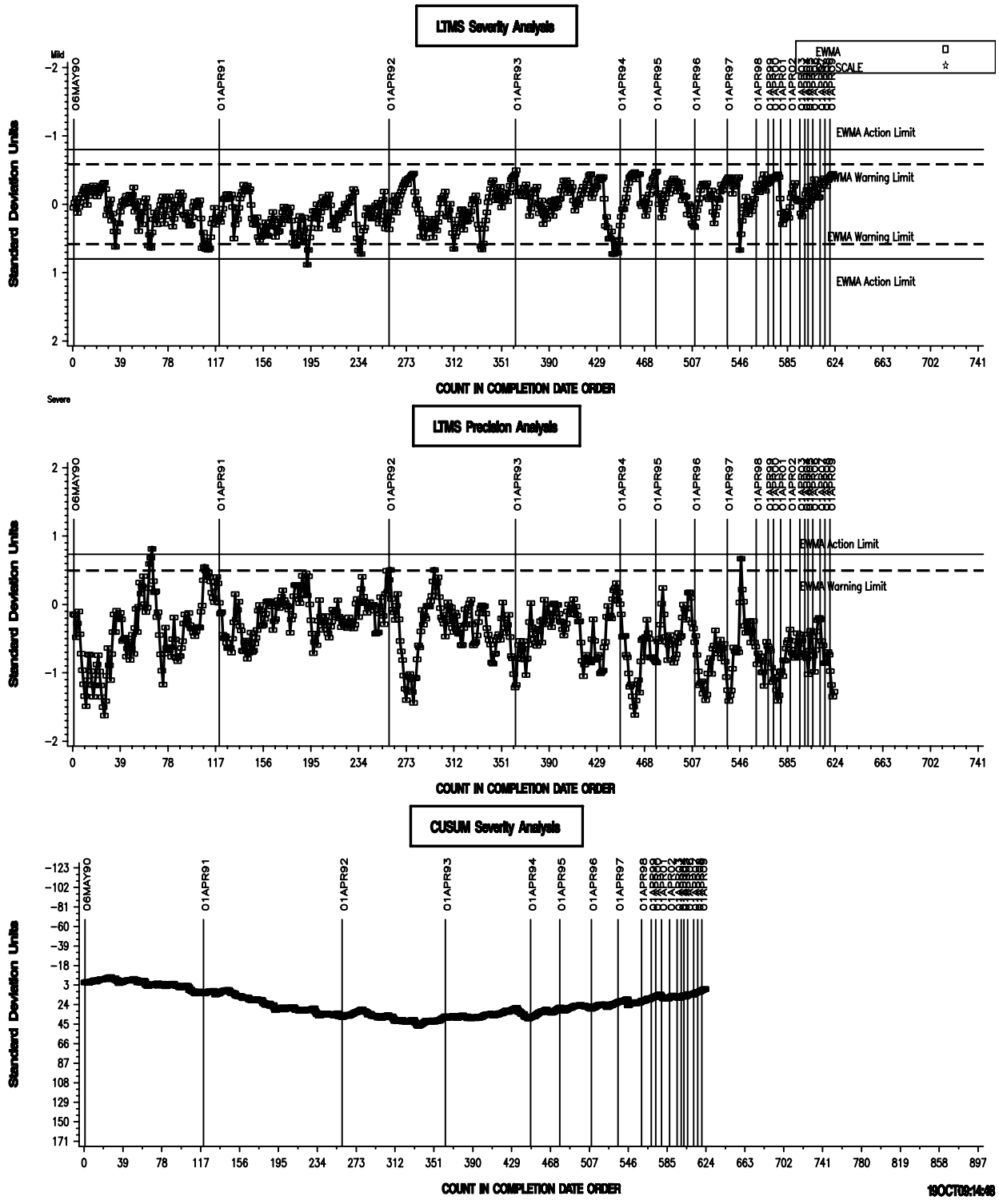

FIGURE 4

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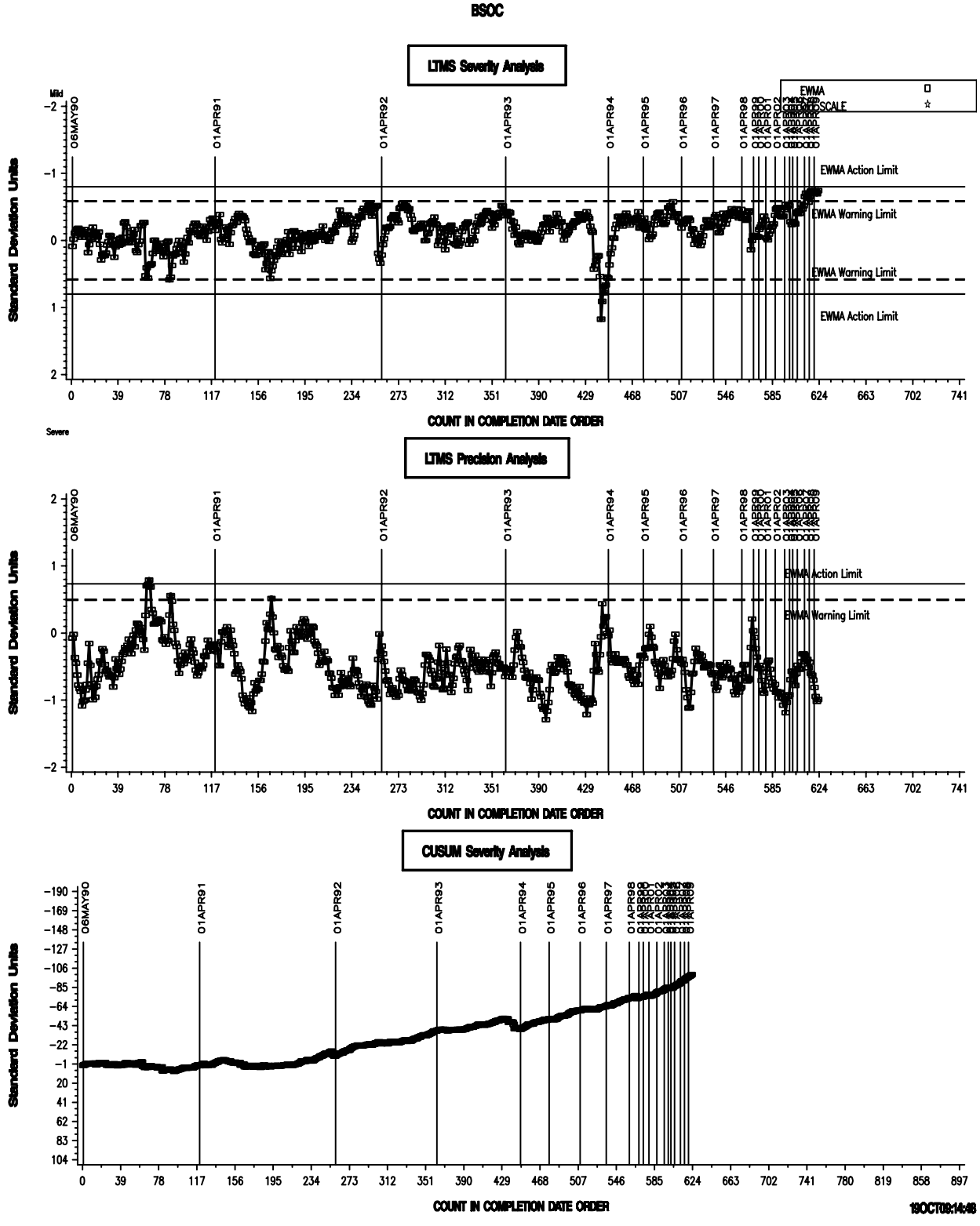

FIGURE 5

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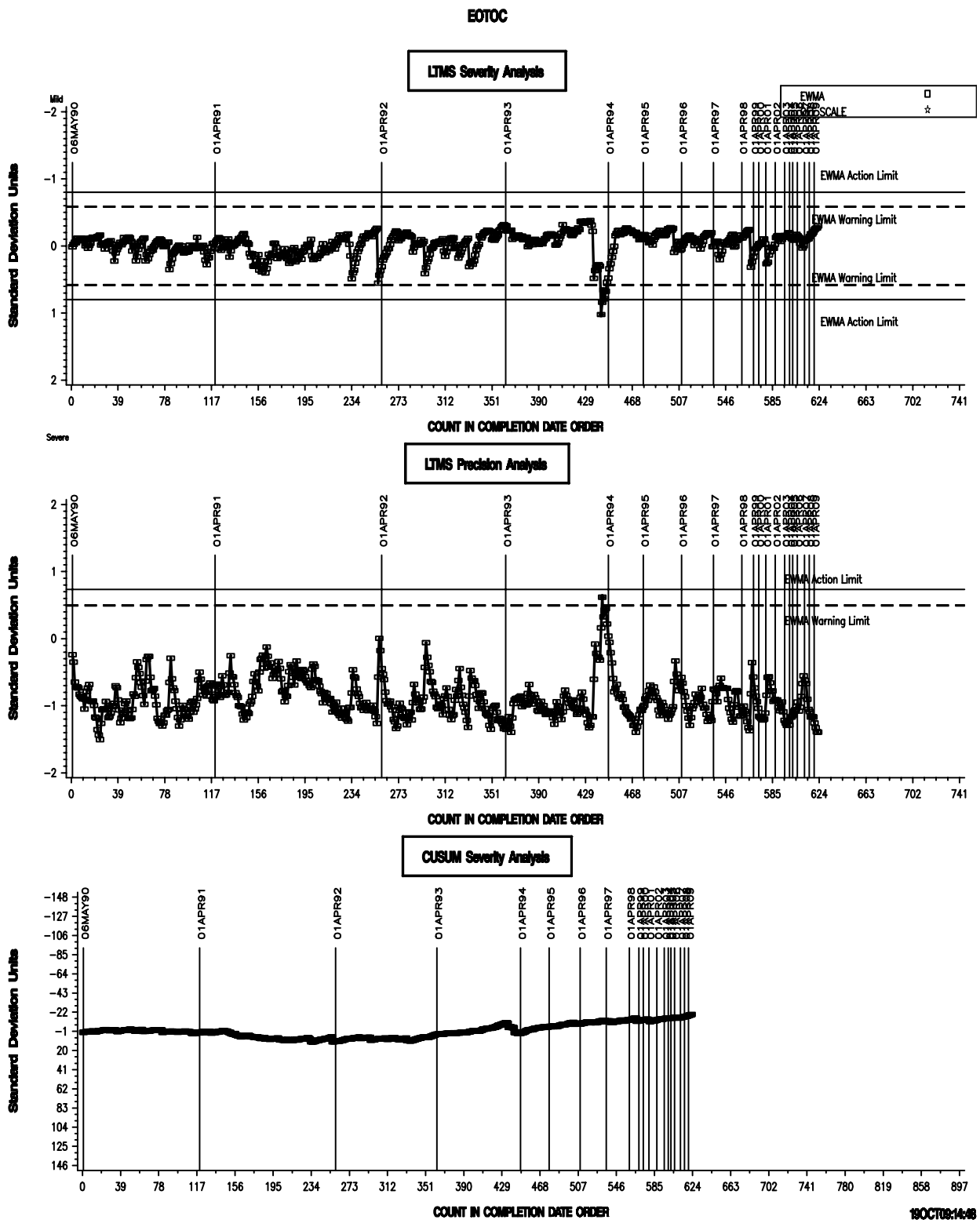

FIGURE 6

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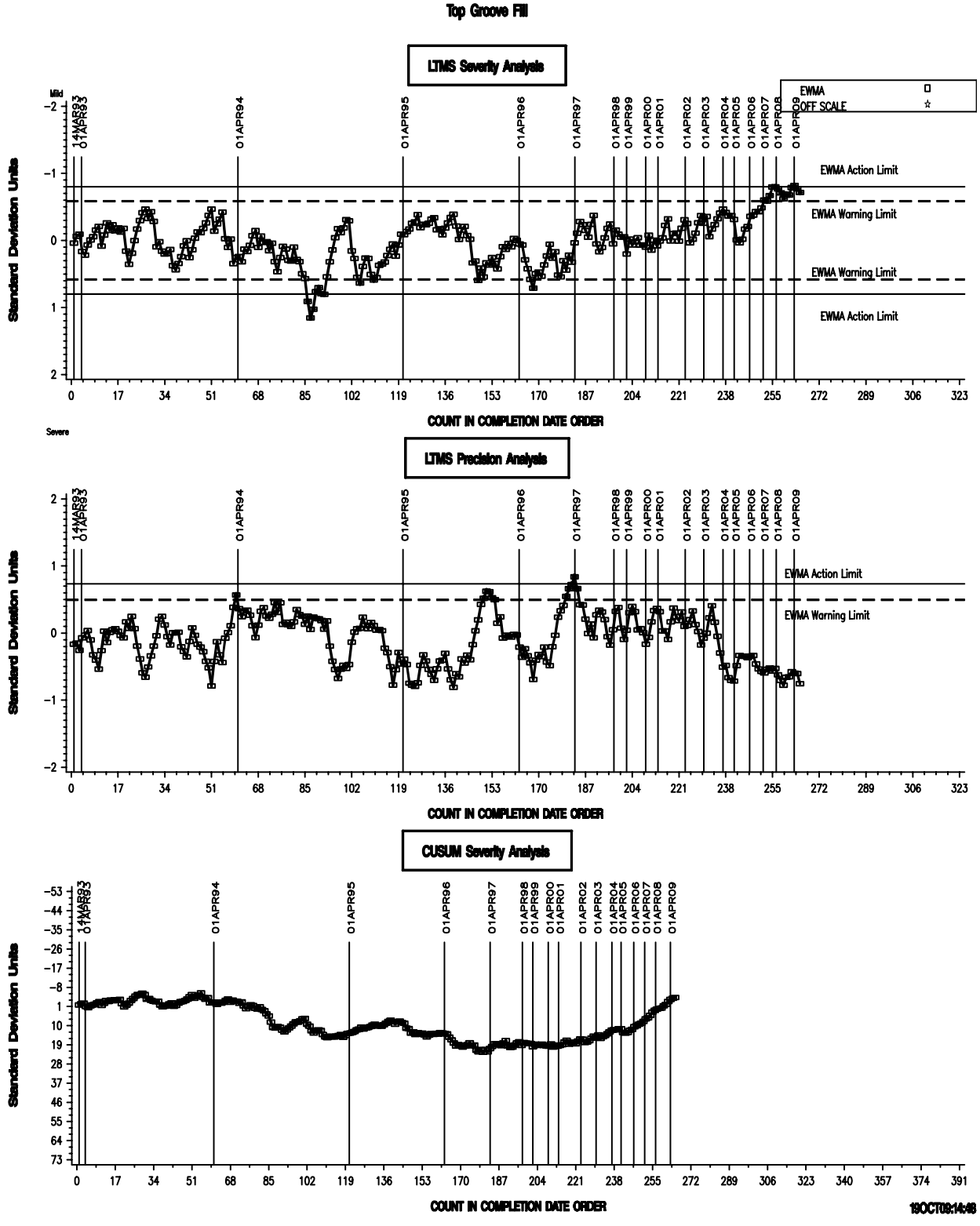

FIGURE 7

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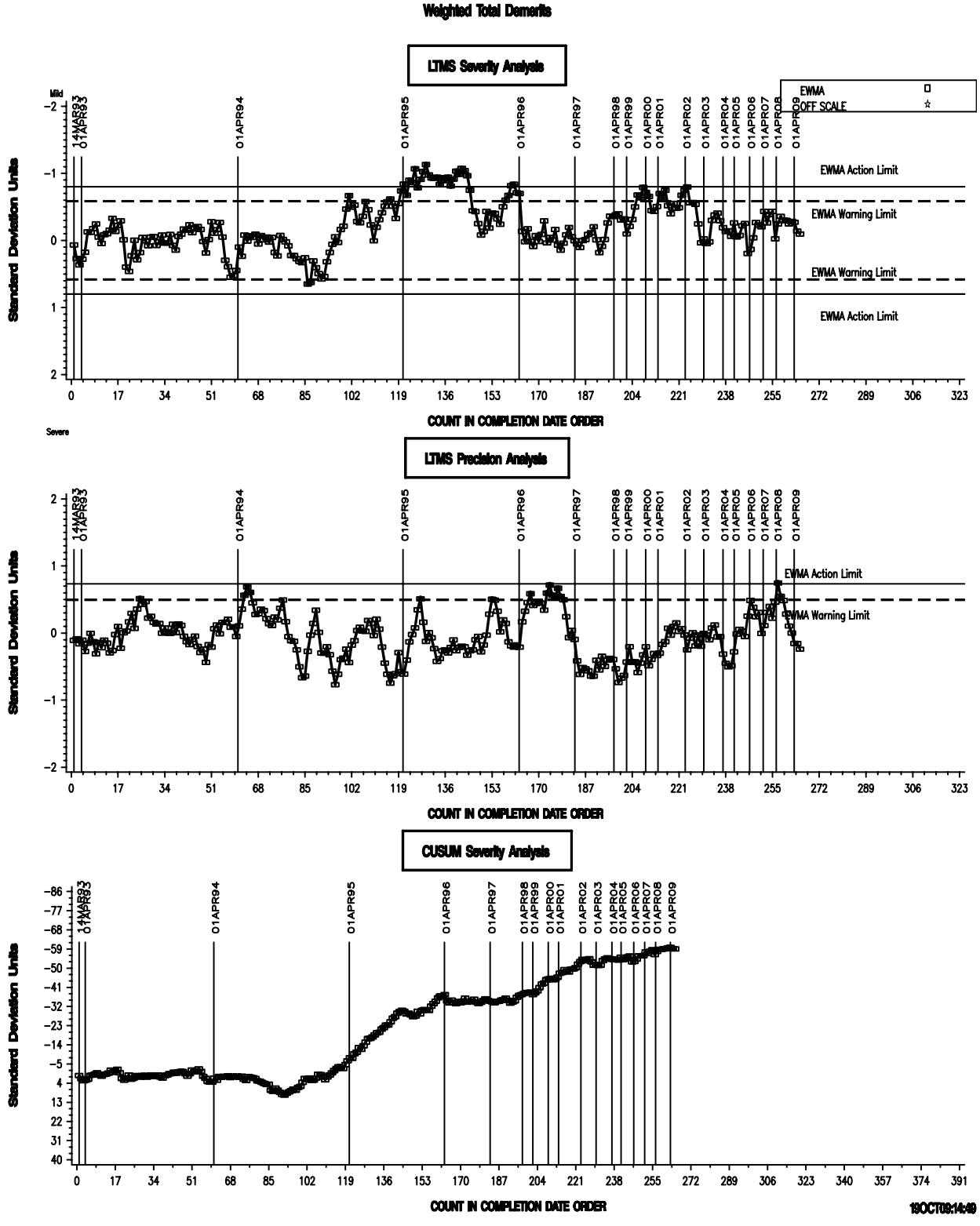

FIGURE 8

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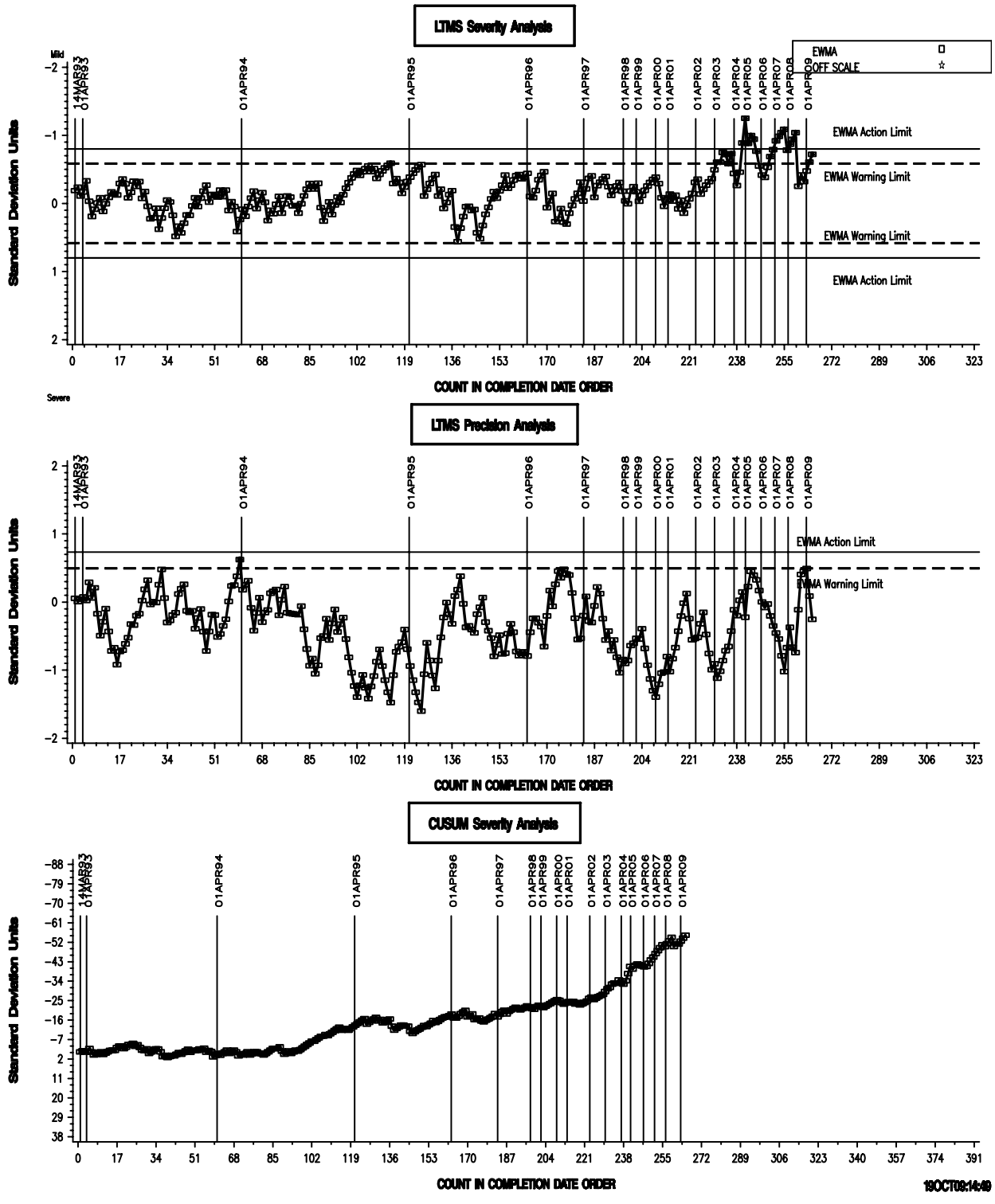

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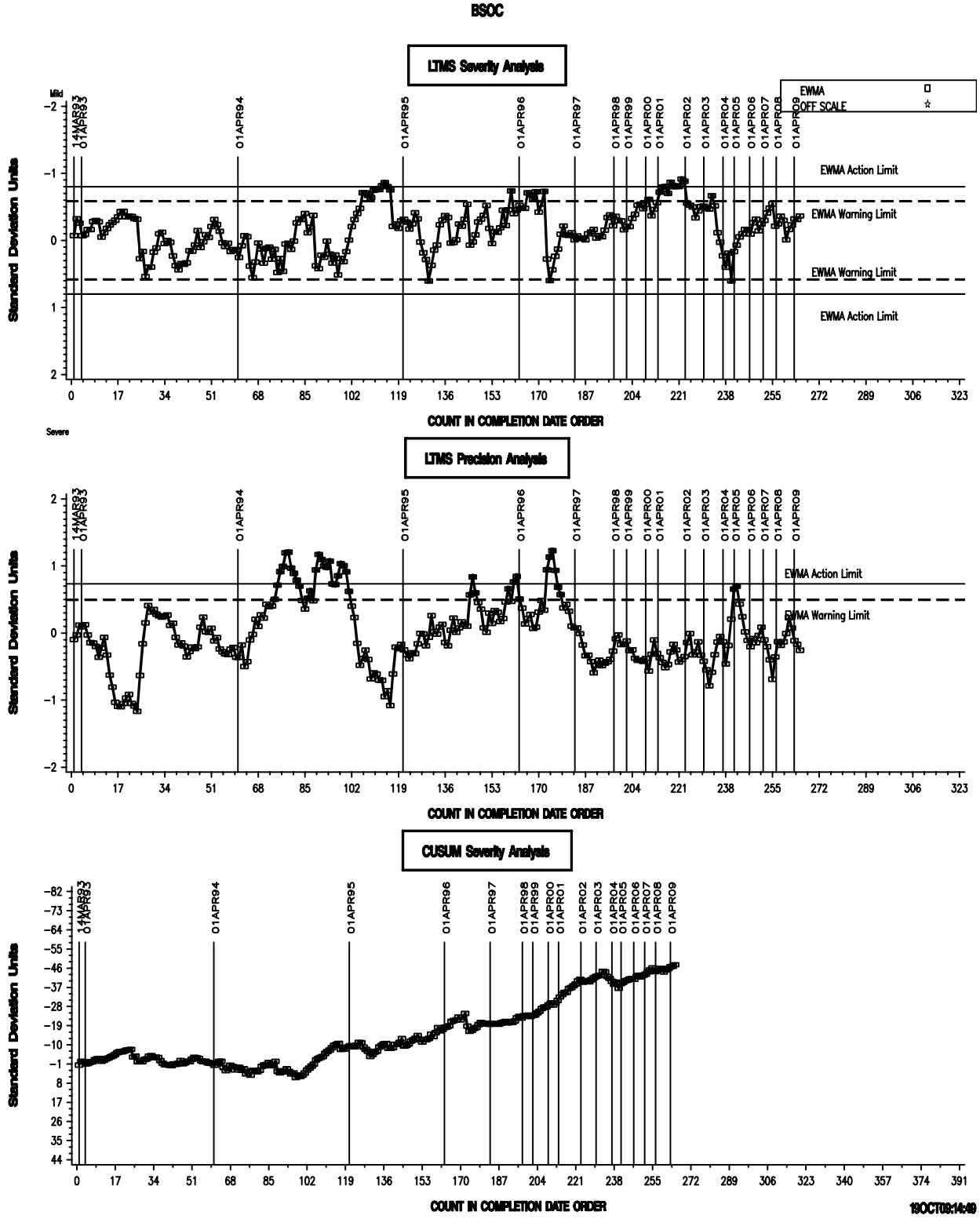
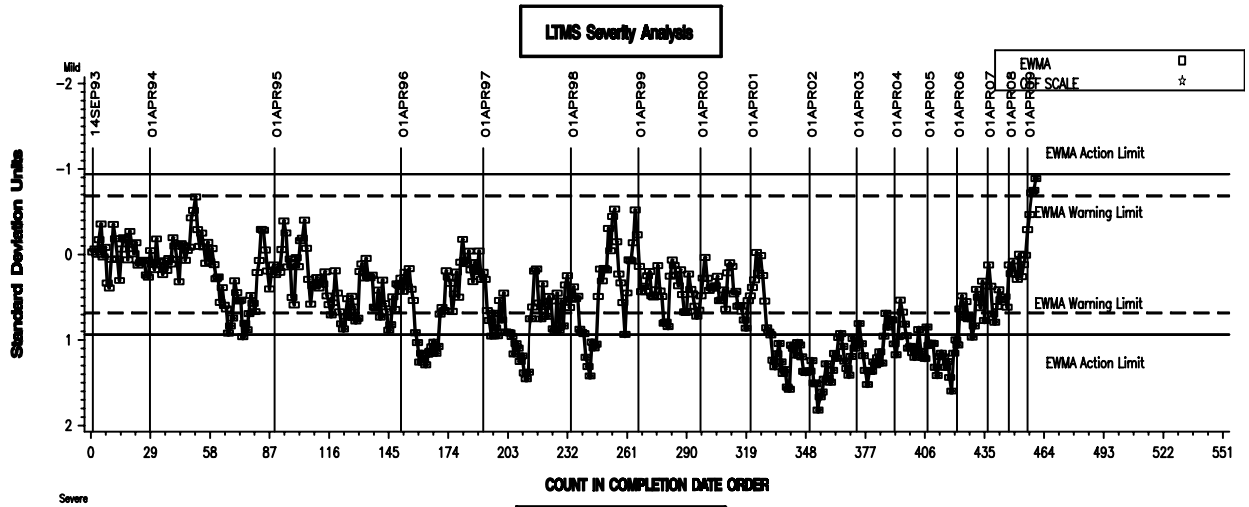
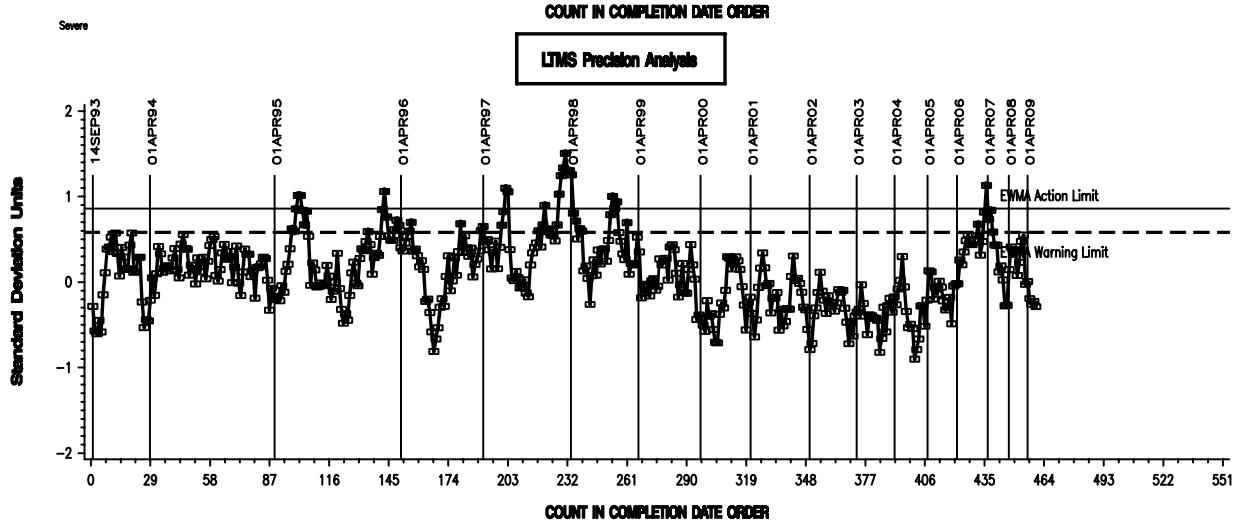


FIGURE 10

CATERPILLAR 1M–PC INDUSTRY OPERATIONALLY VALID DATA

FINAL TOP GROOVE FILLING





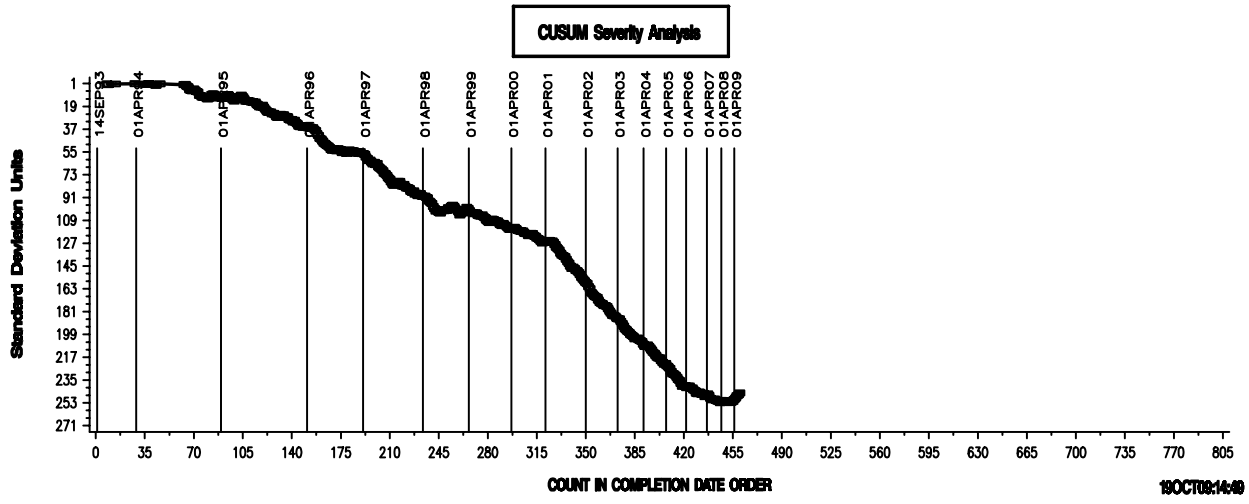


FIGURE 11

CATERPILLAR 1M–PC INDUSTRY OPERATIONALLY VALID DATA

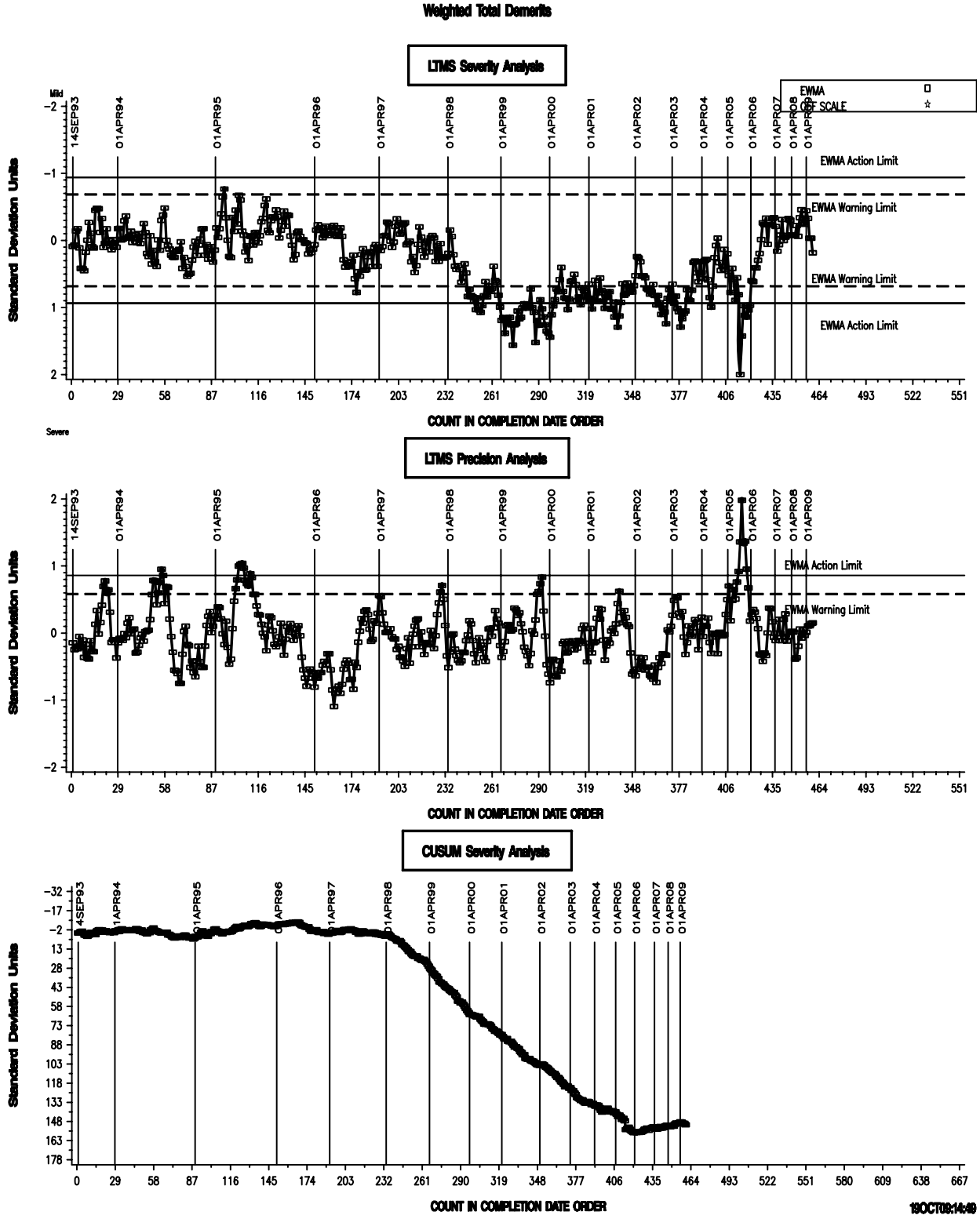


FIGURE 12

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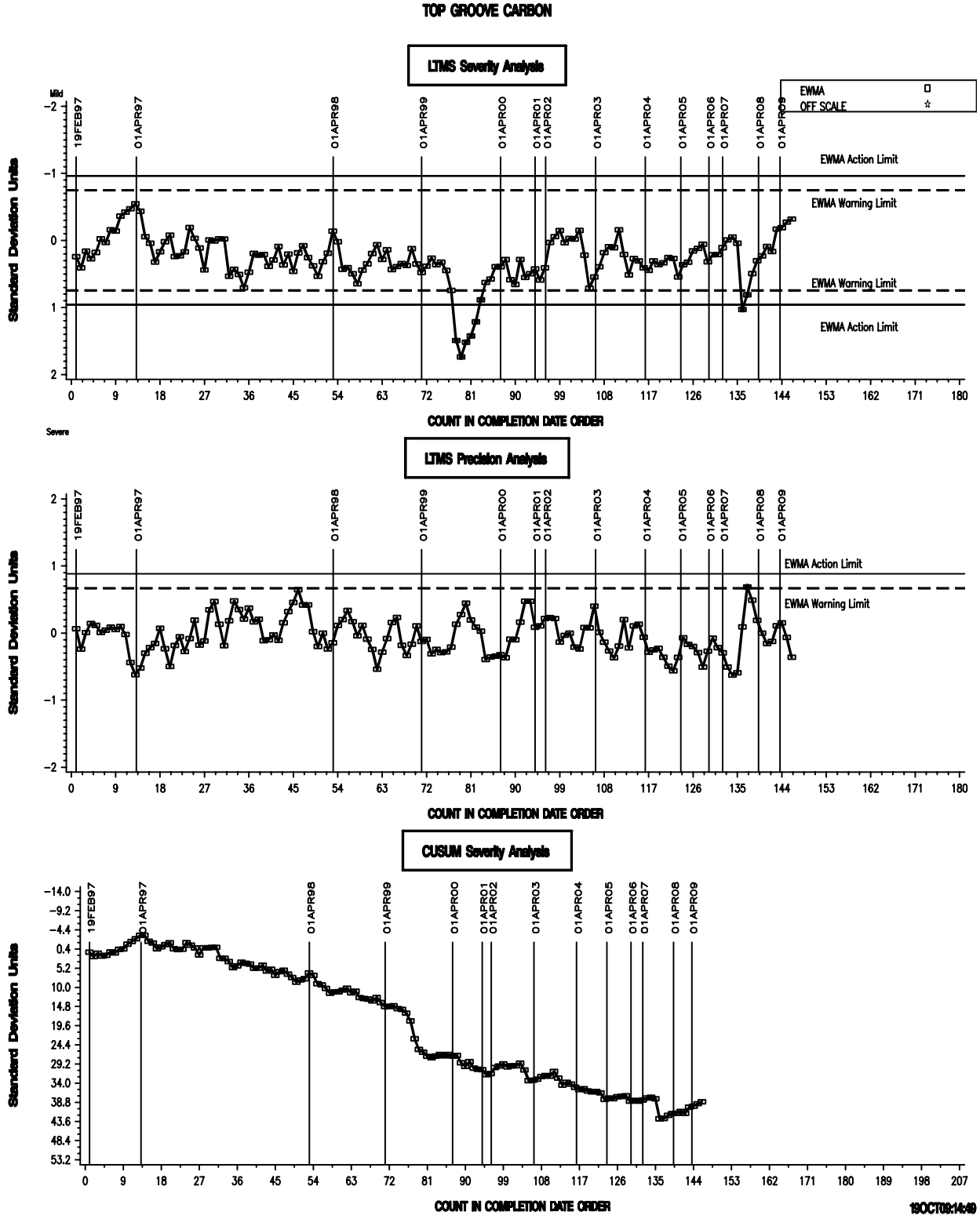

FIGURE 13

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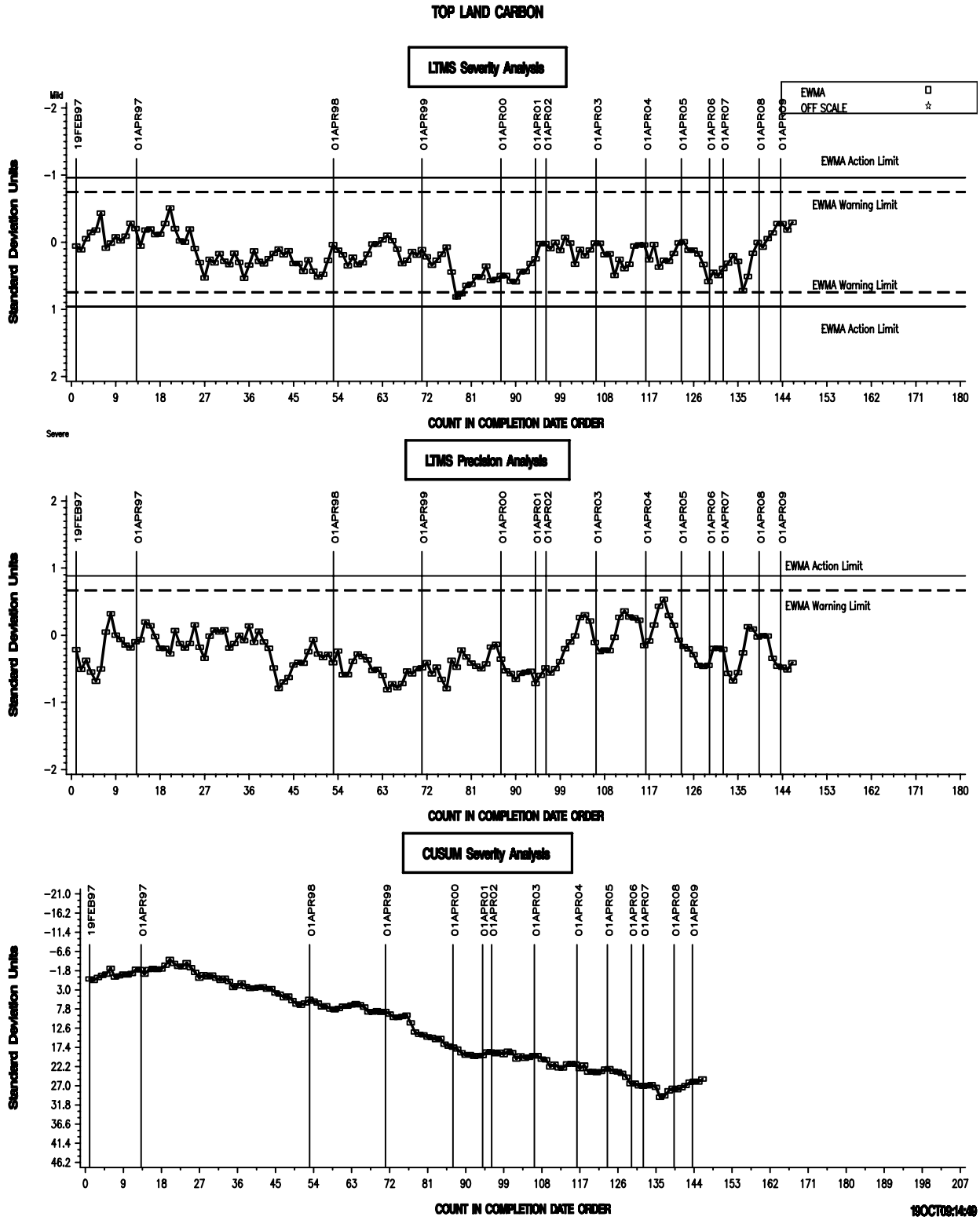

FIGURE 14

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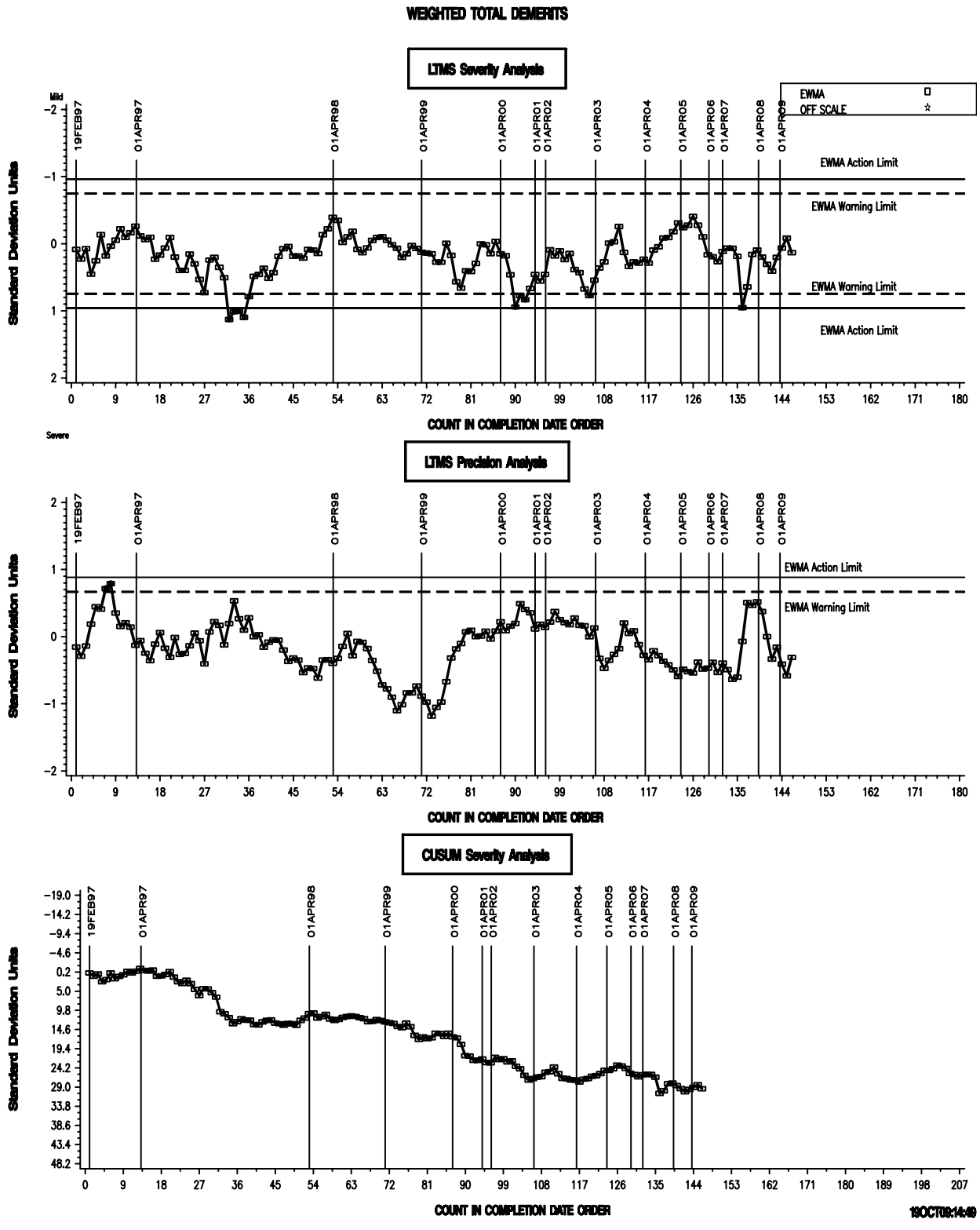
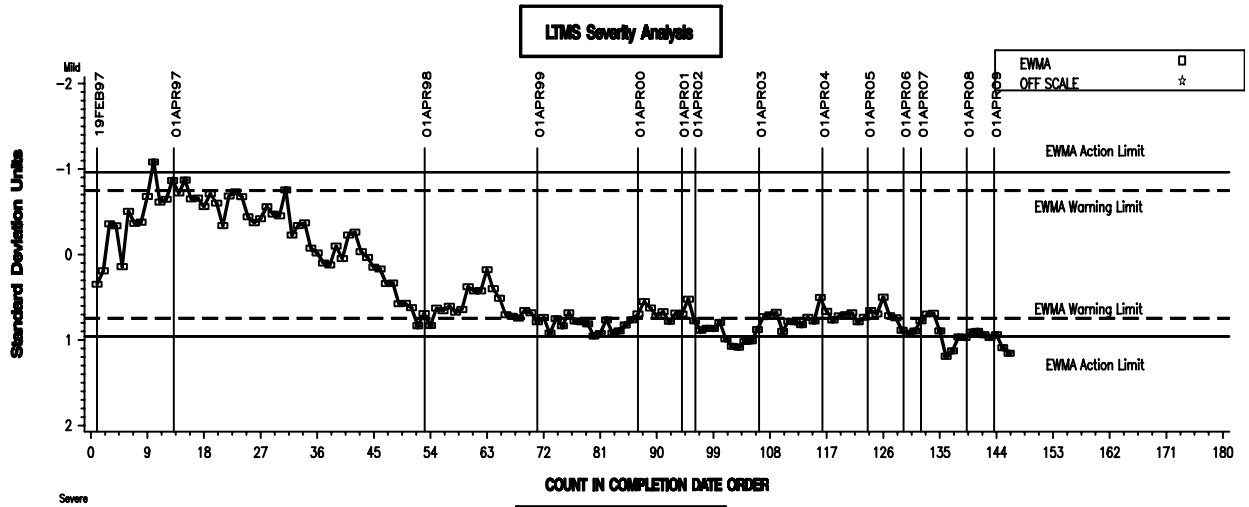
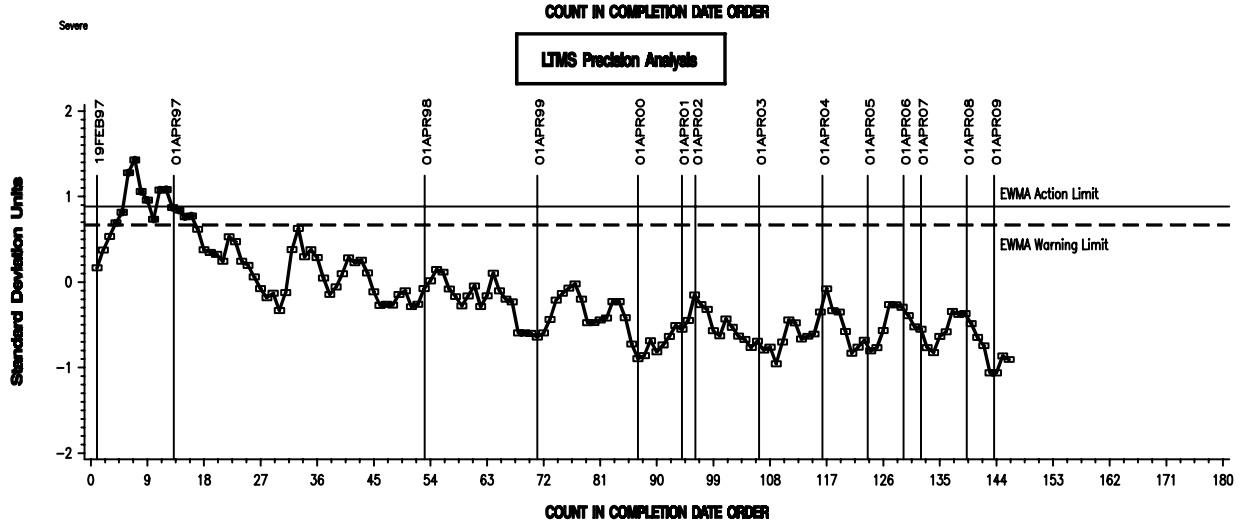


FIGURE 15

CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA

OIL CONSUMPTION





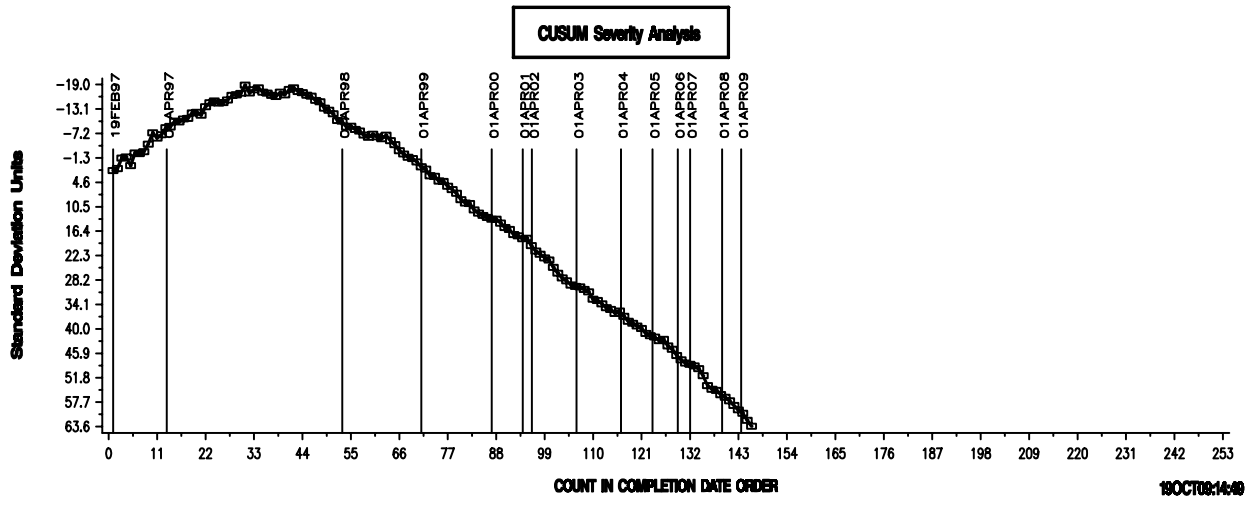


FIGURE 16

CATERPILLAR 1P INDUSTRY OPERATIONALLY VALID DATA

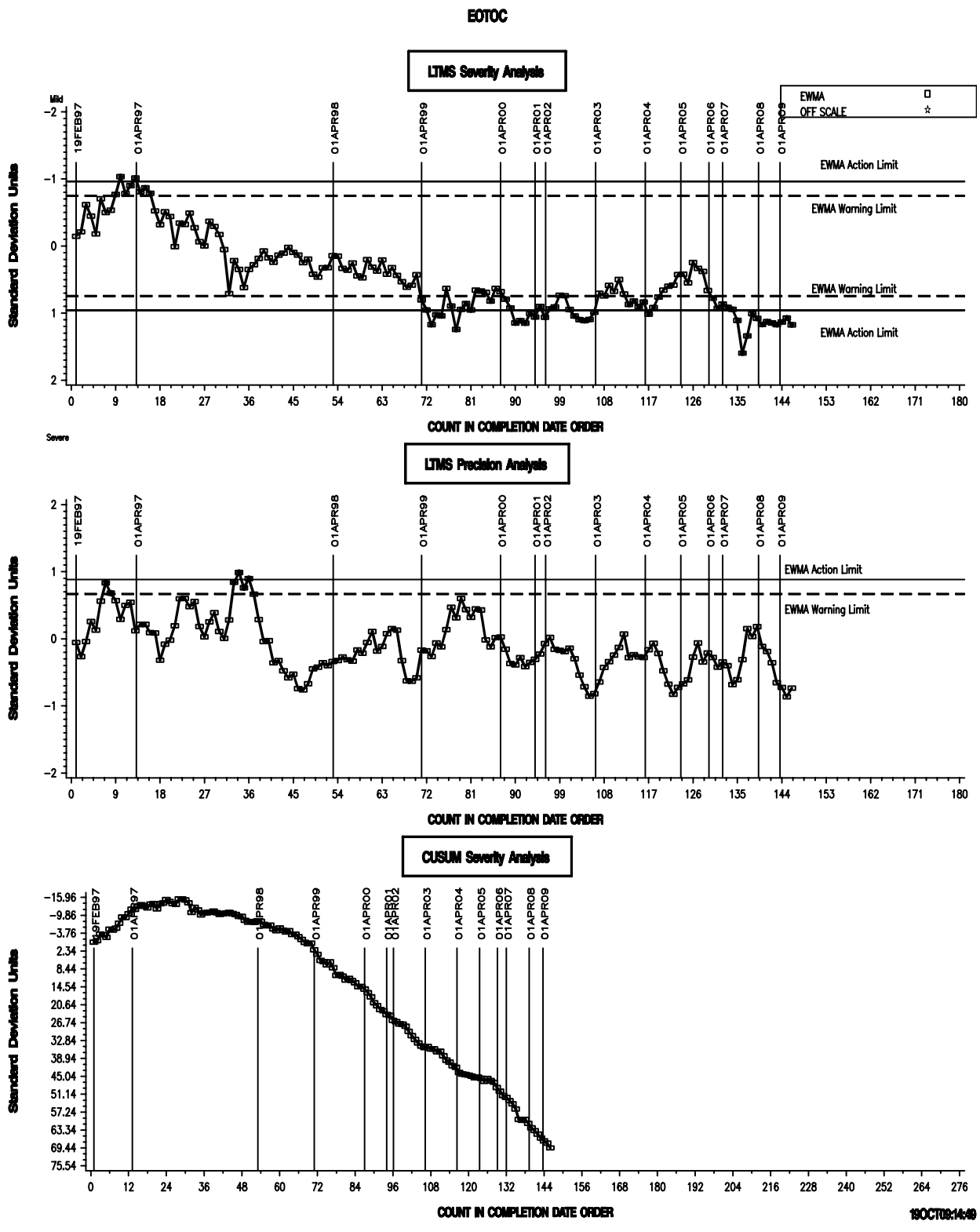


FIGURE 17

CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

FINAL WEIGHTED TOTAL DEMERITS (DEMERITS)

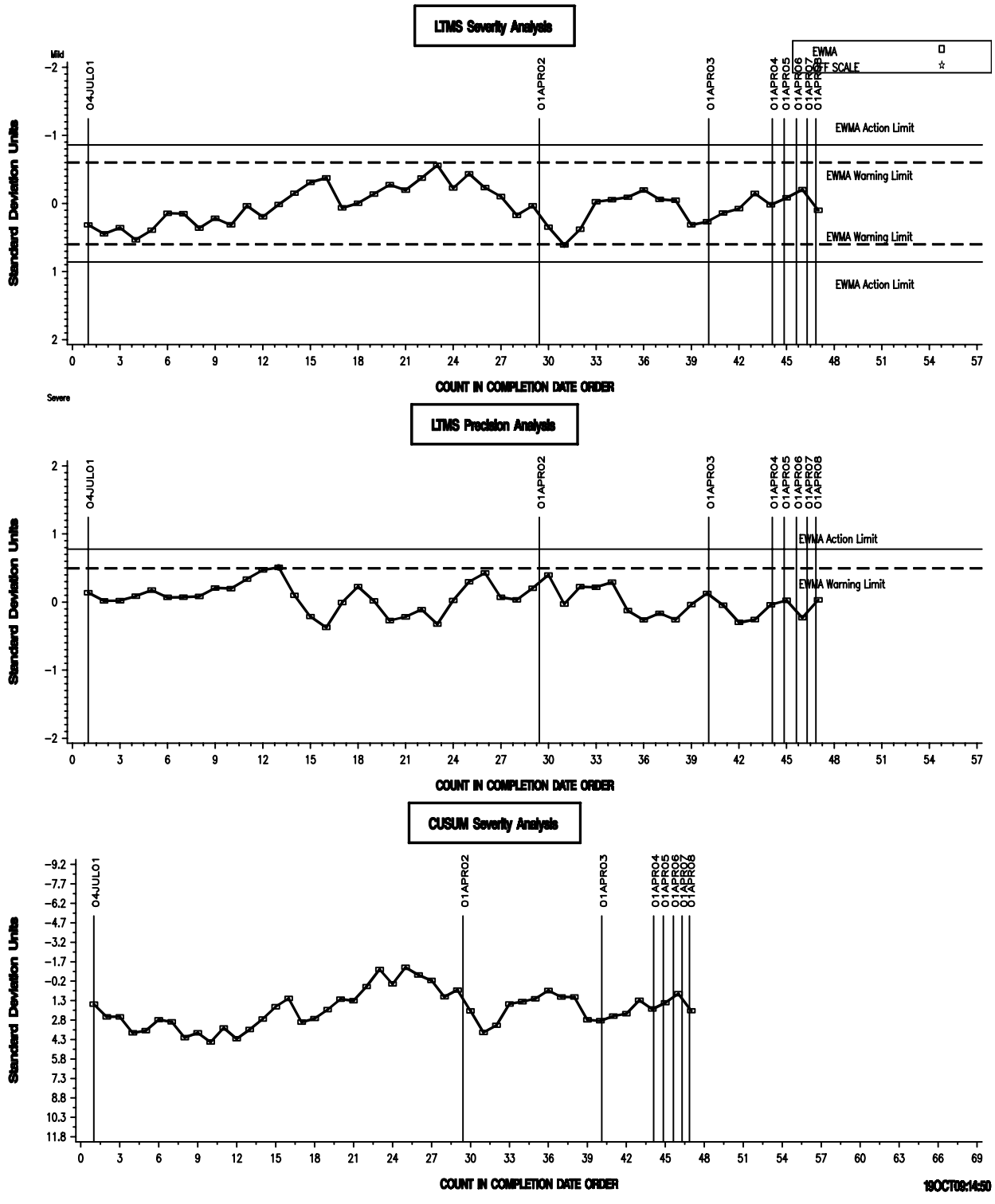


FIGURE 18

CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

FINAL TOP GROOVE CARBON (DEMERITS)

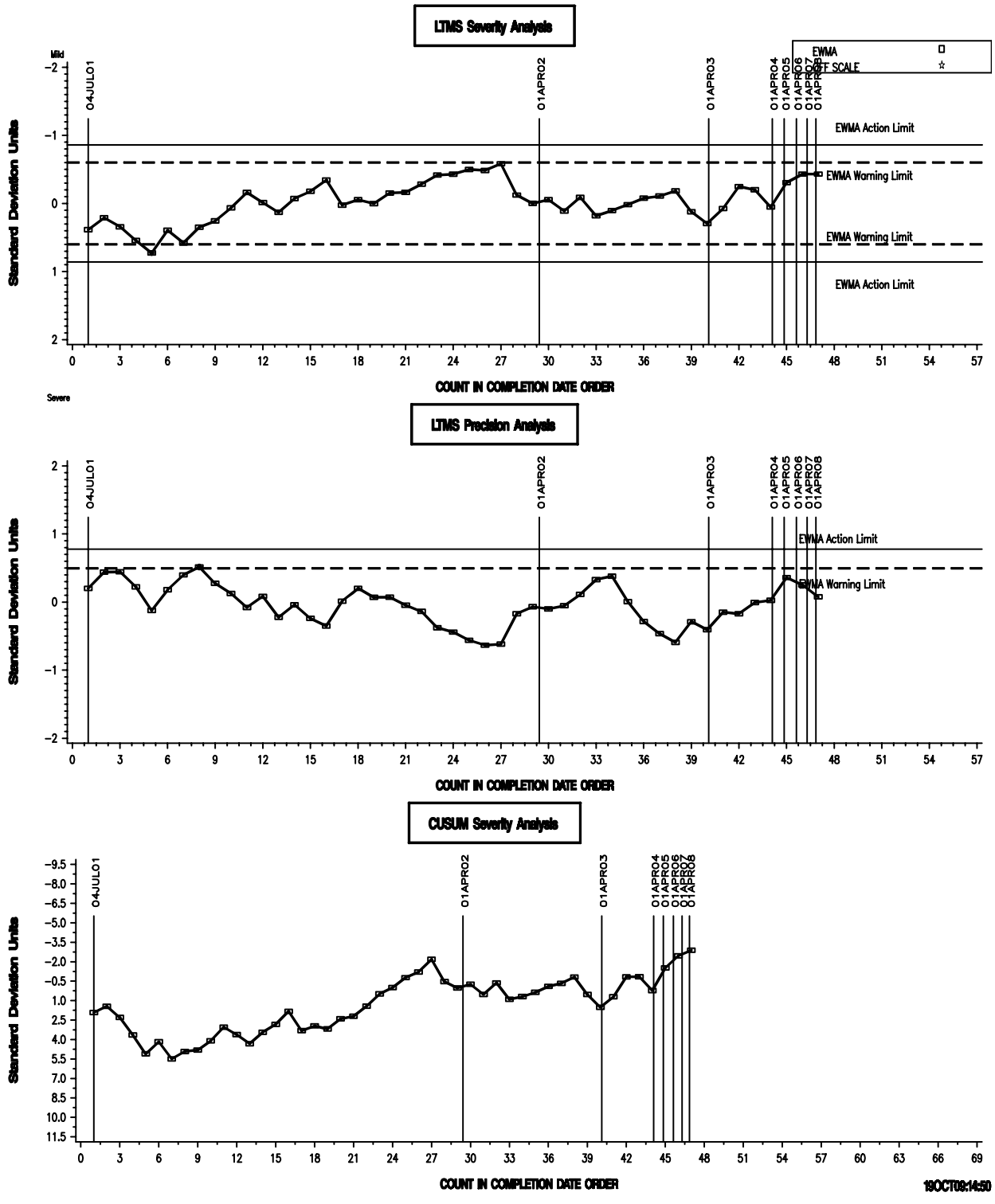


FIGURE 19

CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA

FINAL TOP LAND CARBON (DEMERITS)

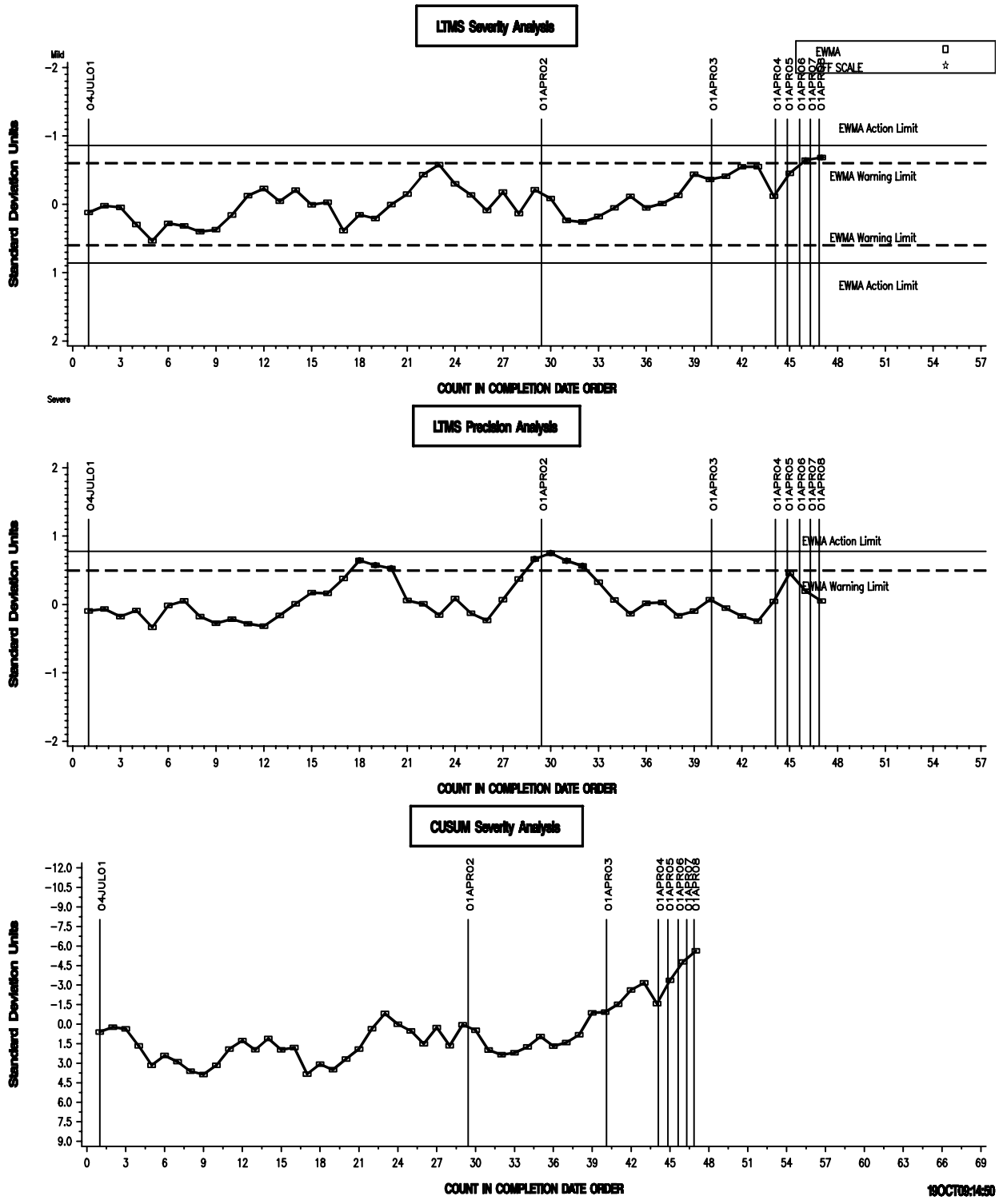


FIGURE 20

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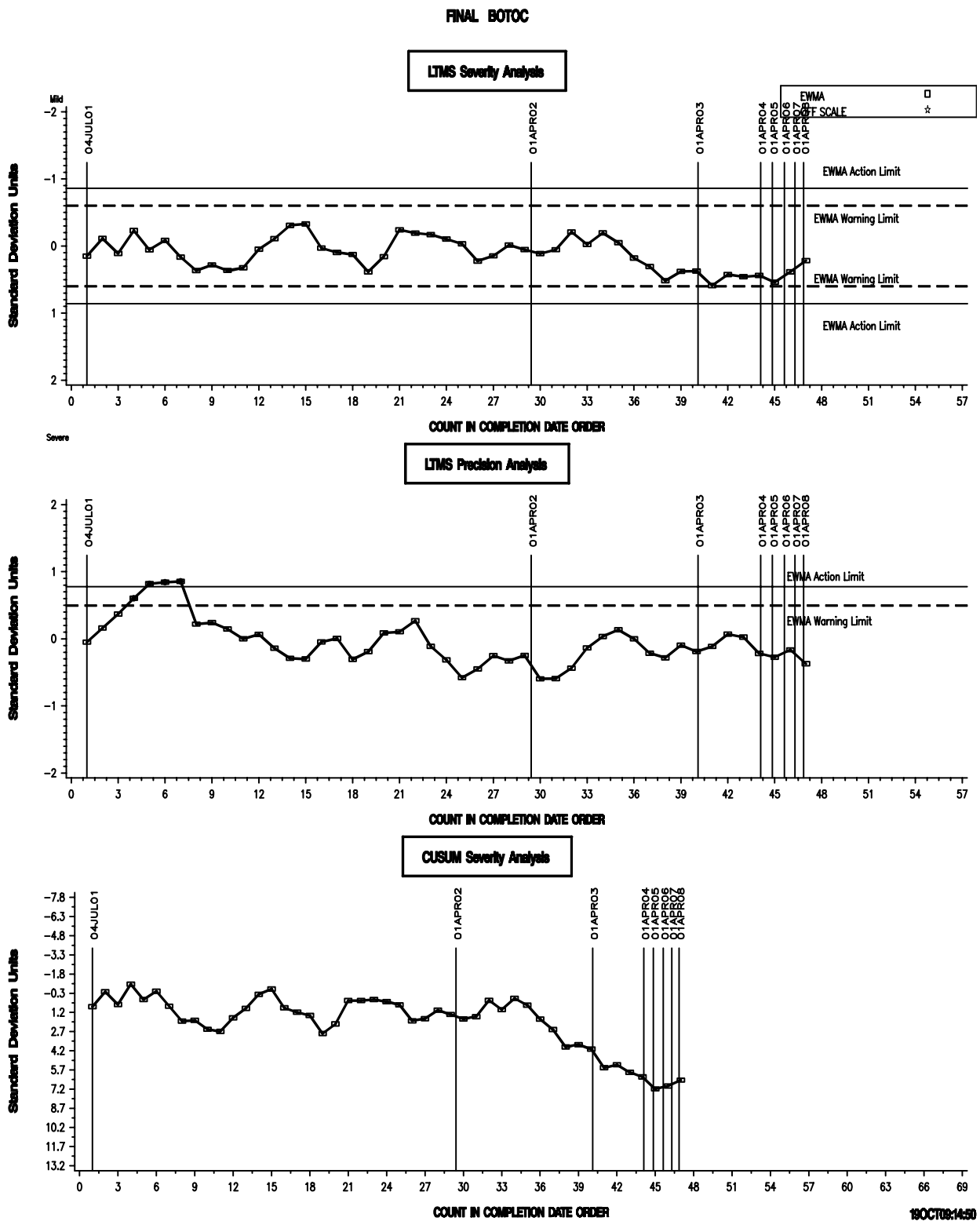

FIGURE 21

CATERPILLAR 1R INDUSTRY OPERATIONALLY VALID DATA