HEAVY-DUTY ENGINE OIL CLASSIFICATION PANEL

OF

ASTM D02.B0.02

December 5,2023

Sheraton New Orleans Hotel – New Orleans, LA

ACTION ITEMS

MINUTES

1.0 Call to order.

1.1 The Heavy-Duty Engine Oil Classification Panel (HDEOCP) was called to order by Chairman Shawn Whitacre at 1:30 p.m. on Tuesday, December 5, 2023, in the Borgne Room of the Sheraton New Orleans Hotel, New Orleans, LA

1.2 There were **11** members, and **60** guests present. The attendance list is included as Attachment **2.**

2.0 Agenda

2.1 The agenda circulated prior (included as Attachment **1**) was not changed.

3.0 Minutes

3.1 The June 27, 2023, minutes were approved as written.

4.0 Membership

4.1 There were no membership changes.

5.0 Mack / Volvo – David Brass (Attachment 3)

5.1 There were 4 meetings held this semester (July- November 2023)

5.2 Volvo T-13

5.2.1 New targets were set for the T-13 reference oil 823-1.

5.2.2 FTIR peak height oxidation is now 109.3.

5.2.3 A correction factor was added for KV40% change at 300-360 hr. period.

5.2.4 New reference oil requested for PC-12. The oil chosen was from supplier A, technology 2.

5.3 Mack T-11 and T-12

5.3.1 The last batch of hardware was introduced.

5.3.2 The current supplier of coolant decommercialized Pencool 3000. Chevron Delo Extended Life 50/50 pre-mix coolant was added as an alternative to the Mack T-11.

5.4 The Mack Panel accepted ISB VIS test and suggest the need of two test lengths to replace the Mack T-8 and T-11 (108/120hr and 156 hr., respectively)

5.5 TMC 1005-5 supply is down to 1.75 years. The SP is looking to replace the Mack T-8 test so new reference oil may not be needed.
5.6 The limiting parts for the Mack T-11 and T-12 are the piston crowns.

6.0 CAT Update – David Brass (Attachment 4)

6.1 COAT is looking to introduce two reference oils, 832-2 and 833-2. Both labs are participating.
6.2 EOAT equivalency tests are underway. The data is under review. The panel is actively looking for funding. Currently there is sufficient funding to complete the matrix.
6.3 The test results from 1005-6 were similar to 1005-5.
6.4 C13 – Low vis prove out has been delayed. The prove out test should run in Q1 2024
6.5 Top ring weight loss to be added as a rate and report parameter on the test report.
6.6 Good status on ref oils for all CAT tests minus 1P-1R. The 1MPC is not used, so 1 year supply is plenty.
6.7 C13 test severity-
  6.7.1 TLC is in severity warning alarm in mild direction.
  6.7.2 R2TC is in severity warning alarm in the severe direction.
  6.7.3 R2TC is in precision warning alarm.
6.8 No severity issues with the COAT.
6.9 1K test severity
  6.9.1 TGF is in warning alarm in the mild direction.
  6.9.2 BSOC is in action alarm in the mild direction.
6.10 1N test severity
  6.10.1 WDN is in severity warning alarm in the mild direction.
  6.10.2 TGF is in precision action alarm.
6.11 1P test severity.
  6.11.1 WD is in severity warning alarm in the sever direction.
  6.11.2 EOTOC is in severity action alarm in the severe direction.

7.0 Cummins – Andrew Smith (Attachment 5)

7.1 Three meetings were held this last semester to discuss ISB and ISM test types.
  7.1.1 1st meeting – discussed new ISB and ISM reference oils as well as ISB VIS test reference oil.
  7.1.2 2nd meeting – select new ISB ref oil for matrix testing.
  7.1.3 3rd meeting - continue discussion on ISM reference oil. Adjusting screws had less wear than expected.
7.2 ISB Test status
  7.2.1 There was an increase in ISB capacity. 4 labs and 8 tests stands are currently calibrated.
  7.2.2 Critical parts supply is about 2 years. All new test hardware will be introduced in 2024.
  7.2.3 Approximately 2 years supply of 831-4 is left. The re-blend has started.
  7.2.4 Low viscosity RO was selected and is expected in Q1 2024.
  7.2.5 ISB engine blocks are not available. A new part number will be introduced in 2024. No changes to the engine design are expected.
  7.2.6 Leftover hardware is expected to be set aside and used for ISB VIS test.
7.3 ISM test status
  7.3.1 Limiting factor is cross heads supply. There are currently enough for 24 kits.
  7.3.2 No issues with ref oil supply.
7.4 ISM action items.
  7.4.1 Select reference oil for matrix testing.
  7.4.2 Determine how to handle new hardware and oils at the same time.
7.5 ISB VIS progress and update will be added to the next semester update.

8.0 DD13 – Robert Slocum (Attachment 6)

8.1 ASTM D8074-23 has an editorial change to the procedure in Table A5.1
8.2 The Surveillance Panel voted on a new liner roughness limits based on a severity study.
8.3 Ther are currently 3 labs 3 stands calibrated.
8.4 Unit hours to Scuff level 1 alarm was triggered in the severe direction.
8.5 Exhaust rockers are still not available, all other hardware is in good condition.
8.6 Ref oil supply is about 3 years.

9.0 Surveillance Panel Chair Handbook Update - Andrew Stevens (Attachment 7)

9.1 There are efforts to develop a handbook for SP Chairs.
9.2 The Handbook will outline Chair responsibilities, provide resources for panel management, provide point of contact for resources and establish a baseline for Chair expectations.
9.3 A draft has been developed and is not expected to be an ASTM control document.
9.4 The panel will consider adding lessons learn from the workshops to the document.

10.0 Old Business-EOEC, Laura Birnbaumer

10.1 The language for revised EOEC limits in D4485 is finished. Information Letter will be balloted in 1H of 2024 for approval.

11.0 Roger Gault

11.1 There is no new conclusion on removing old categories. OEMs are still reviewing. The topic will stay in the agenda. EMA will review it in the next meeting.

12.0 New Business – Roger Gualt

12.1 EMA is working with CARB on how to treat hydrogen engines.
12.2 Lubricants on H2 internal combustion (ICE) engines need review, not just for H2-ICE but all gaseous fueled engines.
12.3 Historically, Compressed Natural Gas engine oils are niche products with performance defined primarily by industry spec. Is this approach sufficient for H2 engines?
12.4 OEMs will approach DEOAP for discussions and direction on H2 topics.

13.0 ASTM D5968

13.1 At a past ASTM meeting, it was agreed that CBT (ASTM D5968) would no longer be monitored by TMC as the method is not used for any active API specifications. In alignment with this change, the method will need to be revised as it contains significant language related to TMC monitoring. The Corrosion SP chair had proposed this change which was discussed at the B.7 meeting on Monday. A motion to open a work item to develop the ballot (to be worked with TMC input) for these changes passed unanimously, so it is expected this ballot will be developed and progressed in the next period. If there are any comments or questions about this change, please direct them to a Corrosion SP member or the SP chair, Jared Cavaliere.

14.0 Next meetings

14.1 June 18, 2024, in Austin, TX, or at call of the chairman.

15.0 The meeting was adjourned at 2:36 pm.

AGENDA
D02.B0.02.1
Heavy-Duty Engine Oil Classification Panel
Tuesday, December 5, 2023 1:30pm CST
Sheraton New Orleans Hotel
New Orleans, Louisiana USA

1) **Call to Order/Anti-trust statement**

2) **Minutes** – Approval of Minutes from June 27, 2023 Meeting in Denver, CO USA

3) **Membership**

   a) Review and update current panel membership

4) **Surveillance Panel/Task Force Reports**

   a) Volvo/Mack SP Report (David Brass, Infineum)
   b) CAT SP Report (David Brass f*or Jacob Goodale*, Infineum)
   c) Cummins SP Report (Andrew Smith, Intertek)
   d) DD13 SP Report (Robert Slocum, Lubrizol)
   e) Ford 6.7L VTW Test TF Update (Mike Deegan, Ford)
   f) Surveillance Panel Chairs Handbook Update (Andrew Stevens, Lubrizol)

5) **Old Business**
   a) EOEC Fixed limits Information Letter Update (Laura Birnbaumer, Oronite)
   b) EMA support for tests in legacy HD Categories (Roger Gault, EMA)

6) **New Business**
   a) Lubricants for Hydrogen Fueled Heavy-Duty Engines (Roger Gault, EMA)

7) **HDEOCP Adjournment**

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Mack/Volvo Surveillance Panel Update

David Brass, Mack/Volvo Surveillance Panel Chair

HDEOCP

December 5, 2023

Key Updates

- 4 meetings held this Semester (July-November)
- Volvo T-13:
  - New Targets for Reference Oil 823-1
  - Industry Correction Factor added for KV40 % change 300-360 hr
  - New Reference Oil Requested from PC-12 and Supplier/Tech chosen for testing
- Mack T-12
  - Last batch of parts was introduced for the Mack T-12 through coordinated reference tests
  - ICF was maintained from prior parts batch
- Mack T-11
  - Last batch of parts was introduced for the Mack T-11
  - New Coolant was accepted for the Mack T-11

Surveillance Panel Meeting Updates

August 1, 2023

- Accepted reference oil choice for the Cummins ISB Soot Viscosity Test
- Suggested the need of 2 test lengths for the Cummins ISB Soot Viscosity Test (156 hr and 108/120 hr) for usage in replacement of Mack T-11 and Mack T-8
- New reference oil requested for the Volvo T-13 with PC-12 target limits

Surveillance Panel Meeting Updates

August 28, 2023

- New targets were set for Volvo T-13 reference oil (823-1) effective 8/28/23
  - FTIR peak height oxidation = 109.3
  - Sqrt (KV40 % increase 300-360 hrs) = 8.139
- An industry correction factor was applied from Batch B liners through Batch D liners of +0.857 for sqrt (KV40 % increase 300-360 hrs) effective 8/28/23
- New reference oil options for the Volvo T-13 were shared
- Data from coordinated reference test in Mack T-12 with hardware combination WYZQFYYB (W Liner, Y Top Ring, Z Rod Bearing, Q Main Bearing, F Piston Crown, Y 2nd Ring, Y Oil Ring, B Piston Skirt) operational data was shared and test results sent for review by statisticians

Surveillance Panel Meeting Updates

September 8, 2023

- Based on data from coordinated reference tests in Mack T-12 with hardware combination WYZQFYYB (W Liner, Y Top Ring, Z Rod Bearing, Q Main Bearing, F Piston Crown, Y 2nd Ring, Y Oil Ring, B Piston Skirt) the parts were accepted and the correction factors from the prior batch of parts was carried forward effective (9/8/23)

October 25, 2023

- A new reference oil for the Volvo T-13 was chosen from Supplier A, Technology 2 for usage in target value testing as part of PC-12 NCDT.
- Hardware combination WYZQFYYB (W Liner, Y Top Ring, Z Rod Bearing, Q Main Bearing, F Piston Crown, Y 2nd Ring, Y Oil Ring, B Piston Skirt) was accepted for the Mack T-11 based on testing in Mack T-12 and Mack T-11.
- Due to the supplier decommercializing Pencool 3000 coolant, the Delo Extended Life 50/50 pre-mix coolant was added as an alternative to the Mack T-11 through confirmation testing.

Reference Oils

Test	Reference Oil	Supply
Mack T-8	TMC 1005-5	1.75 year supply
Mack T-11	TMC 822-2	5+ year supply
Mack T-12	TMC 821-4	5+ year supply
Volvo T-13	TMC 823 TMC 823-1	2 drums remaining 5+ year supply

Updates:
TMC 823-1 introduced in May 2023

New T-13 Reference Oil requested by Surveillance Panel with PC-12 targets (FTIR Oxidation ≤ 80, KV40 % change ≤ 50). Oil chosen by surveillance panel and in process of being blended by the supplier for testing as part of PC-12.

Mack T-8/T-11/T-12 Hardware

Final Parts Batch

	Mack T-11/T-12	Mack T-8	Total Available Kits	Expected Available Kits (After Avg. Rejection Rates)
Top Rings	**Y**	**Y**	334	317
2nd Rings	**Y**	**Y**	314	292
Oil Rings	**Y**	**Y**	314	301
Piston Crowns	**F (Random Subgroup, Excluding sub A)**		250 (w/o sub A)	**245 (w/o sub A) (Limiting Part for T-11/T-12)**
Rod Bearings	**Z**		316	310
Main Bearings	**Q**		433	346
Liner	**W**		345	310
Piston Skirts	**B**		315	299

- Current Purchase Rate for T-11/T-12 kits is 40-45/year (5.5 – 6 years of parts remaining)
- Current Purchase Rate for T-8 kits is 4-6/year (7 years of parts remaining)

Mack T-8/E

Labs	Stands	Referenced Stands
2	2	2

Reference Test Activity (January - November 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	3	
Operationally Invalid	LC	1 1 1	Missed Soot Window Hardware Failure High Oil Consumption/projected to miss soot window
TOTAL		**6**	

Test Severity

- VI38 is in level 2 Zi alarm in mild direction
- RV48 and RV2 are in control

Mack T-11

Labs	Stands	Referenced Stands
3	5	4

Reference Test Activity (January – November 2023)

Test Status	Validity Code	#
Acceptable Calibration Test	AC	4
TOTAL		**4**

Test Severity

- SOOT (12 cSt), SOOT5 (15 cSt) are in control
- SOOT4 is in severity action alarm in severe direction
  - has been this way since introduction of 822-2 in 2014.
  - SOOT is critical parameter for test not SOOT4.
- MRV is in severity warning alarm in the severe direction

Mack T-12

Labs	Stands	Referenced Stands
3	3	3

Reference Test Activity (January – November 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	3	
Failed Calibration Test	OC	1	Pb and OC Mild
TOTAL		**4**	

Test Severity

- All parameters are in control

Volvo T-13

Labs	Stands	Referenced Stands
4	10	8

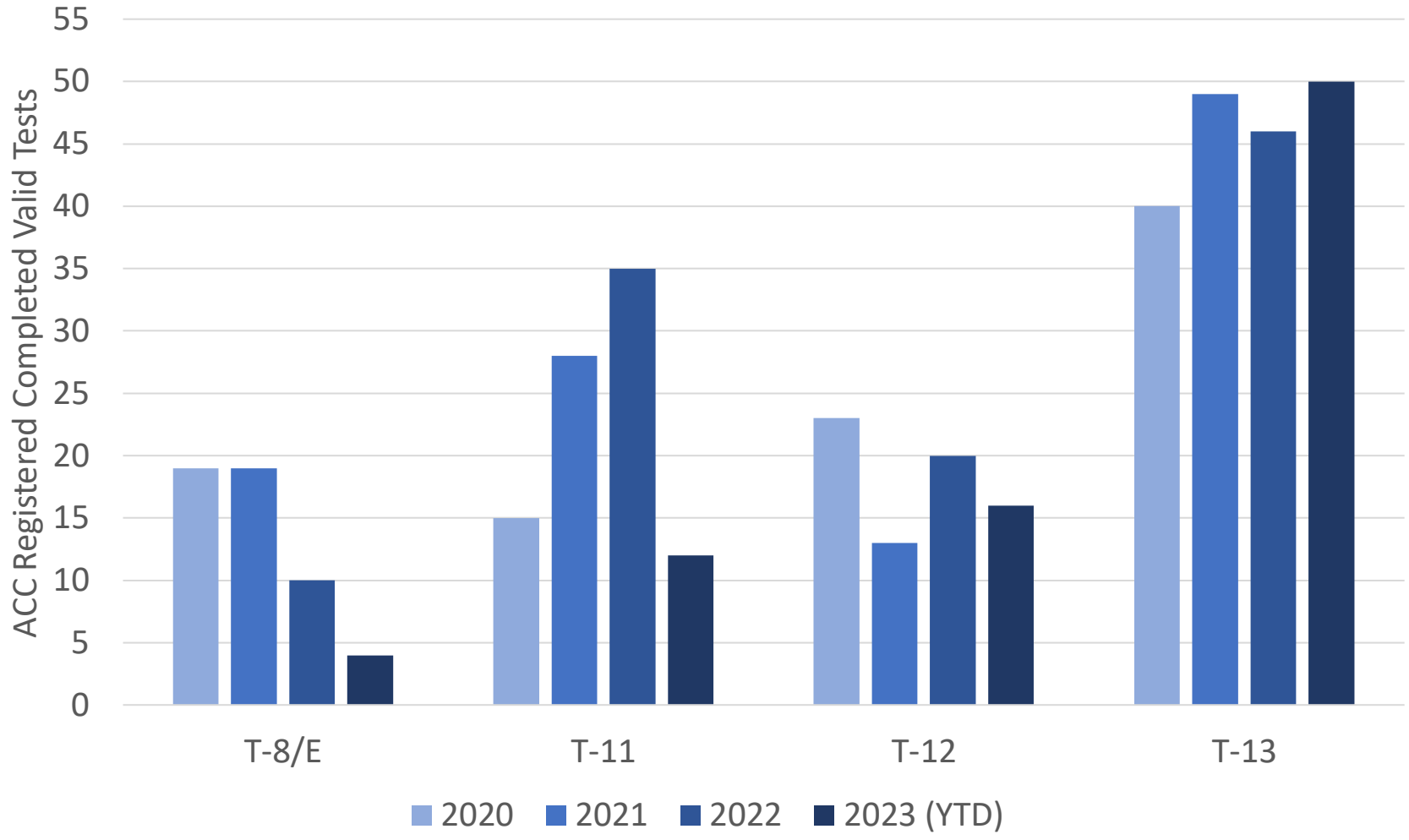
Reference Test Activity (January – November 2023)

Test Status	Validity Code	#	Cause / Failed Parameter
Acceptable Calibration Test	AC	8	
Operationally Invalid	LC	1 1	Coolant Leak Missed Oil Adds
TOTAL		**10**	

Test Severity

- IRPH and KV40 are in control

Candidate Activity

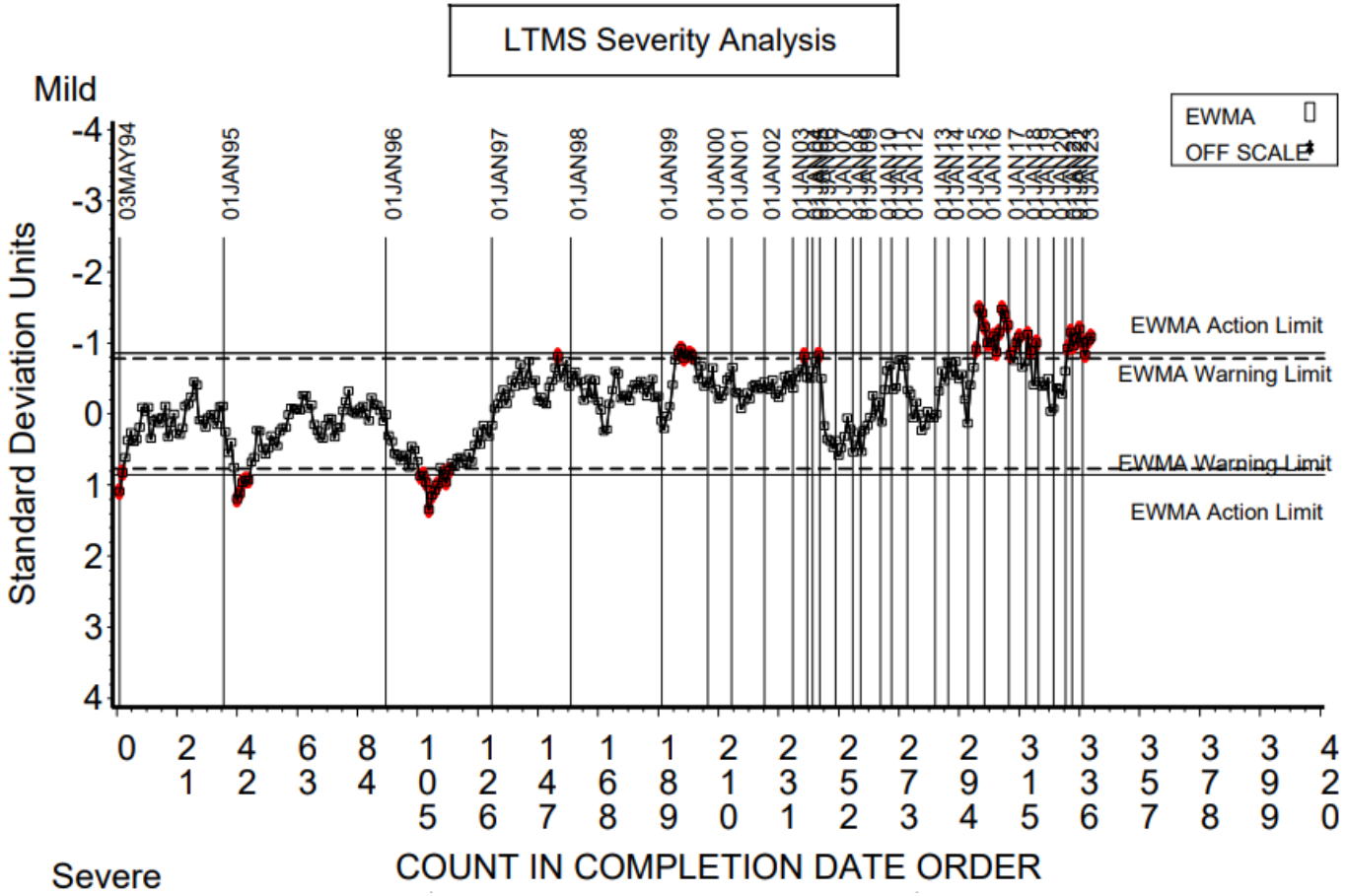


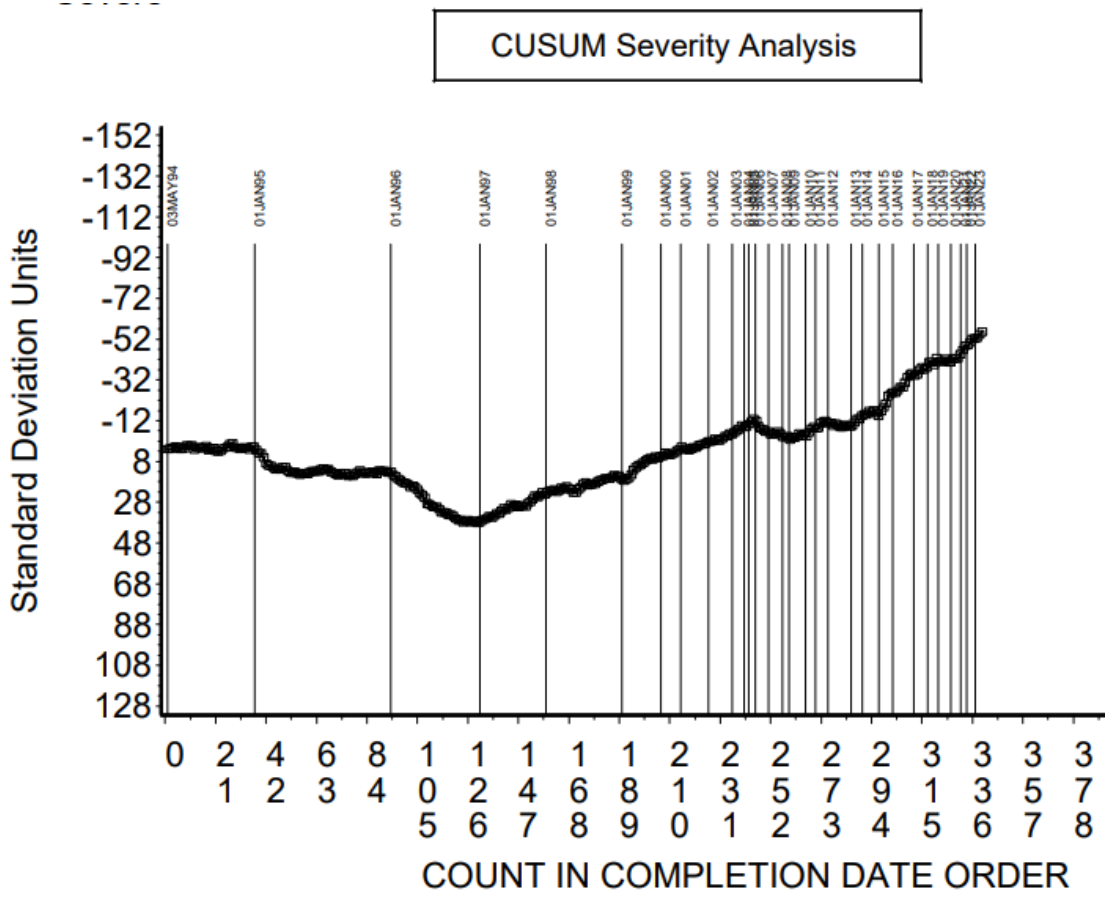
Appendix Charts

Mack T-8

Mack T-8 Charts – VI38

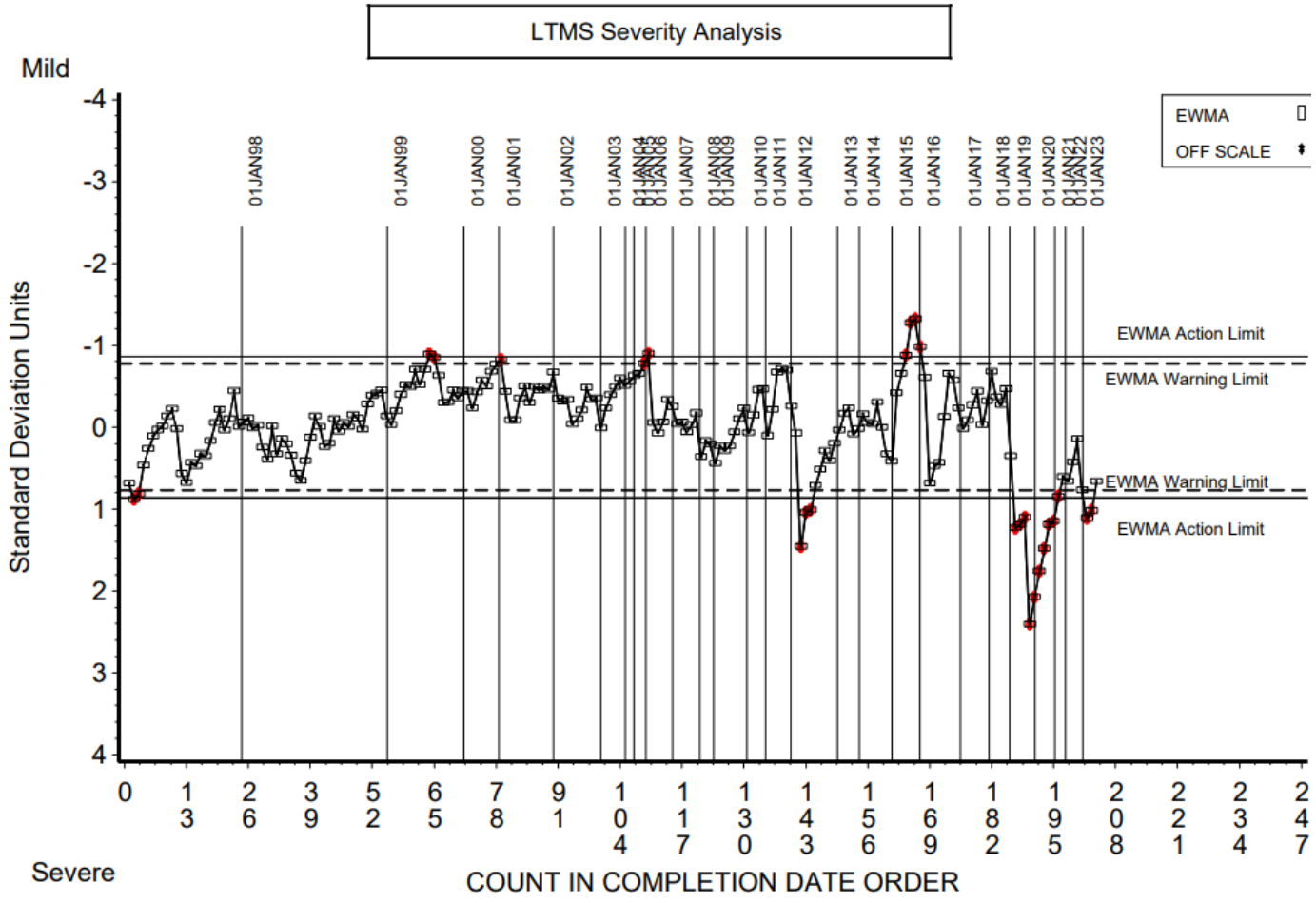
Viscosity Increase @ 3.8% Soot

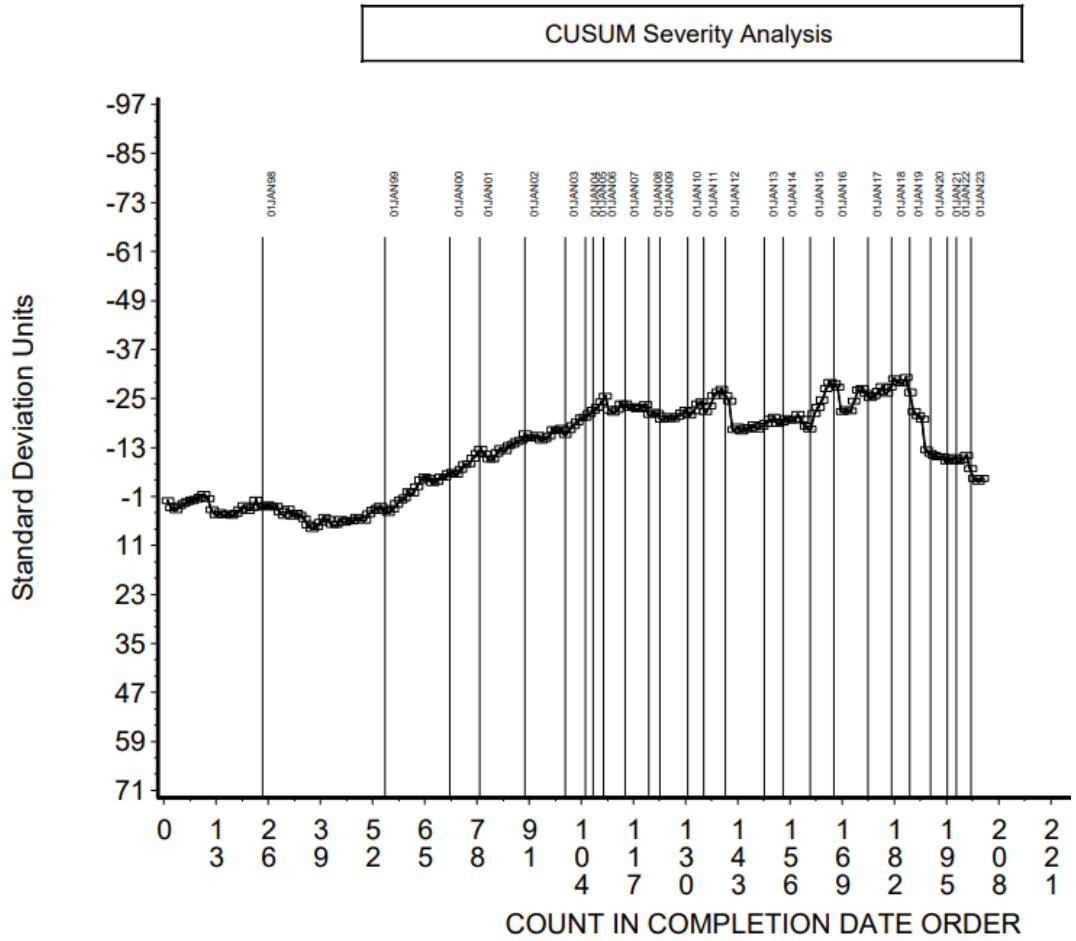




Mack T-8 Charts – RV48

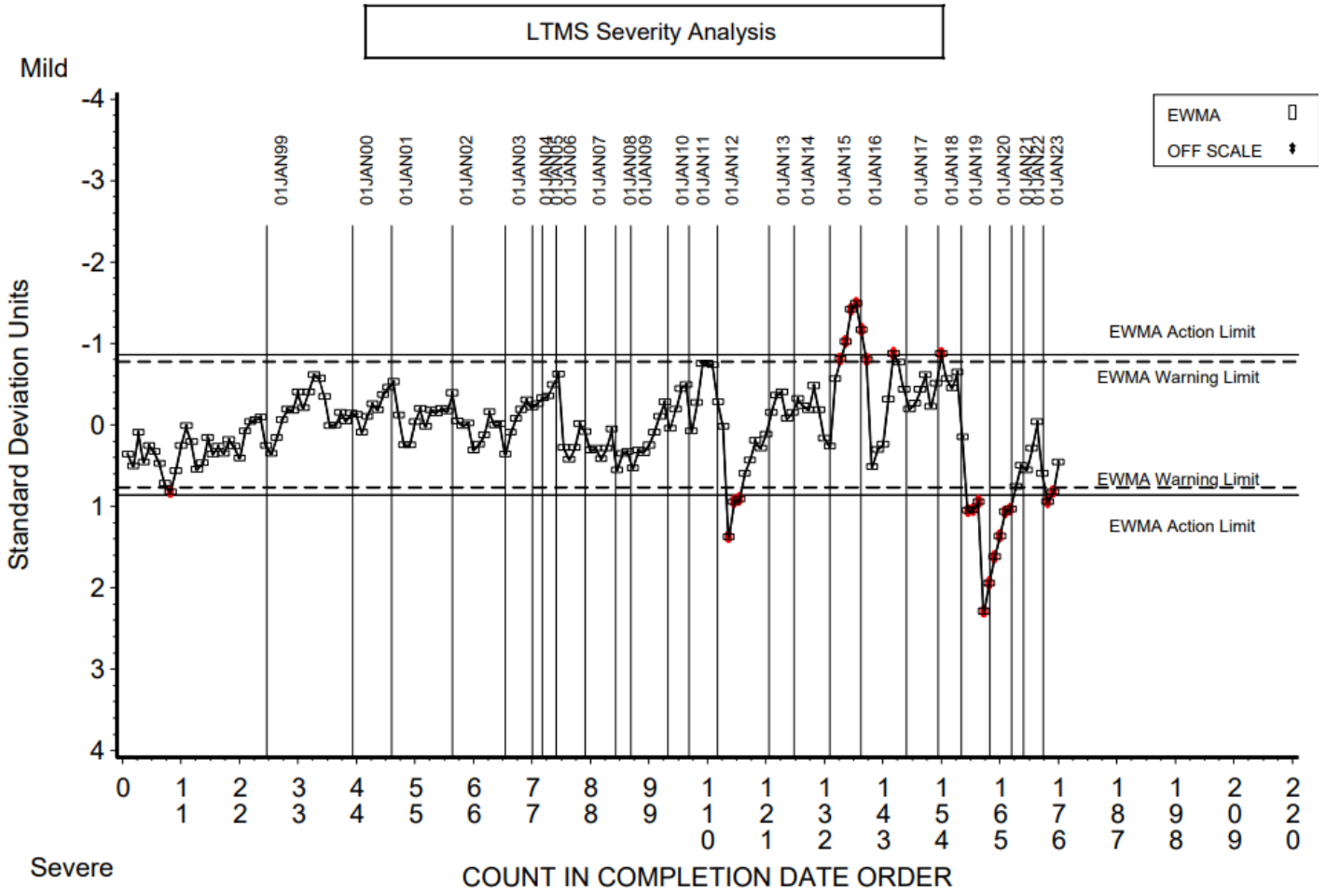
Relative Viscosity @ 4.8% Soot (50% Loss)

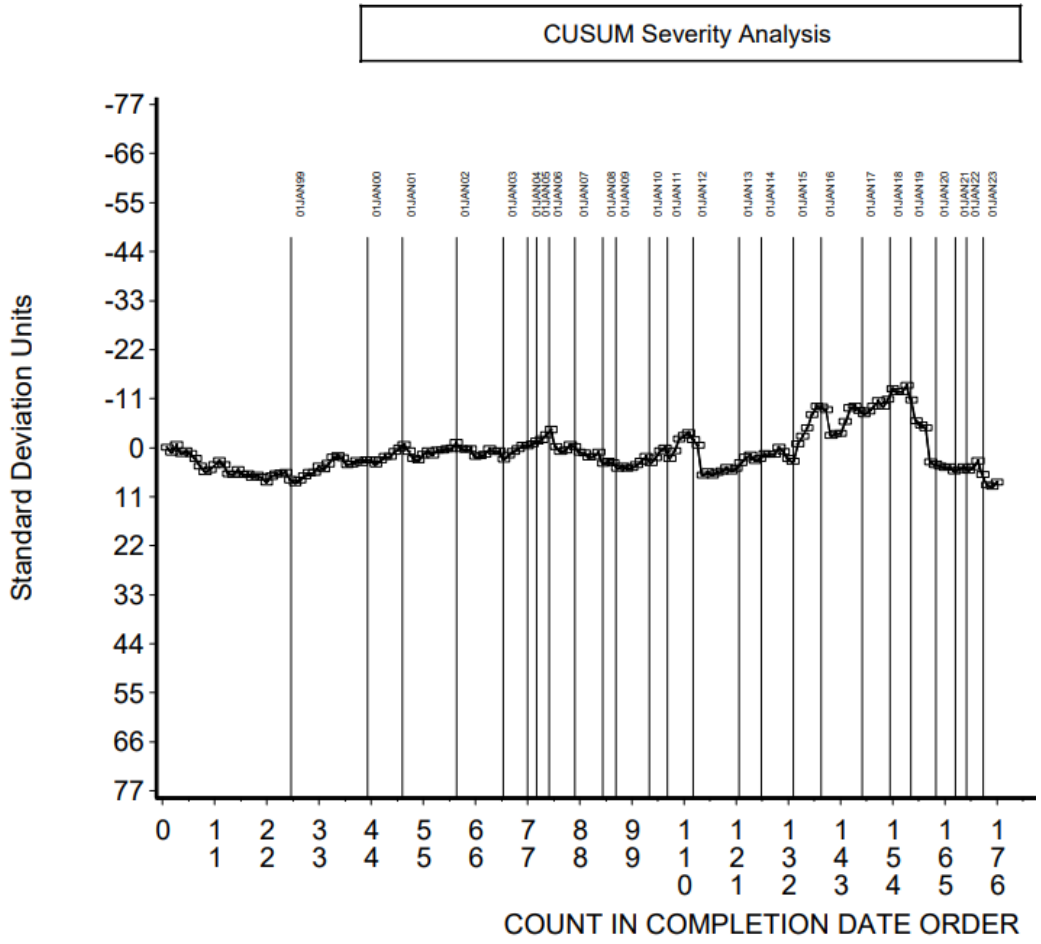




Mack T-8 Charts – RV2

Relative Viscosity @ 4.8% Soot (100% Loss)

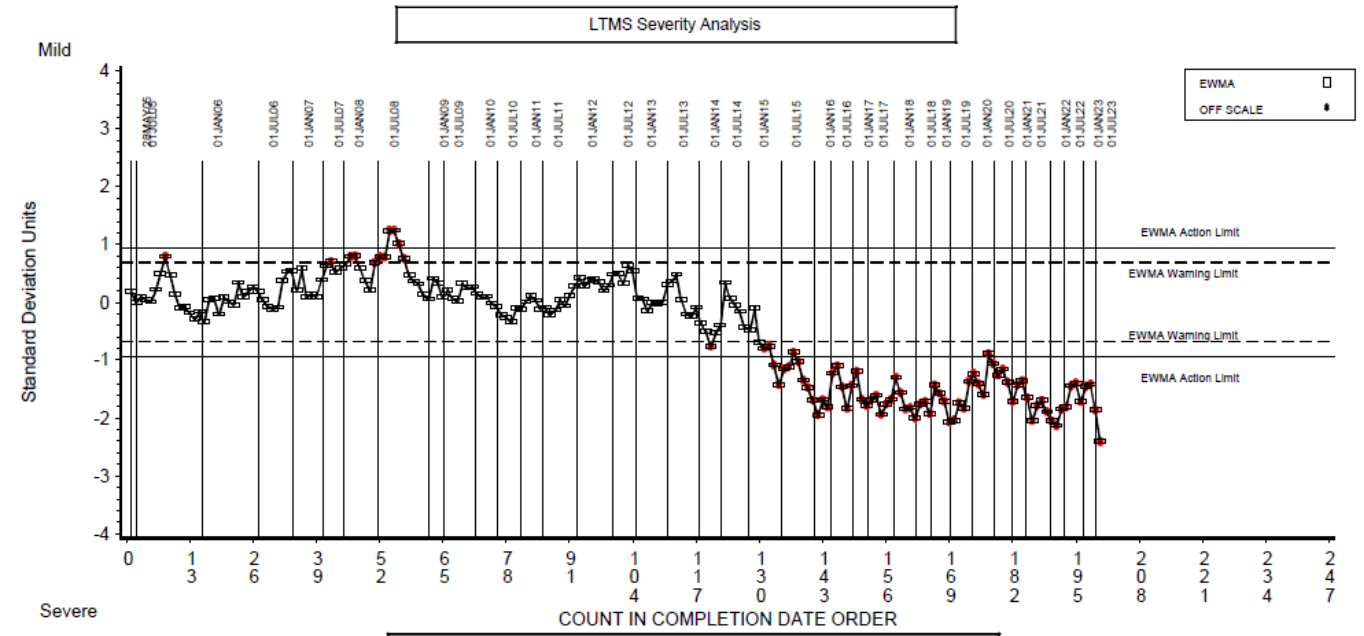


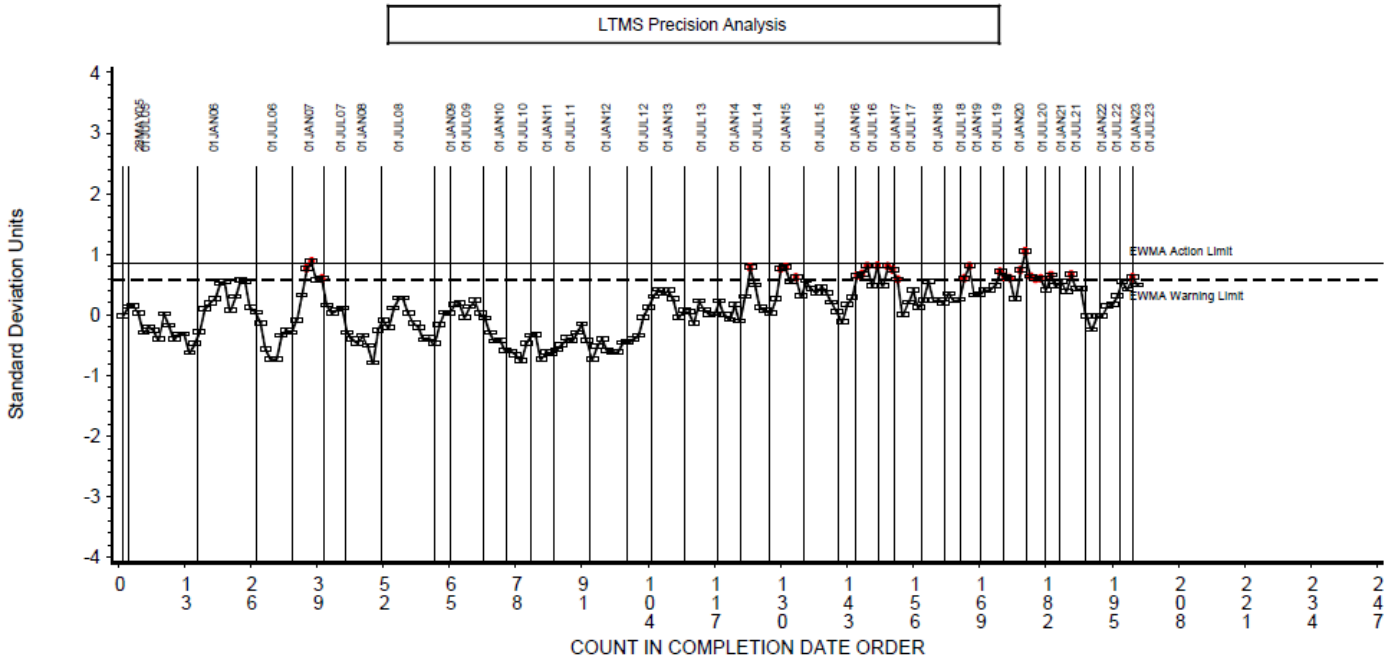


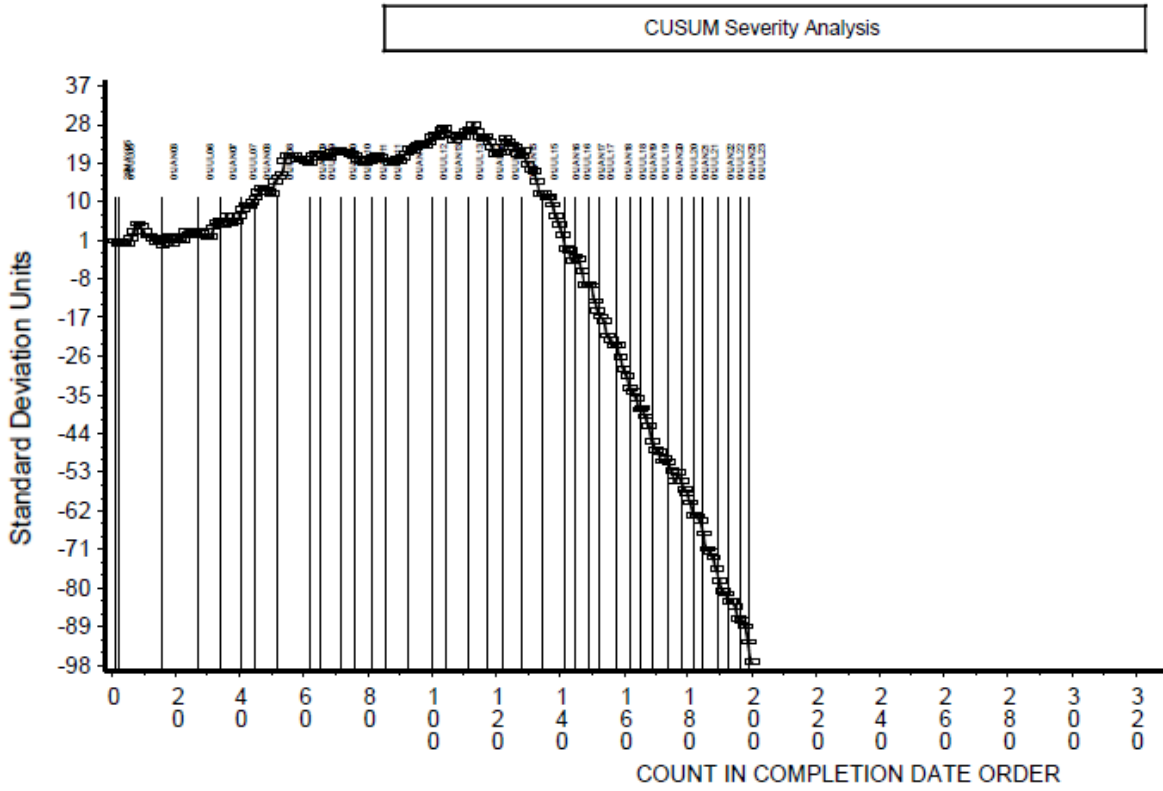
Mack T-11

Mack T-11 Charts – SOOT4

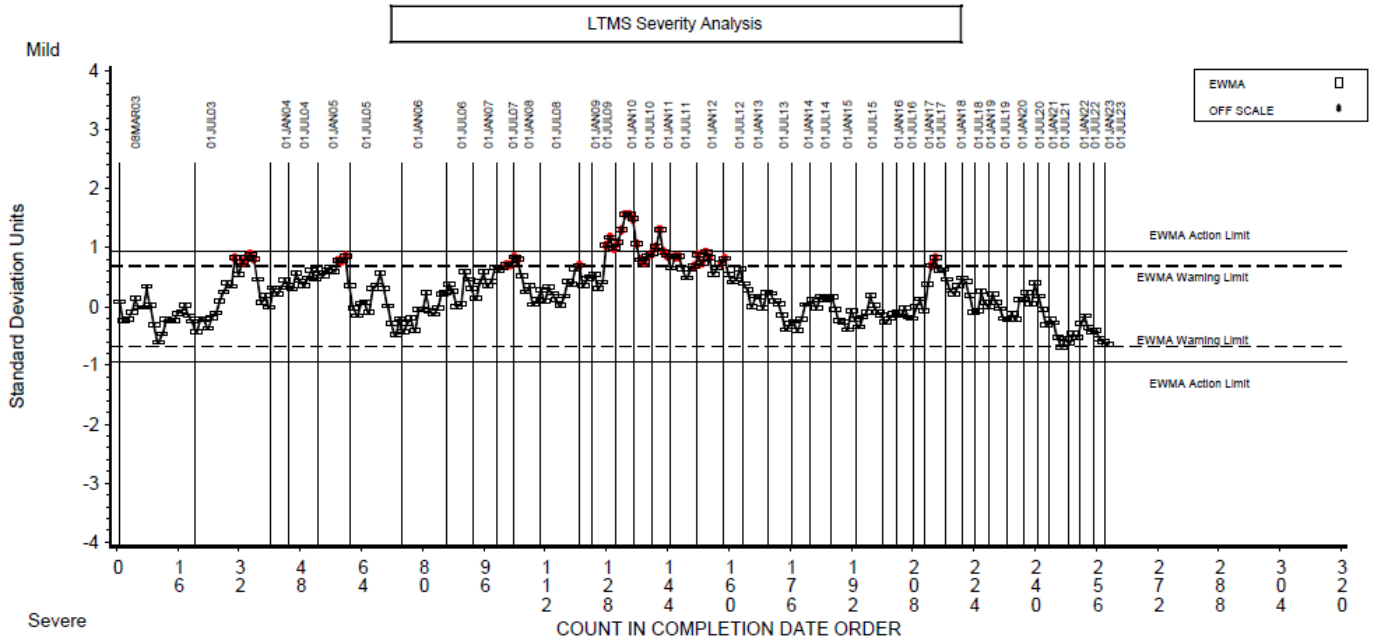
SOOT @ 4 cSt - FINAL RESULT

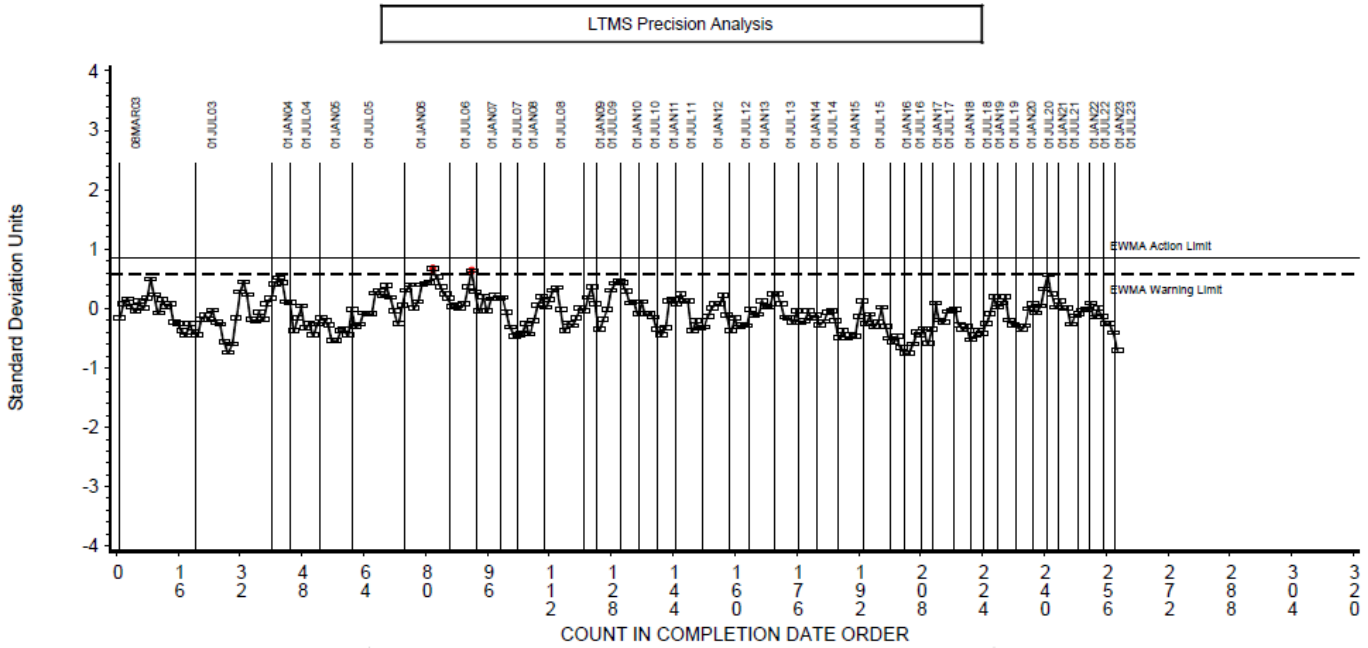


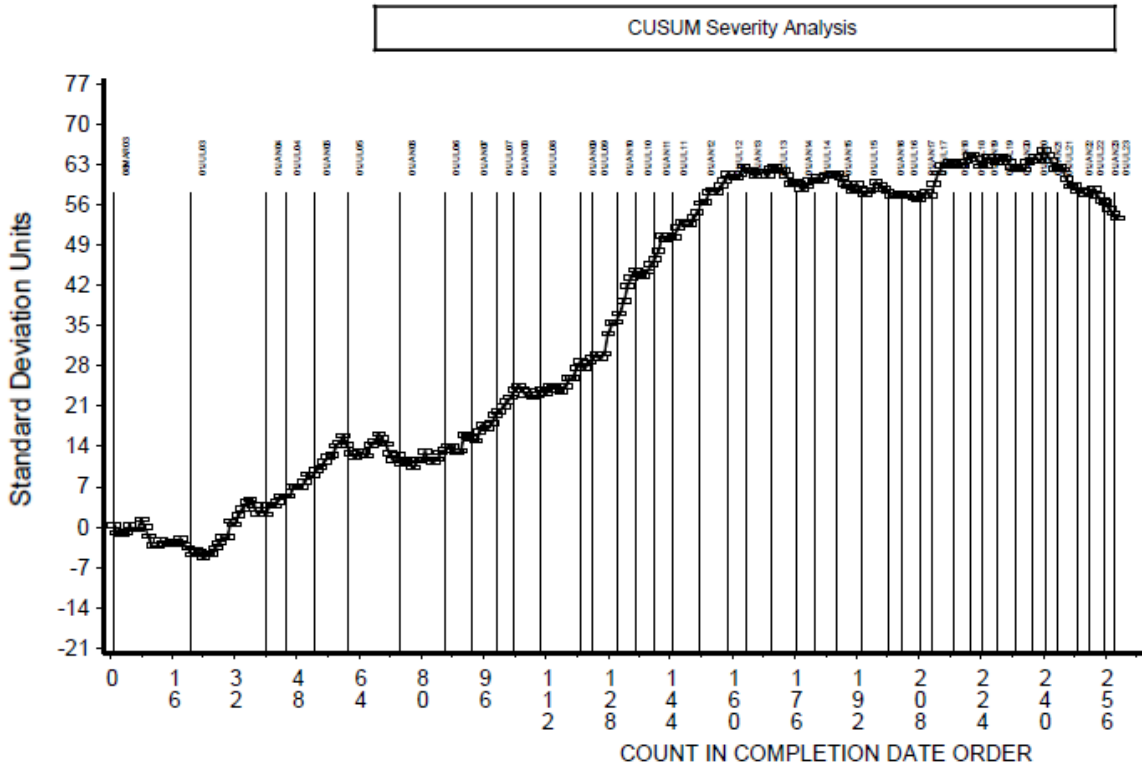




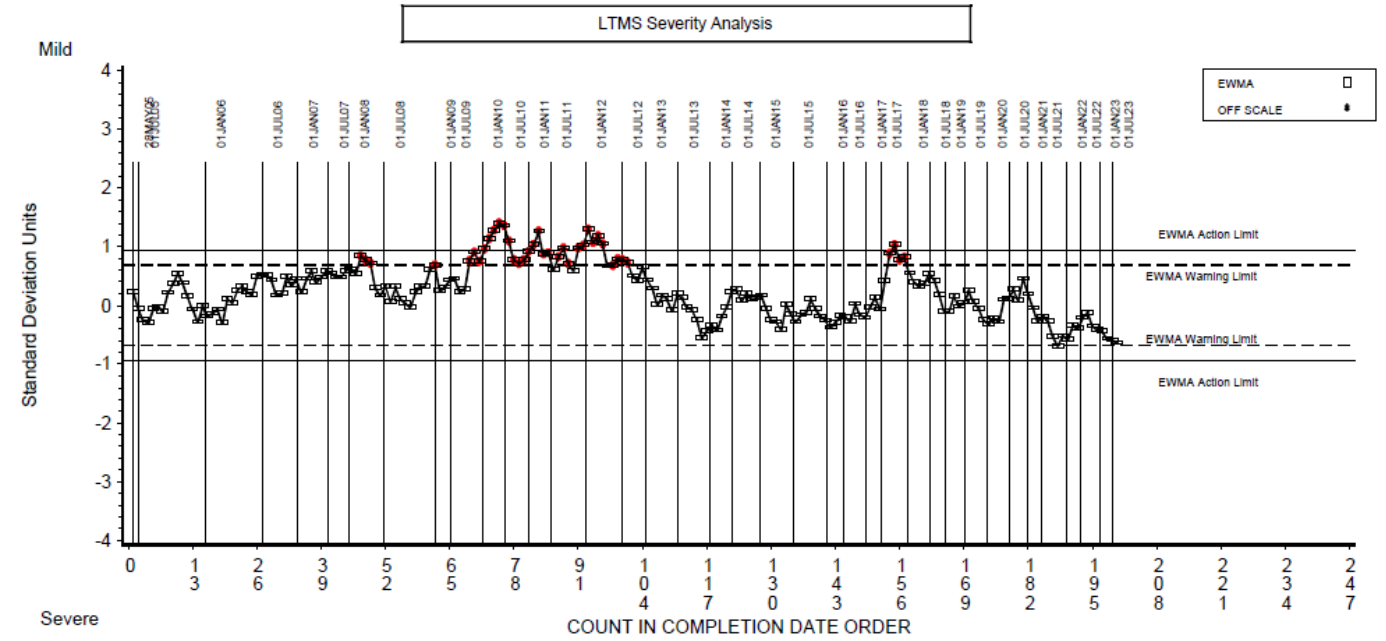
Mack T-11 Charts – SOOT

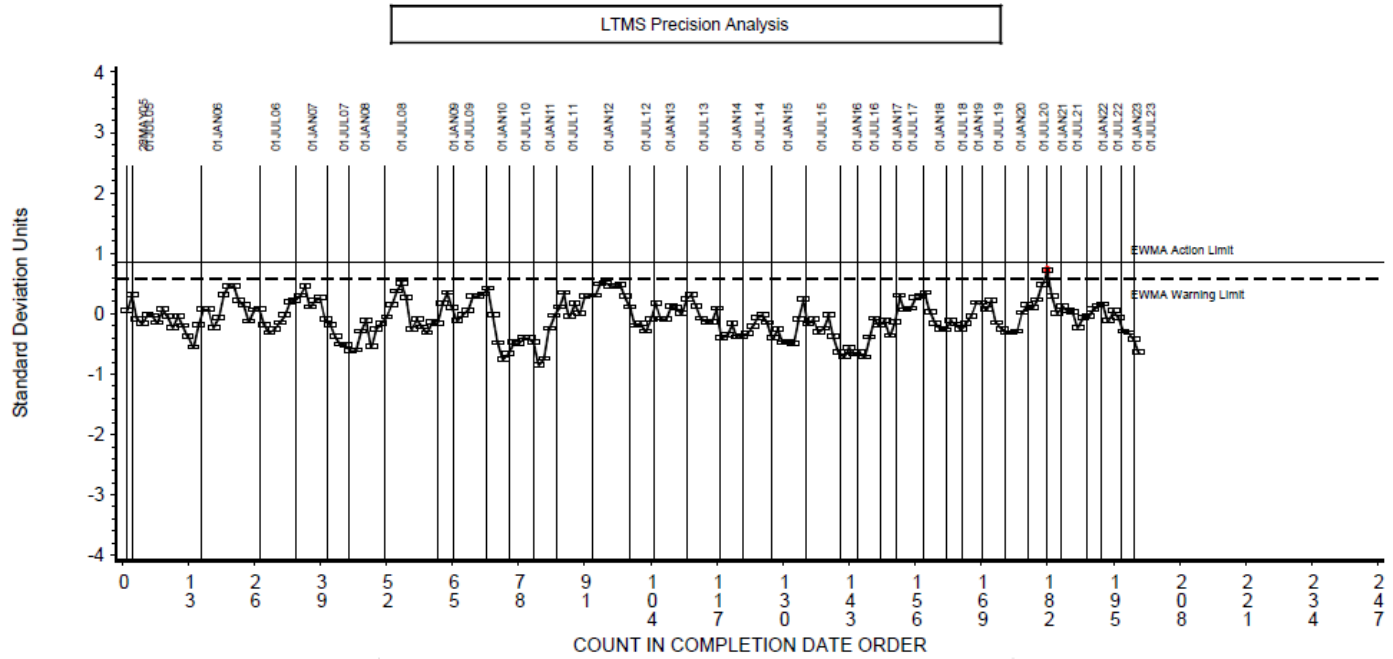


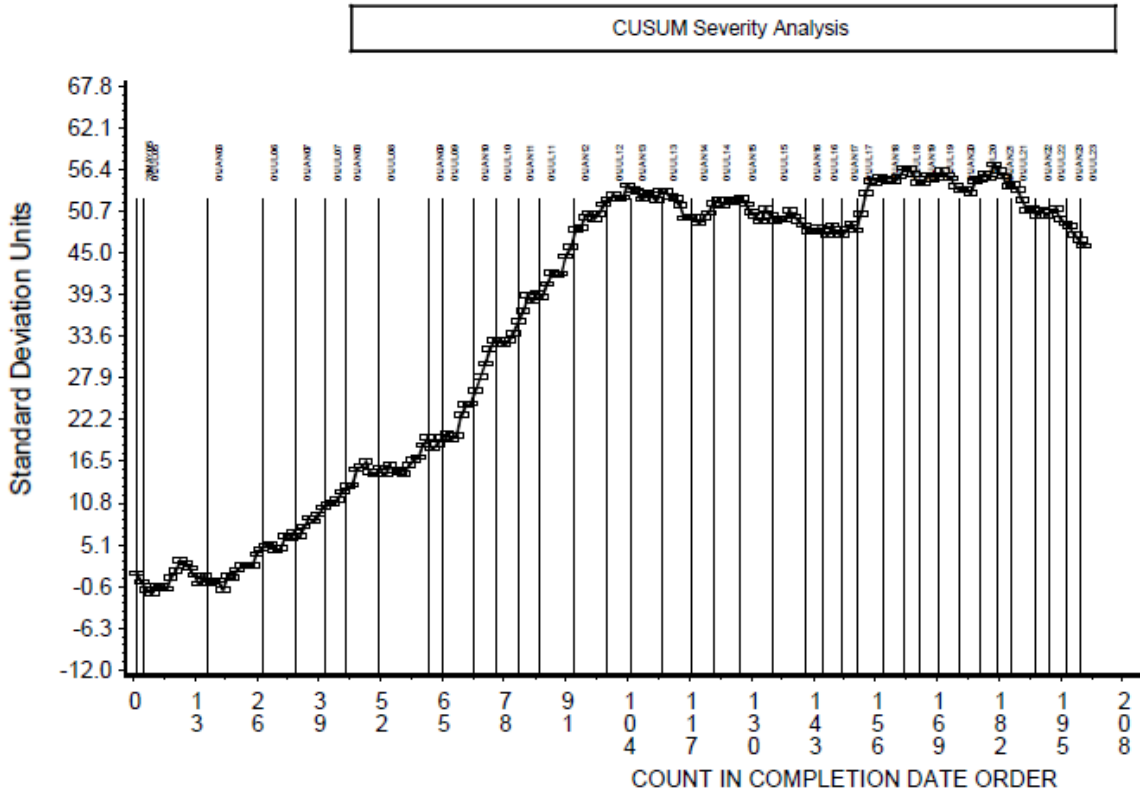




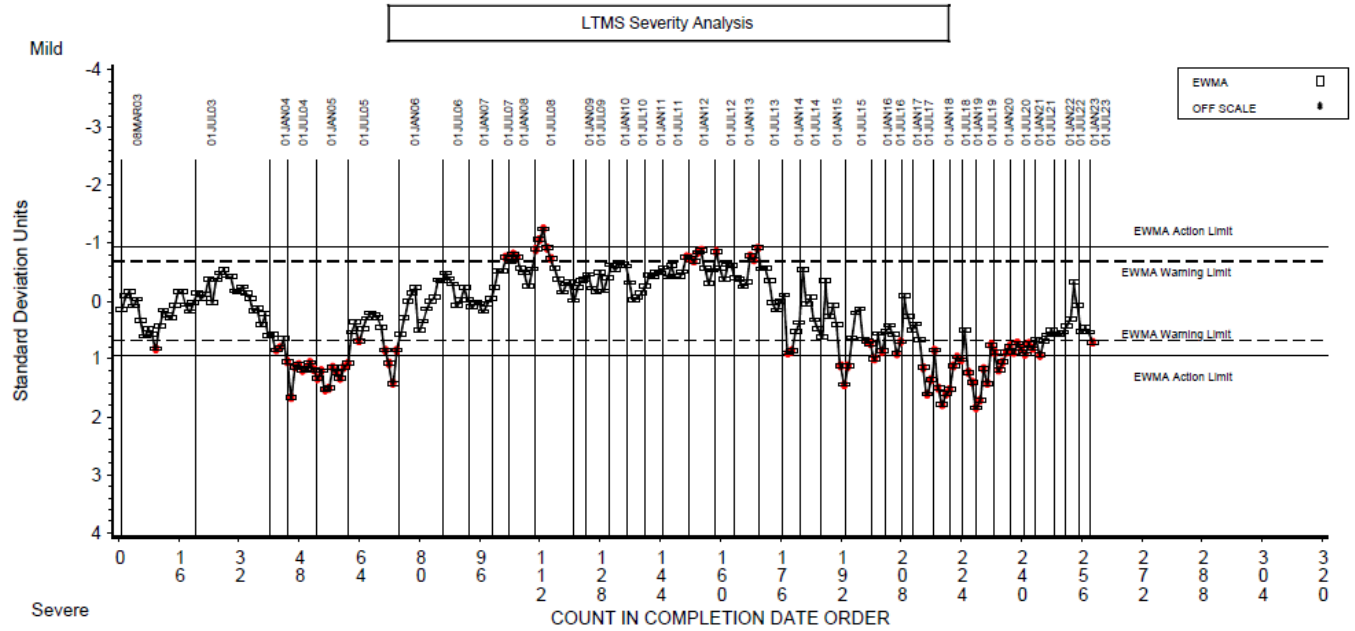
Mack T-11 Charts – SOOT5

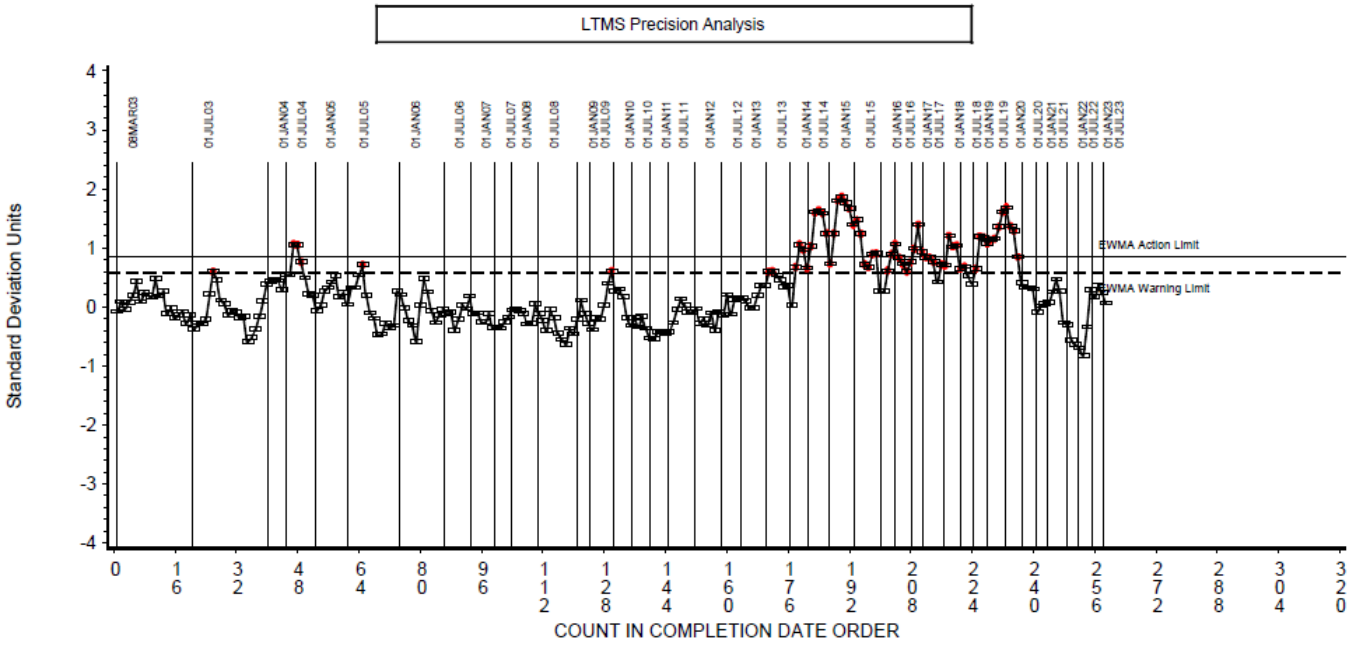


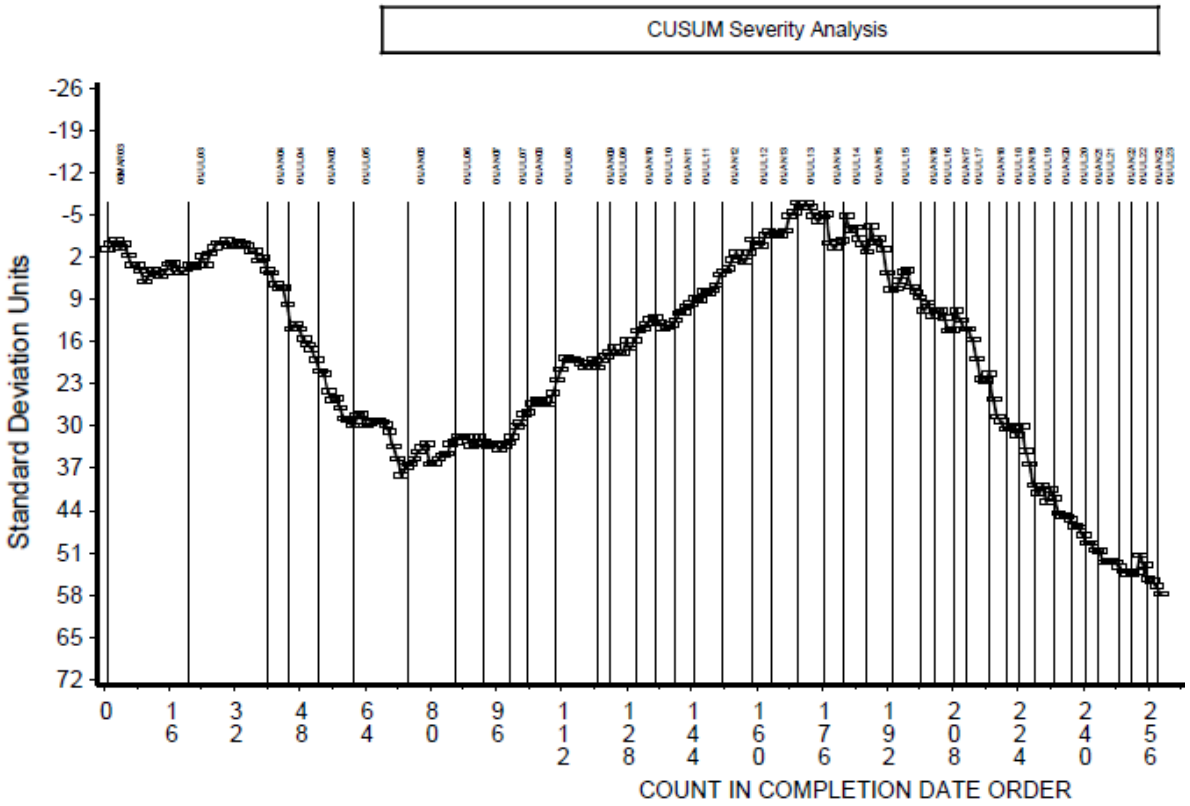




Mack T-11 Charts – MRV



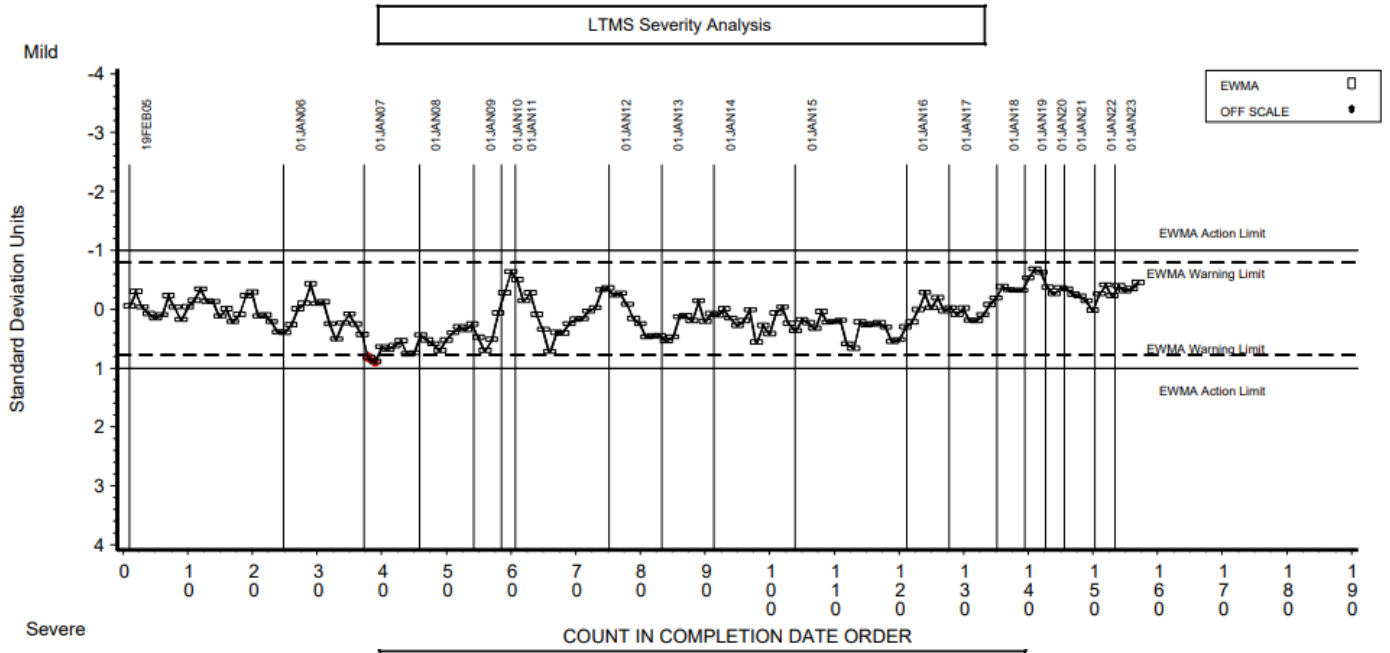


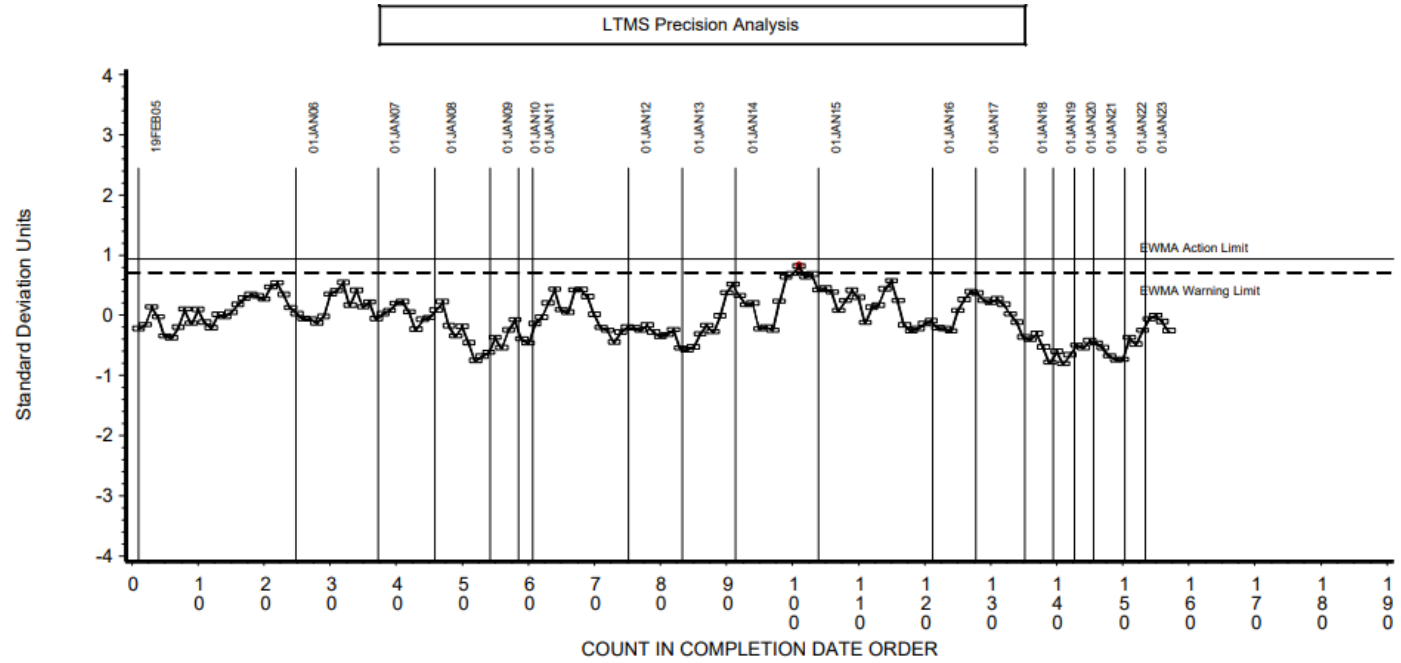


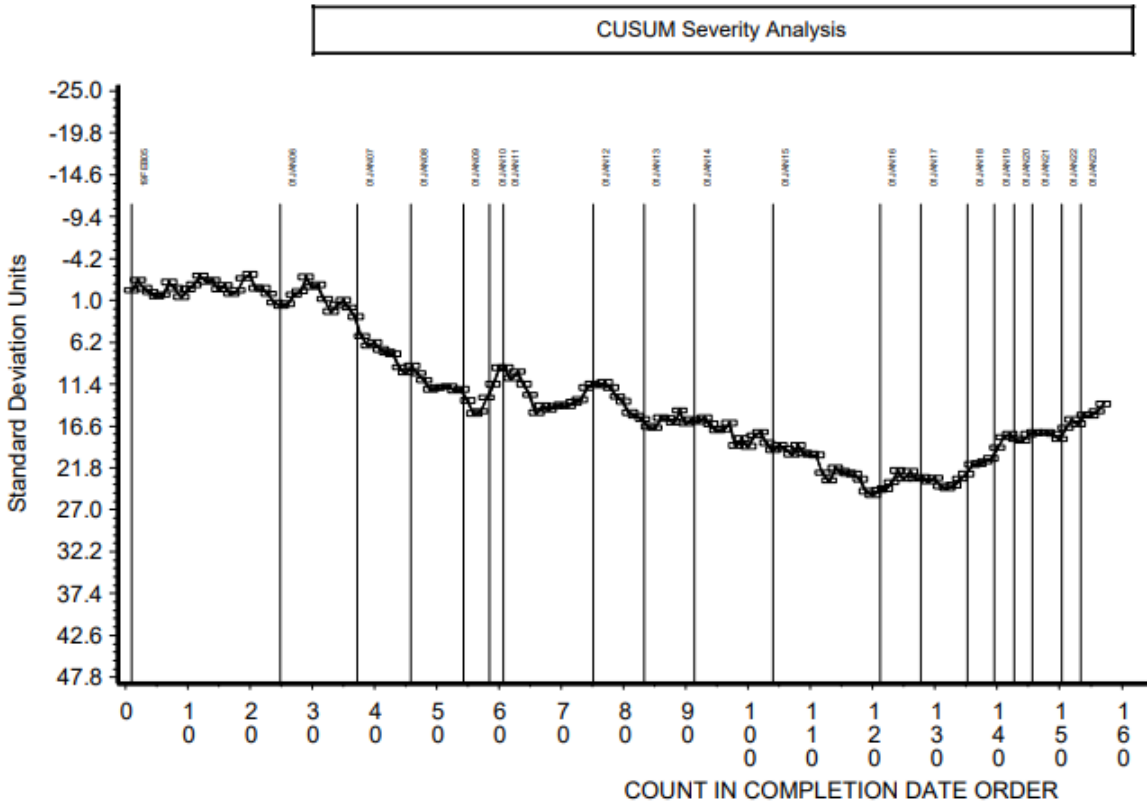
Mack T-12

Mack T-12 Charts – CLW

Avg. Cylinder Liner Wear

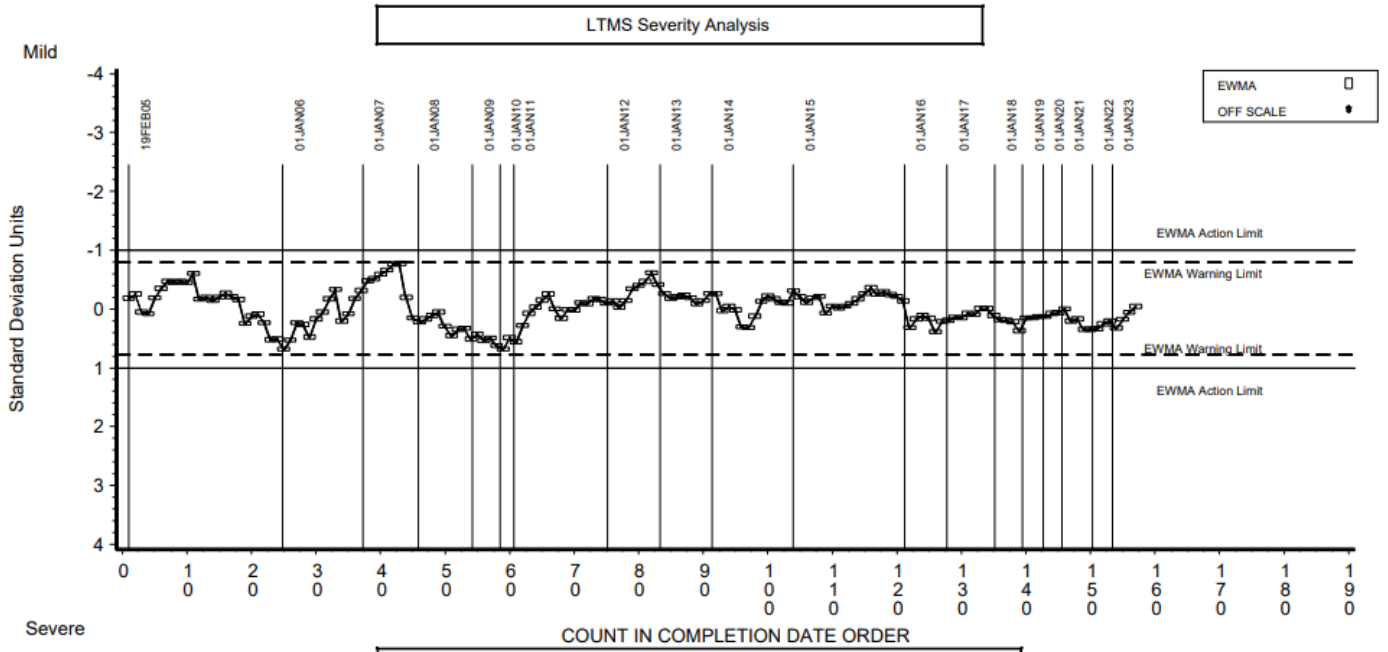


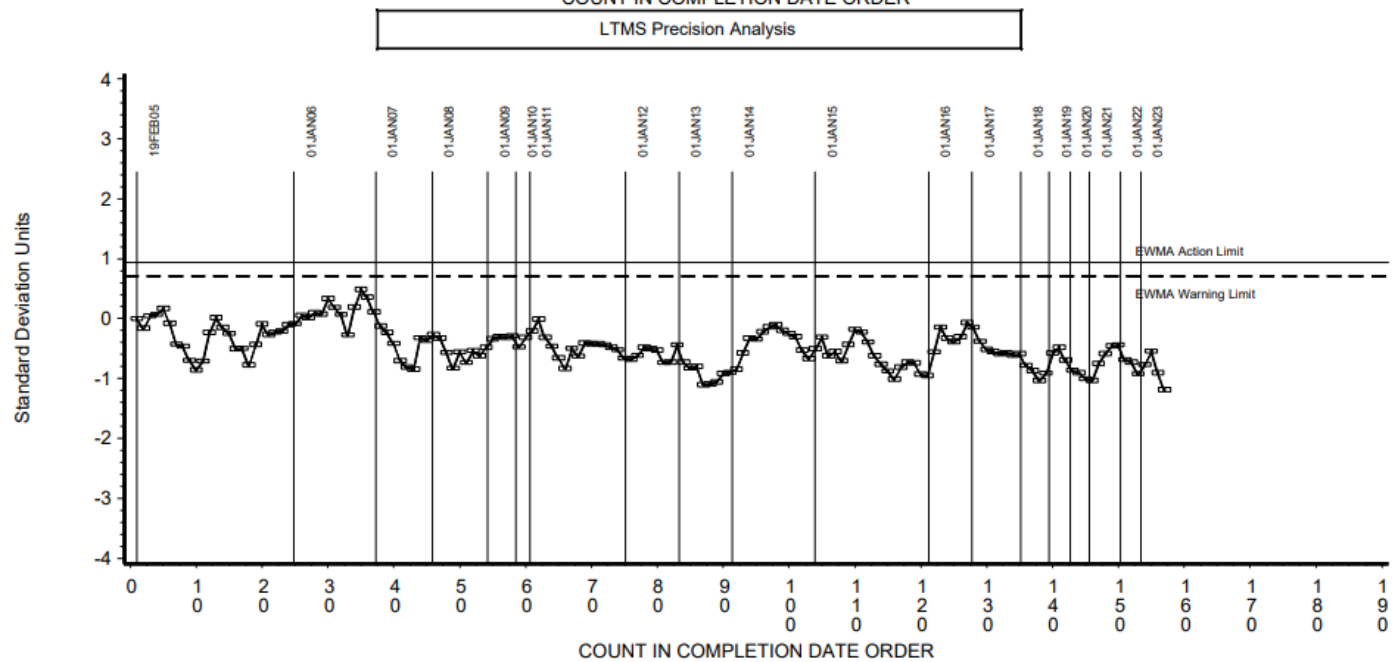


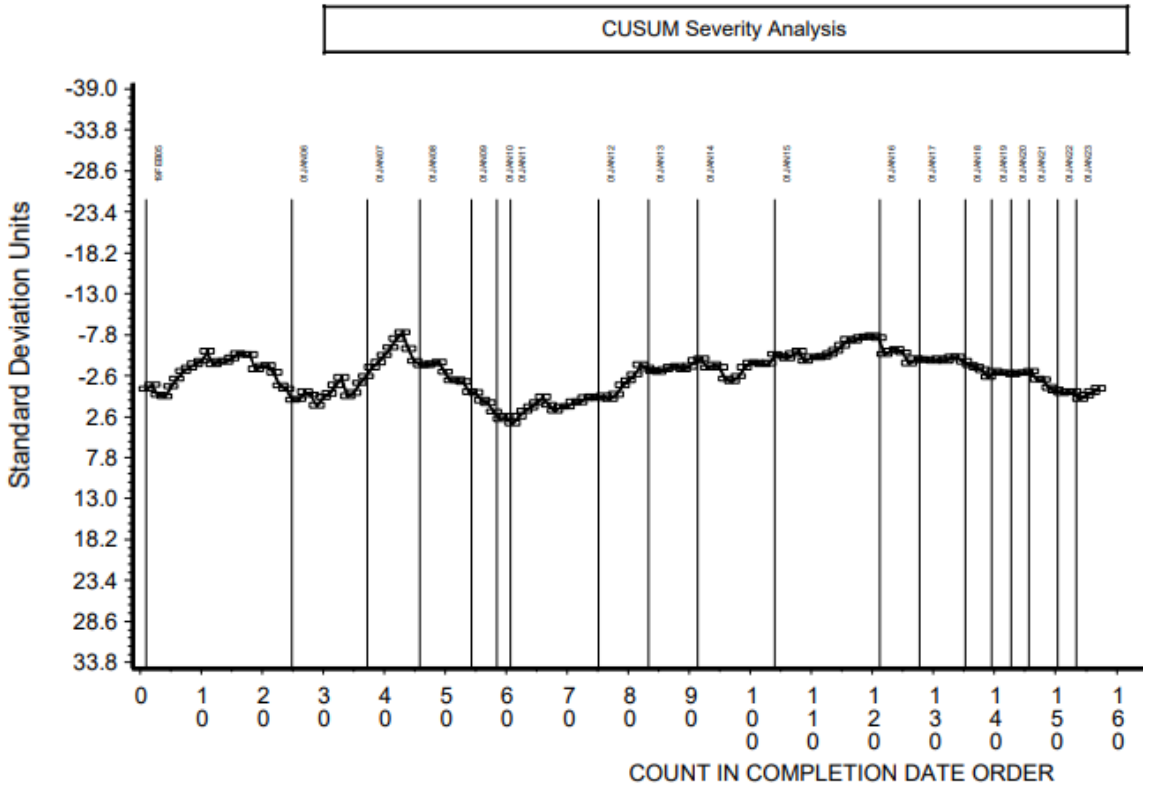


Mack T-12 Charts – TRWL

Avg. Top Ring Weight Loss

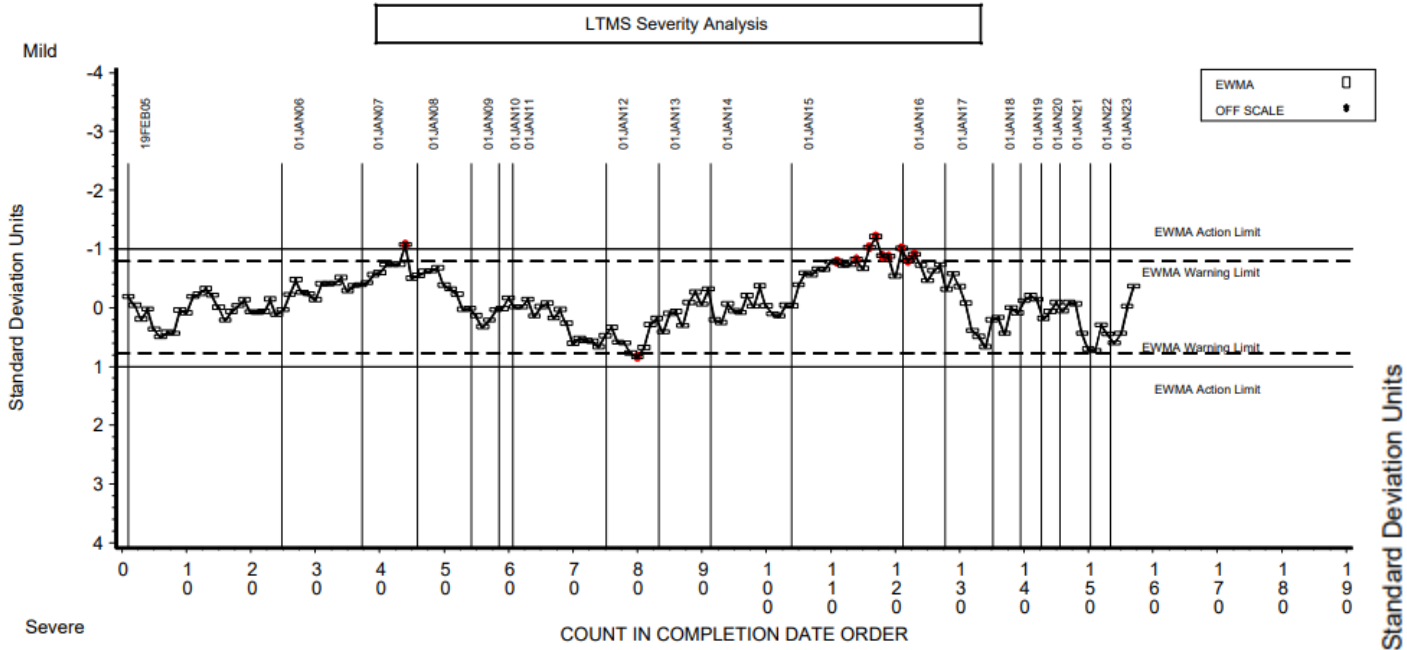


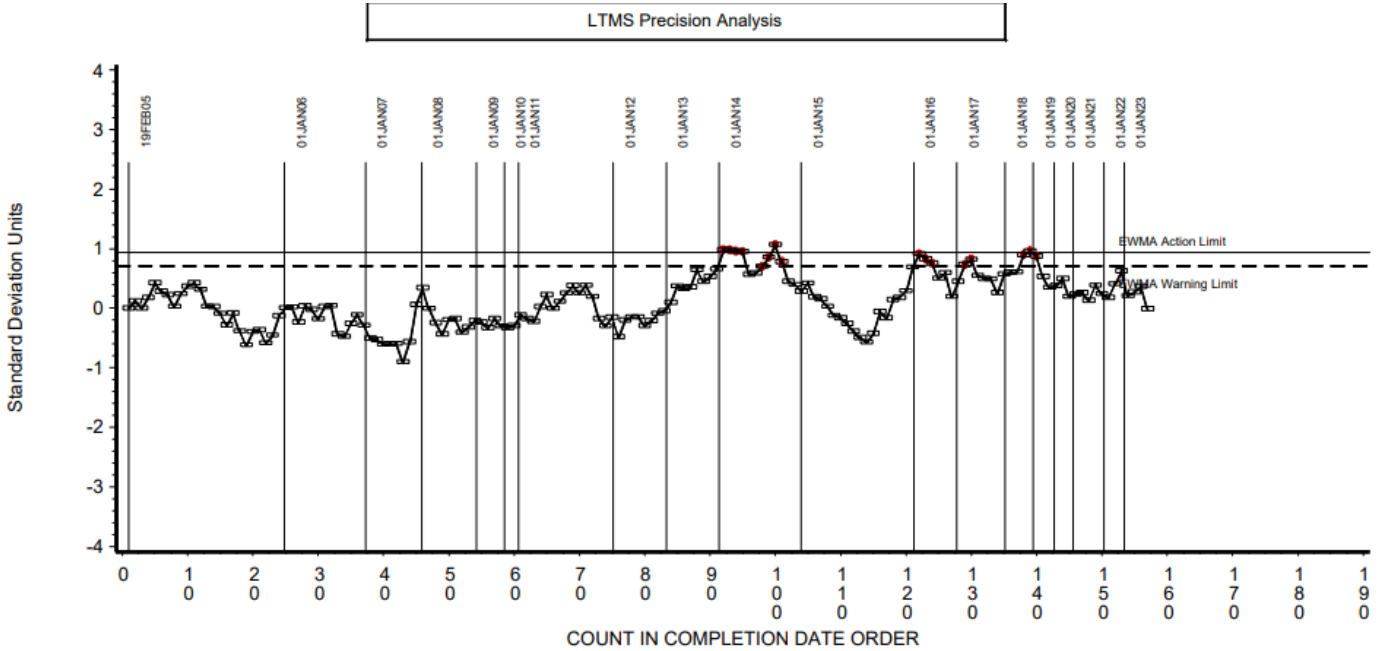


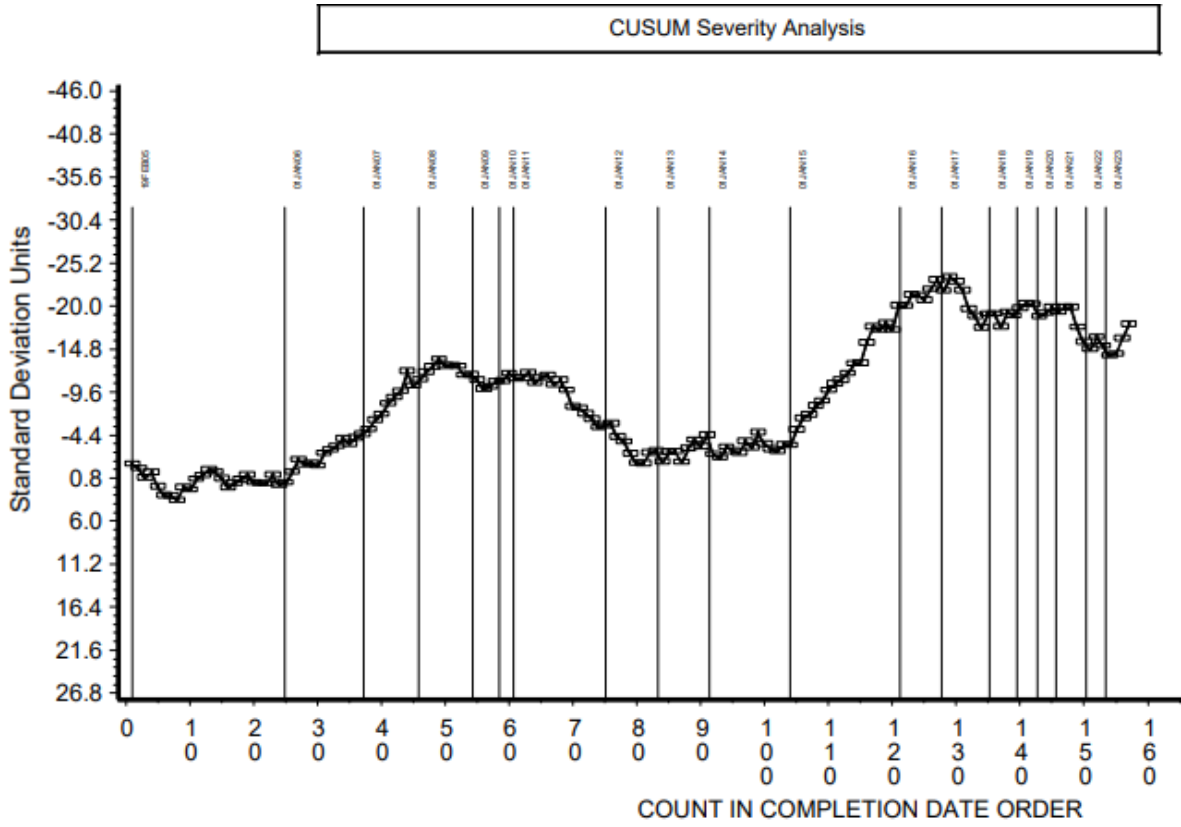


Mack T-12 Charts – PB

Trans. Res. Delta PB @ EOT

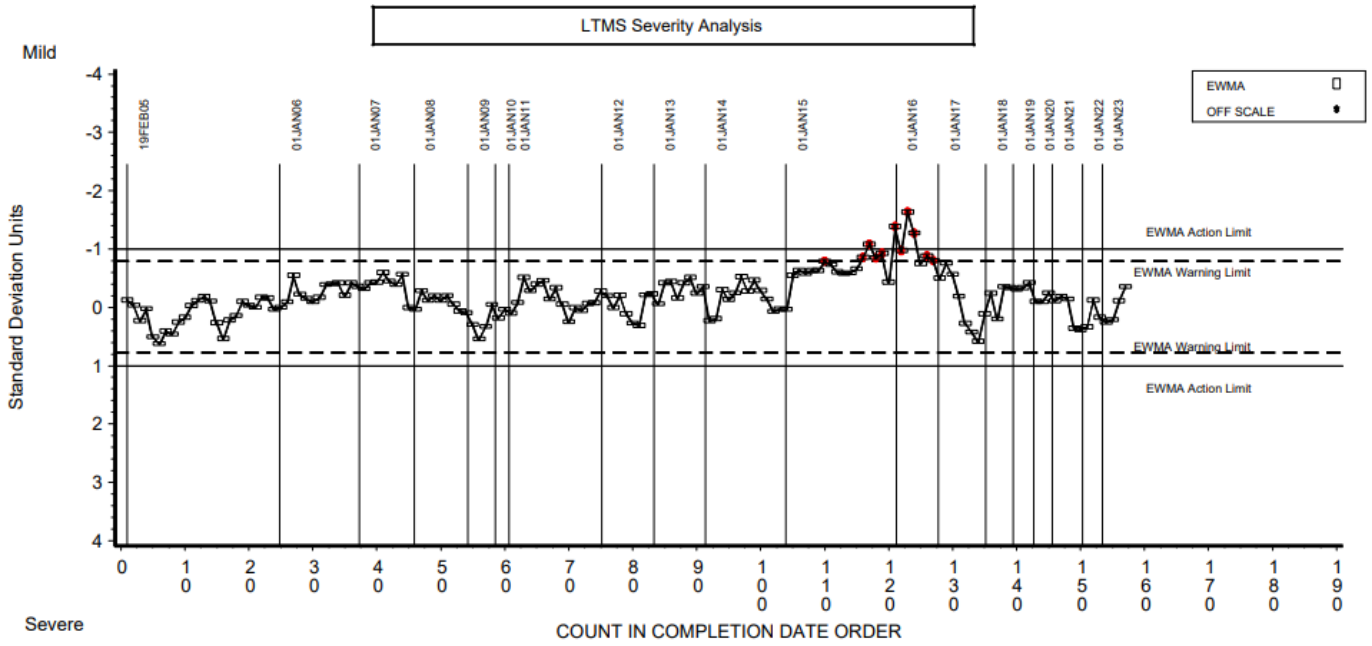


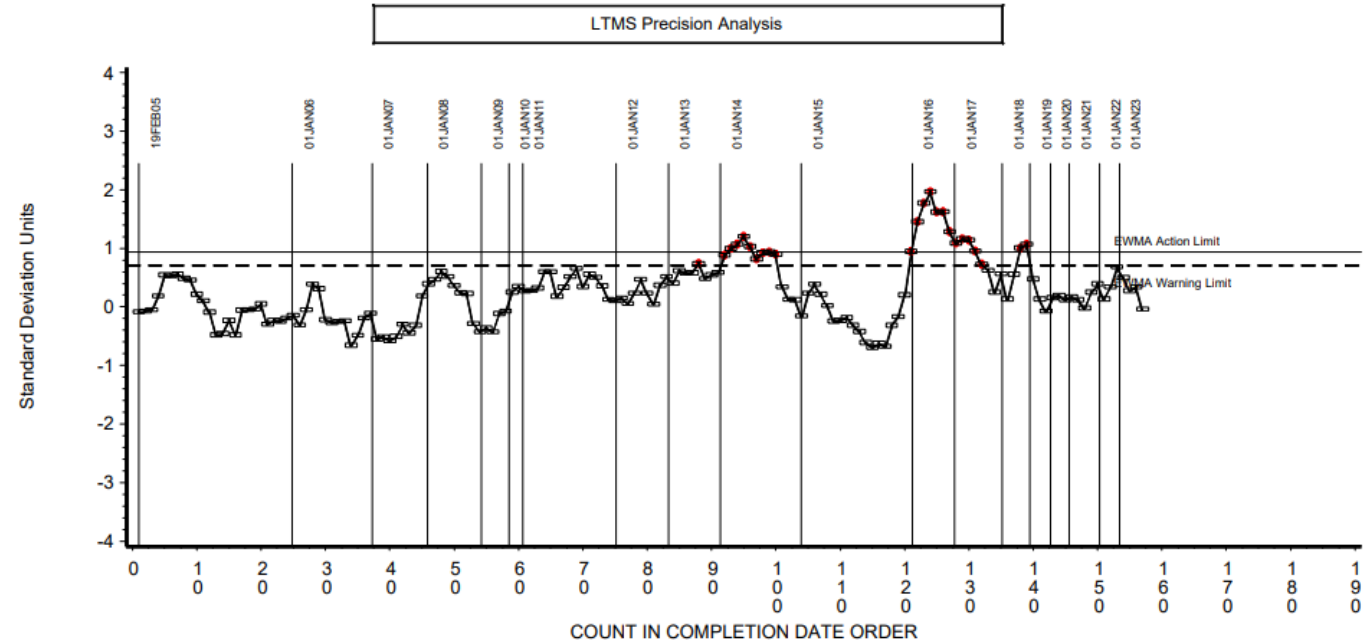


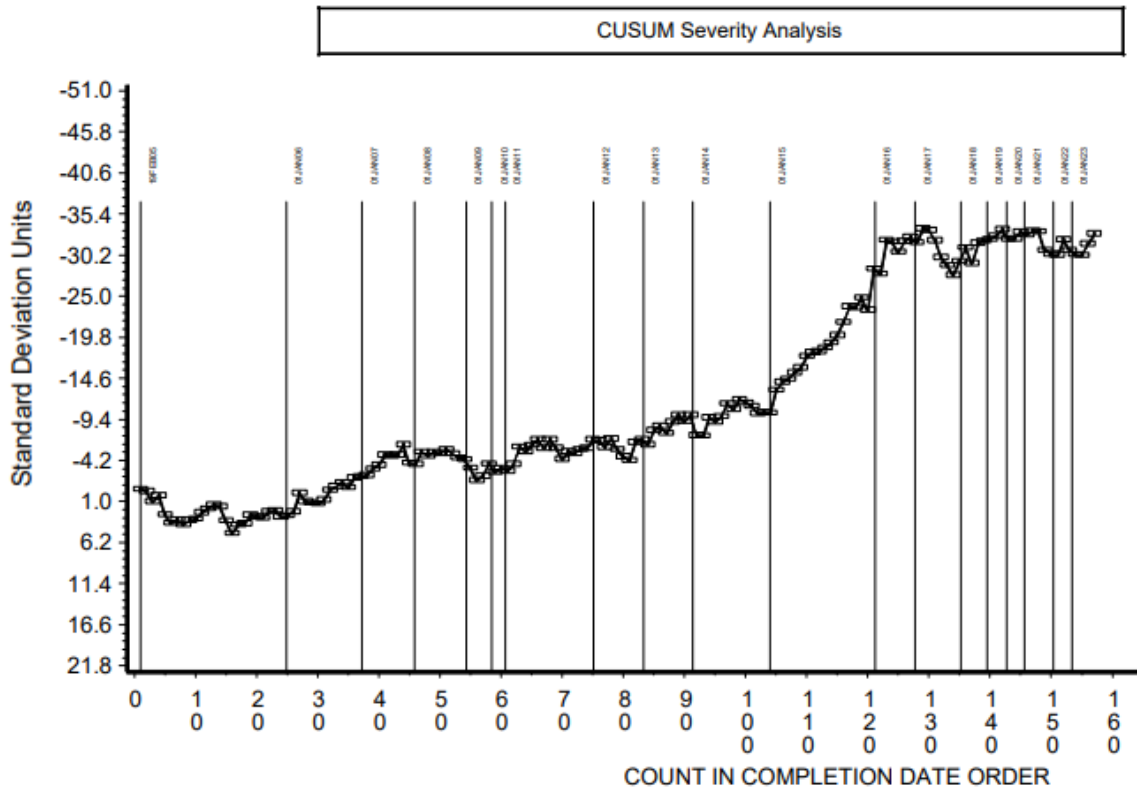


Mack T-12 Charts – PB2

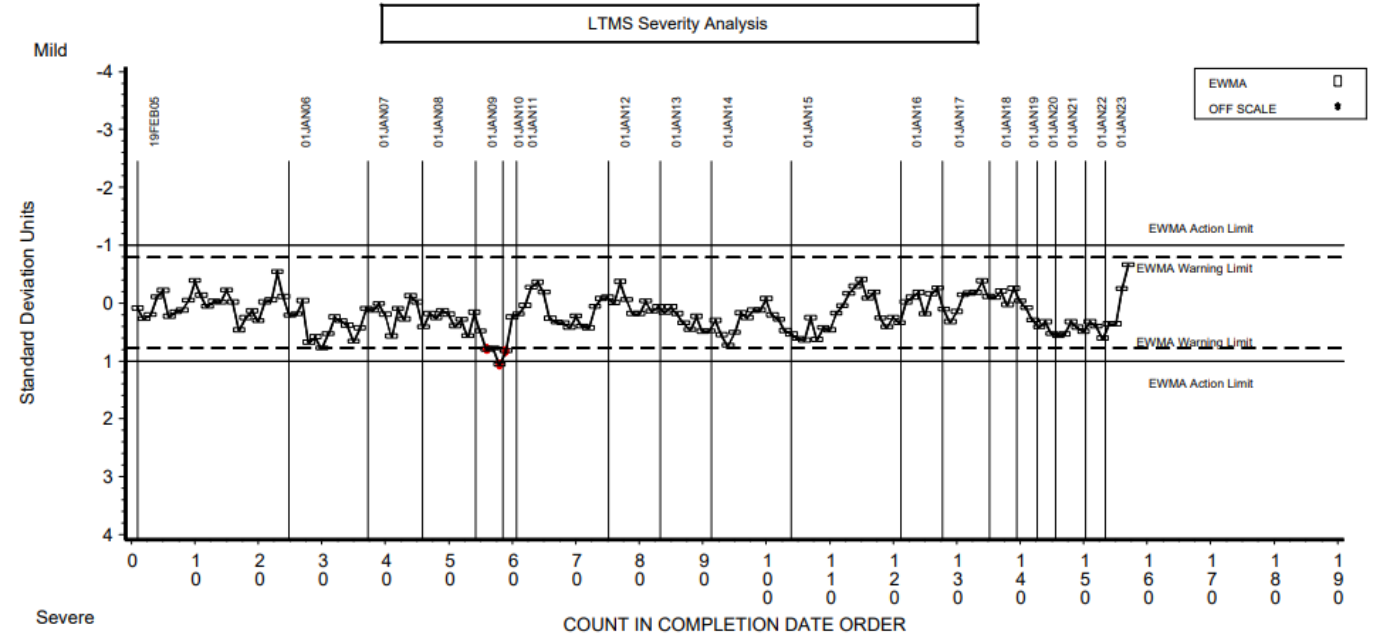
Trans. Res. Delta PB 250-300Hr

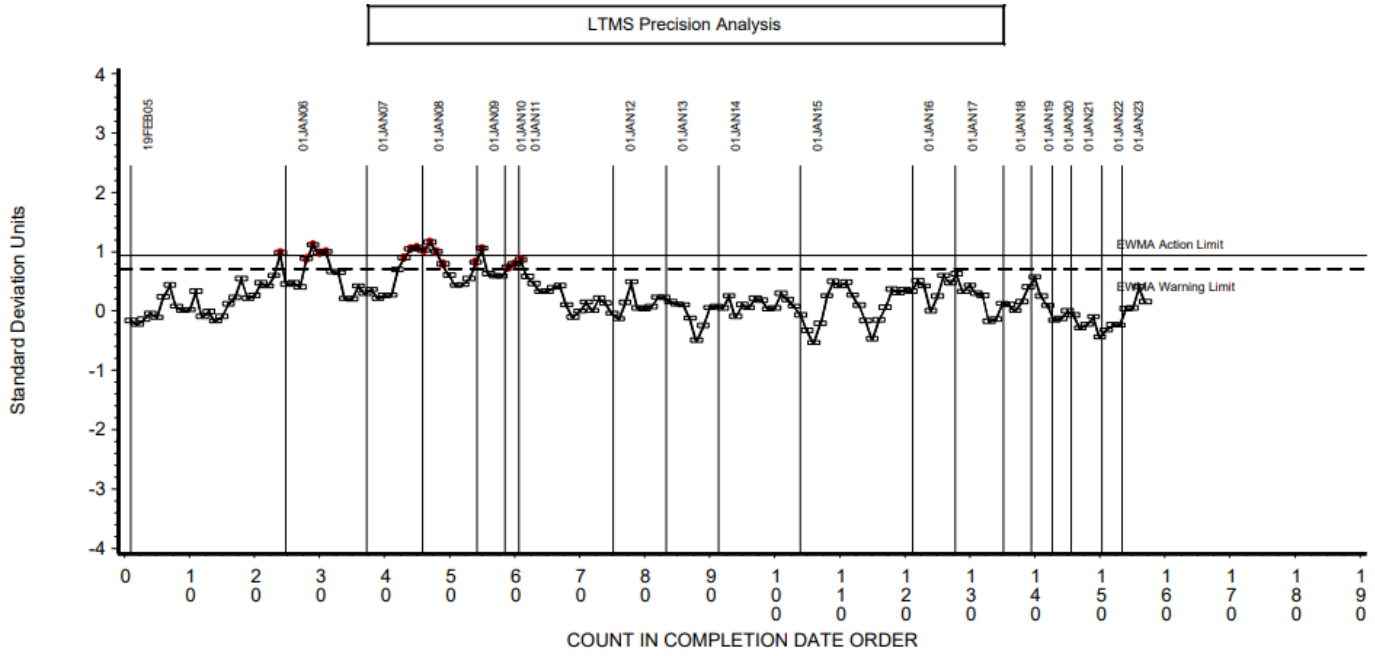


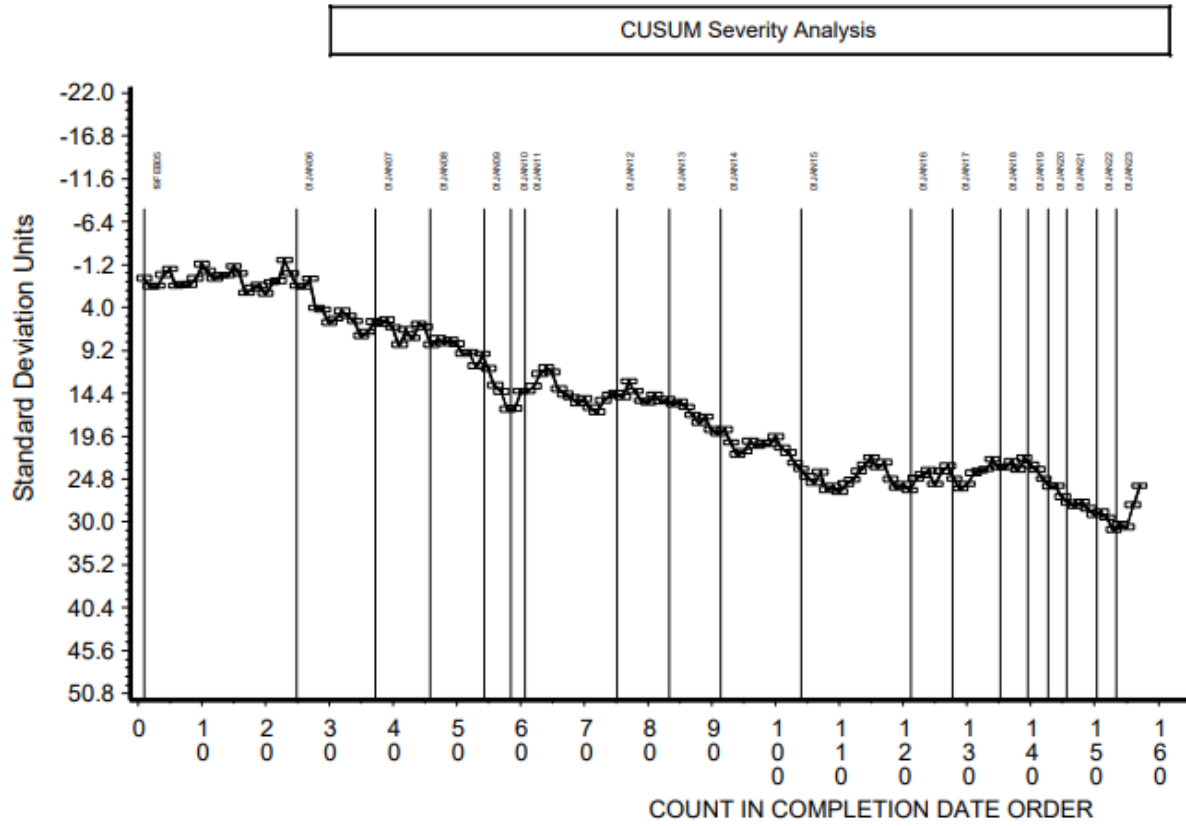




Mack T-12 Charts – OC



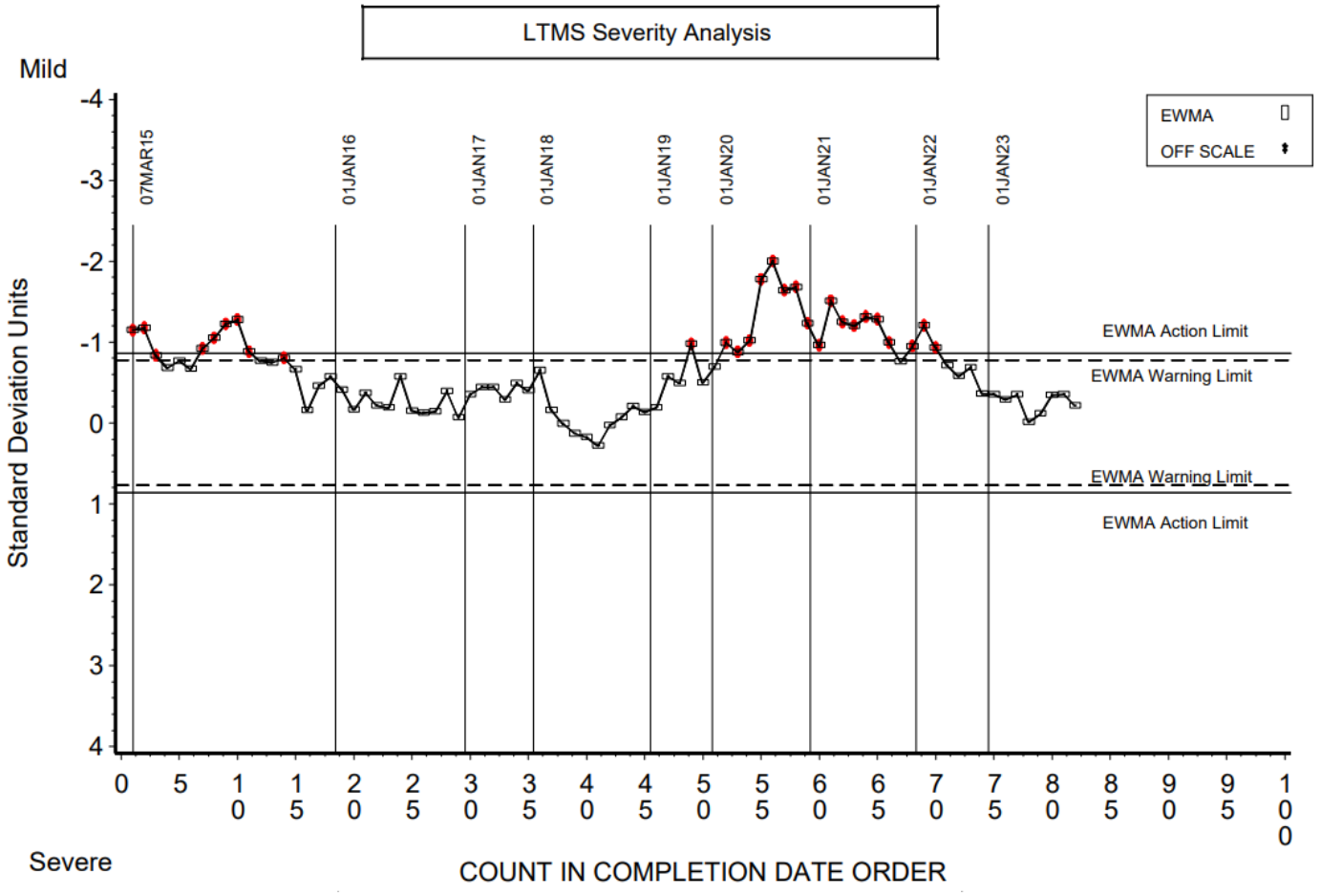


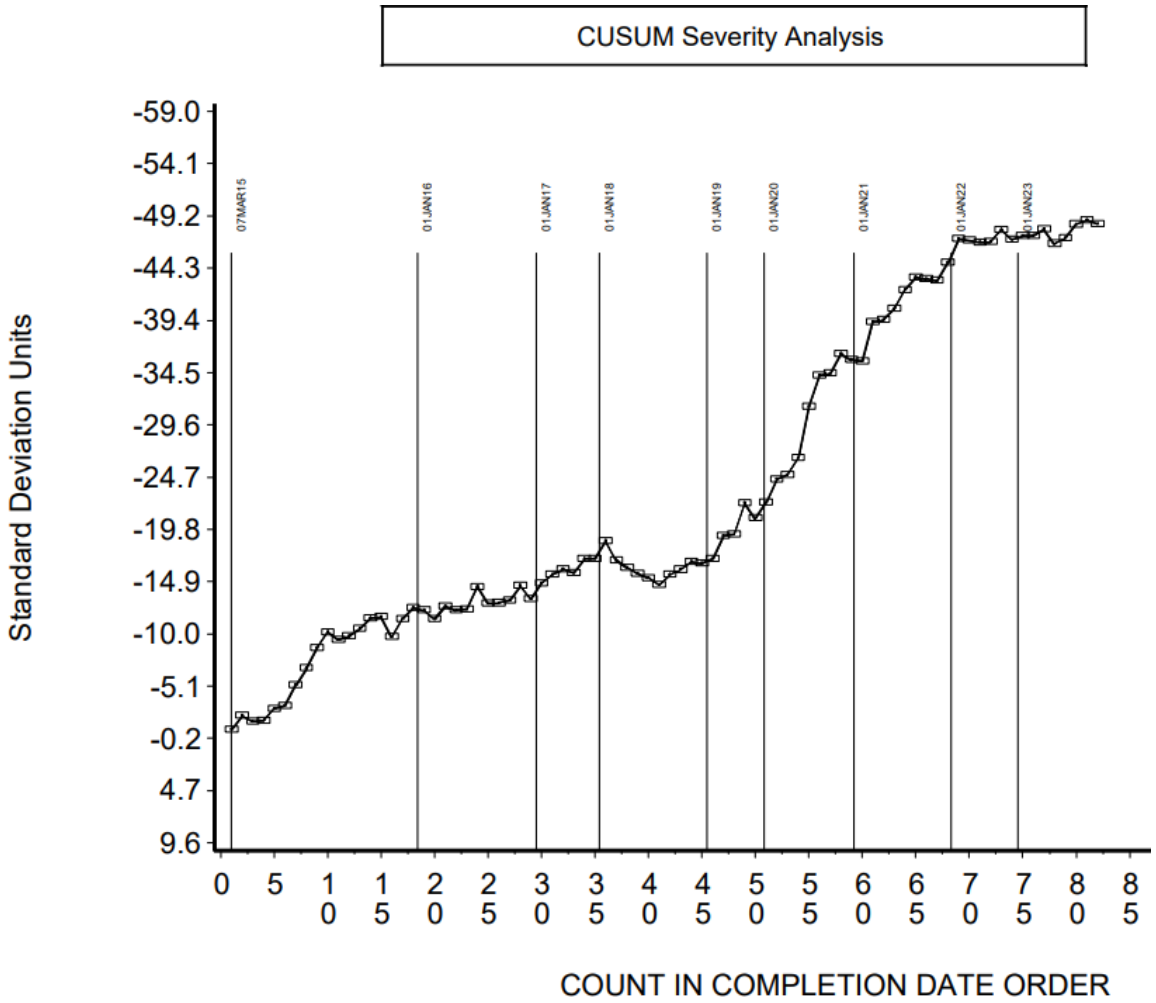


Volvo T-13

Volvo T-13 Charts – IRPH

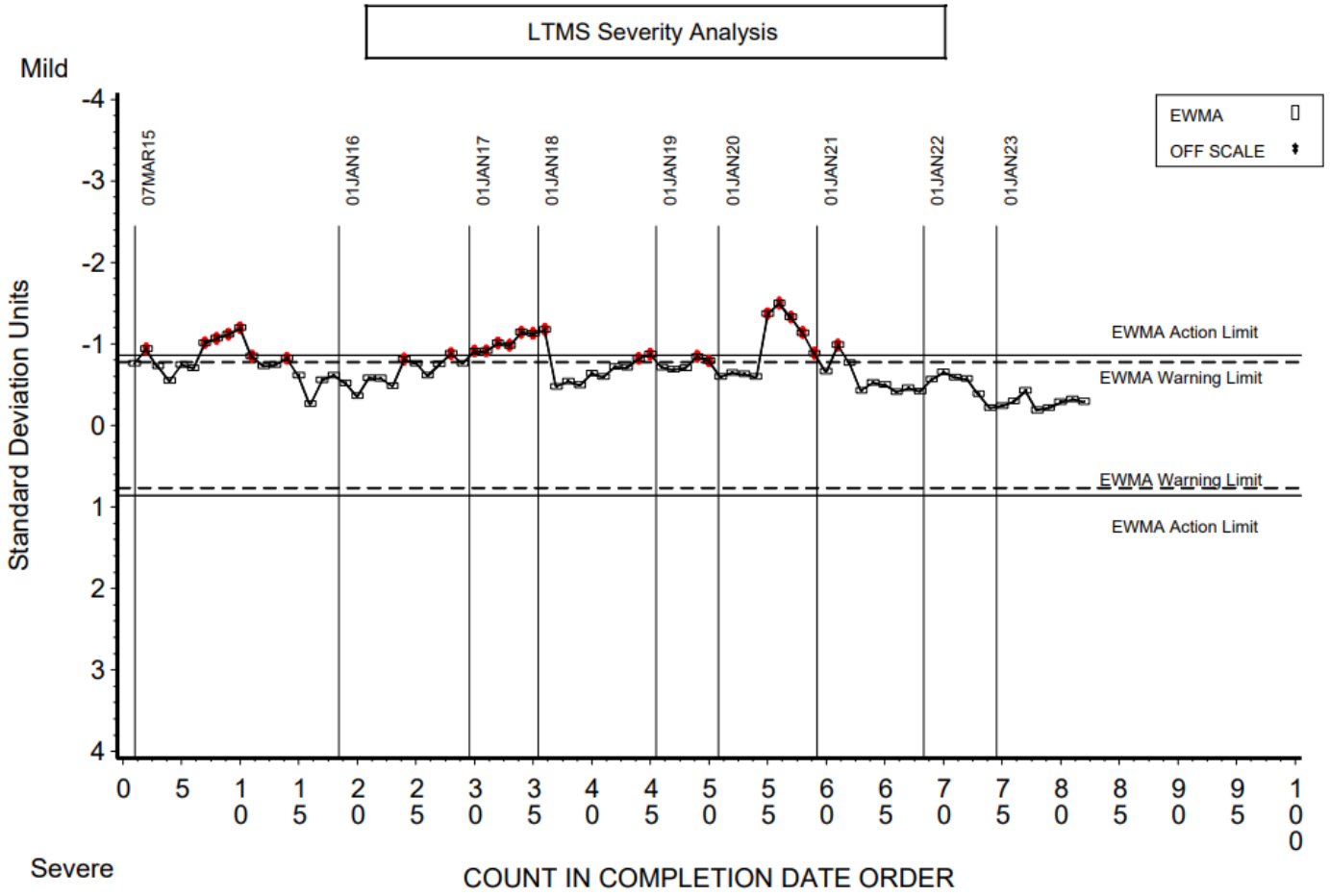
FINAL ORIGINAL PEAK HEIGHT IR AT EOT

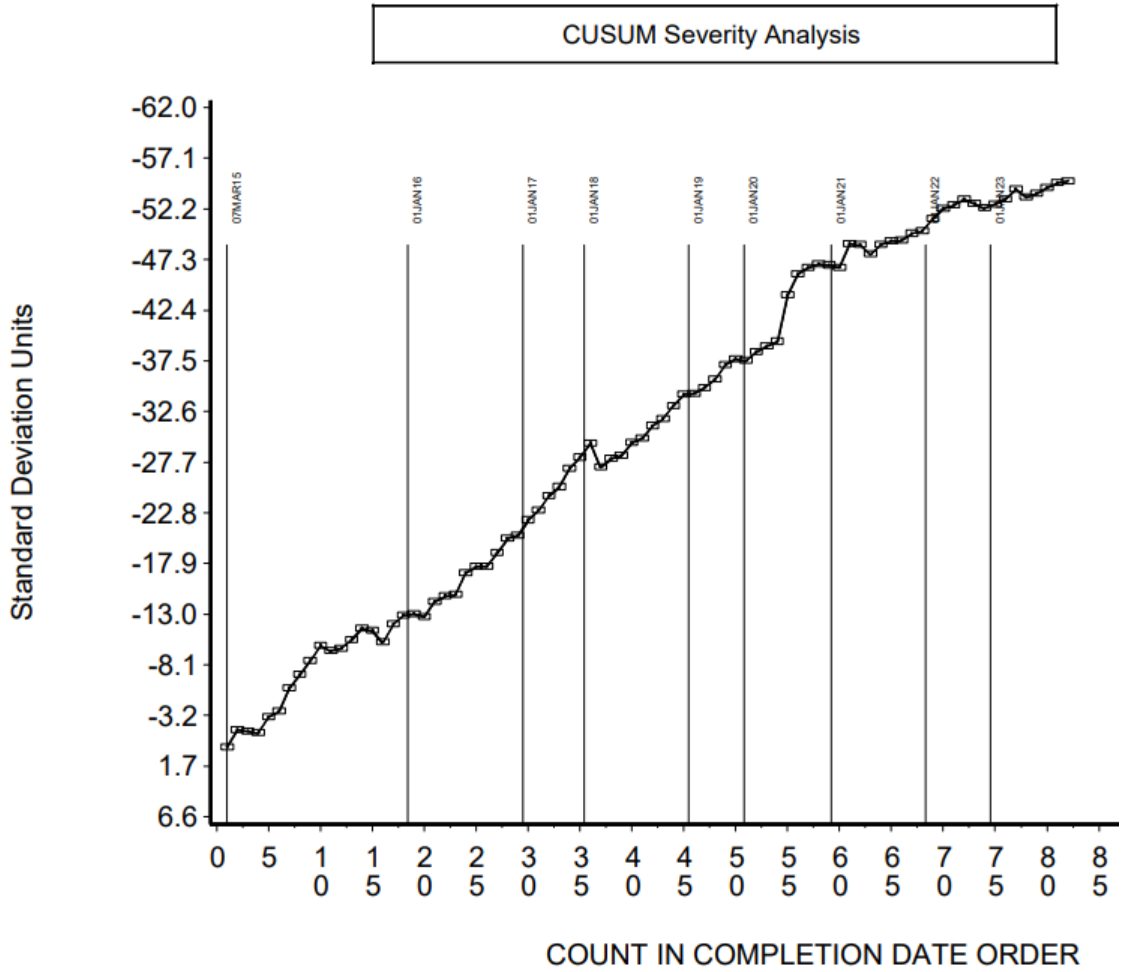




Volvo T-13 Charts – KV40

FNL. ORIG. UNIT KINEMATIC VISCOSITY AT 40 DEG C % CHANGE 300 –360 HRS





Caterpillar Surveillance Panel

HDEOCP Update

Prepared By: Jacob Goodale, S.P Chairman, December 2023

Presented By: David Brass, December 2023

Key Updates

- COAT
  - REO 832-2 and 833-2 scoping runs completed at both labs
    - Data pending review by SP and Stats group
- EOAT Equivalency
  - 3 COAT tests completed on 1005-6
    - Data reviewed by SP and approved
  - Funding secured for remaining 3 COAT tests through ASTM
  - EOAT test completed on 1005-6
    - 2nd EOAT test dropped from matrix due to budget constraints
    - 1005-6 showed matching performance to historical 1005-5 data
- C13 Deposit Test
  - Low viscosity prove out delayed to Q1 2024
  - Top ring weight loss to be added as a rate and report parameter on test report

Reference Oils

Test	Reference Oil	Supply
COAT	TMC 832-1 TMC 833-1 TMC 833-2	5+ year supply 1.5 Year Supply 5+ Year Supply
1P, 1R	TMC 1005-5	1.5 year supply
1R	TMC 822-2	5+ Year supply
1N, 1K	TMC 809-1 TMC 811-2	5+ year supply 5+ year supply
C13	TMC 831-4	2.5 Year supply
1 M-PC	TMC 873-2	1 Year

Updates:

- TMC 832-1: suspended from use due to shifting severe
- TMC 832-2: initial scoping runs completed
- TMC 833-1: supply limited
- TMC 833-2: initial scoping runs completed
- TMC 831: re-blend in progress

Caterpillar C13 (ASTM D7549)

Labs	Stands	Referenced Stands
3	3	3

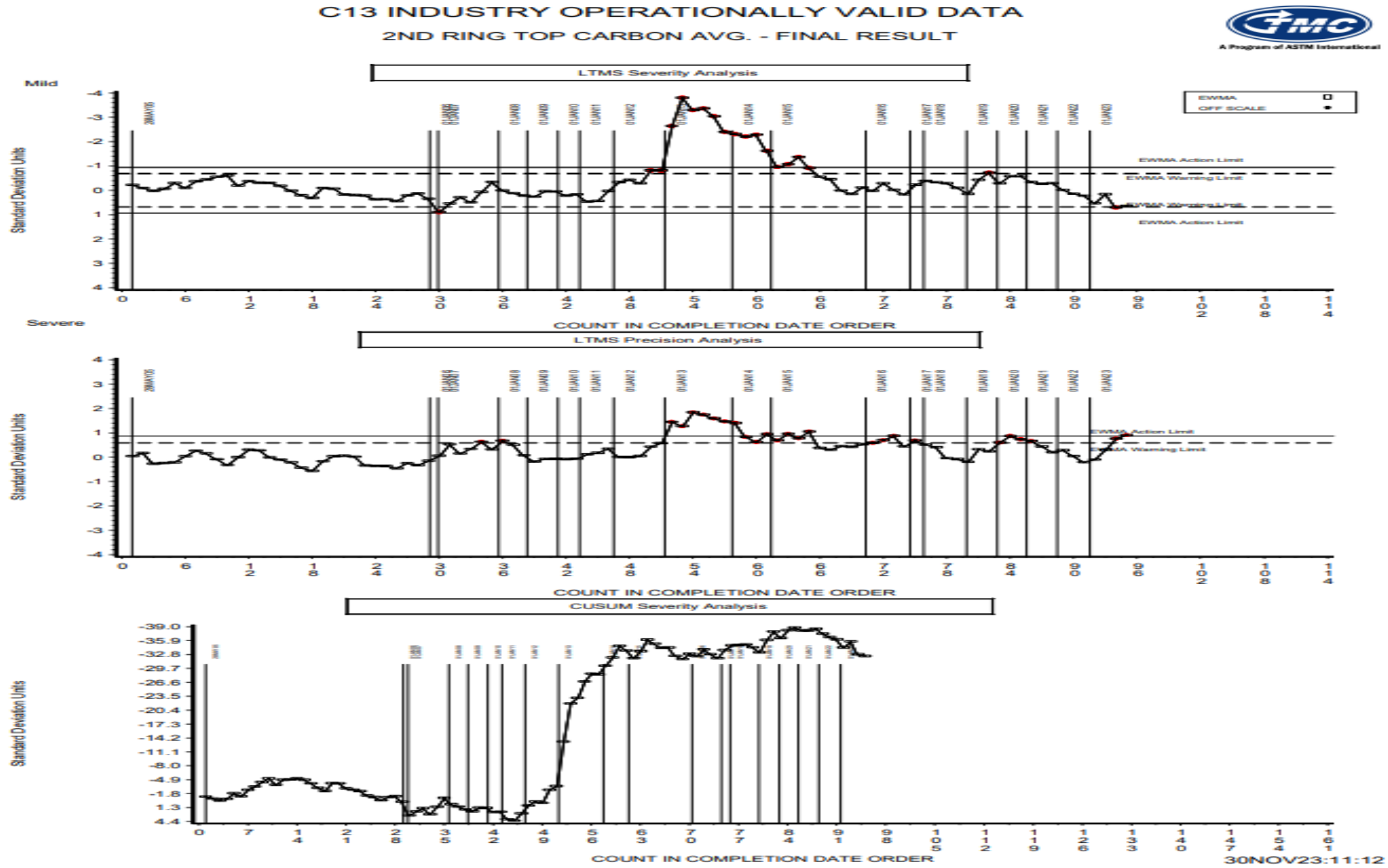
Reference Test Activity (As of September 30th 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
TOTAL		**2**	

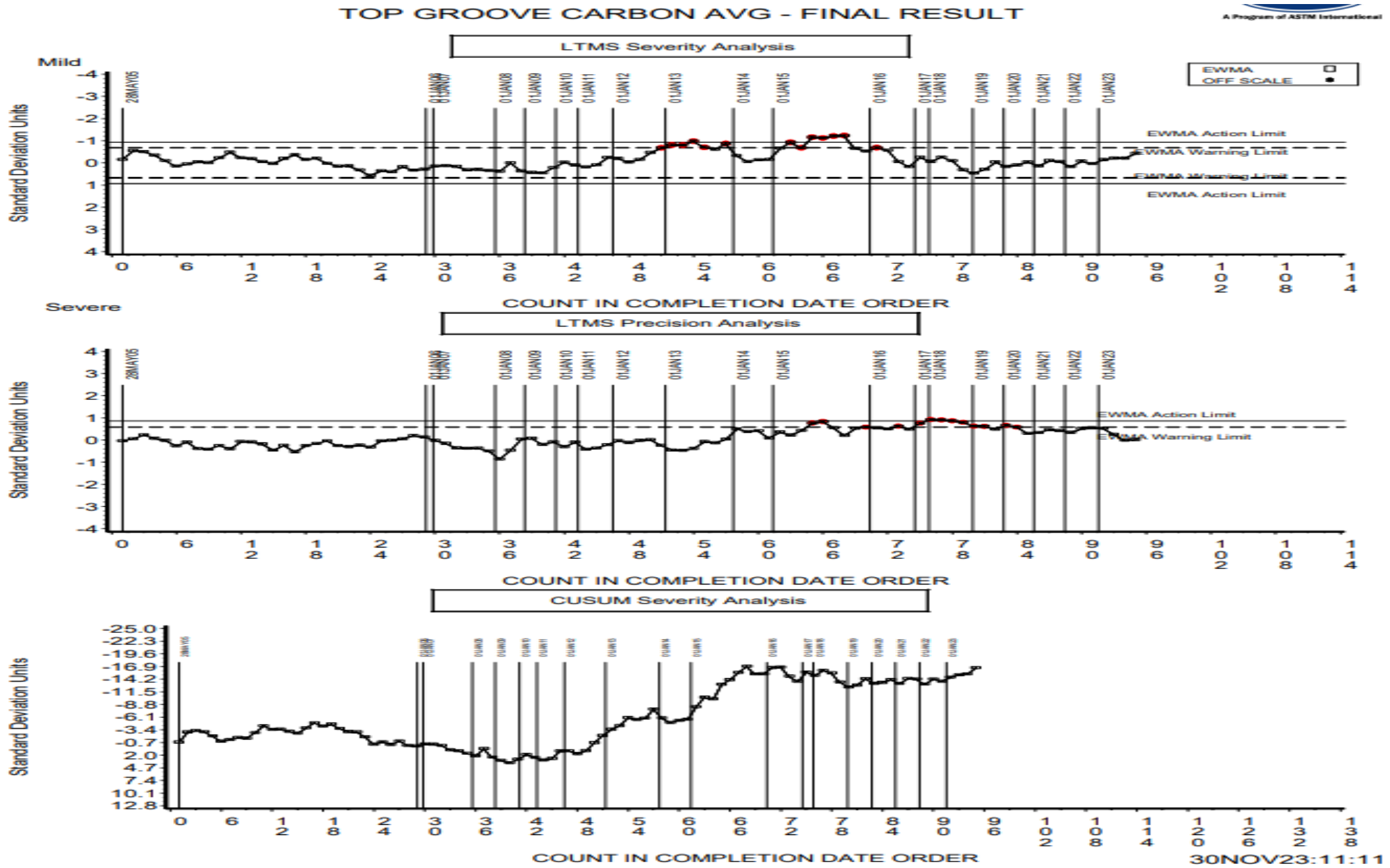
Test Severity

- TLC in severity warning alarm in the mild direction
- R2TC in severity warning alarm in the severe direction
- R2TC in precision warning alarm

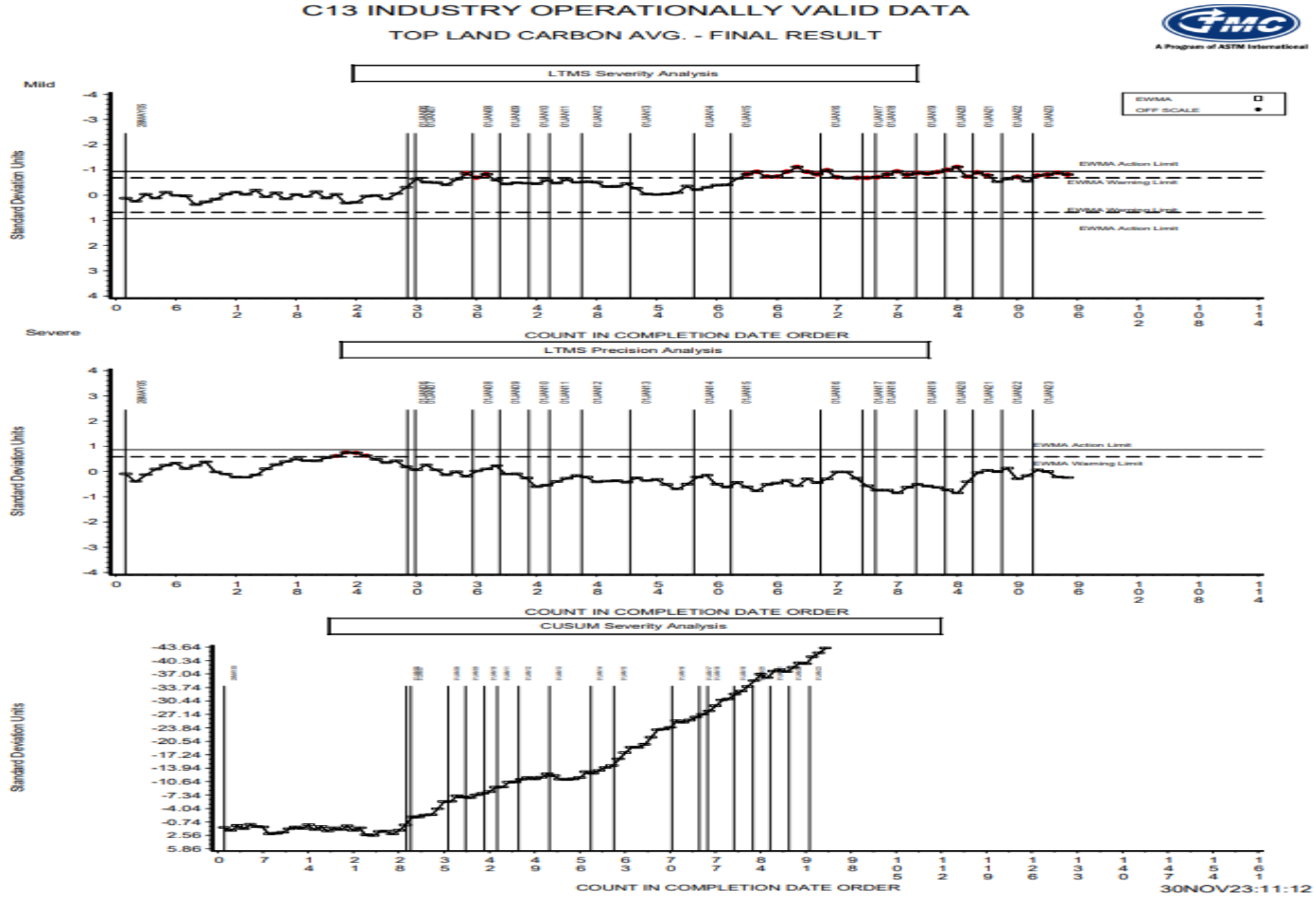
Caterpillar C13 Charts-2nd Ring Top Carbon



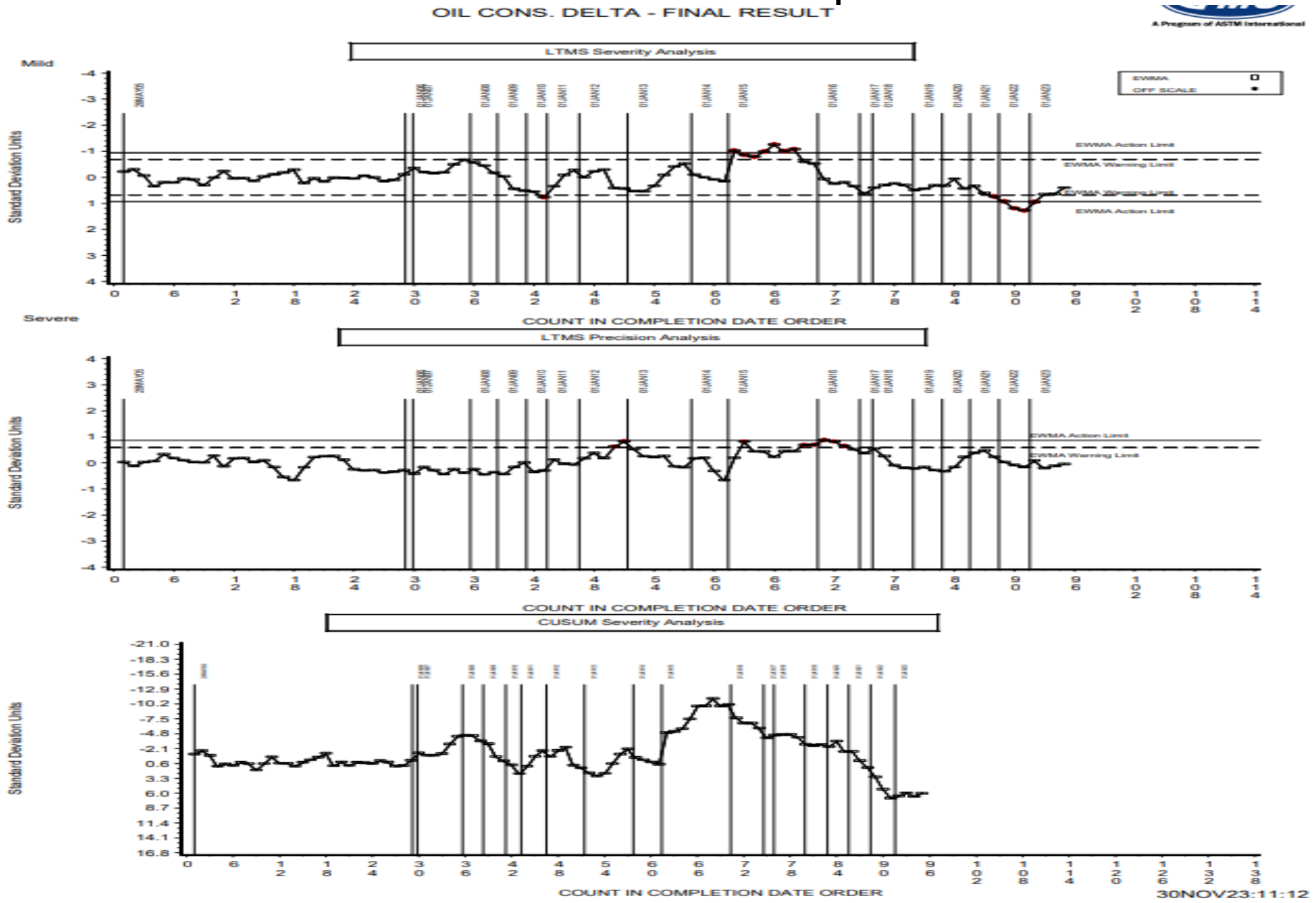
Caterpillar C13 Charts-Top Groove Carbon



Caterpillar C13 Charts- Top Land Carbon



Caterpillar C13 Charts- Oil Consumption Delta



Caterpillar COAT (ASTM D8047)

Labs	Stands	Referenced Stands
2	2	2

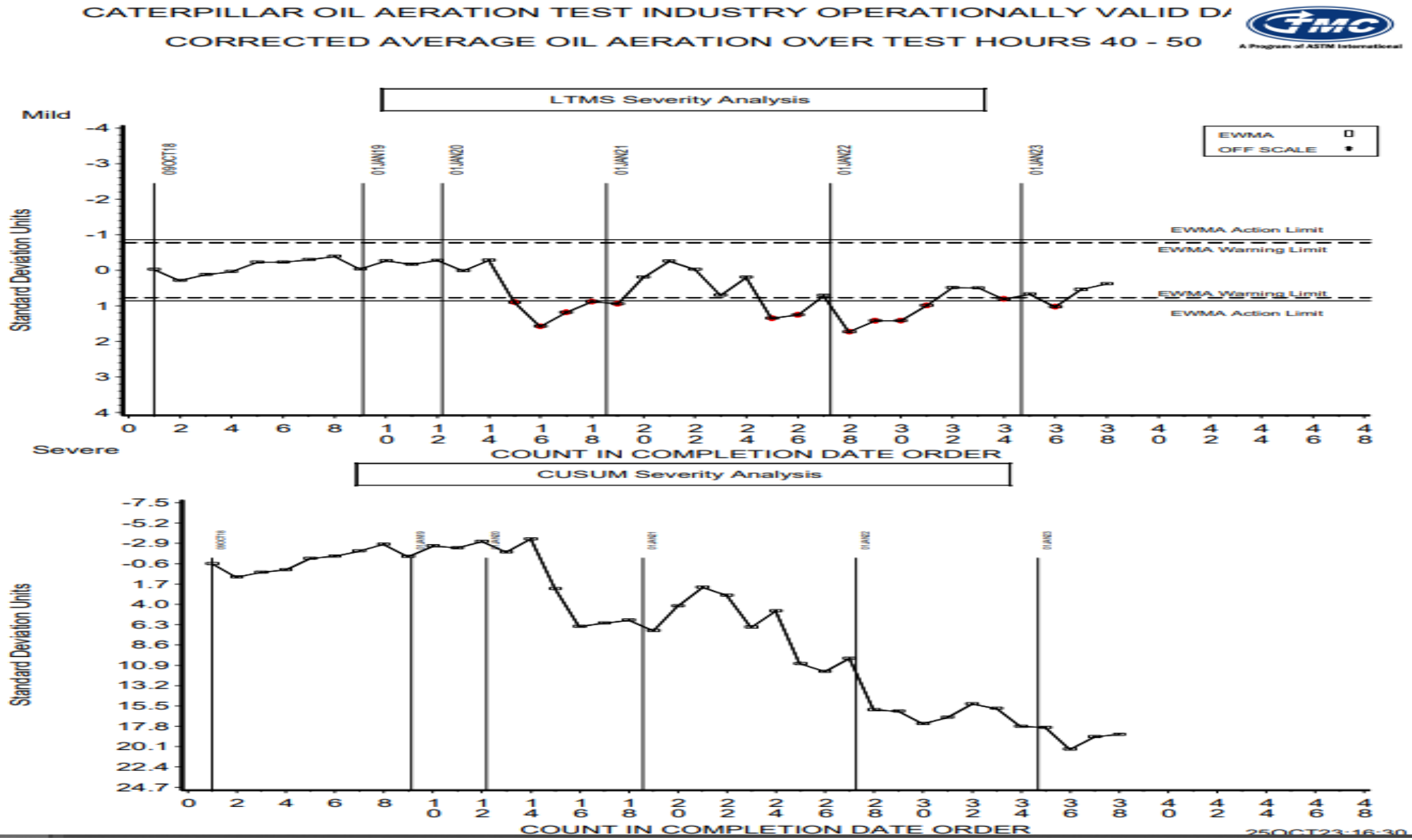
Reference Test Activity (As of September 30th 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
TOTAL		**2**	

Test Severity

- AAVE is in control

Caterpillar COAT Charts- Corrected Average Oil Aeration over Test Hours 40 - 50



Caterpillar SCOTE 1k (ASTM D6750)

Labs	Stands	Referenced Stands
1	1	0

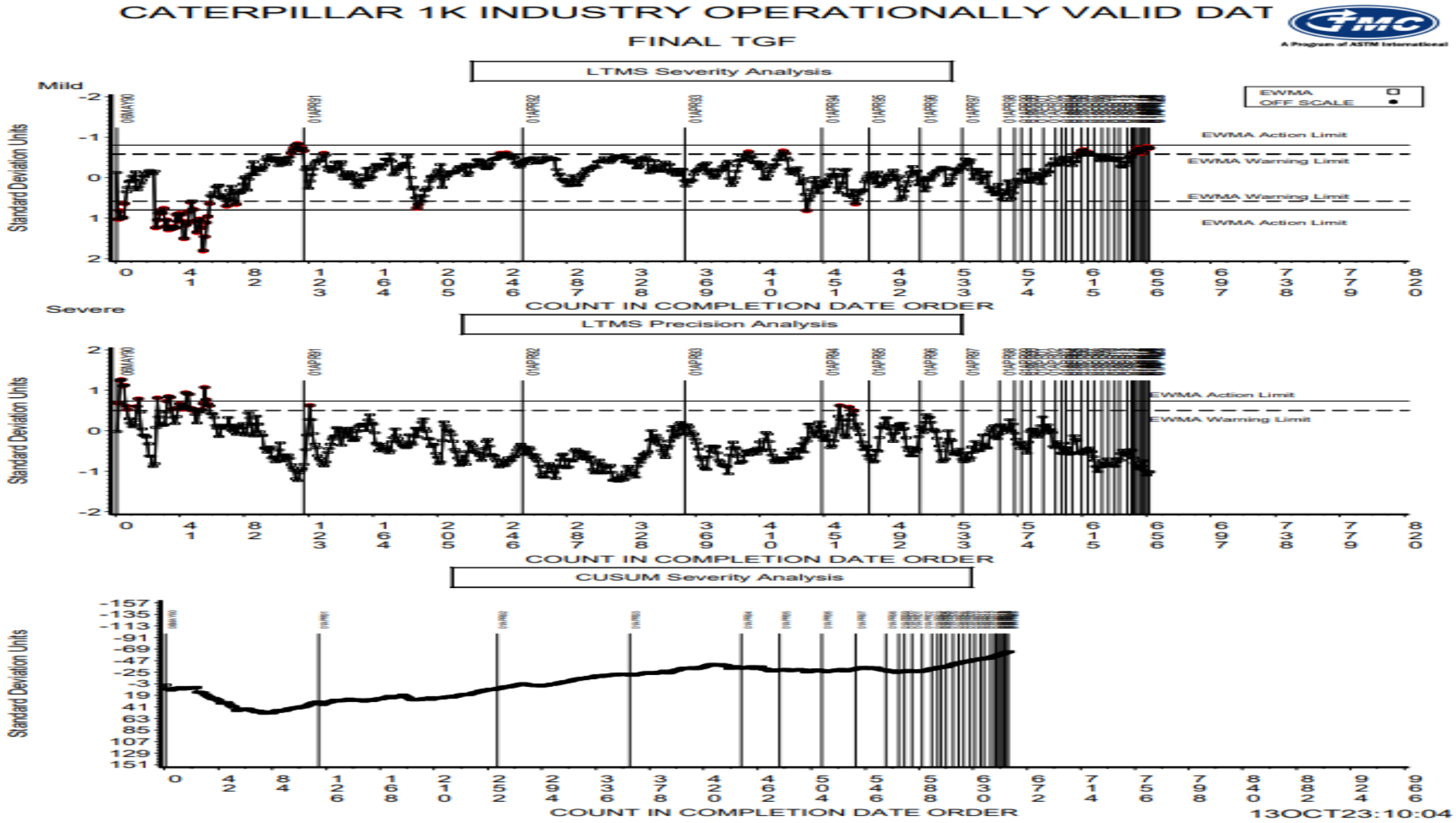
Reference Test Activity (As of September 30th 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	0	
TOTAL		**0**	

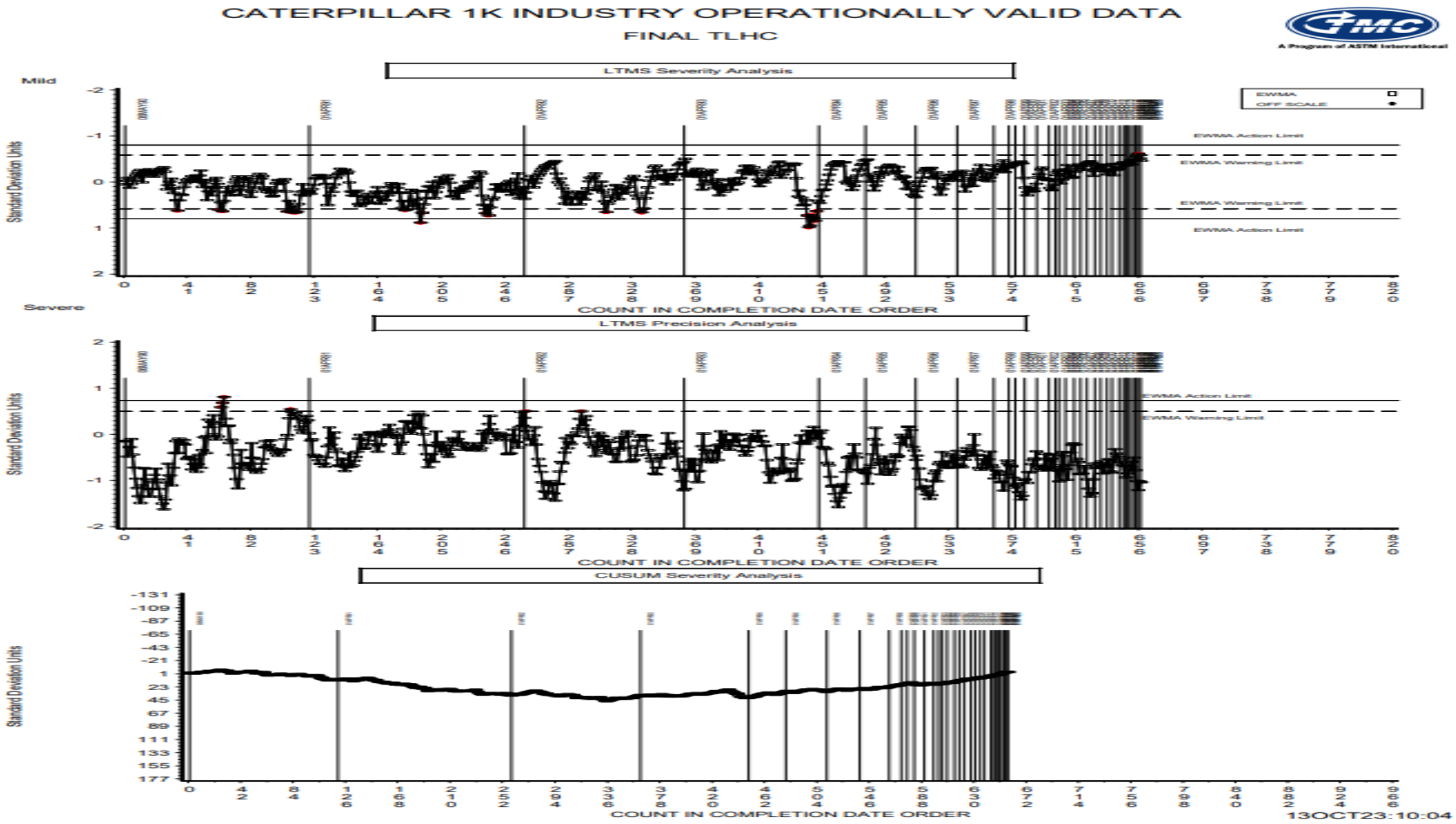
Test Severity

- No 1K tests were run during the last 2 reporting periods. Statements on severity based on prior periods.
- TGF is in warning alarm in the mild direction
- BSOC is in action alarm in the mild direction
- All other parameters are in control

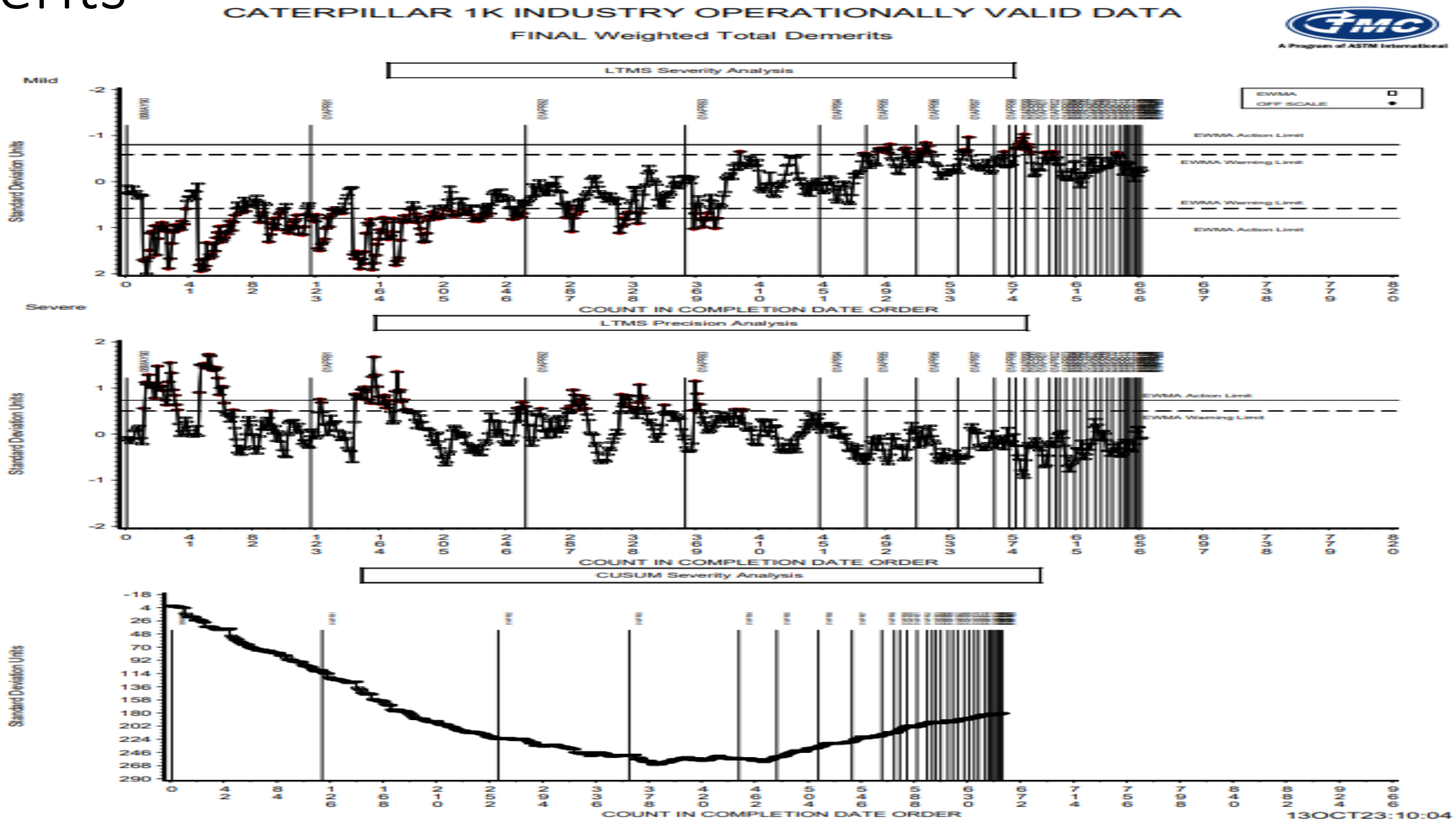
Caterpillar SCOTE 1k Charts- Final TGF



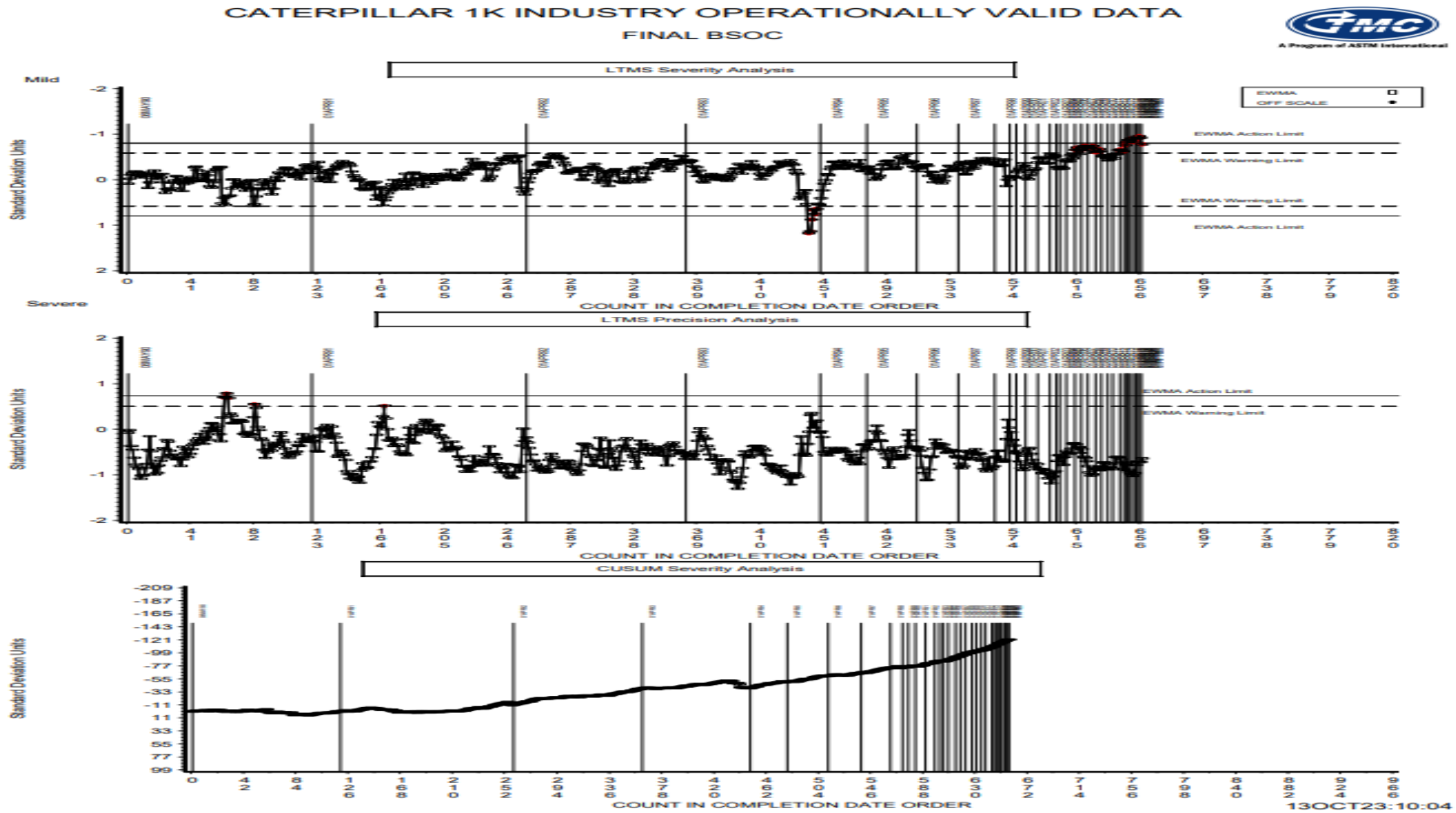
Caterpillar SCOTE 1k Charts- Final TLHC



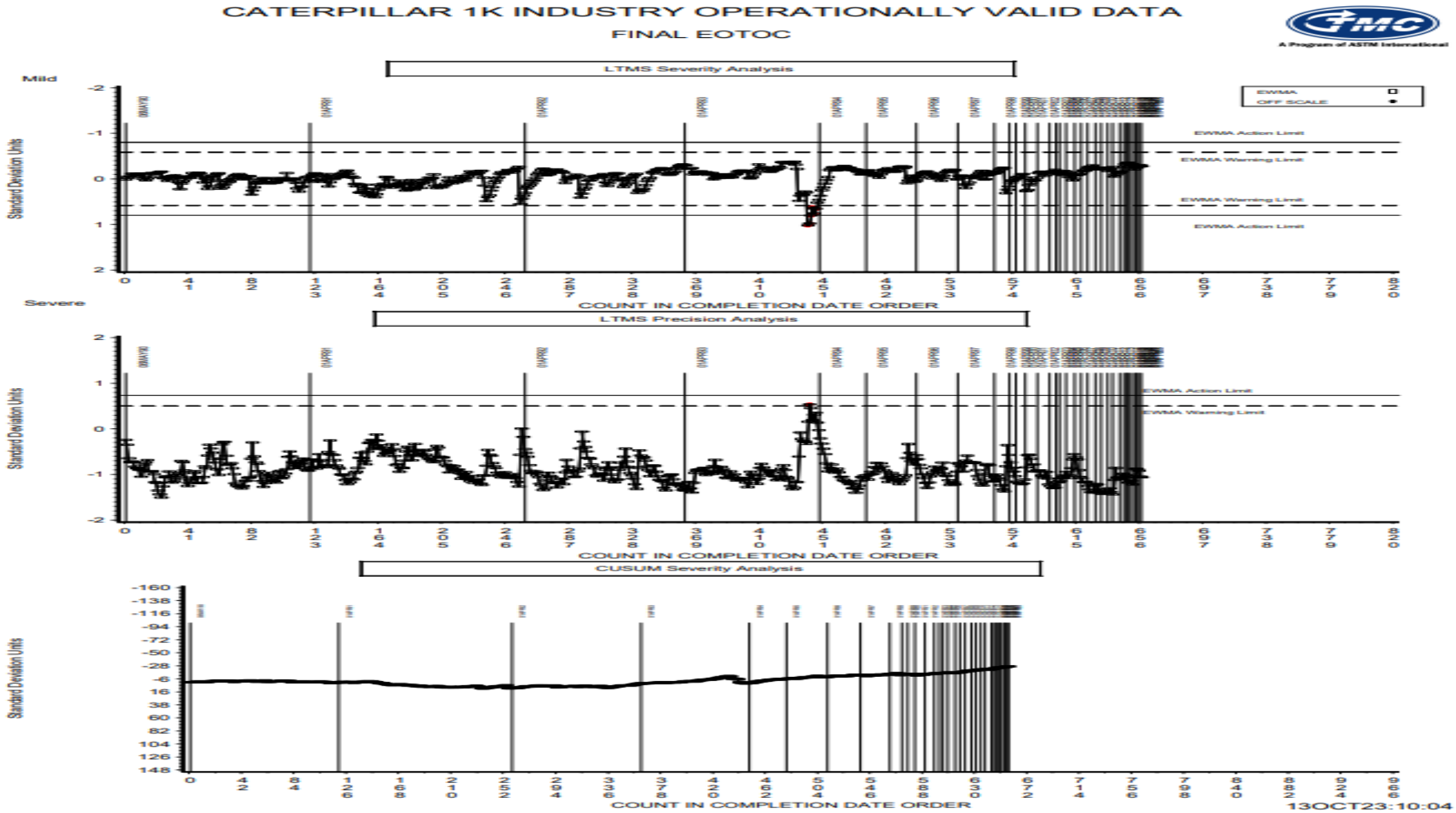
Caterpillar SCOTE 1k Charts- Final Weighted Total Demerits



Caterpillar SCOTE 1k Charts- Final BSOC



Caterpillar SCOTE 1k Charts- EOTOC



Caterpillar SCOTE 1N (ASTM D6750)

Labs	Stands	Referenced Stands
3	5	

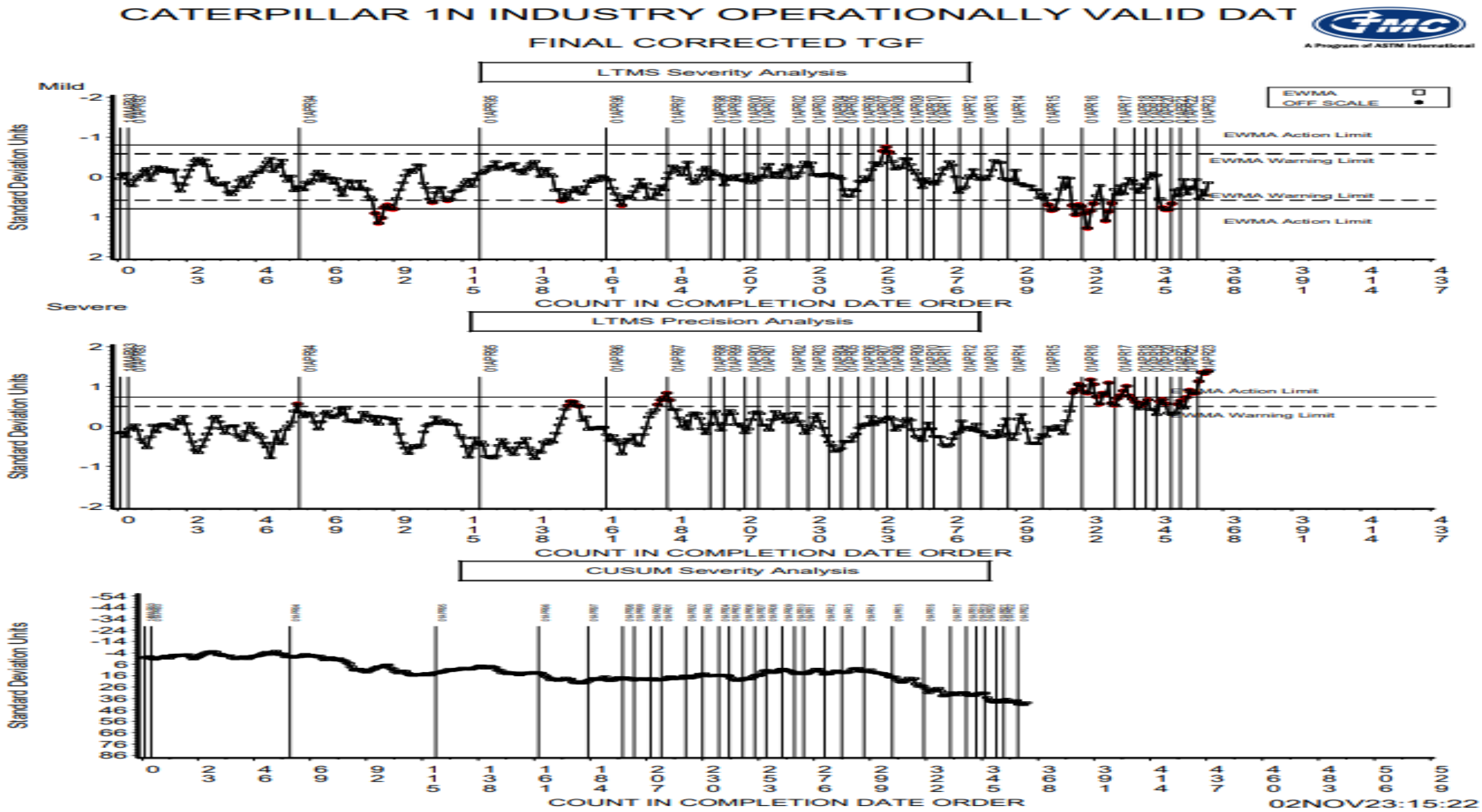
Reference Test Activity (As of September 30th 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
Operationally Invalid	LC	1	
Aborted	XC	1	Scuffed during break-in
TOTAL		**4**	

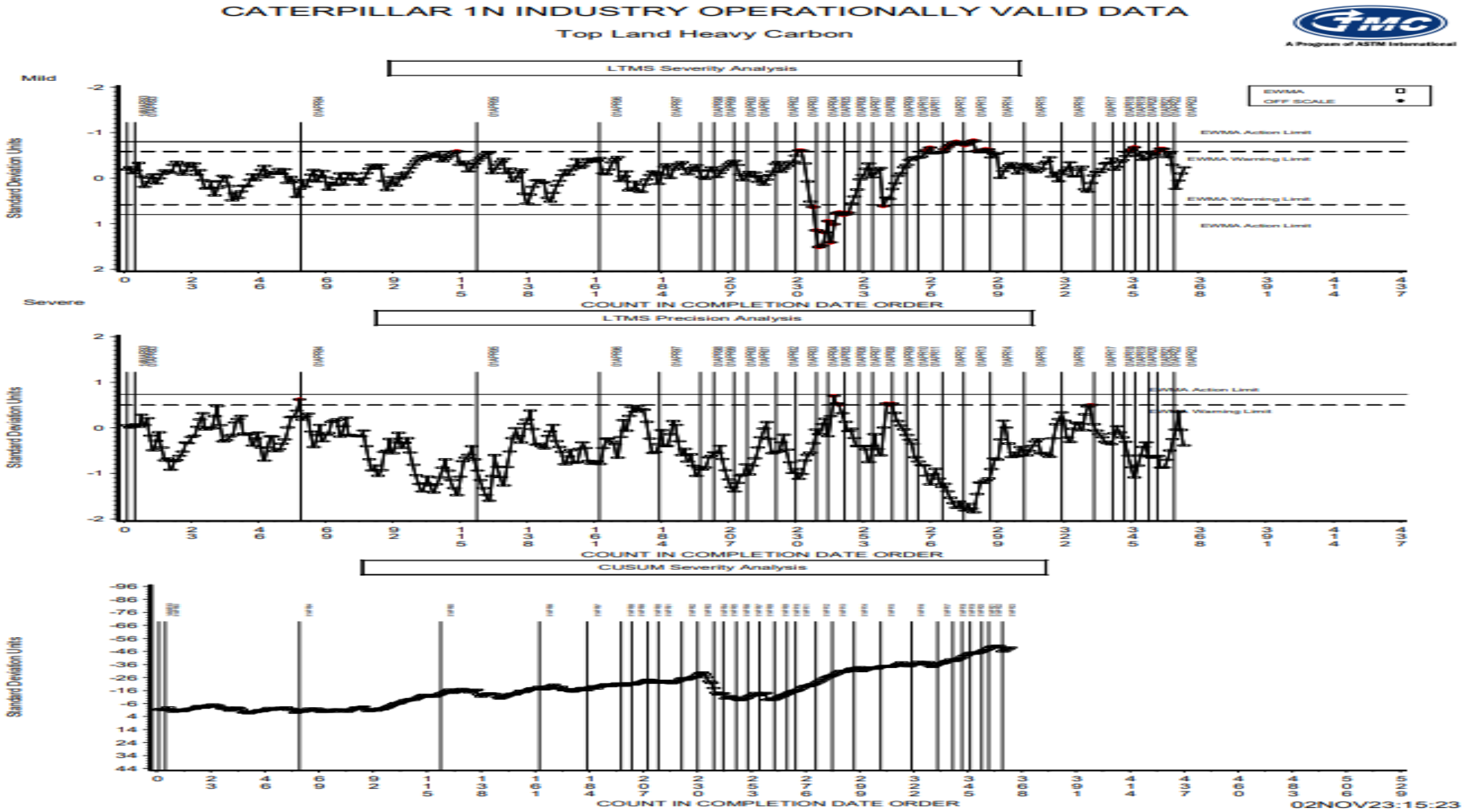
Test Severity

- WDN is in severity warning alarm in mild direction
- TGF is in precision action alarm
- TLHC and BSOC are in control

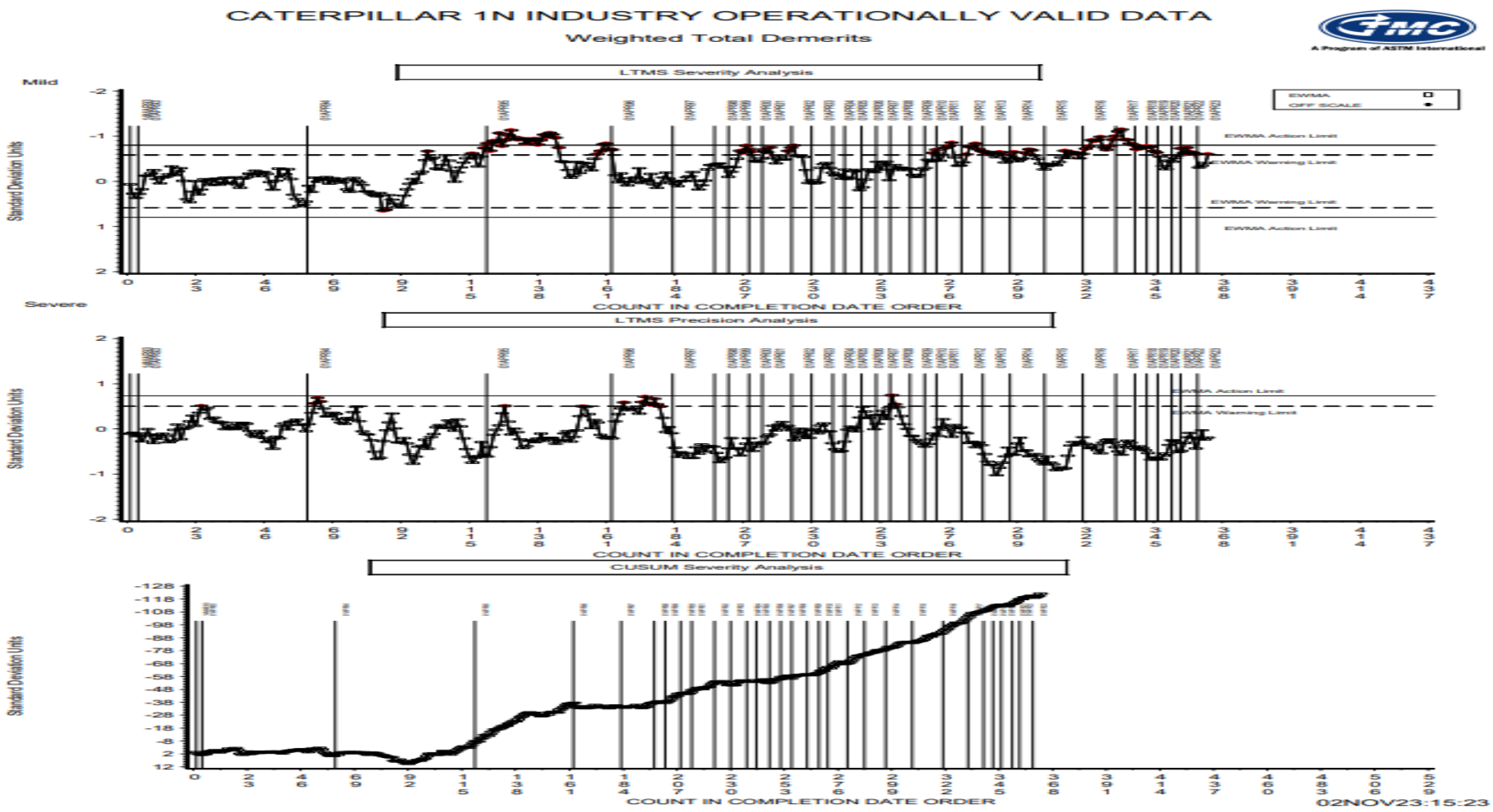
Caterpillar SCOTE 1N Charts- Final TGF



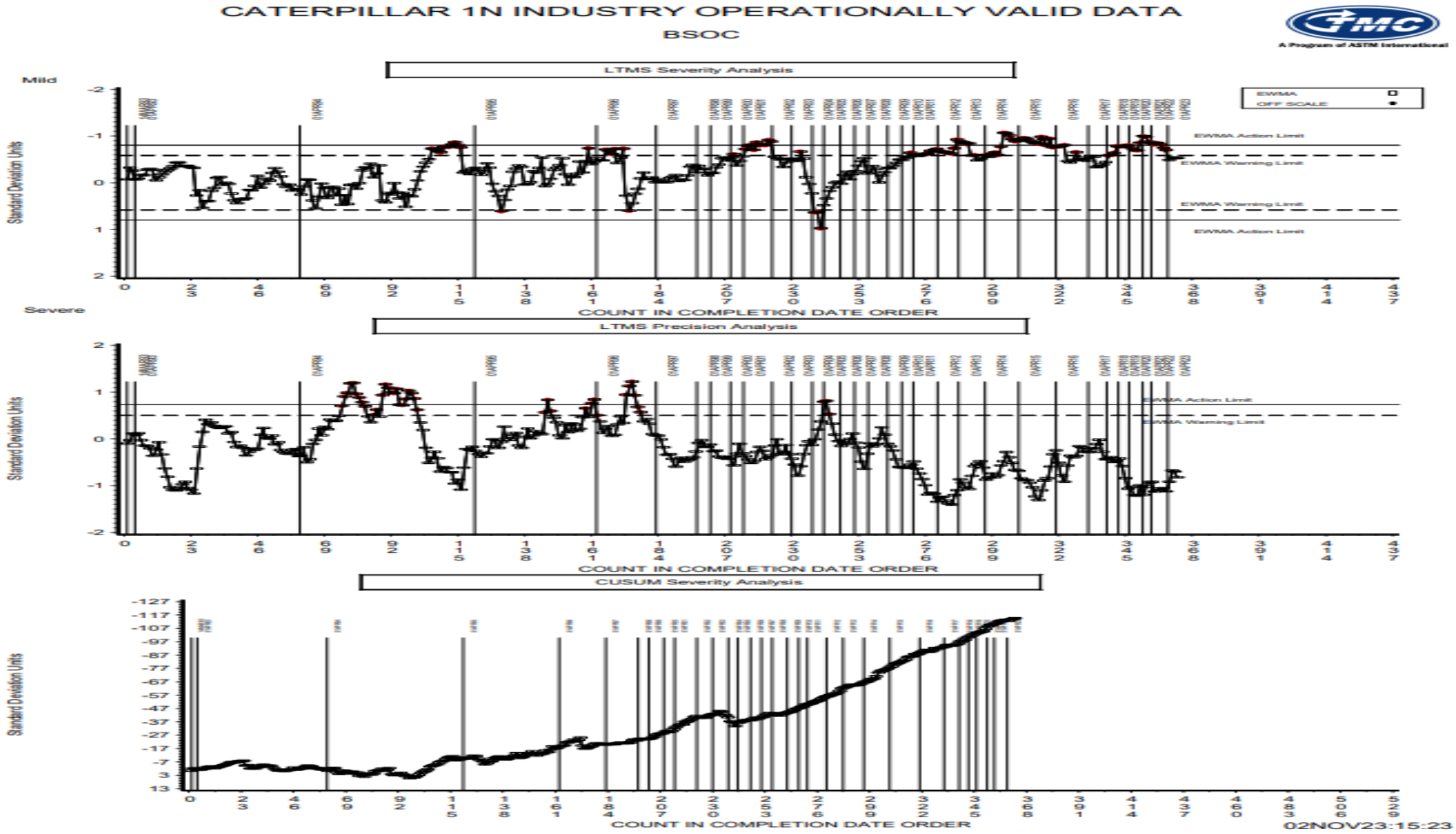
Caterpillar SCOTE 1N Charts- Top land Heavy Carbon



Caterpillar SCOTE 1N Charts- Final Weighted Total Demerits



Caterpillar SCOTE 1N Charts- Final BSOC



Caterpillar SCOTE 1P (ASTM D6681)

Labs	Stands	Referenced Stands
1	1	1

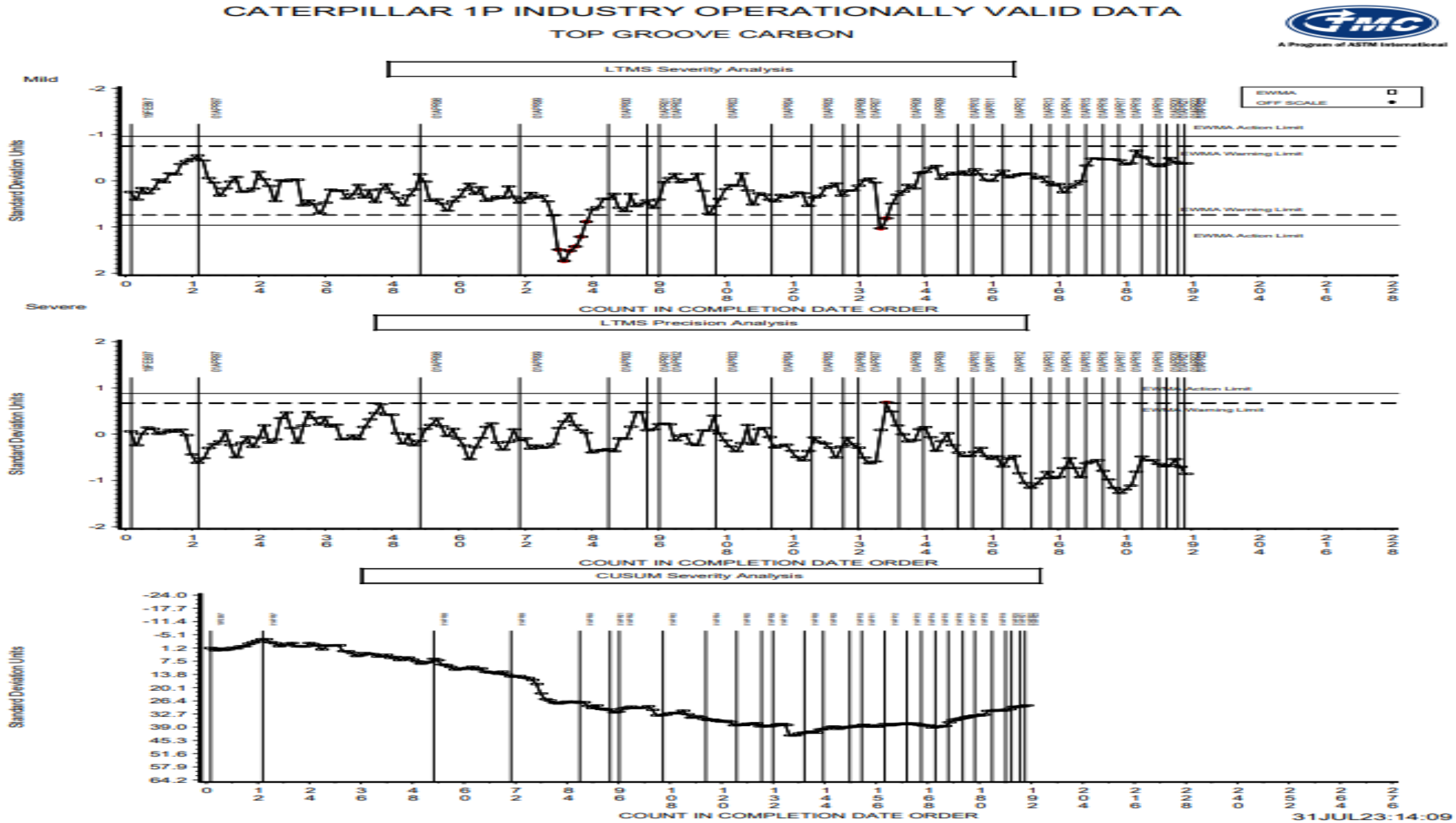
Reference Test Activity (As of September 30th 2023)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	1	
TOTAL		**1**	

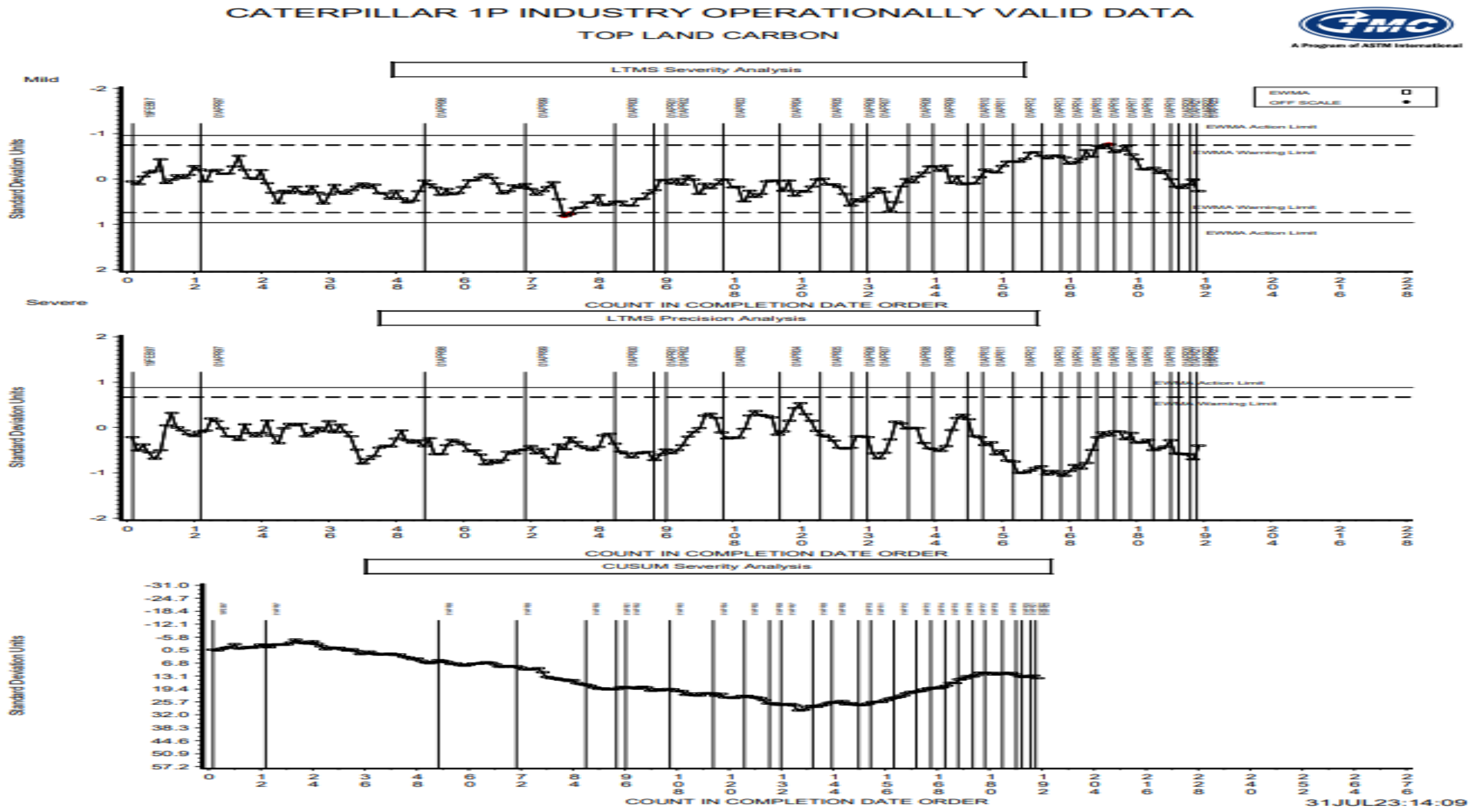
Test Severity

- TGC, TLC, OC are in control
- WD is in severity warning alarm in the severe direction
- EOTOC is in severity action alarm in the severe direction

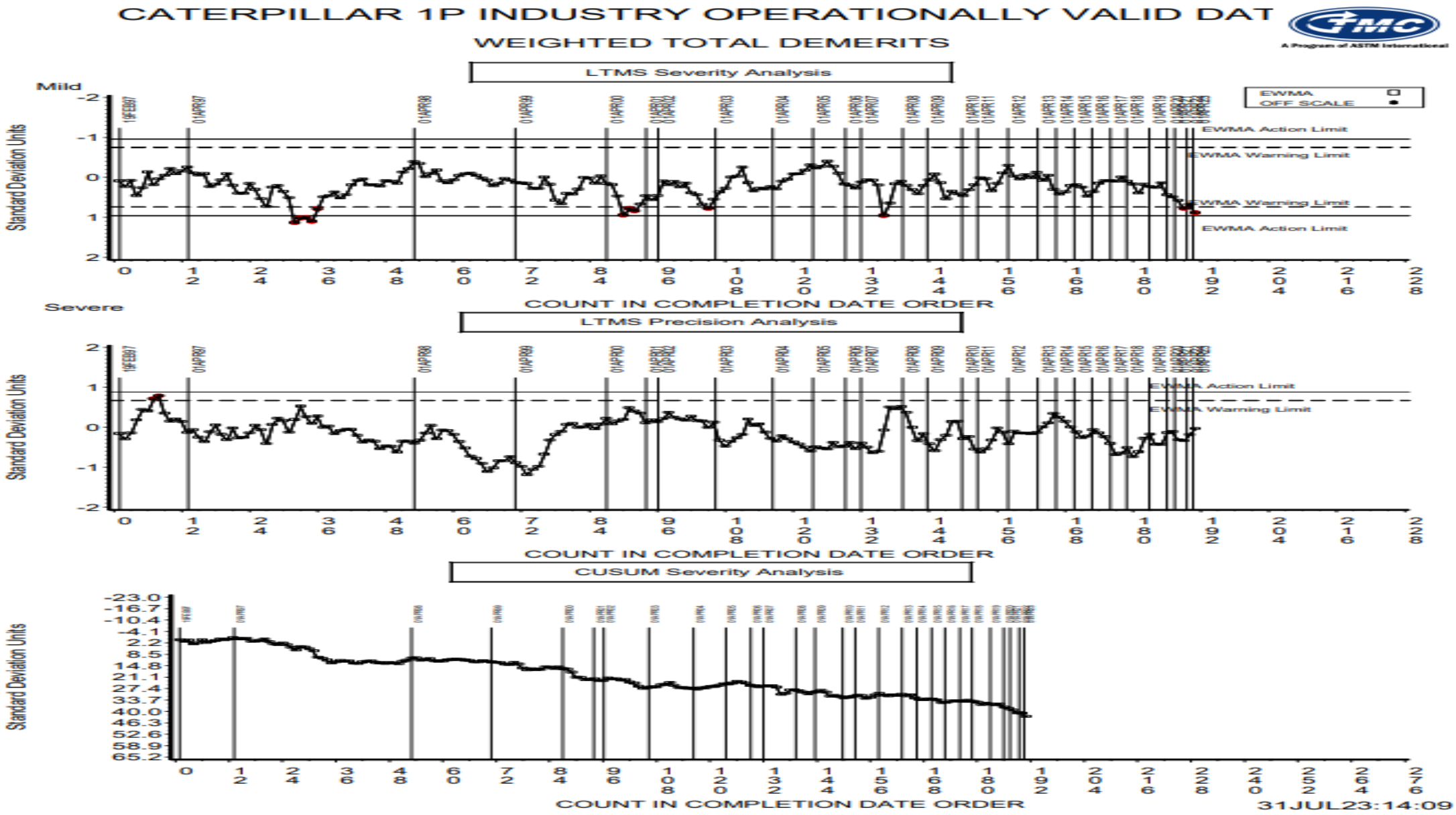
Caterpillar SCOTE 1P Charts- Top Groove Carbon



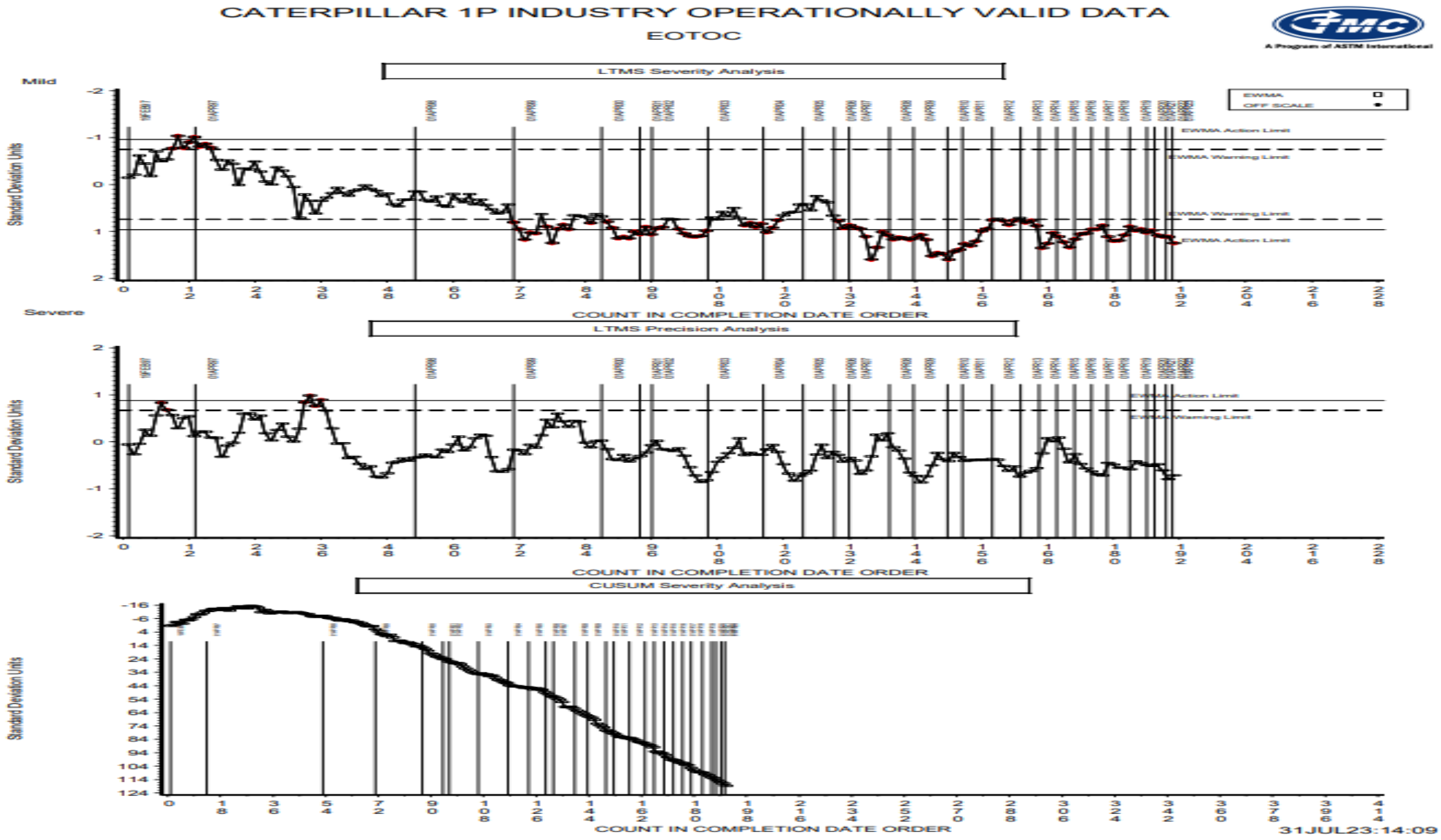
Caterpillar SCOTE 1P Charts- Top Land Carbon



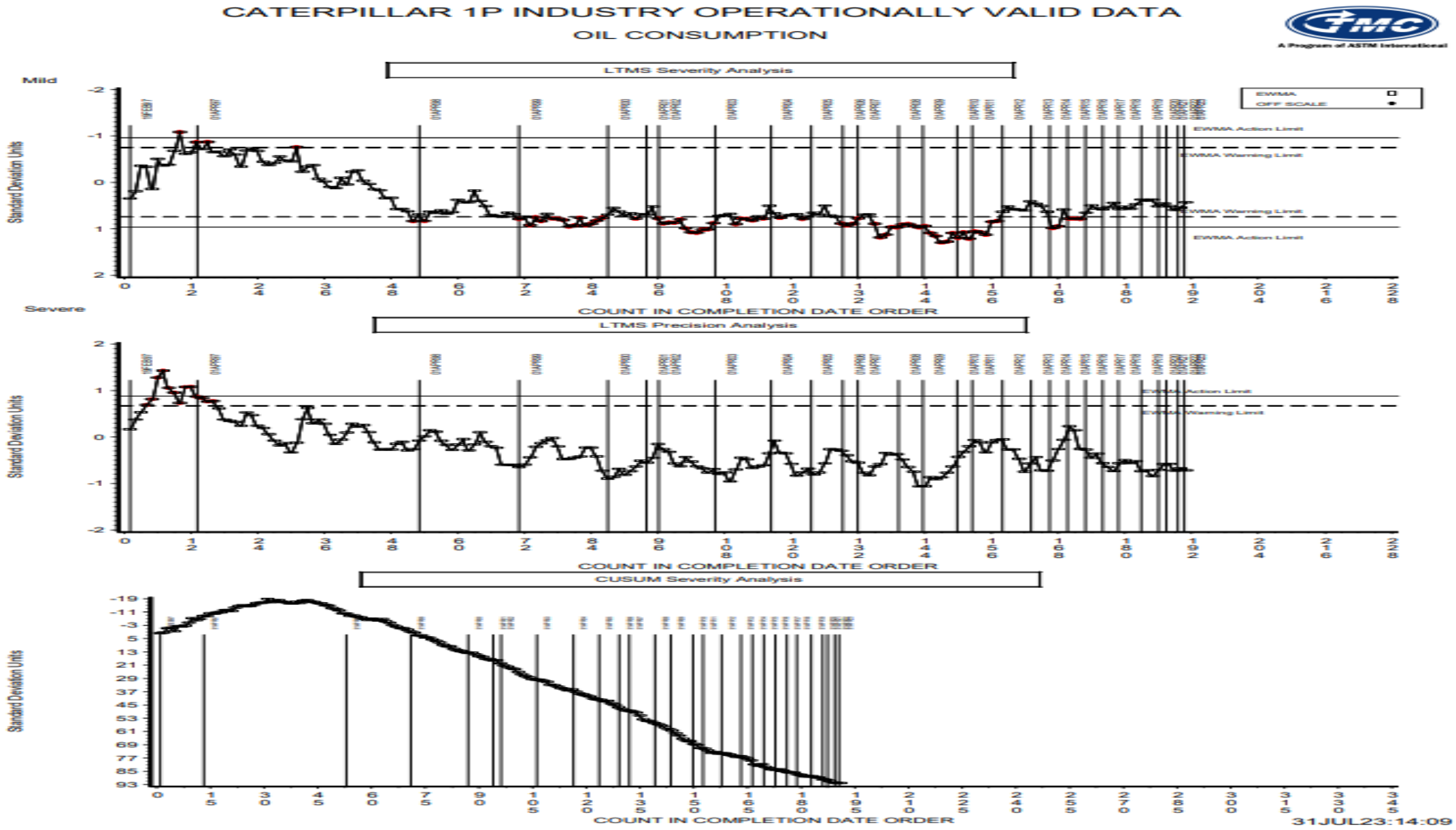
Caterpillar SCOTE 1P Charts- Weighted Total Demerits



Caterpillar SCOTE 1P Charts- EOTOC



Caterpillar SCOTE 1P Charts- Oil Consumption



Caterpillar SCOTE 1R (ASTM D6923)

Labs	Stands	Referenced Stands
0	0	0

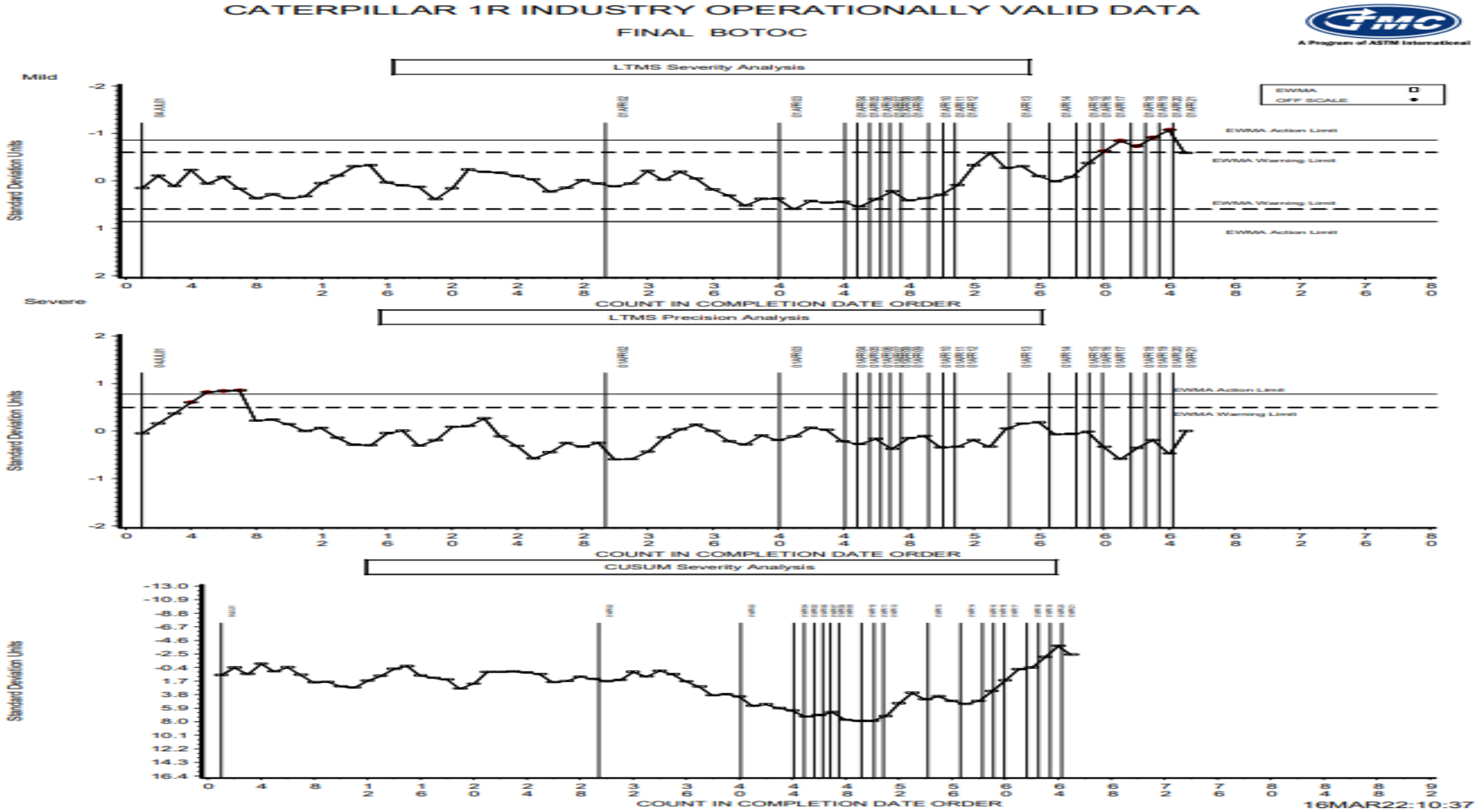
Reference Test Activity (Since June 2022)

Test Status	Validity Code	#	Cause
Aborted	XC	4	3 High OC, 1 Scuffing
TOTAL		**4**	

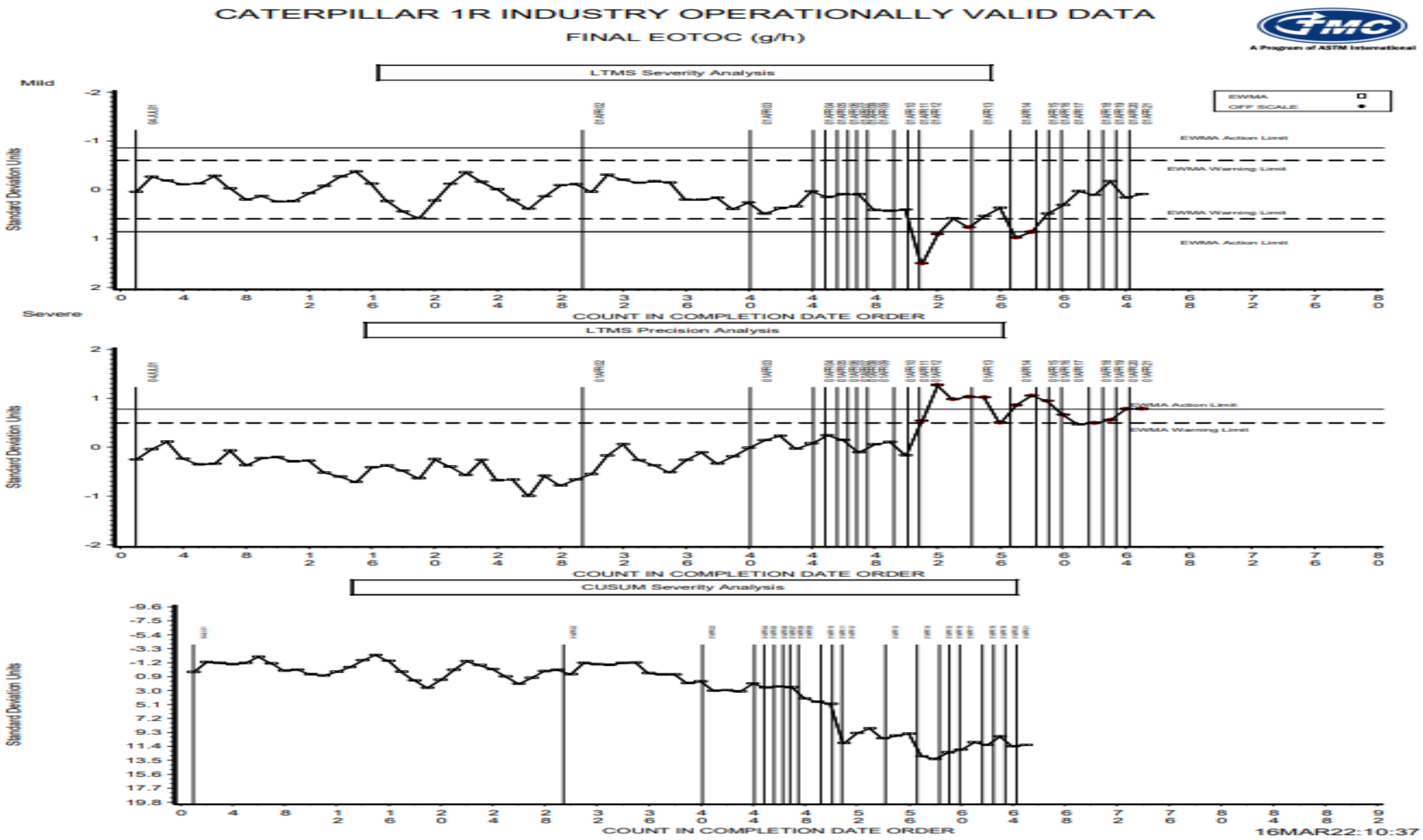
Test Severity

- No chartable 1R Tests run during this period no statement on test severity can be made.

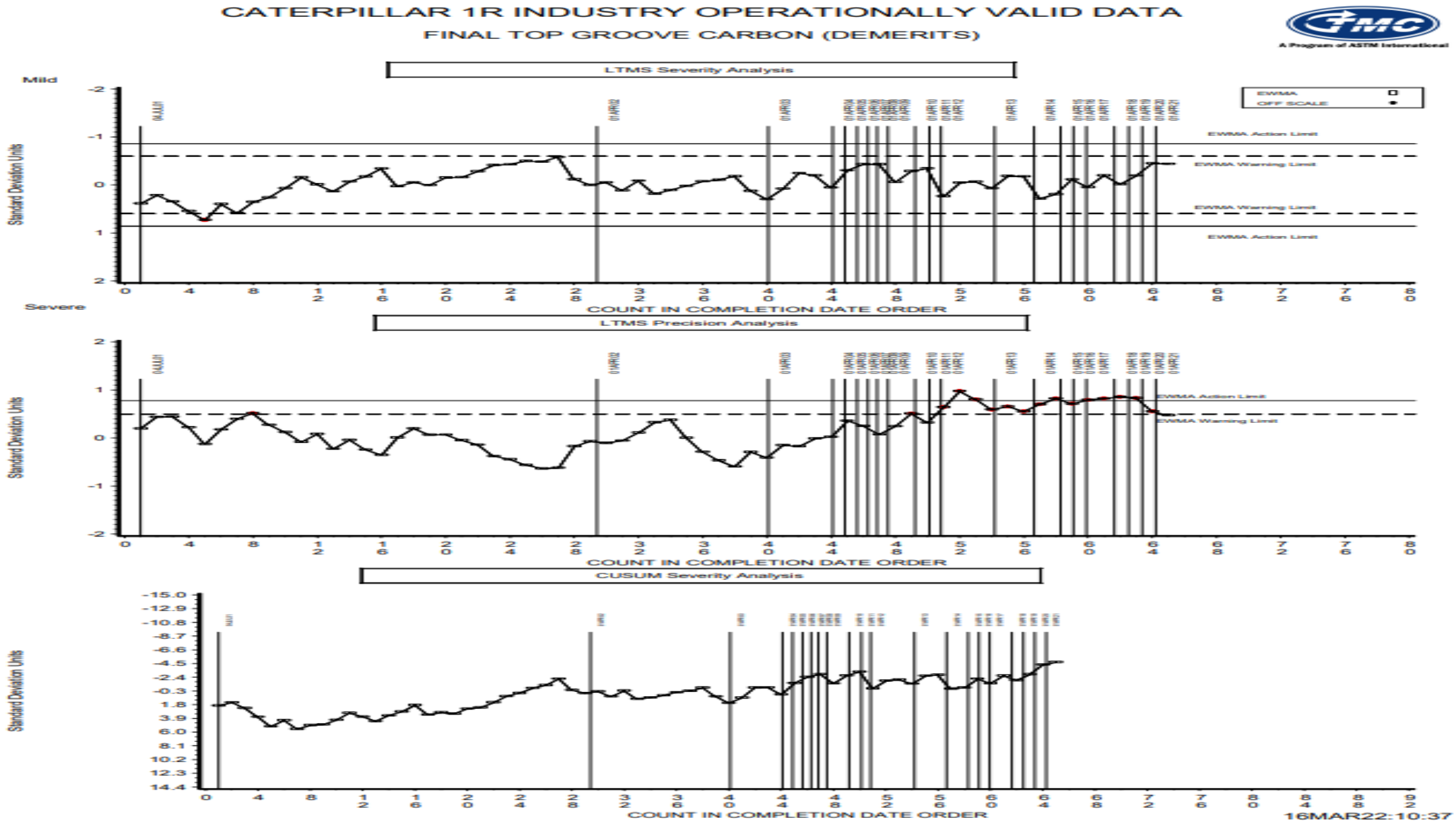
Caterpillar SCOTE 1R Charts- BOTOC



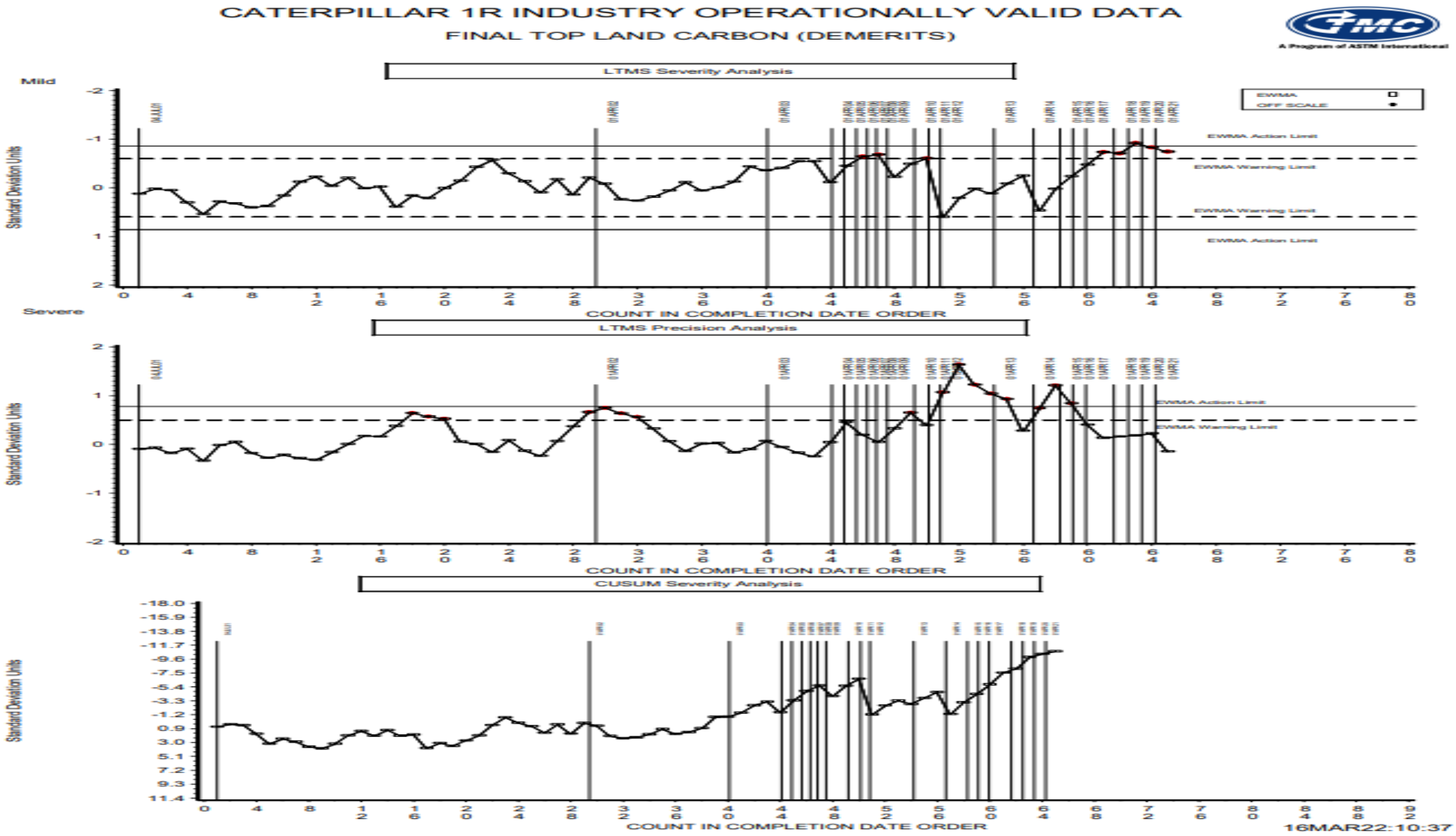
Caterpillar SCOTE 1R Charts- EOTOC



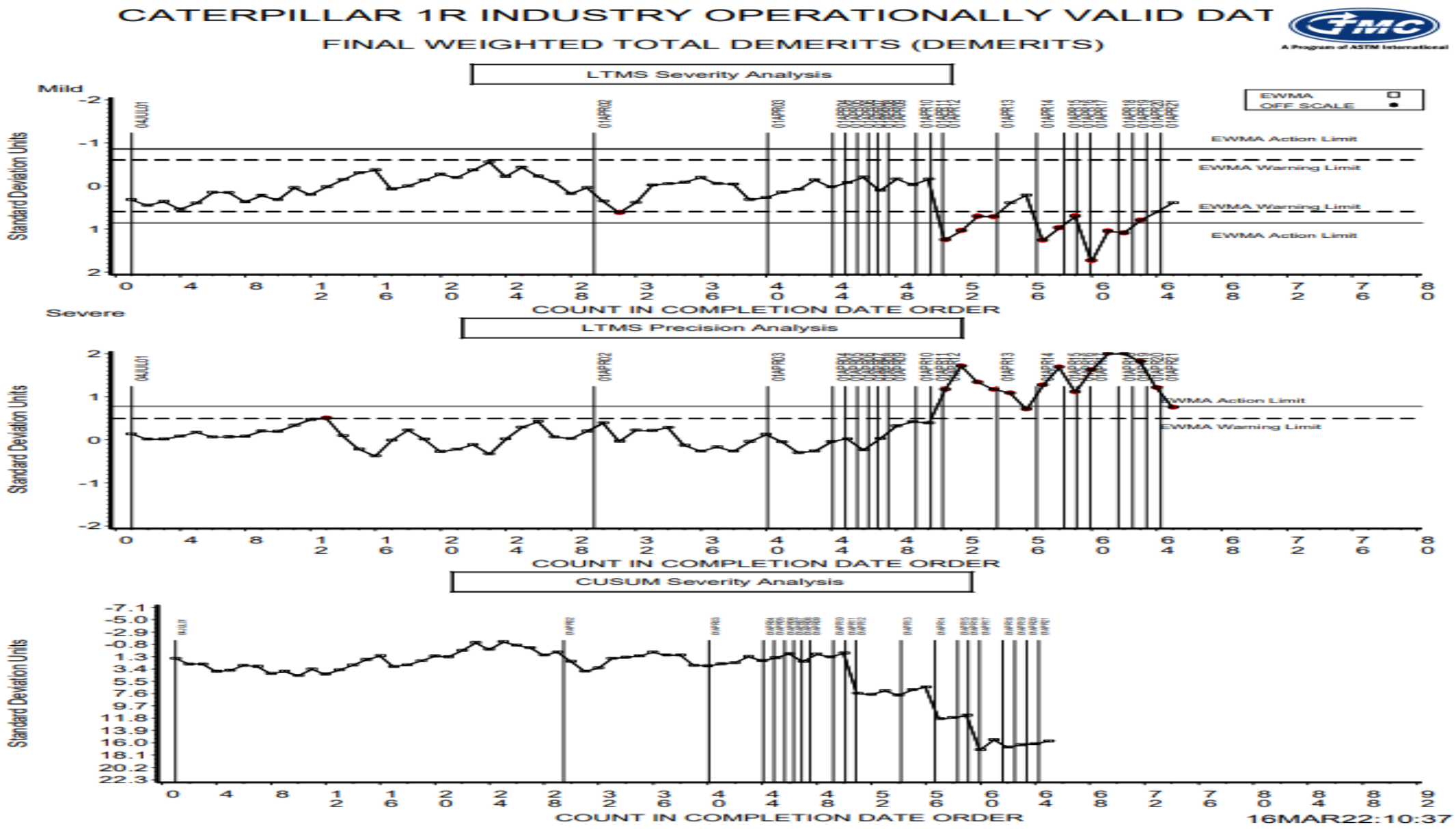
Caterpillar SCOTE 1R Charts- TGC



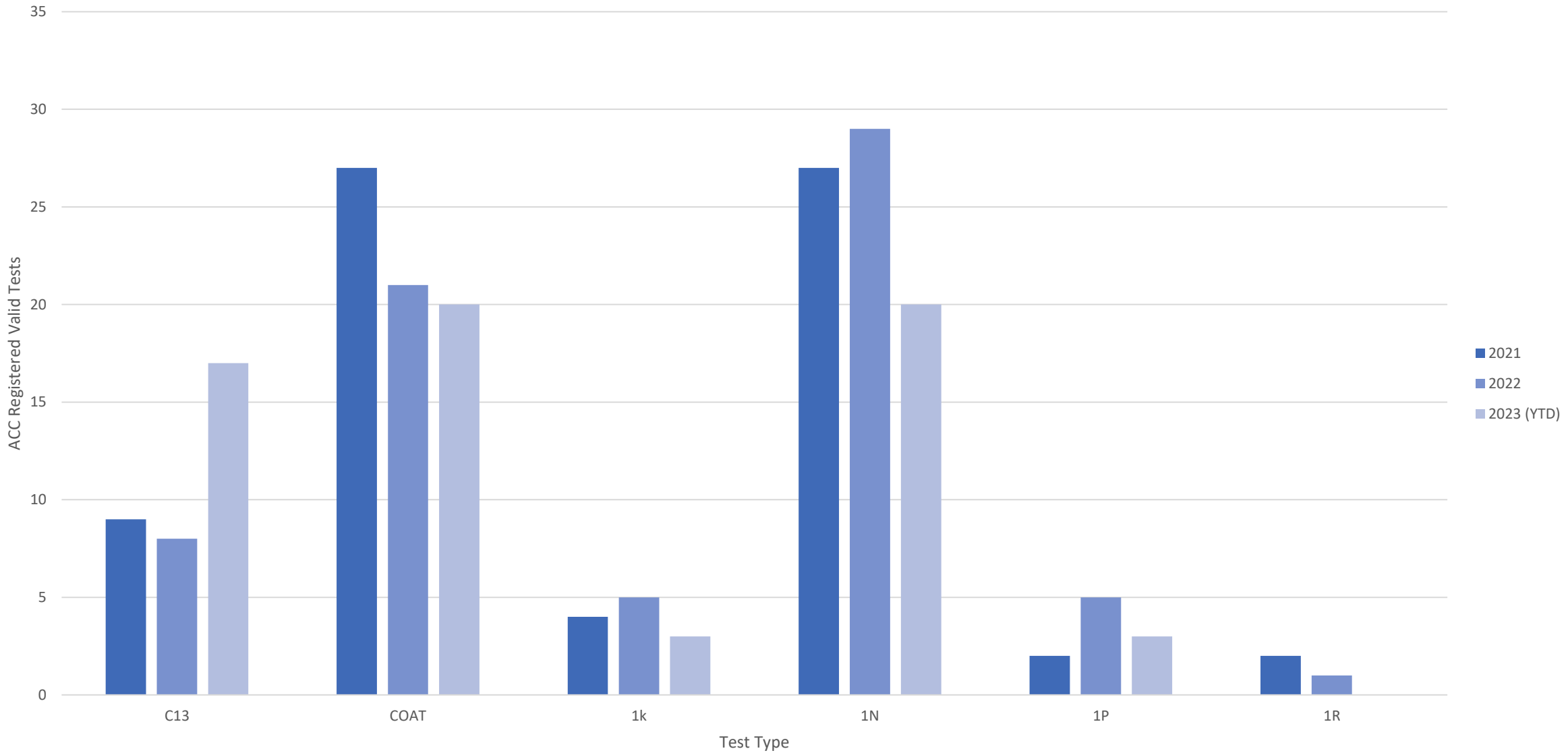
Caterpillar SCOTE 1R Charts- Final Top Land Carbon



Caterpillar SCOTE 1R Charts-Final Weighted Total Demerits



Candidate Activity



Cummins

ISB (ASTM D7484) ISM (ASTM D7468)

Surveillance Panel Update

December 2023

Prepared by: Andrew Smith, S.P. Chairman

Cummins SP Report

- 3 Surveillance Panel Meetings this period
- 1st Meeting
  - Discussion on new ISB and ISM reference oils
  - ISB Viscosity Test reference oil selected and accepted
- 2nd Meeting
  - Continued discussion on ISB and ISM reference oil selection
  - ISB new reference oil selected
- 3rd Meeting
  - Continued discussion on ISM reference oil selection and new options

Cummins SP Report

ISB Test Status

- 4 labs, 8 tests stands are currently calibrated
  - Critical Parts Inventory
    - Camshaft Batch N: 90 Kits***
    - Tappets Batch F: 61 Kits*
    - Crossheads Batch G: 123 Kits***
    - Push Rods Batch D: 116 Kits***

*** Estimated using current rejection rate

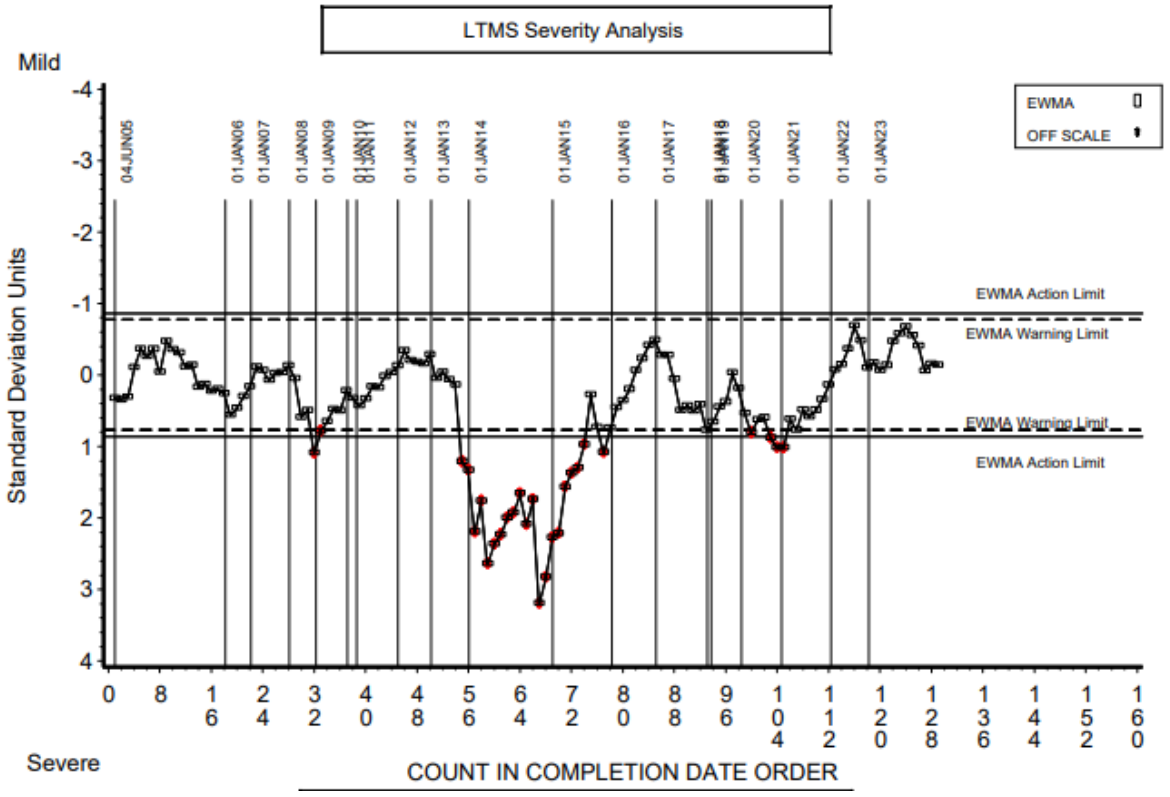
* All remaining parts inspected

- Reference Oil Update:
  - Approximately 2 Year Supply of 831-4 and process for re-blend has started, will need to be introduced in the next couple years
  - Low Viscosity New Reference Oil selected and expected Q1 2024

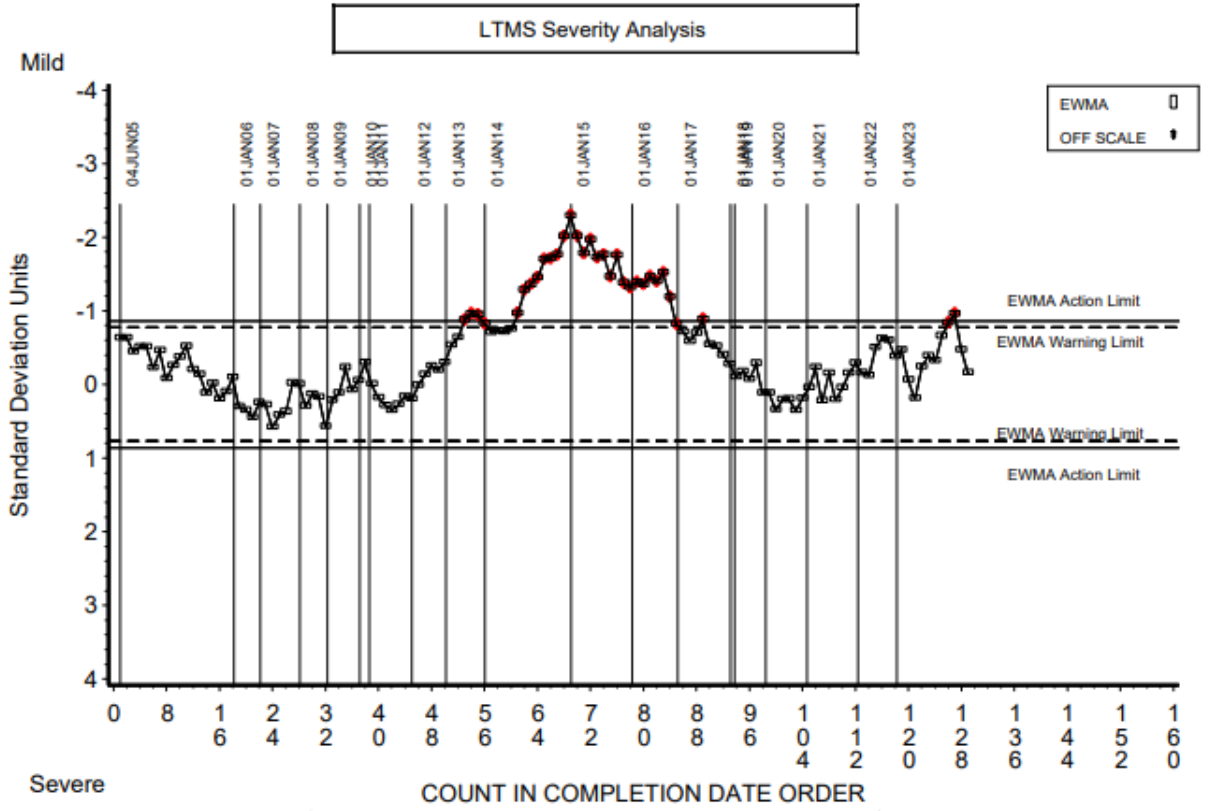
Cummins SP Report

ISB Test Status

ACSW



ATWL



Cummins SP Report

ISB Test Status

- Action Items
  - Low viscosity reference oil introduction
    - When?
    - How to handle referencing with new oil introduction
    - Long term how the panel handles multiple reference oils
  - All new hardware batches expected in 2024

Cummins SP Report

ISM Test Status

- 4 labs, 5 tests stands are currently calibrated
  - Critical Parts Inventory
    - Adjusting Screw Batch E: 124 Kits***
    - Crossheads Batch G: 24 Kits*
    - Push Rods Batch D: 324 Kits***
    - Exhaust Valve Batch F: 58 Kits***
    - Intake Valves Batch F: 47 Kits***
    - Oil Filters, 901 Media: 572 Kits***

*** Estimated using current rejection rate

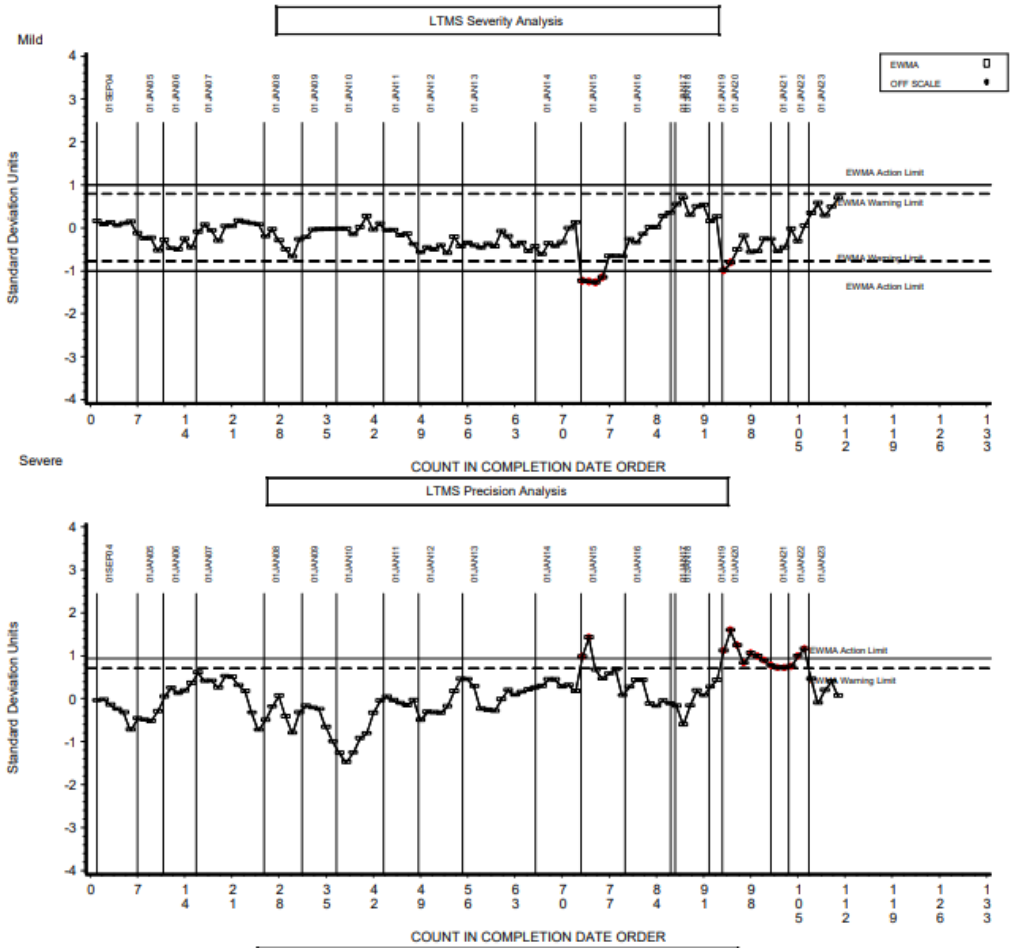
* All remaining parts inspected

- Reference Oil Update:
  - Approximately 5 Year Supply of 830-3 at current usage rate

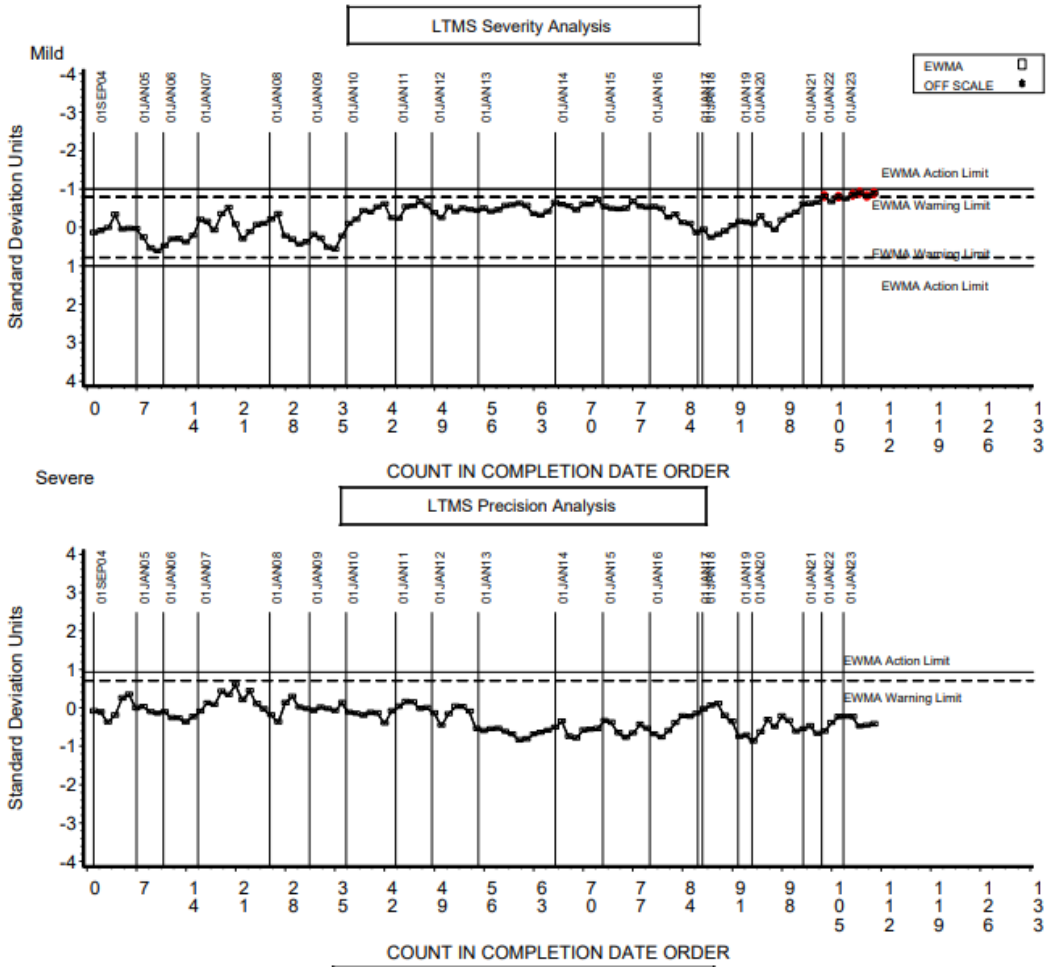
Cummins SP Report

ISM Test Status

ASR



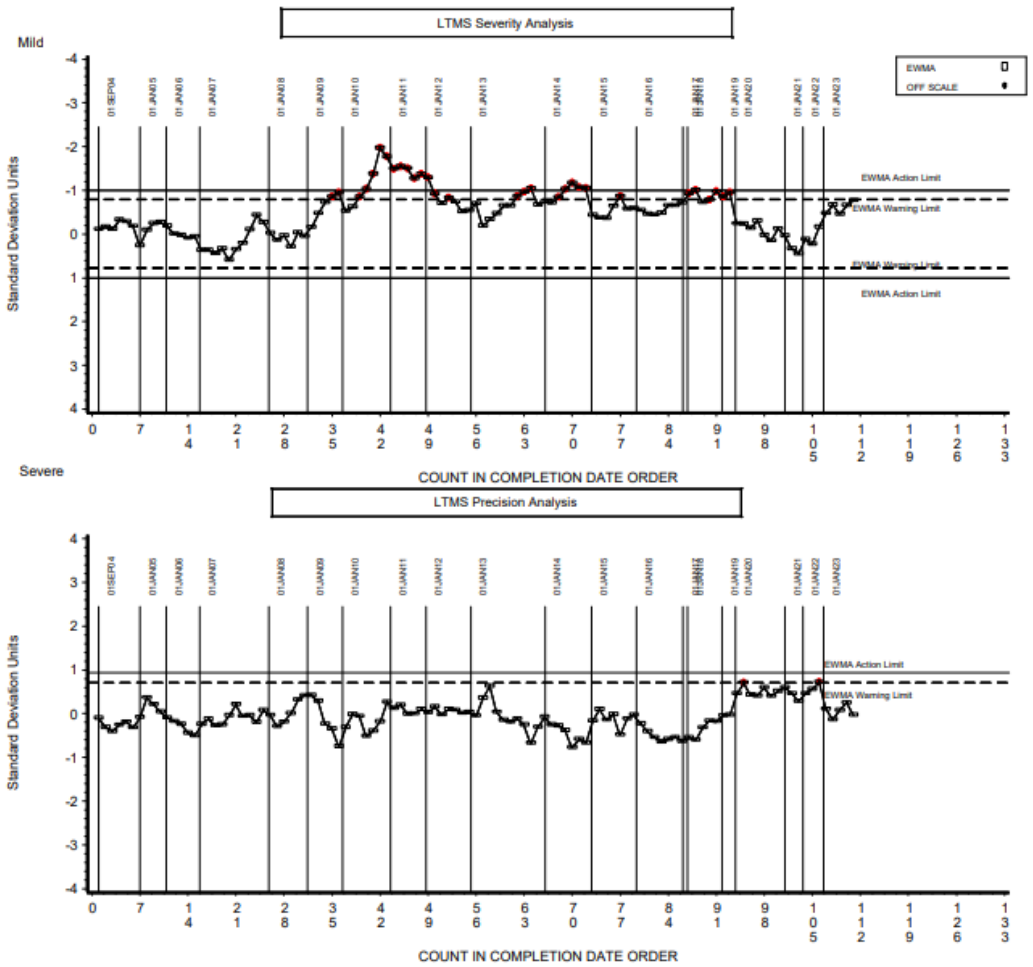
CWL



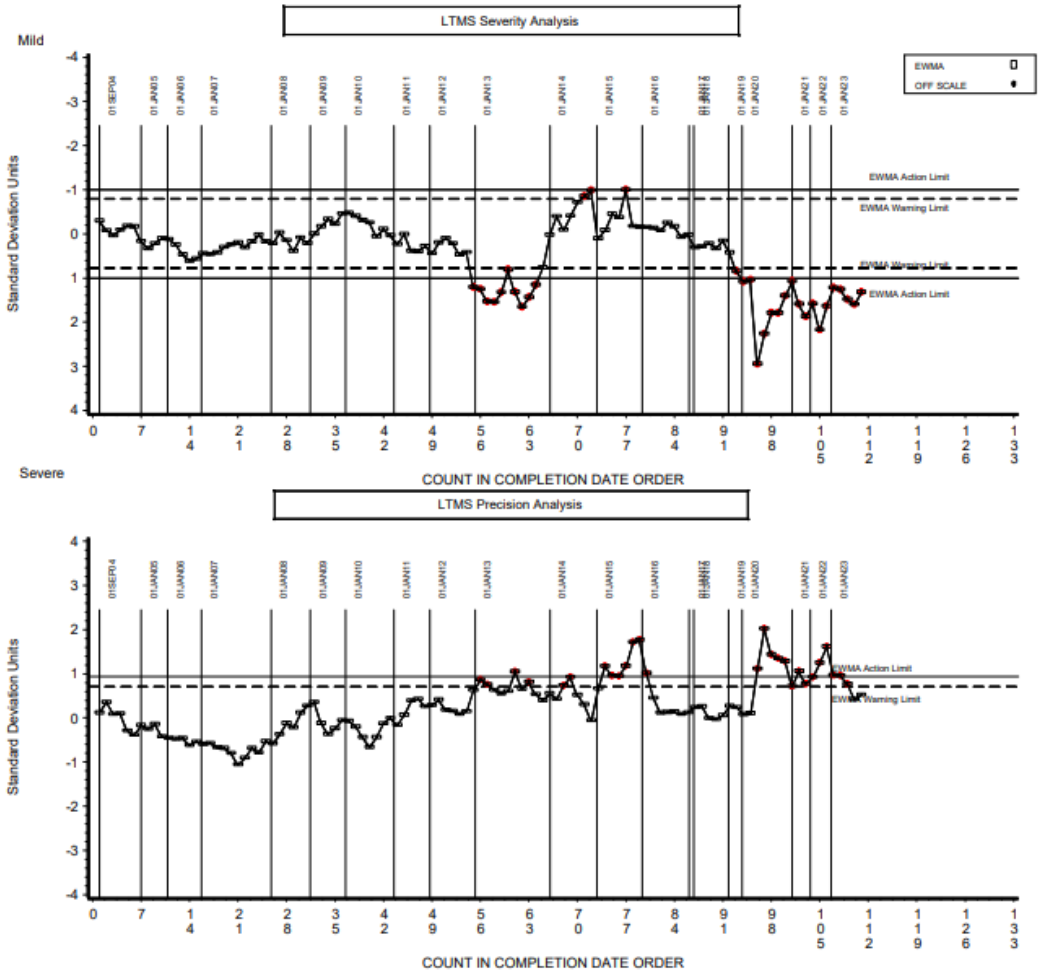
Cummins SP Report

ISM Test Status

FDP



IAS



Cummins SP Report

ISM Test Status

- Action Items
  - Low viscosity reference oil introduction
    - Select a reference oil for matrix
    - When?
    - How to handle referencing with new oil introduction
    - Long term how the panel handles multiple reference oils
  - CF change was previously made to IAS, needs to be re-investigated now with more data available
  - New crosshead, intake and exhaust valve batch expected in 2024

Cummins SP Report

- Questions?

DD13 S.P.
Annual Report, December 2023
Presentation to Subcommittee D02.B0

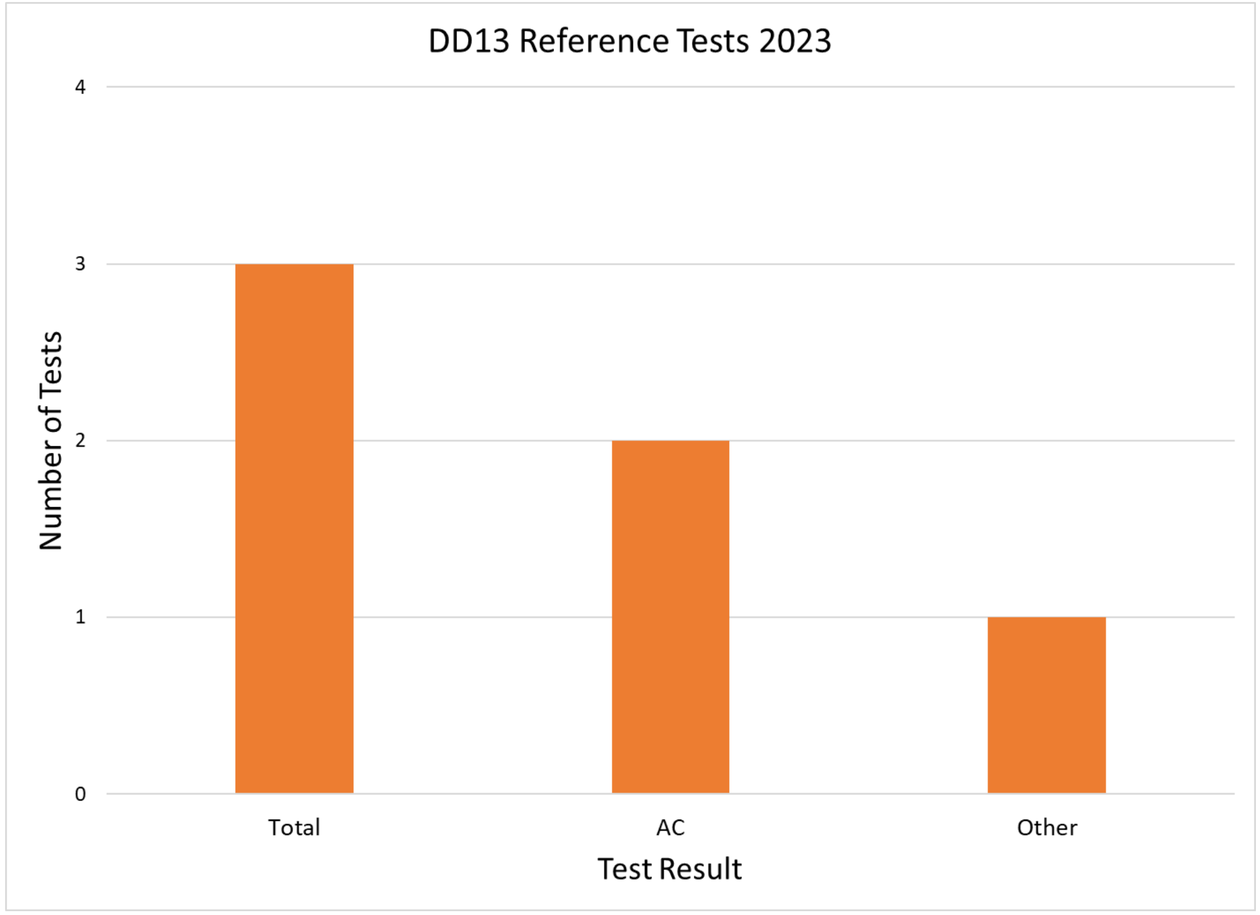
Prepared By: Robert Slocum, S.P. Chair December 2023

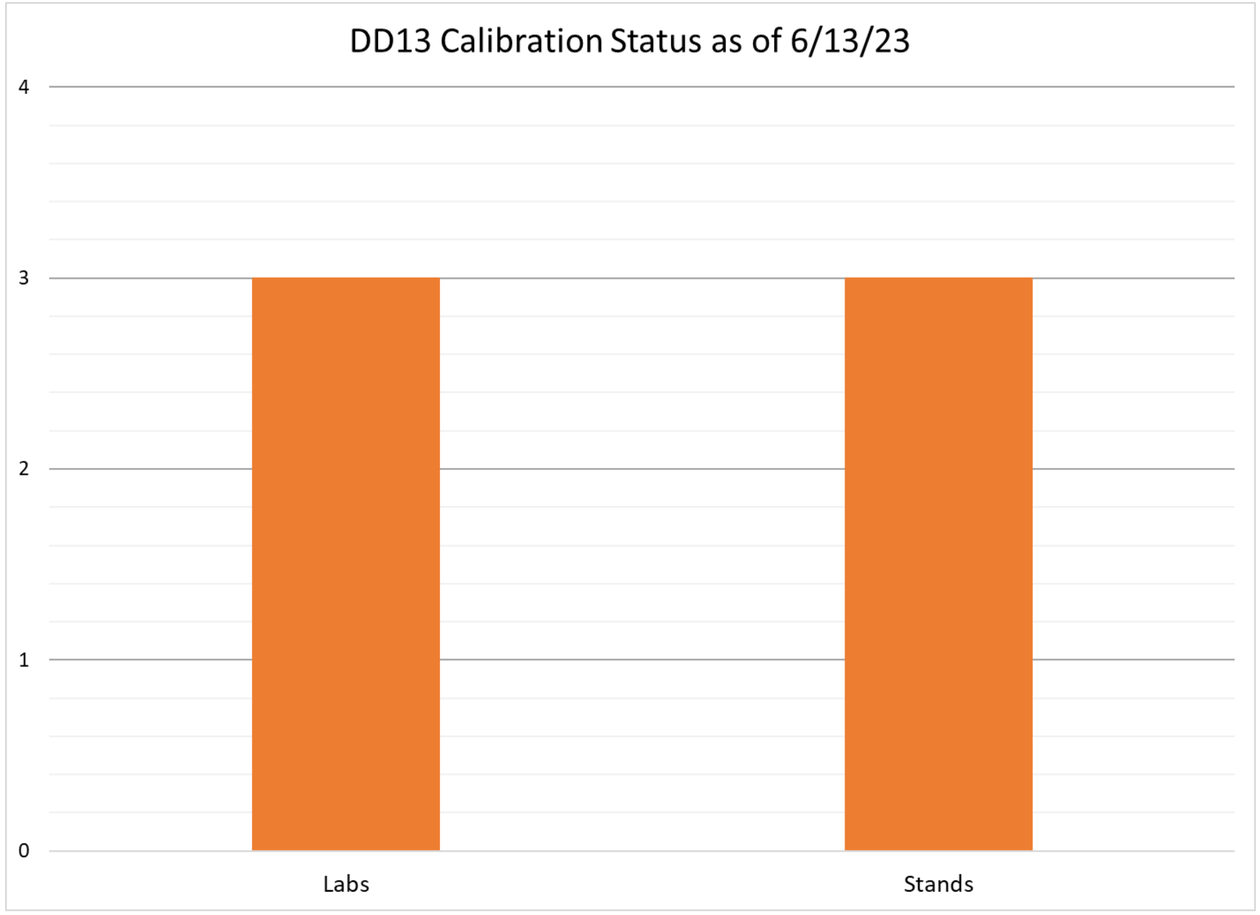
DD13 S.P. Report
Panel Activity

- D8074-23 has been updated to reflect the Pretest Break-in Sequence time of 00:15 minutes from 20:00 hours in table A5.1

- DD13 SP voted on new liner roughness limits based on a severity study presented by David Brass 09/18/2023

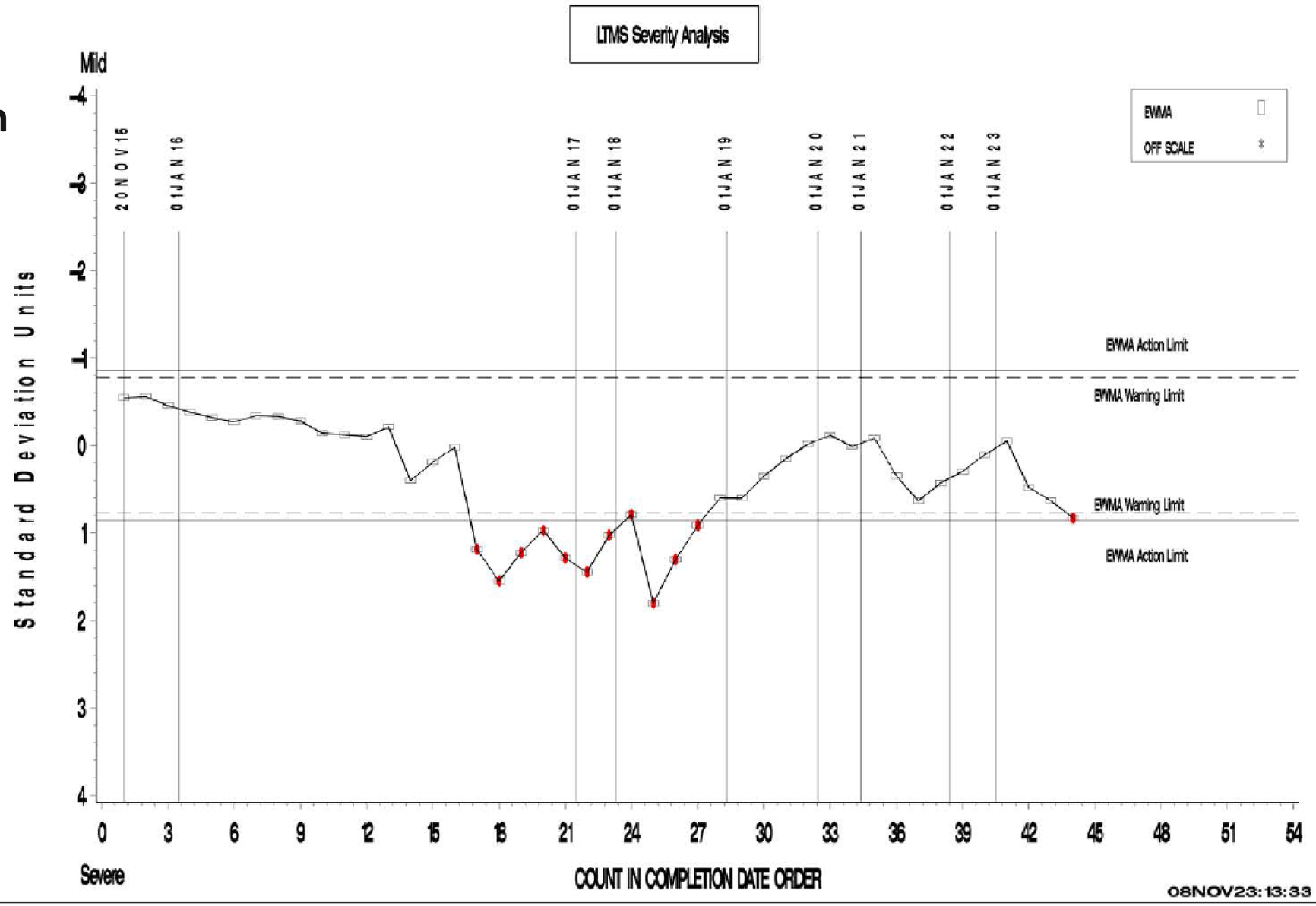
DD13 S.P. Report
Reference Test Activity





Control Charting

Level 1 Alarm in Severe Direction



Control Charting

DD 13 S.P. Report Hardware

- A4710500834 (exhaust rocker) arms currently unavailable
- Batched parts below

Part	Batch	Quantity	Kits Remaining	Years Remaining*
Top Ring	C	1986	333	8.8
Second Ring	B	1723	289	7.6
Oil Ring	B	1163	196	5.2
Piston	B	1734	291	7.7
Liner	D	1515	255	6.7

*Based on Last 12 months of sales

DD 13 S.P. Report

Reference Oil Inventory Estimated Life

Oil	Tests	Original Blend Amount	Quantity Shipped in last 6 months	TMC Inventory	Lab Inventory	Estimated Life
832-1	COAT	1951	0	1214	0	5+ years
832-2	COAT	733	168	513	140	5+ years
833-1	COAT	1248	56	221	84	1.5 years
833-2	COAT	1078	84	995	28	5+ years
864-1	DD13	1576	200	440	125	3 years
1005-5	1P, 1R, EOAT, RFWT, T-8/E	3826	207	487	137	1.75 years

DD 13 S.P. Report
Next S.P. Meeting

- Tentatively planned for mid-December
  - Topics
    - Proposal for Bearing Screening Protocol – D. Brass

Surveillance Panel Chair Handbook Update December 5, 2023

Prepared By: Andrew Stevens

Surveillance Panel Chair Handbook Update Scope

- Develop a Handbook for Surveillance Panel Chairs
  - Outline Chair Responsibilities
  - Provide Resources for Effective Panel Management
  - Single Point of Contact for Needed Resources
  - Establish a Baseline for Expectations of the Chair by the Panel

Surveillance Panel Chair Handbook Update
Main Topics

- History and Organization
- Panel Housekeeping
- Running Meetings
- Information Letter Process
- Semi-Annual Reports
- Statistics
- Developing New Procedures
- Chair Change Management
- Legal Information

Surveillance Panel Chair Handbook Update Current Progress

- Initial Draft in Development

~~Standard Guide for~~
Standard Guide for D02.B0 Surveillance Panel Chairs' Handbook

[1] This handbook is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.B0.08 Executive Committee, Technical Guidance Committee Subcommittee.

Current edition approved ???. Published ???. Originally approved in 2024. Last previous edition approved in 2024 as ???.

1. Scope

1.1 This handbook covers the information and responsibilities necessary for the effective management of surveillance panels. While this handbook was developed primarily to aid surveillance panel chairs with the execution of their duties, it can also serve as a resource for any panel member or stakeholder. A task force under ASTM D02.B0.08 Executive Committee, Technical Guidance Committee Subcommittee was responsible for the creation of this document.

1.2 This handbook is arranged as follows:

Subject	Section
Scope	1
Referenced Documents	2

4.1 *Handbook* – This handbook is meant to act as a resource primarily for surveillance panel chairs to facilitate the effective management of panels. The information and guidelines contained herein were developed via input from industry members and stakeholders and represents many collective years of experience. There are also references to external resources to provide additional information as well as to reference other guidelines or regulations that may be important to consider as a panel chair and member.

4.2 *Use* – This handbook is useful for the effective management of surveillance panels. Unless otherwise stated, the guidelines contained within are exactly that; guidelines and not strict regulations. However, these guidelines were developed through the collective experience and wisdom of numerous industry members and stakeholders. The surveillance panel chair would be wise to seriously consider them when leading their panel.

5. History and Organization
6. Panel Housekeeping
7. Running Meetings

Yong-Li McFarland
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Yong-Li McFarland