Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206-4489
(412) 365-1000

MEMORANDUM: 08-013

DATE: April 2, 2008

TO: Chris Schenkenberger, Chairman, L-60-1 Surveillance Panel

FROM: Donald Lind

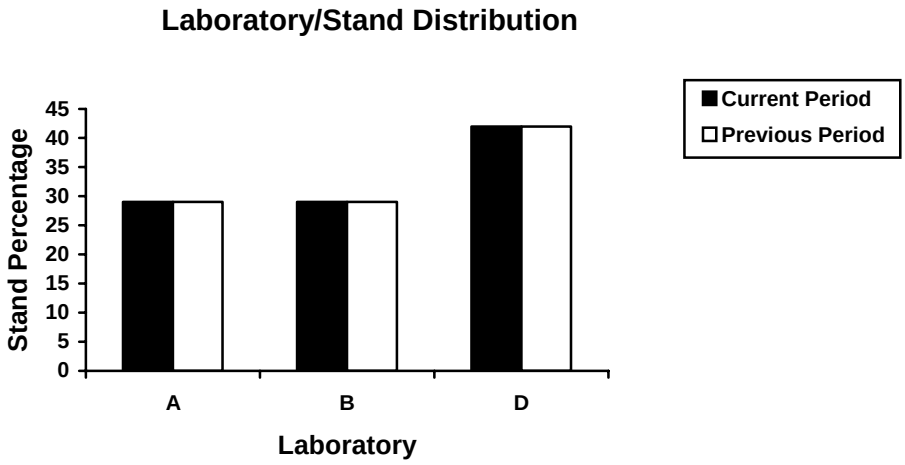
SUBJECT: L-60-1 Reference Test Status from October 1, 2007 through March 31, 2008

The following is a summary of the L-60-1 reference oil tests that were reported to the Test Monitoring Center during the period October 1, 2007 through March 31, 2008.

Lab/Stand Distribution

	Reporting Data	Calibrated as of 3/31/08
Number of Laboratories	3	3
Number of Stands	7	7

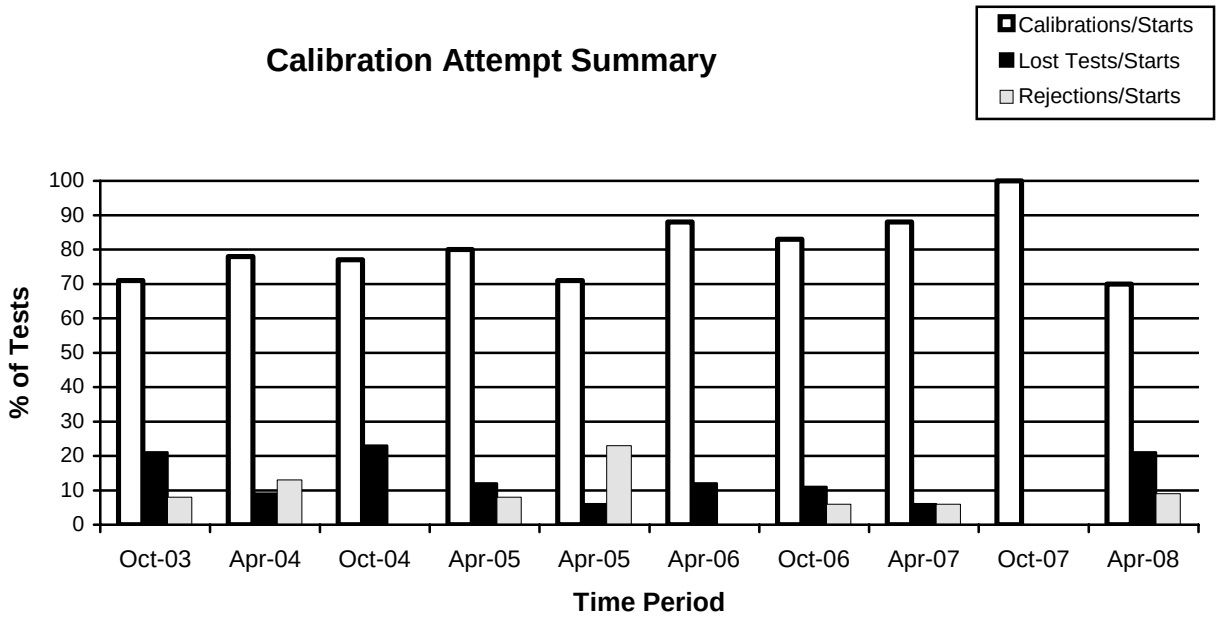
The following chart shows the laboratory/stand distribution:



The following summarizes the status of the reference oil tests reported to the TMC:

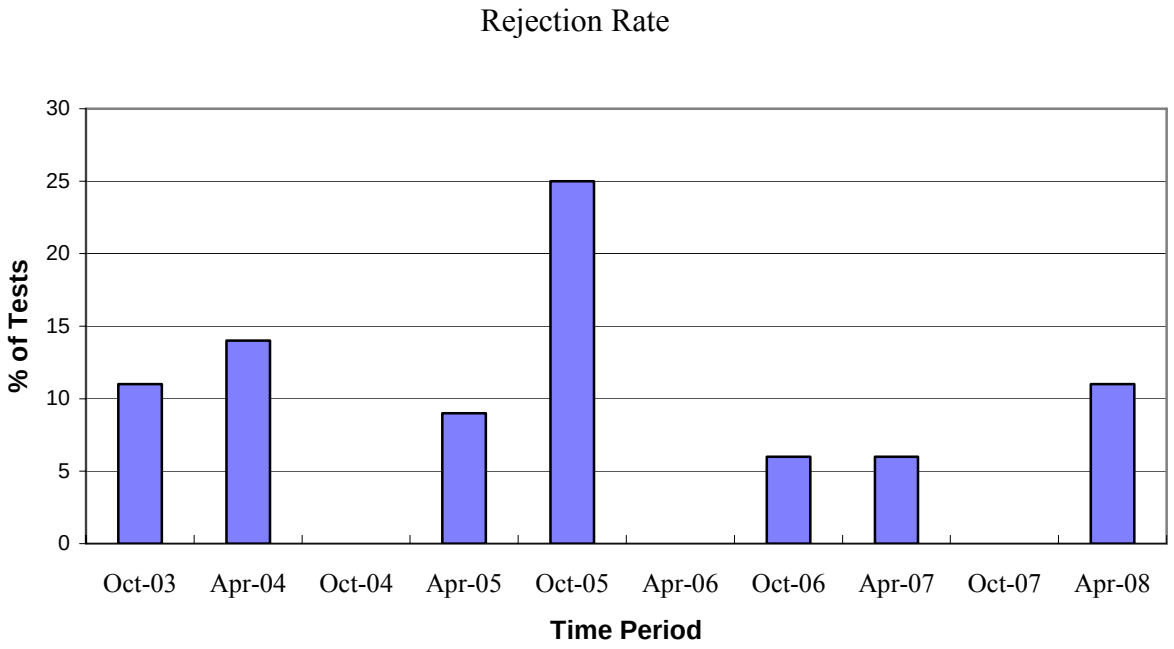
	TMC Validity Codes	No. of Tests
Operationally and Statistically Acceptable	AC	16
Statistically Invalid Calibration Test	OC	2
Operationally Invalid, Laboratory Judgment	LC	3
Operationally Invalid, (Laboratory & TMC Judgment)	RC	0
Aborted	XC	2
Total		23

Calibrations per start, lost tests per start and rejection per start rates are summarized below:

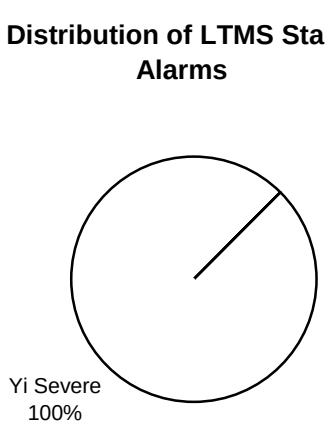


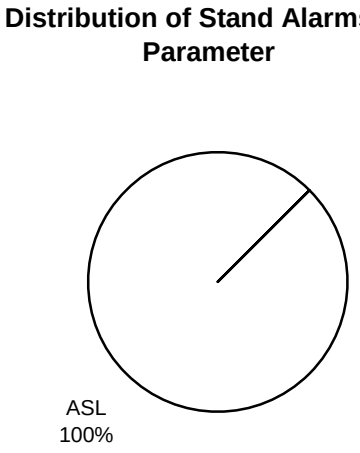
The calibration per start rate has decreased when compared to the previous period. The lost test per start and rejected test per start rates have increased with respect to the previous period.

There were two statistically rejected tests reported this period. The operationally valid statistically rejected test rate, as shown below, has increased with respect to the previous period.



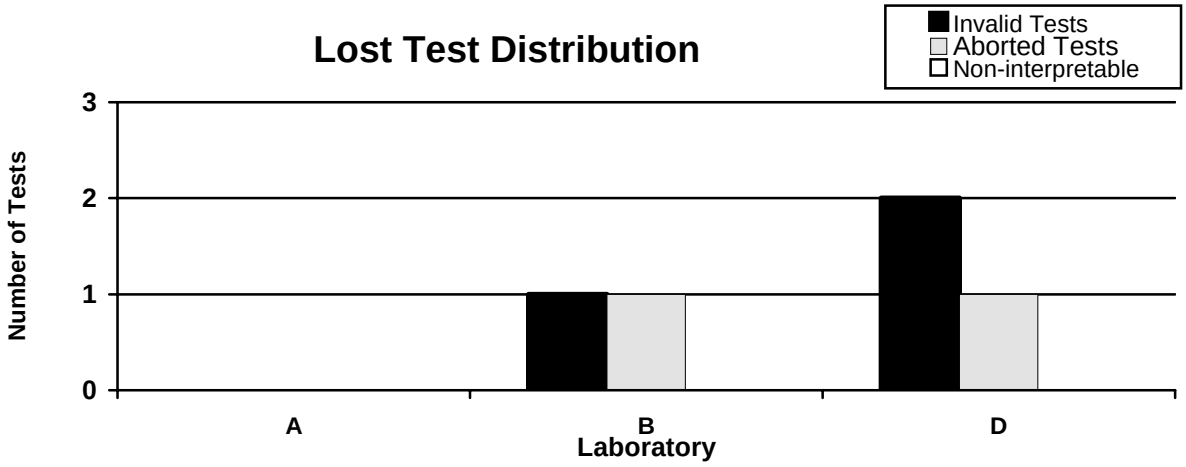
A detailed list of reasons tests failed the acceptance criteria is shown in Table 1. The following charts summarize these reasons with a breakdown by parameter of the failed tests:





No LTMS deviations were written this period. There have been no LTMS deviations written in previous report periods.

The laboratory distribution of lost tests is shown below. A detailed list of reasons for tests declared operationally invalid, aborted, or non-interpretable is shown in Table 2.



Severity and Precision

For this period, the mean delta/s was 0.35 severe (2.86 %) for Viscosity Increase, 0.06 severe (0.04 % wt.) for Pentane Insolubles, 0.03 severe (0.02 % wt.) for Toluene Insolubles, -0.43 severe (-0.37 merits) for Average Carbon/Varnish and -0.72 severe (-0.07 merits) for Average Sludge. Below are tables illustrating laboratory severity and pooled s:

Laboratory Severity for This Report Period					
Lab	Viscosity	Pentane	Toluene	Carbon Varnish	Sludge
A	0.51	-0.12	-0.05	-0.04	-0.35
B	0.07	0.01	0.30	-0.74	-1.01
D	0.44	0.17	-0.10	-0.42	-0.71

Pooled Standard Deviation Table			
Parameter	Report Period Pooled s (All Oils)	Historical Pooled s (All Oils)	Pooled s Values Used for Severity Adjustment Calculations
Viscosity	0.06	0.13	0.08
Pentane	0.15	0.34	0.20
Toluene	0.26	0.45	0.34
Carbon Varnish	0.18	0.40	0.44
Sludge	0.16	0.23	0.16

Industry Control Charts

Figures 1 through 5 show the industry control charts through March 31, 2008. Figures 6 through 10 are industry control charts of the last 50 test results. The industry alarms triggered this report period are detailed below.

Pentane Insolubles

There were no industry EWMA severity or precision alarms this report period.

Toluene Insolubles

There were no industry EWMA severity or precision alarms this report period.

Viscosity Increase

There were no industry EWMA severity or precision alarms this report period.

Sludge

There were six industry EWMA severity warning alarms and no industry EWMA precision alarms this report period. The severity alarms were triggered by two severe test results. The one severe result was from lab B (-1.9 Δ/s) and the other one from lab D (-2.1 Δ/s).

Carbon Varnish

There were no industry EWMA severity or precision alarms this report period.

TMC Lab Visits

There was one lab visit conducted this report period with no discrepancies to report.

Information Letters

There was one information letter issued this report period. Information Letter 07-01, Sequence Number 34 was issued on November 15, 2007. Items changed with this information letter are documented in the L-60-1 timeline (Table 3).

Reference Oil Status

The following is a listing of oils used for calibration testing along with the expected number of tests remaining at the Test Monitoring Center and at the testing laboratories. L-60-1 reference oils are shipped in quantities of 1/2 pint per test.

Oil	Number of Tests Remaining			
	Lab A	Lab B	Lab D	TMC
133	6	5	4	1680
148-1	2	5	2	656
151-2	2	5	1	192

Attachments

c: J. L. Zalar
F. M. Farber
L-60/L-60-1 Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/semiannualreports/l601-04-2008.pdf

Distribution: Email

Listing of Tables and Figures Included as Part of This Report to the L-60-1 Surveillance Panel

Table 1 Summarizes the Reasons for Failed Tests

Table 2 Summarizes the Reasons for Lost Tests

Table 3 is the L-60-1 Industry Timeline.

Figure 1 is the Industry Control Chart for L-60-1 Pentane Insolubles.

Figure 2 is the Industry Control Chart for L-60-1 Average Sludge.

Figure 3 is the Industry Control Chart for L-60-1 Toluene.

Figure 4 is the Industry Control Chart for L-60-1 Carbon/Varnish.

Figure 5 is the Industry Control Chart for L-60-1 Viscosity Increase.

Figure 6 is the Industry Control Chart of the last 50 test results for L-60-1 Pentane Insolubles.

Figure 7 is the Industry Control Chart of the last 50 test results for L-60-1 Average Sludge.

Figure 8 is the Industry Control Chart of the last 50 test results for L-60-1 Toluene.

Figure 9 is the Industry Control Chart of the last 50 test results for L-60-1 Carbon/Varnish.

Figure 10 is the Industry Control Chart of the last 50 test results for L-60-1 Viscosity Increase.

Table 1
Summary of Reasons for Rejected Tests

Reasons	No. of Tests
Stand Shewhart Severity Alarm (Average Sludge Severe)	2

Table 2
Lost Tests Summary

Tests declared operationally invalid, aborted, or non-interpretable are summarized below by laboratory, reason, and number of lost tests:

LAB	REASON	Tests Lost
B	Invalid Due To High Oil Consumption	1
B	Aborted Due To Alternator Problems	1
D	Invalid Due To High Oil Consumption	1
D	Invalid due to Computer Problems	1
D	Aborted, Test Was Accidentally Shut Down.	1

Table 3

L-60-1 Timeline

Effective Date	Topic	IL#
19950901	Test Stand Motor Speed Change	95-1
19950901	Alternator Part Number Change	95-1
19950901	Air Box Heater Part Number Correction	95-1
19951115	Transforms./Correction Factors	95-1
19951103	Report Forms and Dictionary Version 19950912	95-1
19951026	Alternator Load Circuit Schematic Addition	95-2
19960122	Severity Adjustment Calculation Method	96-1
19960430	TMC One Page Addition	96-2
19960430	TMC New Address	96-2
19960531	Perfect Seal Gasket Maker Use	96-3
19960531	Gear Case Drawing (Lip Seal Use)	96-3
19960531	Report Forms and Dictionary Version 19960408	96-3
19970530	Added Percent Out Validity Criteria, Report Forms and Data Dictionary Changes (Version 19970411), Reporting of "Zero Value" Date	97-1
19970605	Revision of Primary Air Flow Spec, Removal of Air Pressure Specification	97-2
19970829	Added Average Air Box Temperature to Report Forms and Data Dictionary (Version 19970611)	97-2
19971107	Revised Precision and Bias Statement, Report Forms and Data Dictionary (Version 19970902)	97-3
19980612	Air Flow Calibration Requirement	98-1
19980623	Cleaning Agent Revision (Toluene)	98-2
19981123	Air Flow Calibration Requirement	98-3
19990100	Gear Problem (Manufacturer changed steel to lead-free metallurgy)	
19990101	Addition of CRC Gear Rating Workshop Training Requirement	98-3
19990215	Revised Gear Case Disassembly Procedure	99-1
19990301	Air Supply Line Note Addition	99-2
19990301	Data Logging Requirement	99-2
19990301	Strip Chart Requirement	99-2
19990301	Repeatability Term Change	99-2
19990609	Definition of Acceptable gears for testing due to severe ACV severity	99-3
19991016	Test Method for Pentane and Toluene Insolubles	99-4
20000427	Testing With Used Gears Discontinued	00-1
20000427	New Gear Batch 7-99 Introduced	
20020501	CRC Rating Manual 20	02-1
20020501	Report Forms and Data Dictionary	02-1
20020710	Test Gear Preparation	02-2
20020710	Shaft Oil Lip Seal	02-2
20020710	Speedi-Sleeve	02-2
20020710	Joint Radial Seal (V Ring)	02-2
20020710	End of Test Oil Drain	02-2
20020710	Instrument Calibration Frequency	02-2

Table 3 (Continued)

L-60-1 Timeline

Effective Date	Topic	IL#
20021201	Revised End of Test Oil Drain Procedure	03-1
20021201	Pre-Test Gear Preparation	03-1
20030205	Revised End of Test Oil Drain Procedure	03-2
20030430	Heater Blower Air Output	03-2
20030430	Digital Manometer	03-3
20030430	Revised Heater Blower Air Output Verification	03-3
20030506	Non-interpretable Tests	03-3
20030506	Revisions to the Use of Warning Statements	03-3
20030801	Revised Heater Blower Air Output Verification	03-4
20030801	Preso Low Loss Venturi Meter and Dwyer Digital Manometer Calibration	03-4
20040101	Cleaning Solvent Specification	03-5
20040401	Revised Gear Case Cleaning Procedure	04-1
20040401	Revised Carbon Depth Rating Guidelines	04-1
20040401	Editorial Changes to Precision Statement	04-1
20040630	Air Flow Controller Calibration Standard Model Number Addition	04-2
20040630	Revised Precision Statement	04-2
20050225	Revised Solvent Specification	05-1
20050225	Carbon Varnish Rating Procedure	05-1
20050225	Donated Reference Oil Test Programs/Calibration period Length Adjustment	05-1
20050421	Updated Test Precision	05-2
20050421	Rounding Test Results Using ASTM E 29	05-2
20051010	Nitrile and Laytex Gloves for Catalysts Handling	05-3
20060711	Revised Copper Catalyst Strip Cleaning Procedure	06-1
20060711	Editorial Revision	06-1
20061011	Phase Out of Manufacturer's Name and Updated Part Number for Lip Seal, Speedi-Sleeve Seal, and Joint Radial Seal.	06-2
20071115	Revised Downtime Wording	07-1

Figure 1

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

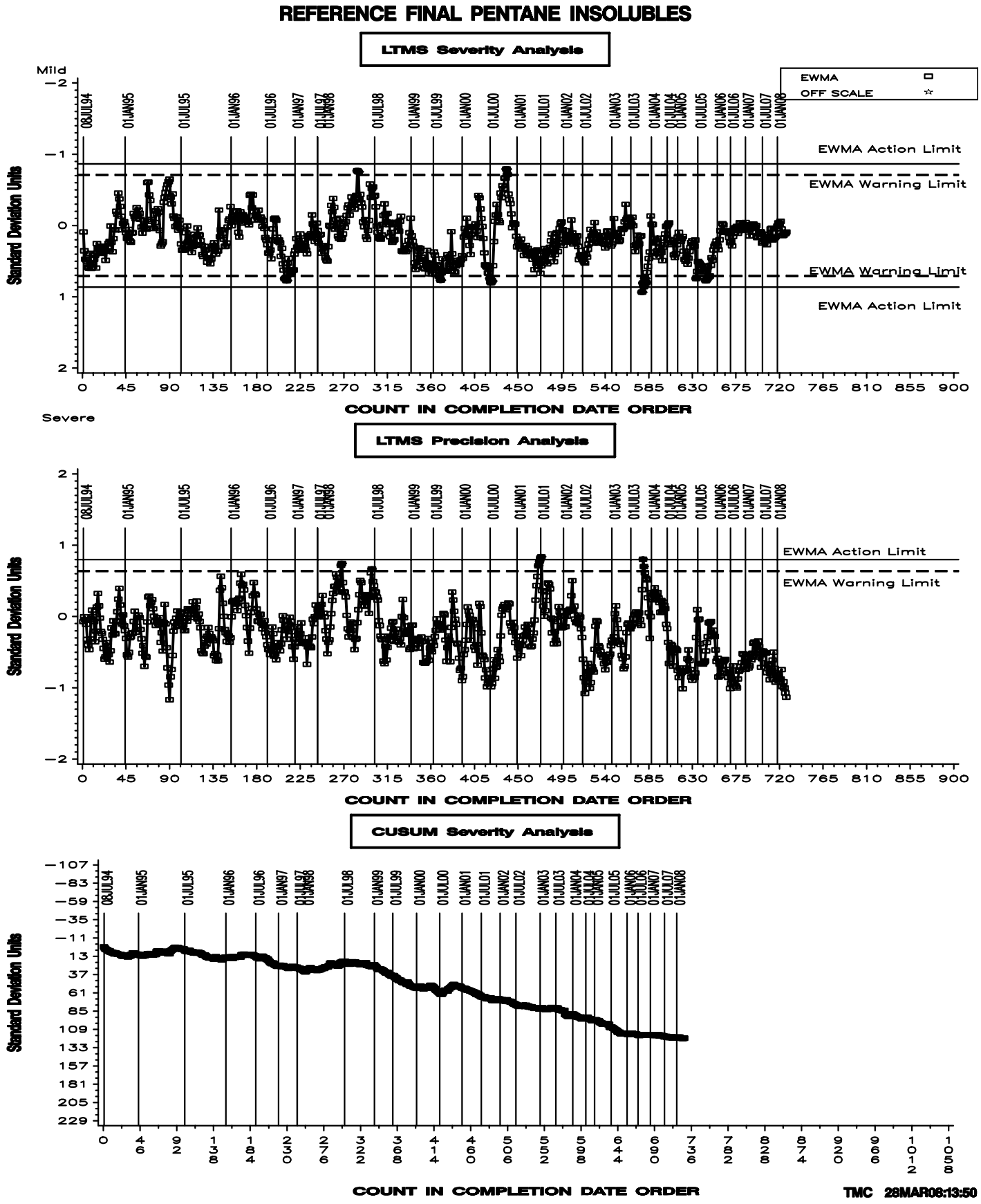
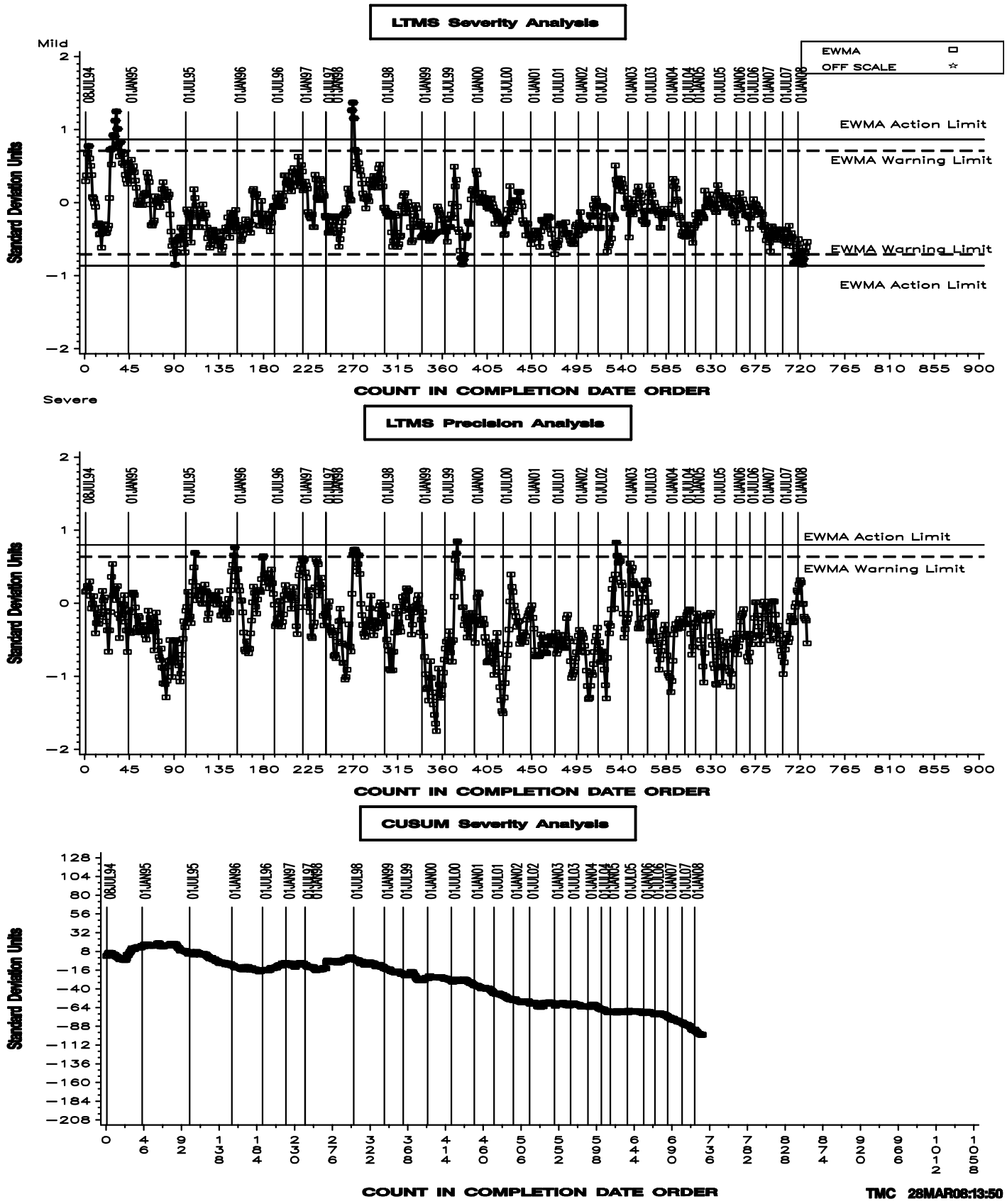


Figure 2

L−60−1 INDUSTRY OPERATIONALLY VALID DATA

REFERENCE FINAL AVERAGE SLUDGE



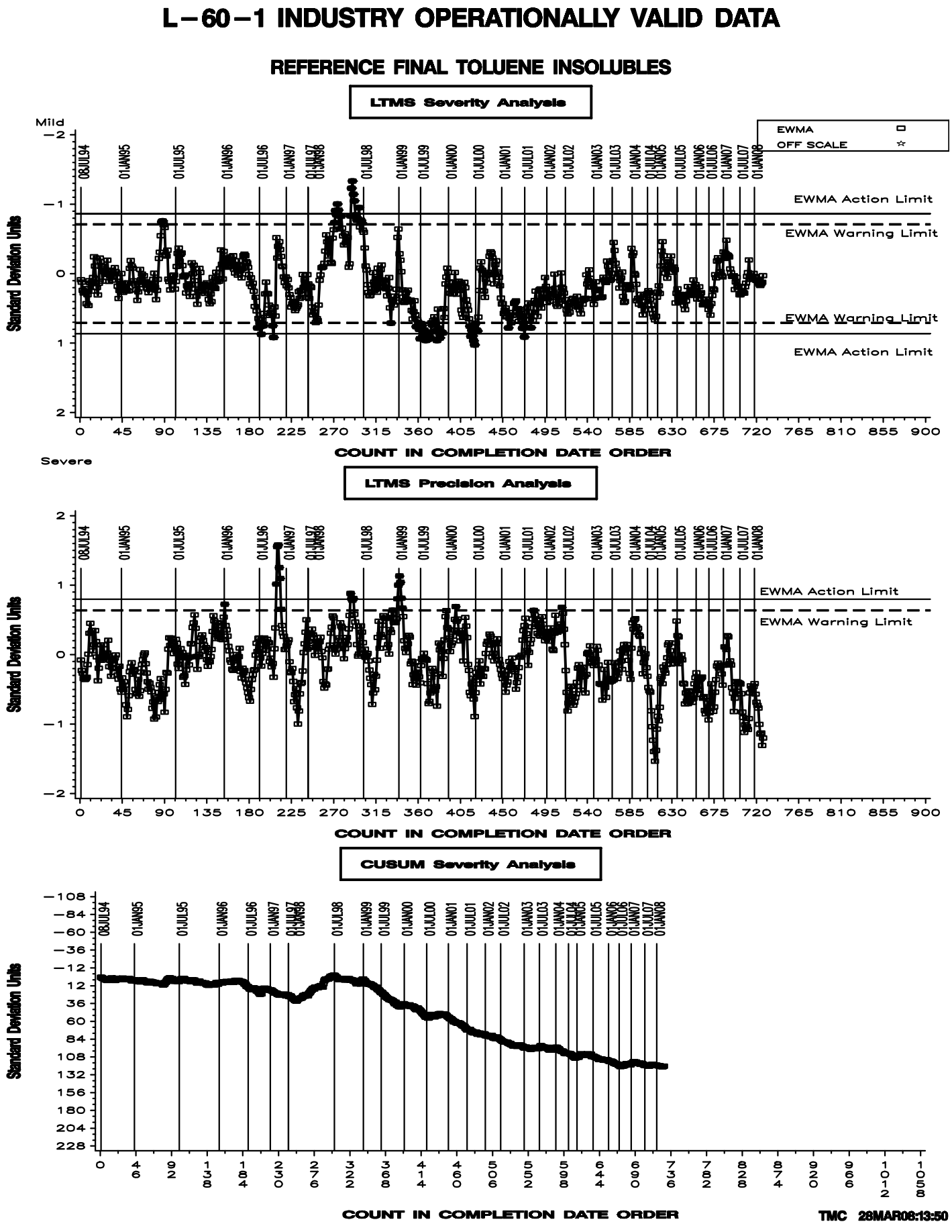

L-60-1 INDUSTRY OPERATIONALLY VALID DATA
REFERENCE FINAL TOLUENE INSOLUBLES
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
CUSUM Severity Analysis
08JUL94
01JAN95
01JUL95
01JAN96
01JUL96
01JAN97
01JUL97
01JAN98
01JUL98
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Figure 4

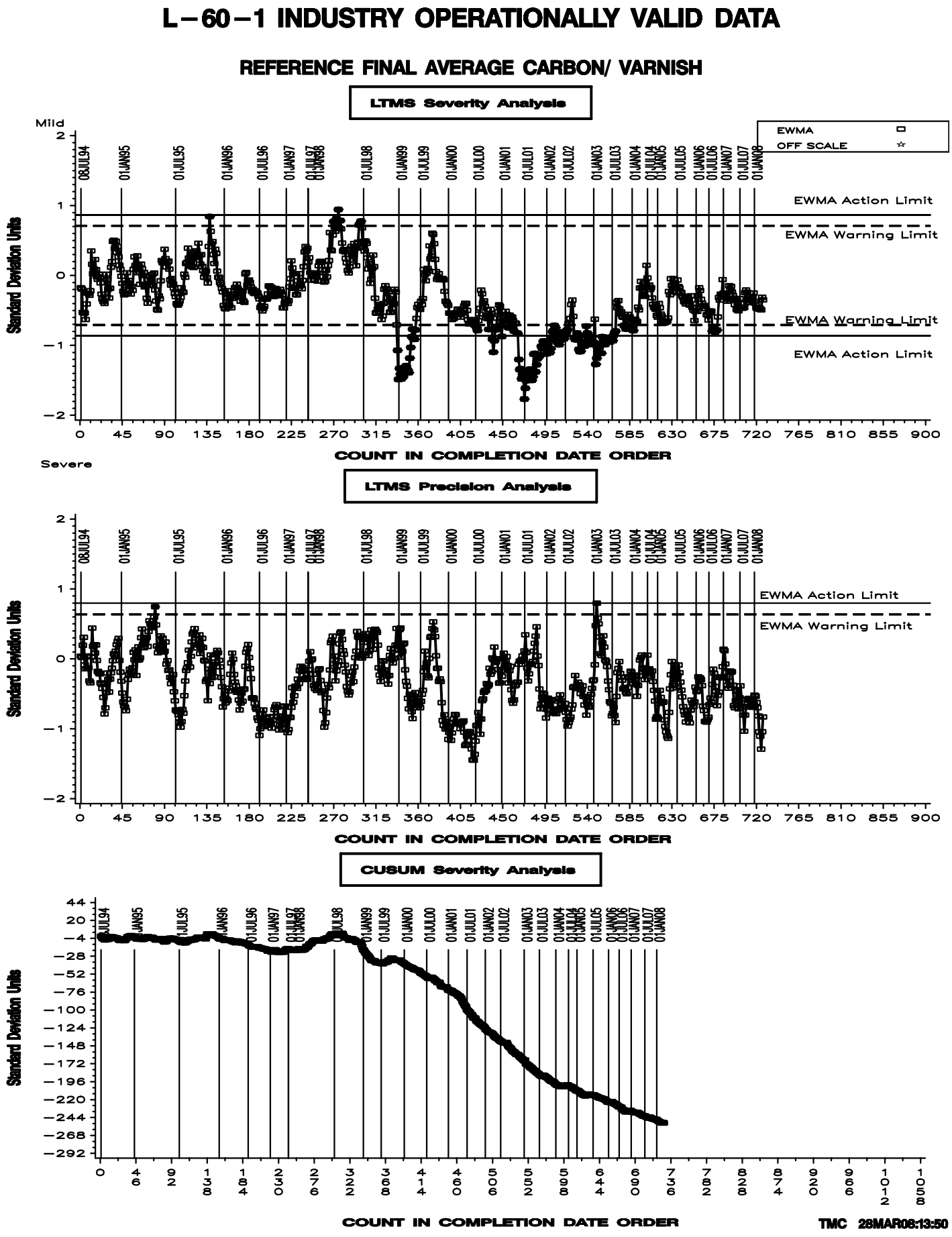

L−60−1 INDUSTRY OPERATIONALLY VALID DATA
REFERENCE FINAL AVERAGE CARBON/ VARNISH
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
CUSUM Severity Analysis
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
TMC 28MAR08:13:50

Figure 5

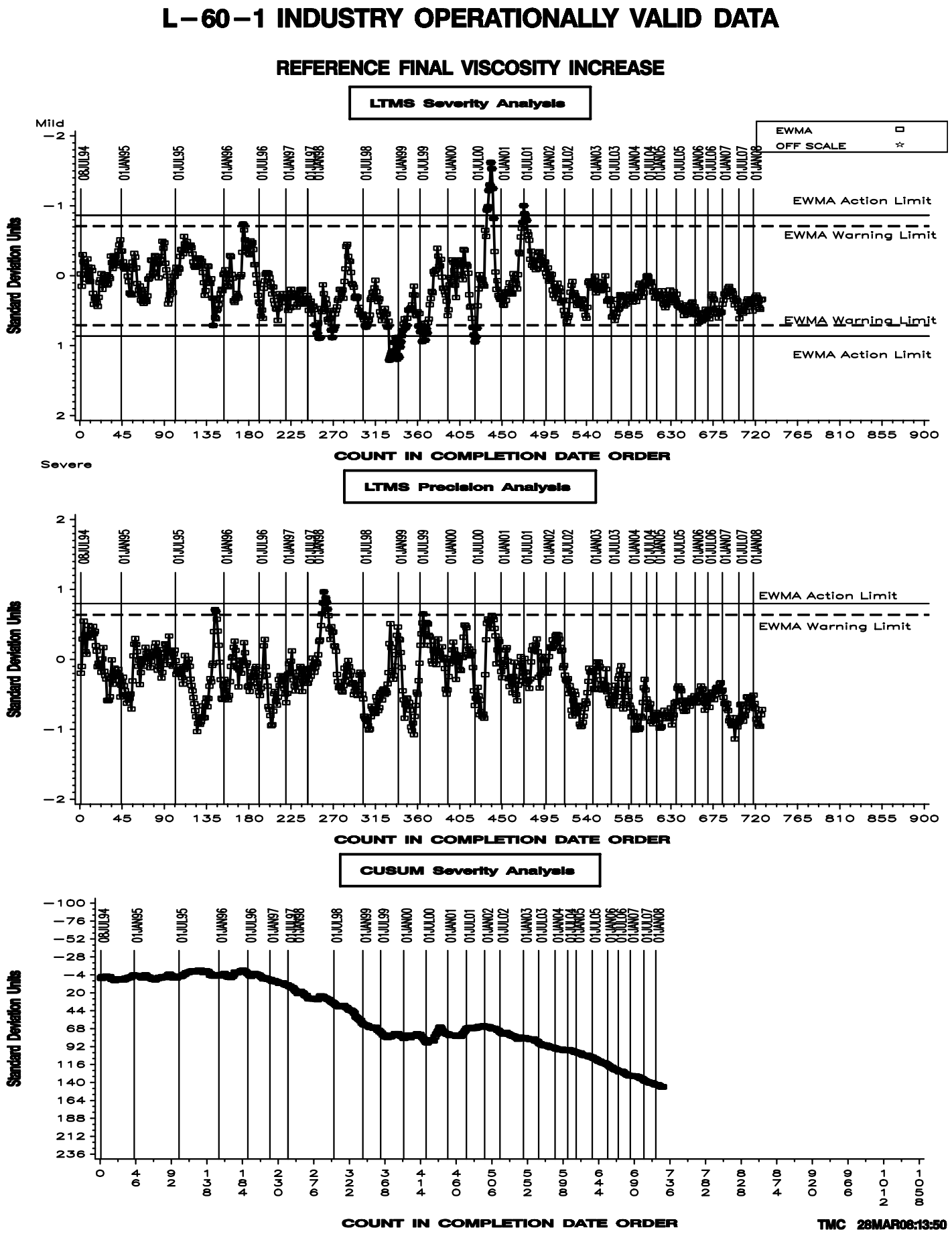

L-60-1 INDUSTRY OPERATIONALLY VALID DATA
REFERENCE FINAL VISCOSITY INCREASE
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
CUSUM Severity Analysis
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
TMC 28MAR08:13:50

Figure 6

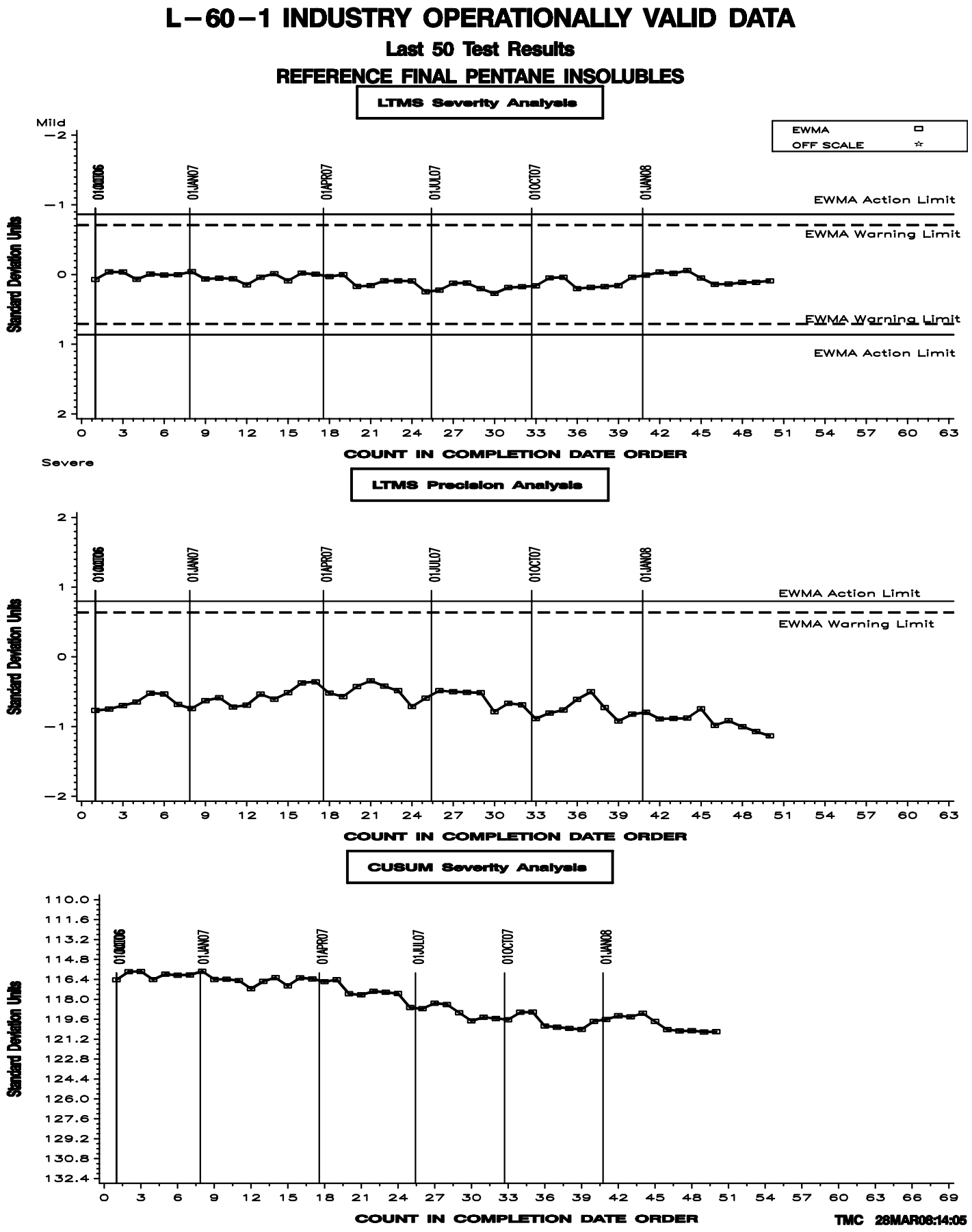

L-60-1 INDUSTRY OPERATIONALLY VALID DATA
Last 50 Test Results
REFERENCE FINAL PENTANE INSOLUBLES
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
01DEC06
01JAN07
01APR07
01JUL07
01OCT07
01JAN08
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
CUSUM Severity Analysis
TMC 28MAR08:14:05

Figure 7

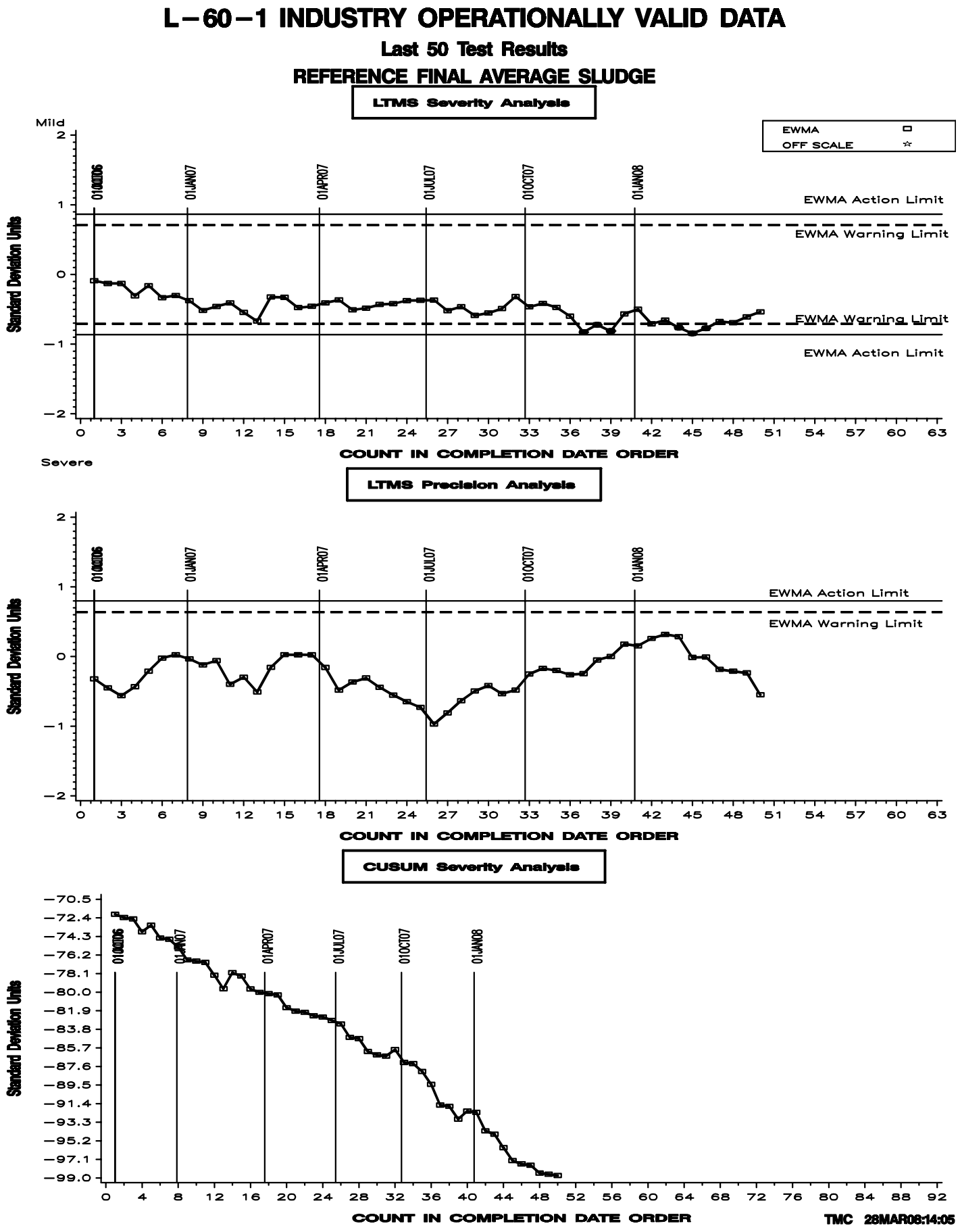
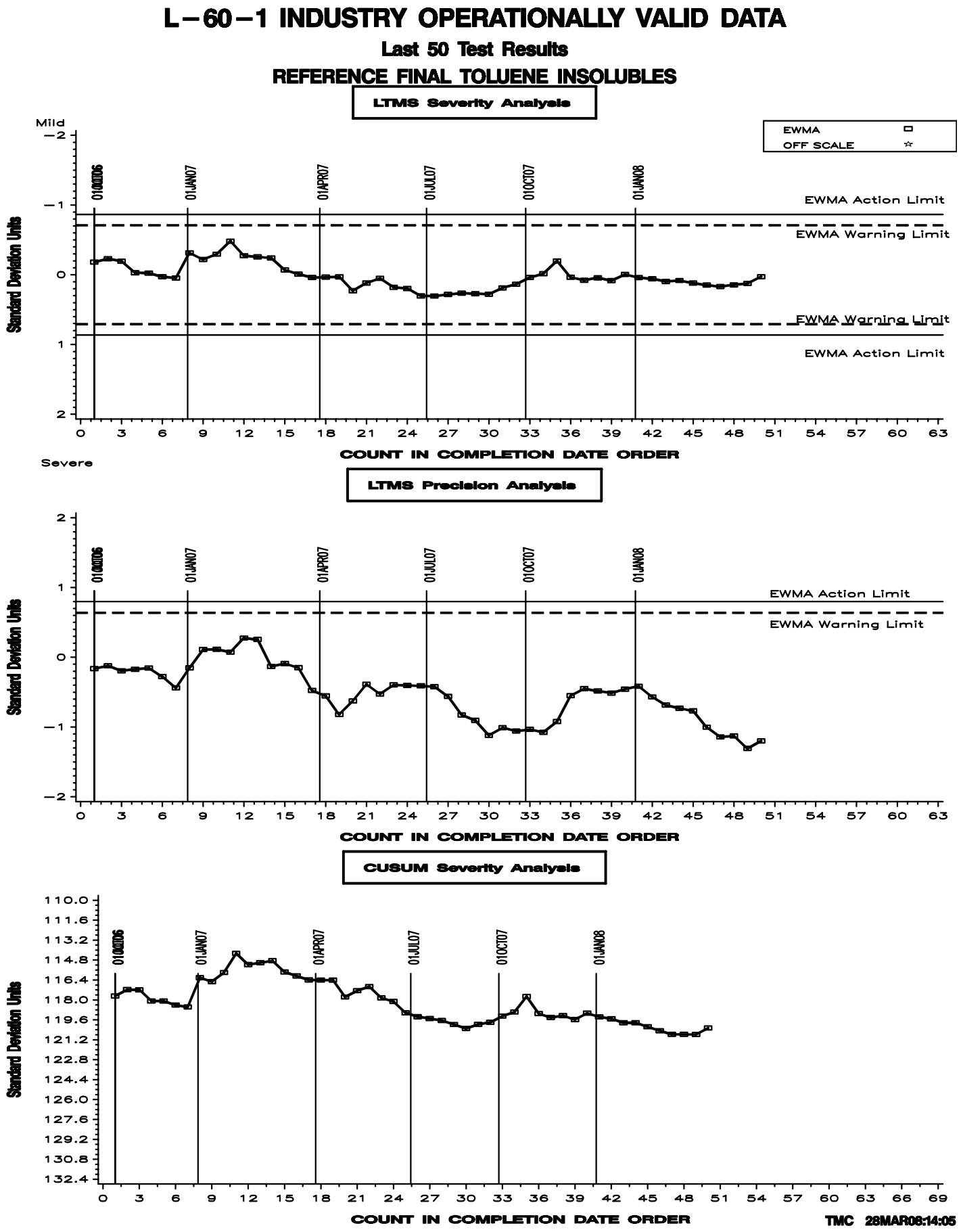
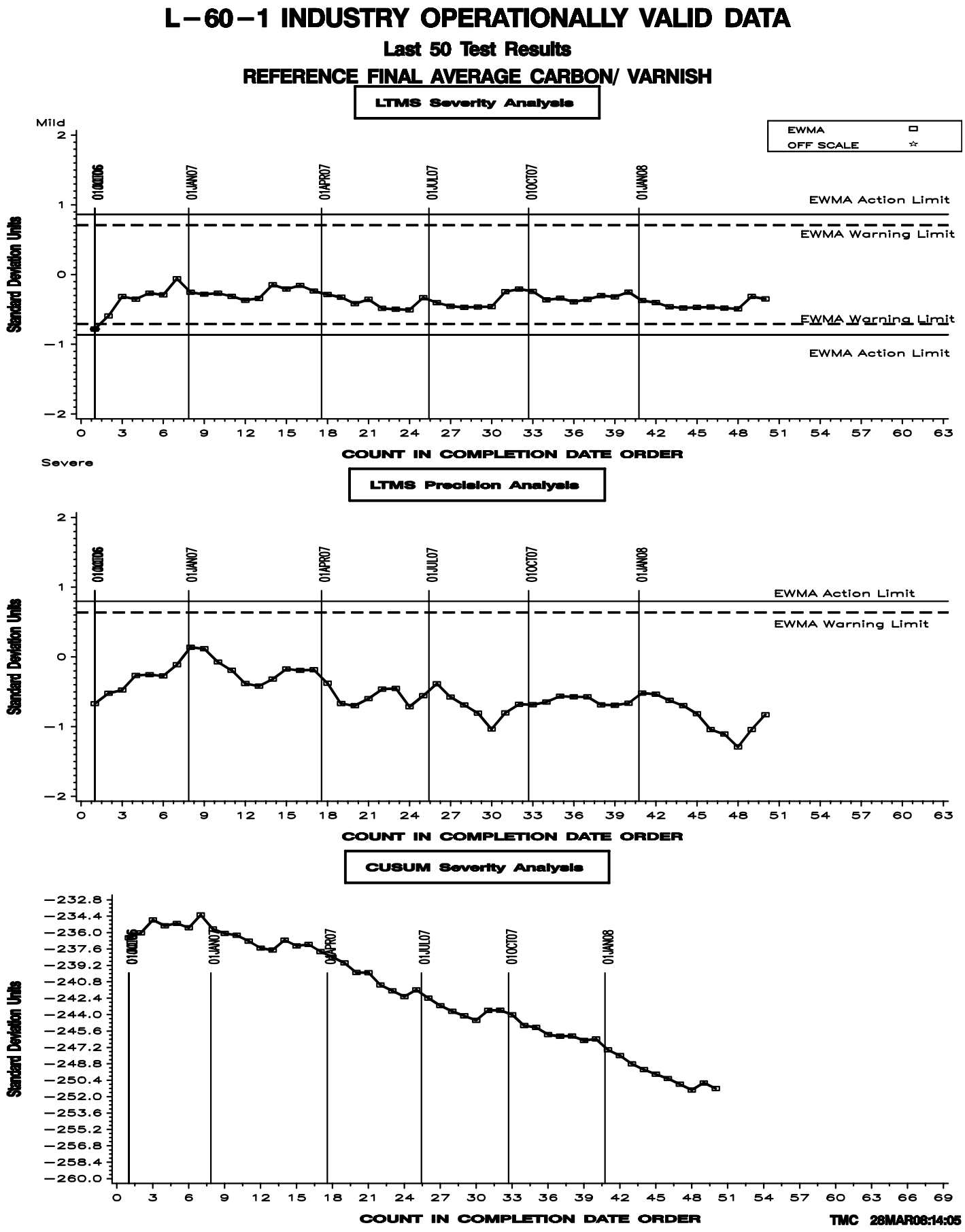
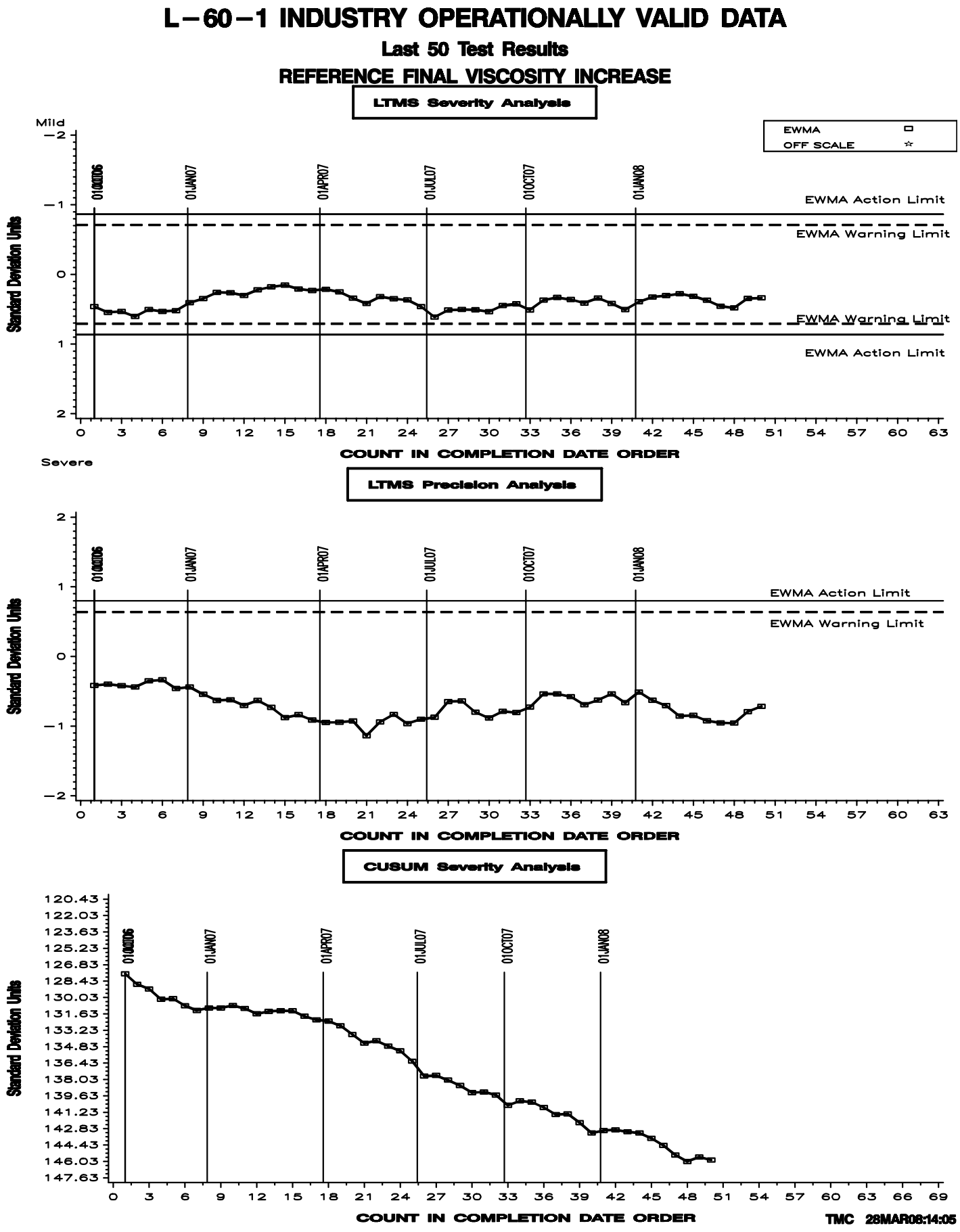

L−60−1 INDUSTRY OPERATIONALLY VALID DATA
Last 50 Test Results
REFERENCE FINAL AVERAGE SLUDGE
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
01JAN06
01JAN07
01APR07
01JUL07
01OCT07
01JAN08
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
CUSUM Severity Analysis
TMC 28MAR08:14:05

Figure 8


L-60-1 INDUSTRY OPERATIONALLY VALID DATA
Last 50 Test Results
REFERENCE FINAL TOLUENE INSOLUBLES
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
01DEC06
01JAN07
01APR07
01JUL07
01OCT07
01JAN08
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
CUSUM Severity Analysis
TMC 28MAR08:14:05


L−60−1 INDUSTRY OPERATIONALLY VALID DATA
Last 50 Test Results
REFERENCE FINAL AVERAGE CARBON/ VARNISH
LTMS Severity Analysis
Mild
EWMA
OFF SCALE
01DEC06
01JAN07
01APR07
01JUL07
01OCT07
01JAN08
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
Severe
LTMS Precision Analysis
CUSUM Severity Analysis
TMC 28MAR08:14:05


L−60−1 INDUSTRY OPERATIONALLY VALID DATA
Last 50 Test Results
REFERENCE FINAL VISCOSITY INCREASE
LTMS Severity Analysis
Mild
Severe
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
01DEC06
01JAN07
01APR07
01JUL07
01OCT07
01JAN08
Standard Deviation Units
COUNT IN COMPLETION DATE ORDER
LTMS Precision Analysis
CUSUM Severity Analysis
TMC 28MAR08:14:05