HEAVY-DUTY ENGINE OIL CLASSIFICATION PANEL

OF

ASTM D02.B0.02

December 9, 2025

Hyatt Regency Houston, TX

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 9, 2025, in the Imperial Room of the Hyatt Regency in Houston, TX.

1.2 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 Approval of minutes from June 2025 and October 2025

3.1.1 Minutes are posted on the TMC website

3.1.2 Minutes approved as written

4.0 Membership

4.1 There were no membership changes.

5.0 Surveillance Panel and Taskforce Reports

5.1 DD13 – Robert Slocum - Lubrizol **(Attachment 3)**

5.1.1 No activity this period from the panel

5.1.2 6 reference tests this period, with 5 of them failing

5.1.3 Action alarm currently on hours to scuff, with one lab having an issue with calibrating (severe and mild) causing a precision alarm

5.1.4 Parts supply is adequate, everything has been readily available

5.1.5 Reference oil inventory is in good supply

5.2 Cummins – Joshua Ward - Intertek **(Attachment 4)**

5.2.1 ISB Test Status

5.2.1.1 No parts issues

5.2.1.2 No reference oil supply issues

5.2.1.3 New ICF updates with new hardware after statistical analysis of 7 references

5.2.1.4 Rejection criteria updated on camshafts to reduce rejection rate, which was necessary to continue having hardware available
5.2.1.4.1 SwRI ran a “prove-out” test on a pitted camshaft to give an indication if severity would increase
5.2.1.4.2 No evidence was found that wear increased in pitted lobes
5.2.1.5 Action Items:
5.2.1.5.1 Continue to review reference results on pitted camshafts as they become available
5.2.1.5.2 BOI/VGRA matrix in early 2026
5.2.2 ISM Test Status
5.2.2.1 Adjusting screw batch low, TEI has the new batch in so labs will bring this in soon
5.2.2.2 Crossheads low, high rejection rate, panel to review rejection criteria
5.2.2.3 Kit and engine availability issues
5.2.2.3.1 Non-kitted hardware supply has had delays, but Cummins and TEI have been working to keep supply available and no current issues
5.2.2.4 Action Items:
5.2.2.4.1 SP will continue to monitor hardware availability
5.2.2.4.2 Bring in adjusting screw batch F once Batch E supply is depleted
5.2.2.4.3 Evaluate crosshead rejection criteria and order the next batch
5.2.2.4.4 Continue to monitor control charts on new hardware once available
5.2.3 ISB Viscosity Test Status
5.2.3.1 No parts issue as this test uses a small volume of ISB Wear hardware
5.2.3.2 822-2 running low, will work with Mack/Volvo panel on updating to new batch
5.2.3.3 Action alarms on all parameters
5.2.3.3.1 Will be reviewed by panel, and what may be affecting the test
5.2.3.4 6 cSt to be added to the report forms
5.2.3.5 Procedure has been published

5.3 Mack/Volvo Surveillance Panel – Andrew Smith - Infineum **(Attachment 5)**
5.3.1 822-2 reference oil is getting lower and used by both the T11 and the ISBV, so this will need to be on the panel’s radar
5.3.2 T8
5.3.2.1 CLOG initiative for T8E to ISBV 108 Equivalency Matrix
5.3.2.2 Visc increase at 3.8% soot still in action alarm to be reviewed
5.3.2.3 1 calibration test this period
5.3.3 T11
5.3.3.1 MRV warning alarm to be monitored with additional data
5.3.3.2 2 calibration tests this period
5.3.3.3 No hardware issues, however we are on the last batch
5.3.4 T12
5.3.4.1 2 reference tests this period
5.3.4.2 All charts are under control
5.3.5 T13
5.3.5.1 ICF updates were made for batch E liners on IRPH and SQRT(KV40)
5.3.5.1.1 Control charts were reset with the new liner references
5.3.5.1.2 Changes will continue to be monitored and reviewed after 5 additional valid references
5.3.5.2 New head part number to be reviewed by the panel
5.3.5.3 6 reference tests this period with 5 passing and 1 invalid

5.4 Caterpillar Surveillance Panel – Jacob Goodale - Infineum **(Attachment 6)**

5.4.1 No concerns on reference oil supply with a reblend of TMC 831-5 planned to be introduced in early 2026
5.4.2 C13
5.4.2.1 6 acceptable calibrations this period
5.4.2.2 TGC, 2RTC are in warning alarm limits while 2 RTC is in a precision action alarm, to be monitored by the panel
5.4.3 COAT
5.4.3.1 9 total reference tests, with 3 acceptable calibrations, 1 failed, and 4 informational runs
5.4.3.2 AAVE is in severity action alarm in the severe direction
5.4.4 1K
5.4.4.1 2 acceptable calibrations
5.4.4.2 TGF is in a warning alarm and BSOC is in action alarm
5.4.5 1N
5.4.5.1 No tests ran this period
5.4.6 1P
5.4.6.1 No tests ran this period
5.4.7 1R
5.4.7.1 No tests ran this period

5.5 Ford Valvetrain Wear Test – Mike Deegan – Ford **(Attachment 7)**
5.5.1 Model Year 2023 Status
5.5.1.1 Procedure review finalization meeting to be planned in mid-January
5.5.1.2 Long term ECM supply established
5.5.1.3 Total test time reduced to 175 hours targeting 5.25% soot
5.5.1.4 Report forms and data dictionary to be updated
5.5.1.5 Adequate parts and oil exist for testing
5.5.1.6 Reference data shows discrimination still exists between reference fluids in the MY 23 platform
5.5.1.6.1 An initial target for the borderline reference oil will be analyzed and established after 7 tests are available on the fluid

5.6 D4485 Surveillance Panel – Laura Birnbaumer – Oronite **(Attachment 8)**
5.6.1 Additional sections of D4485 to be updated for API CL-4 and API FB-4
5.6.1.1 Sections with updated language can be reviewed in the attachment in detail
5.6.1.2 Laura Birnbaumer (Oronite) - Move to recommend to Sub Committee D02.B0 to ballot the proceeding PC12 accompanying additions and updates to D4485 (see additions and updates in attachment 8)
5.6.1.2.1 Second by Joe Franklin (Intertek)
5.6.1.2.2 None opposed, none waived
5.6.2 Standard Deviations for HNBR
5.6.2.1 HD Specification Elastomer Adjusted Limits
5.6.2.1.1 Historical details and emails can be found in the following attachments for detailed review of discussion and updates **(Attachments 9, 10, and 11)**
5.6.2.1.2 Laura Birnbaumer (Oronite) - Move to recommend to Sub Committee D02.B0 to ballot the initial HNBR-A Total and within-laboratory standard deviation estimates addition to Annex A5 of D4485
5.6.2.1.2.1 Second by Joe Franklin (Intertek)
5.6.2.1.2.2 None opposed, none waived
5.6.3 Changes to the Methodology of Updating D4485
5.6.3.1 D4485 panel does not have “technical” responsibility for D4485, which lies within the two class panels

5.6.3.2 The panel has editorial power, and any recommendations will proceed straight to ASTM ballot and will not be utilizing the information letter system

6.0 Ballot Review **(Attachment 12)**

6.1 Negative Review

6.1.1 Comment on an editorial change in Table 8 to correct the temperature in D6594.

6.1.2 No issues with this correction noted

6.2 Affirmative with Comments review

6.2.1 Several editorial comments were reviewed and can be found in the attachment for details around additions needed within D4485 as well as ILSAC naming revisions

6.2.2 Footnote on ISBV comment from Exxon Mobil for clarity. Propose wording like “Results must be from a registered ISBV108 test. See D8617, Annex A9 for additional information about ISBV108”.

6.2.2.1 None opposed to the editorial change.

6.2.3 Lubrizol Comments

6.2.3.1 T13 editorial change for Average oil consumption parameter, where “max” is incorrectly written in the table and should be removed.

6.2.3.2 New Annex A8 to be written in D4485 and updated in subsequent ballot

6.2.3.3 Tiered limit – FB-4 tiered limit wasn’t supposed to be updated, but it was unintentionally

6.2.3.3.1 This would not be an editorial change, so this would have to go back to subcommittee ballot to be updated

6.2.3.3.2 Shawn W. recommendation to stay the course, none opposed to keeping as was originally balloted

6.2.3.4 No action on sulfur comment

6.3 All editorial changes to be updated and recommended in D02.B0 for ballot in January

7.0 Motion to adjourn at 2:37 PM

D02.B0.02.1 HDEOCP

Shawn Whitacre
Chairman
Heavy-Duty Engine Oil Classification Panel

December 9, 2025
Houston, TX USA

AGENDA
D02.B0.02.1
Heavy-Duty Engine Oil Classification Panel

Tuesday, December 9, 2025 1:30pm CST
Hyatt Regency Houston - Imperial Center Room (Third Level)
Houston, TX USA

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

2) **Minutes** – Approval of Minutes from June 24, 2025 Meeting in Kansas City, MO and October 9, 2025 Meeting in Chicago, IL

3) **Membership**

   a) Review and update current panel membership

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

   a) DD13 SP Report (Robert Slocum, Lubrizol)
   b) Cummins SP Report (Josh Ward, Intertek)
   c) Volvo/Mack SP Report (Andrew Smith, Infineum)
   d) CAT SP Report (Jacob Goodale, Infineum)
   e) Ford 6.7L VTW Test Update (Michael Deegan, Ford)
   f) D4485 SP Action Items and SP update (Laura Birnbaumer, Chevron Oronite)

5) **Old Business**
   a) WK96777 Revision of D4485-2024 to include PC-12 (CL-4/FB-4) requirements (Shawn Whitacre, Chevron)

6) **New Business**
   a) None

7) **HDEOCP Adjournment**

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- **https://www.astm.org/media/pdf/regs_Regulations.pdf**
- **For a complete list of standards see** http://www.astm.org/COMMIT/SUBCOMMIT/D02B0.htm

ASTM-HDEOCP Membership

	Oil and Additive Companies		OEMs
1	Shawn Whitacre - Chevron	1	Patrick Holmes – Volvo Powertrain
2	Steve Jetter – ExxonMobil	2	Wei Qin- Cummins Inc.
3	Karin Haumann - Shell	3	Mike Cabaj – Daimler Truck
4	Mike McLaughlin - BP Castrol	4	Lynsie Delp - Caterpillar Inc.
5	Bruce Tonkel – Valvoline Global Op.	5	Heather DeBaun – Navistar
6	Eugene Scanlon - BASF	6	Ashu Gupta - John Deere
7	Mark Petit - Evonik	7	Stephen Kirby - General Motors
8	Cory Koglin – Afton	8	Jason Andersen- Paccar
9	David Lee – Chevron Oronite	9	Mike Deegan - Ford
10	Greer Gibbons– Lubrizol		
11	Michael Madalian- Infineum U.S.A.		
12	Kyle Kress - Phillips 66 Lubricants		
13	Mark Petraoia, TOTAL Lubricants		

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D02.B0.02.1
Heavy-Duty Engine Oil Classification Panel

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5) **Old Business**
   a) WK96777 Revision of D4485-2024 to include PC-12 (CL-4/FB-4) requirements (Shawn Whitacre, Chevron)

6) **New Business**
   a) None

7) **HDEOCP Adjournment**

WK96777 Revision of D4485-2024 to include PC-12 requirements

New Business

- None

Next Meeting

- **June 23, 2026 in Chicago, IL**

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DD13 S.P.
Annual Report, December 2025
Presentation to Subcommittee D02.B0

Prepared By: Robert Slocum, S.P. Chair December 2025

DD13 S.P. Report
Panel Activity

- No SP activity this period

DD13 S.P. Report
ACC Activity YTD

Test Type	Part A Count	Part B Count	Completed Count	Sponsor Cancelled Count
DD13	37	35	31	1

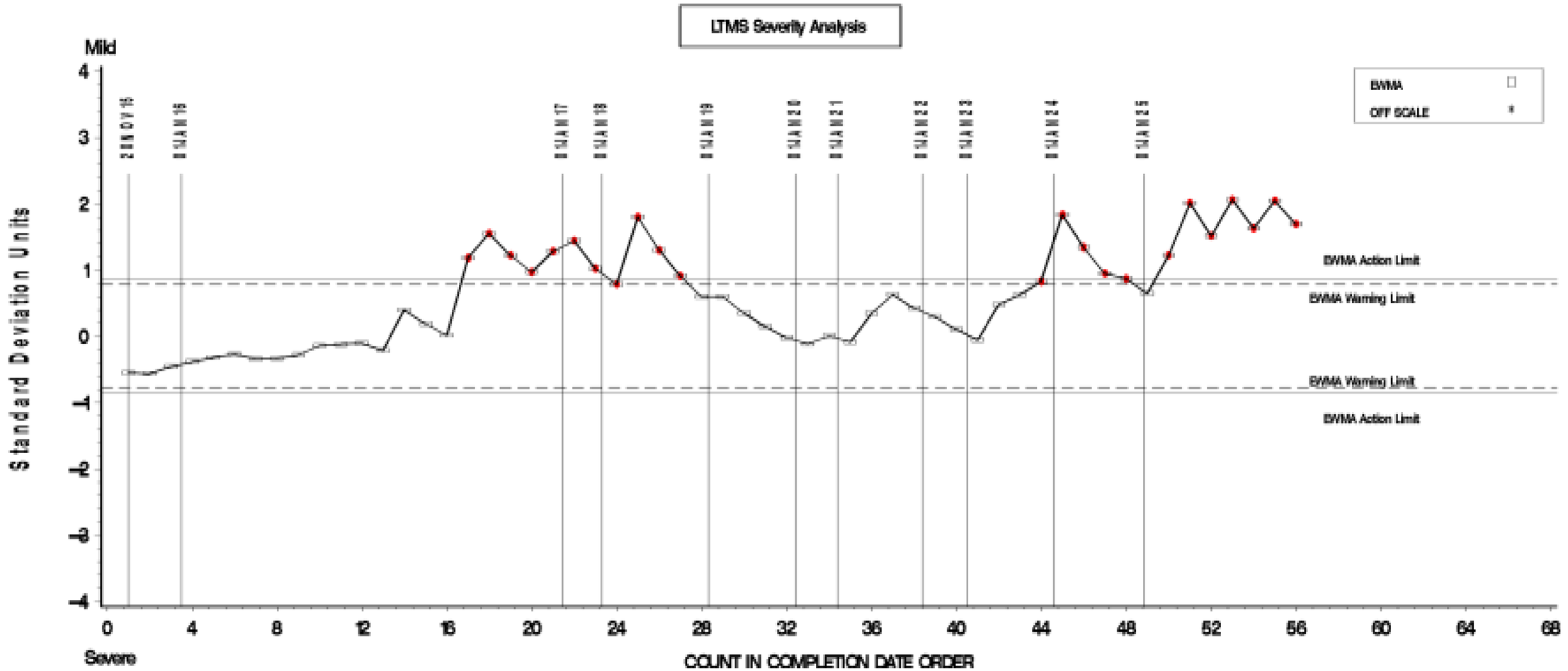
DD13 S.P. Report
Reference Test Activity

Acceptable Calibration Test	AC	1
Failed Calibration Test	OC	5
Operationally Invalid	LC	0
Aborted	XC	0
Total		**6**

Failed Parameter	Number of Tests
HRS2 Mild	2
HRS2 Severe	2
Zi Level 2 Exceeded	1
Total	**5**

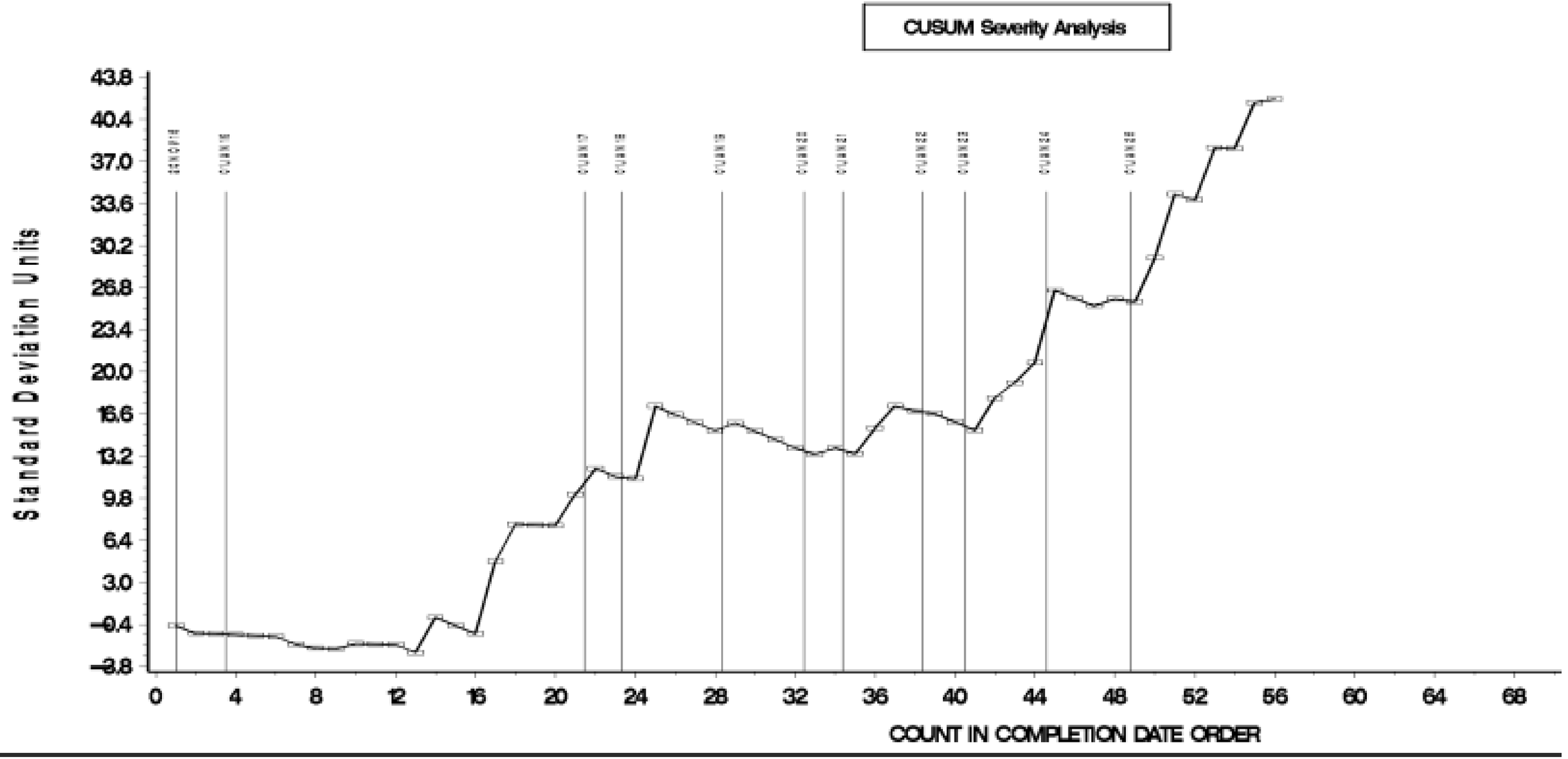
Control Charting

FNL. ORIG. UNIT HOURS TO SCUFF



- HRS2 is in severity action alarm in the mild direction.

Control Charting



DD 13 S.P. Report Hardware

- There haven't been any difficulties getting parts lately, everything has been readily available.

Part	Batch	Quantity	Kits Remaining	Years Remaining*
Top Ring	C	1374	229	4.2
Second Ring	B	1111	185	3.4
Oil Ring	B	551	92	1.7
Piston	B	1122	187	3.5
Liner	D	600	100	1.9

*Based on Last 6 months of sales

DD 13 S.P. Report

Reference Oil Inventory Estimated Life

Oil	Year	Test	Blend Quantity	TMC Inventory
864-1	2016	DD13	1576	137
864-2	2023	DD13	1491	1459

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

- When: TBD
  - Topics
    - Need to keep next batch of liners on the radar
    - Other?

Cummins

ISB (ASTM D7484) ISM (ASTM D7468) ISBVIS (ASTM D8617)

Surveillance Panel Update

December 2025

Prepared by: Joshua Ward, S.P. Chairman

Cummins SP Report

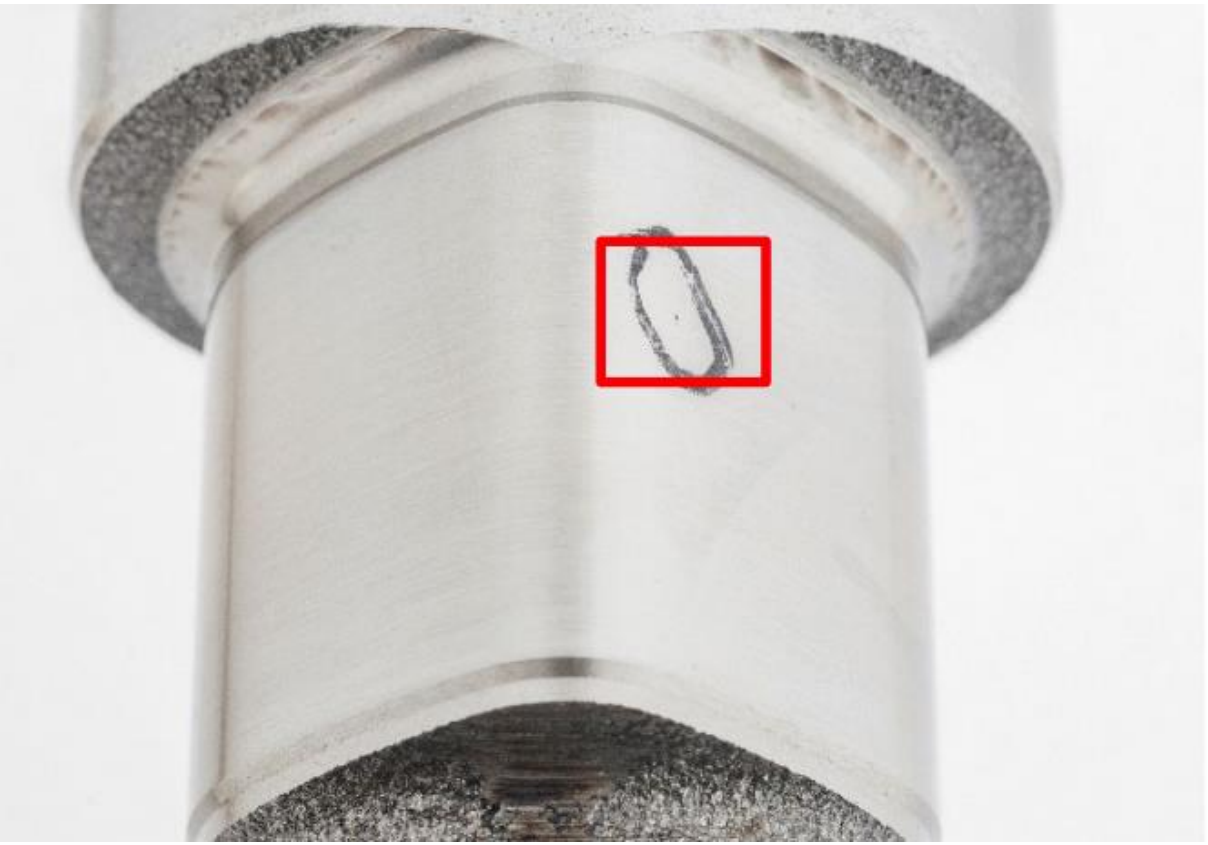
ISB Test Status

- 4 labs, 9 test stands are currently calibrated on current hardware batch
  - Critical Parts Inventory
    - Camshaft Batch O: 266 Kits
    - Tappets Batch G: 238 Kits
    - Crossheads Batch H: 437 Kits
    - Push Rods Batch E: 702 Kits
- Reference Oil Update:
  - Approximately 355 gallons of RO835 remaining

Cummins SP Report

ISB Test Status

- Updated ICF based on newly completed reference data
  - Tappet ICF updated to +1.1153 based on n=7 analysis
  - Camshaft ICF unchanged
- Camshaft Status
  - 70 to 90% camshafts were to be rejected due to pitting on lobe
  - SWRI completed prove out test on pitted camshaft
    - Results were on target with no evidence of increased wear on pitted lobes
    - Camshafts with one intake lobe and one exhaust lobe with a visible pit were approved for use



Cummins SP Report

ISB Test Status

- Action Items
  - Continue review of reference results on pitted camshafts as more results become available
  - Upcoming BOI/VGRA matrix in early 2026

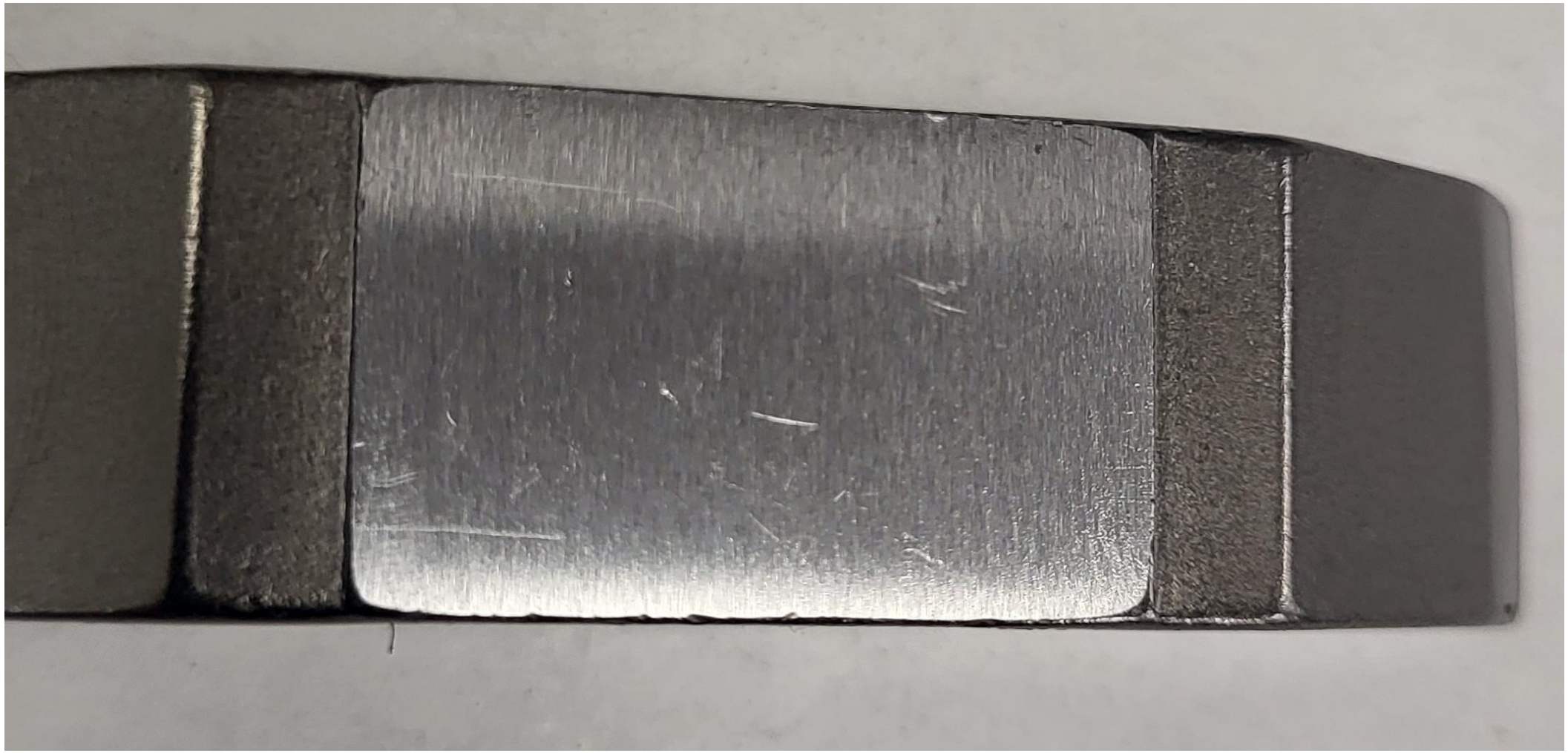
Cummins SP Report

ISM Test Status

- 4 labs, 4 tests stands are currently calibrated
  - Critical Parts Inventory
    - Adjusting Screw Batch E: 21 Kits
    - Adjusting Screw Batch F: 333 Kits
    - Crossheads Batch H: 57 Kits (75% rejection rate)
    - Push Rods Batch D: 206 Kits
    - Exhaust Valve Batch G: 144 Kits
    - Intake Valves Batch G: 1192 Kits
- Reference Oil Update:
  - Approximately 5 Year Supply of 830-3 at current usage rate

Cummins SP Report

ISM Test Status



Cummins SP Report

ISM Test Status

- Kit and engine availability
  - Availability of non-kitted hardware has led to delays in receiving kits
  - TEI recently received engine blocks

Cummins SP Report

ISM Test Status

- Action Items
  - SP will continue to work on hardware availability with TEI and Cummins
  - Bring in adjusting screw batch F once Batch E supply is depleted
  - Evaluate crosshead rejection criteria and order next batch
  - Continue to monitor ISM control charts as reference data on the new hardware becomes available

Cummins SP Report

ISBV Test Status

- 3 labs, 7 test stands are currently calibrated
- Critical Parts Inventory
    - Uses low volume of ISB wear test hardware
- Reference Oil
    - ISBV108 RO834-1 1499 gallons approximately 6 years supply
    - ISBV156 RO822-2 296 gallons approximately 1.5 years supply

Cummins SP Report

ISBV Test Status

- Procedure published
- ISBV 156 hour severity
  - MRV, and soot at 4, 12, and 15 cSt all currently exceeding action limits
  - Panel is currently investigating engine life and other possible factors
  - Review targets
- Current Critical Parameter only 12 cSt

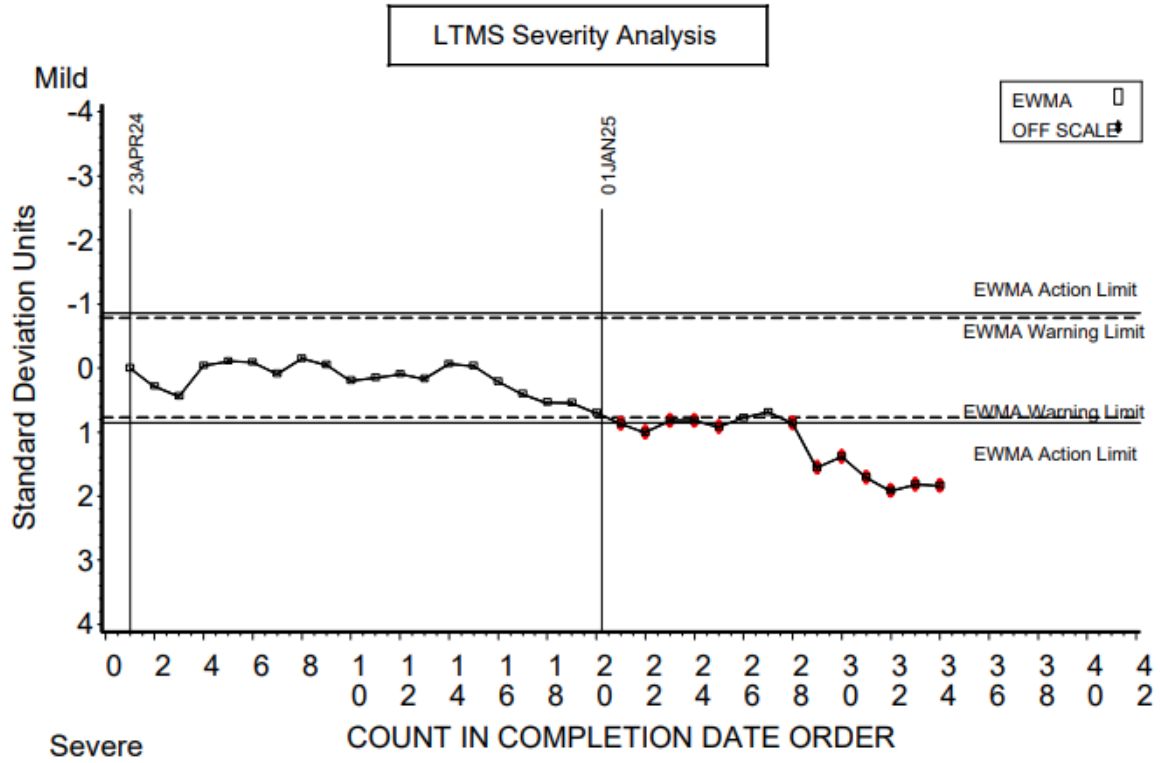
- Addition of 6 cSt
  - Maintain 4 cSt and add 6 cSt

Cummins SP Report

ISBV Test Status

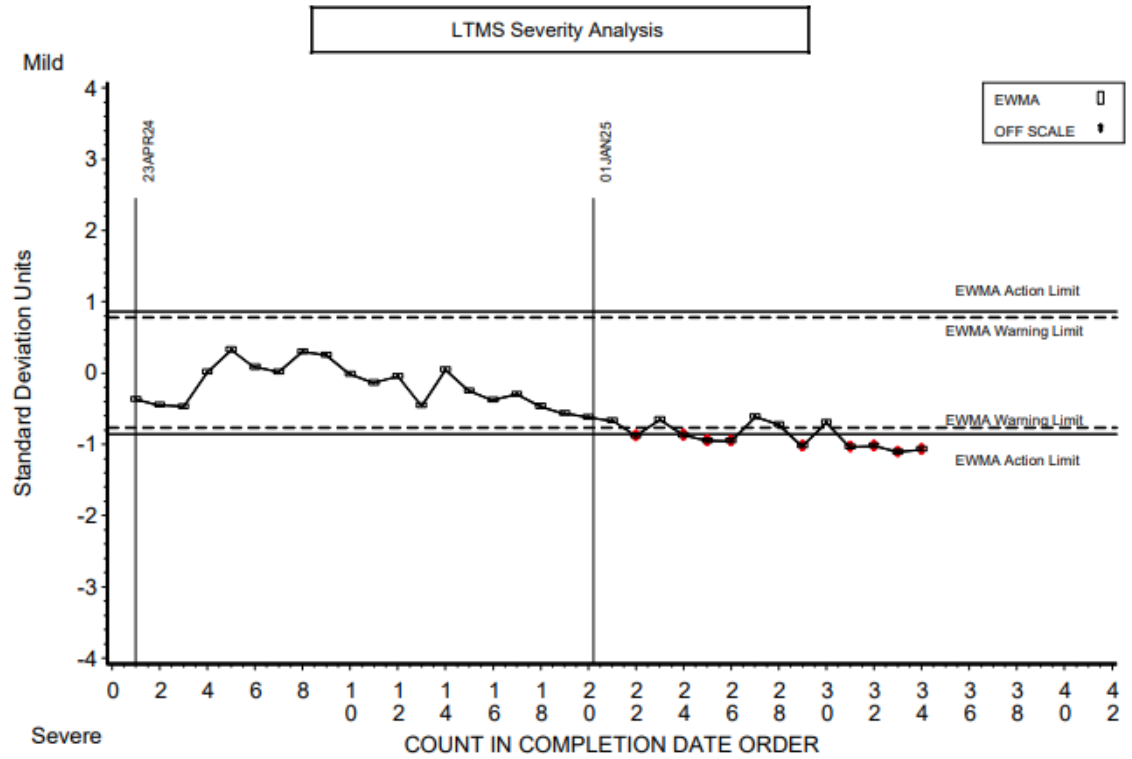
CUMMINS ISB VISCOSITY TEST 156 HR INDUSTRY OPERATIONALLY ATA

FINAL MRV VISCOSITY [NM, SOLID, FROZEN, <, >]



CUMMINS ISB VISCOSITY TEST 156 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 4 cSt [>]

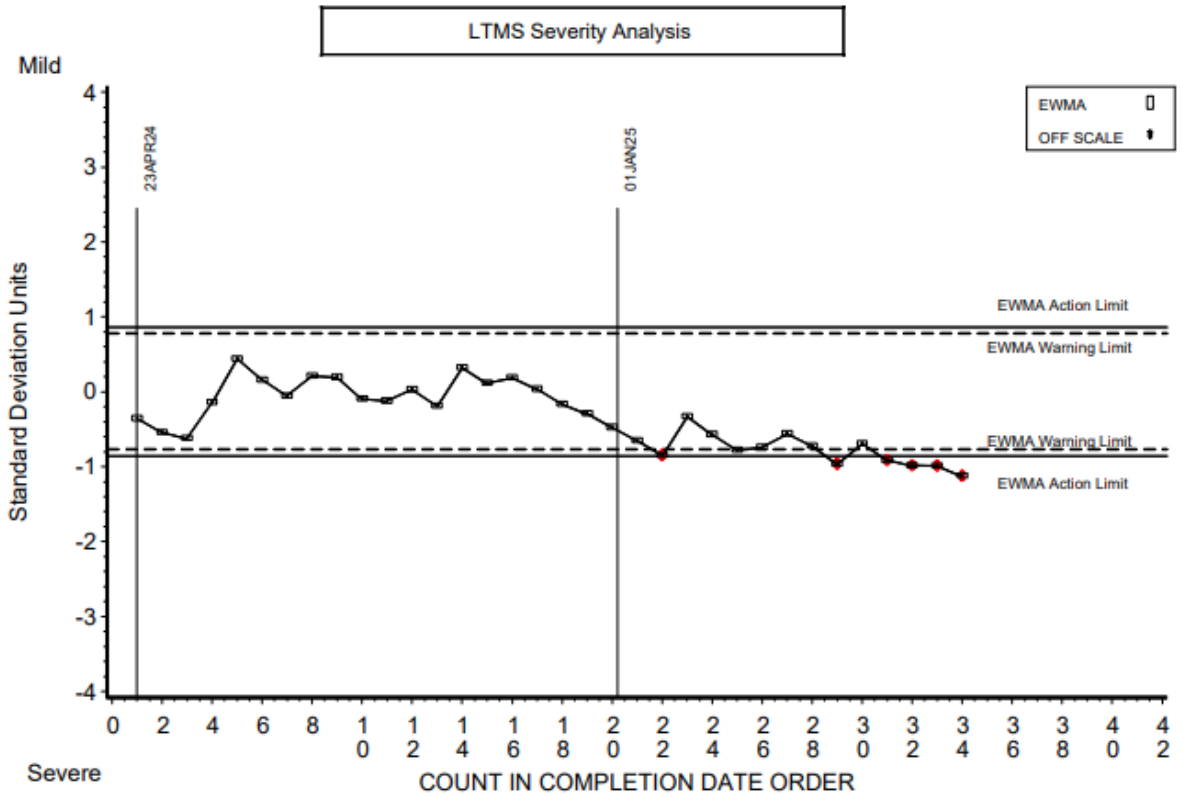


Cummins SP Report

ISBV Test Status

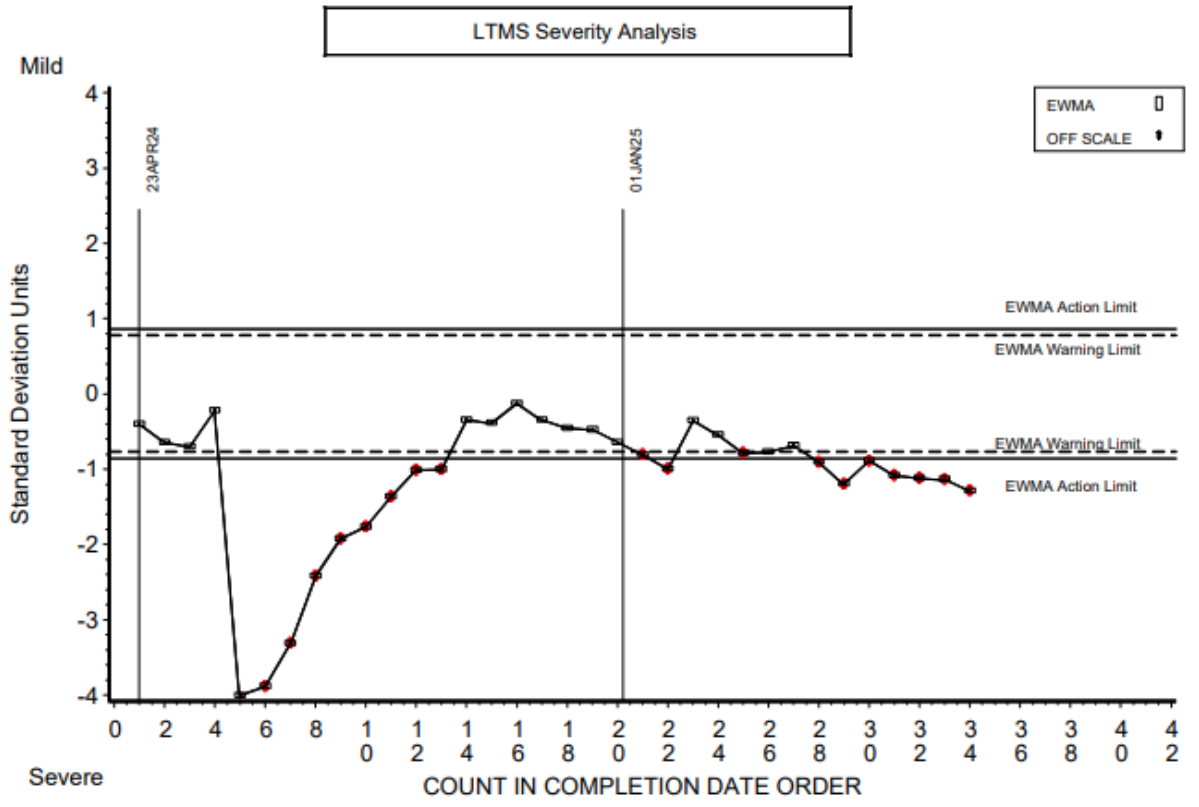
CUMMINS ISB VISCOSITY TEST 156 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 12 cSt [>]



CUMMINS ISB VISCOSITY TEST 156 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 15 cSt [>]



Cummins SP Report

- 3 Surveillance Panel Meetings this period
- 1st Meeting
  - Review ISB camshaft rejection criteria
  - ISM kit availability
  - ISB ICF Review
    - Camshaft wear remained stable
    - Tappet wear had shifted mild
  - Discuss ISBV severity shift

Motion: The panel moves to update the tappet ICF to +1.1153 based on the n=7 analysis which excludes the first 2 tests on stand B5. The ICF will effect all candidate tests completed 8/6/2025 or after and all reference tests completed on batch GHO hardware will be resubmitted.

Cummins SP Report

- 2nd Meeting
  - Discuss ISB camshaft inventory and rejection criteria
    - SWRI to run prove out test on pitted camshaft
  - ISM kit availability
  - Discuss ISBV procedure for oxidation measurement
  - Reviewed ISBV LTMS critical vs non-critical parameters for level 3 Ei alarms

Motion: Update section 11.1.3 of the procedure, making the calculation of oxidation optional and changing from peak IR to integrated IR.

Cummins SP Report

- 3rd Meeting
  - Review results from ISB pitted camshaft test at SWRI
  - ISM kit status
  - Add validity statement to ISBV report for 108 hour MRV result
  - Discuss the addition of 6cSt to ISBV procedure and report
  - RO 834-1 introduction

Motion: The panel directs TEI to allow the distribution, for labs willing to accept them, of kits with camshafts containing up to one intake lobe and one exhaust lobe with a visible “pit” as a rolling change. The next reference on each stand shall be run with a camshaft with one pit on an intake lobe and one pit on an exhaust lobe. The test report shall be updated to call out pit locations in the wear results table on form 8 by adding a column

Motion: The panel directs TMC to update the report form to add a validity statement for the 108-hour MRV run in a 156-hour test, to match what is outlined in the test procedure.

Motion: Introduction of RO 834-1 shall be treated as a rolling change with level 2 Ei alarms. Once more data is available, the panel will evaluate if new targets are needed.

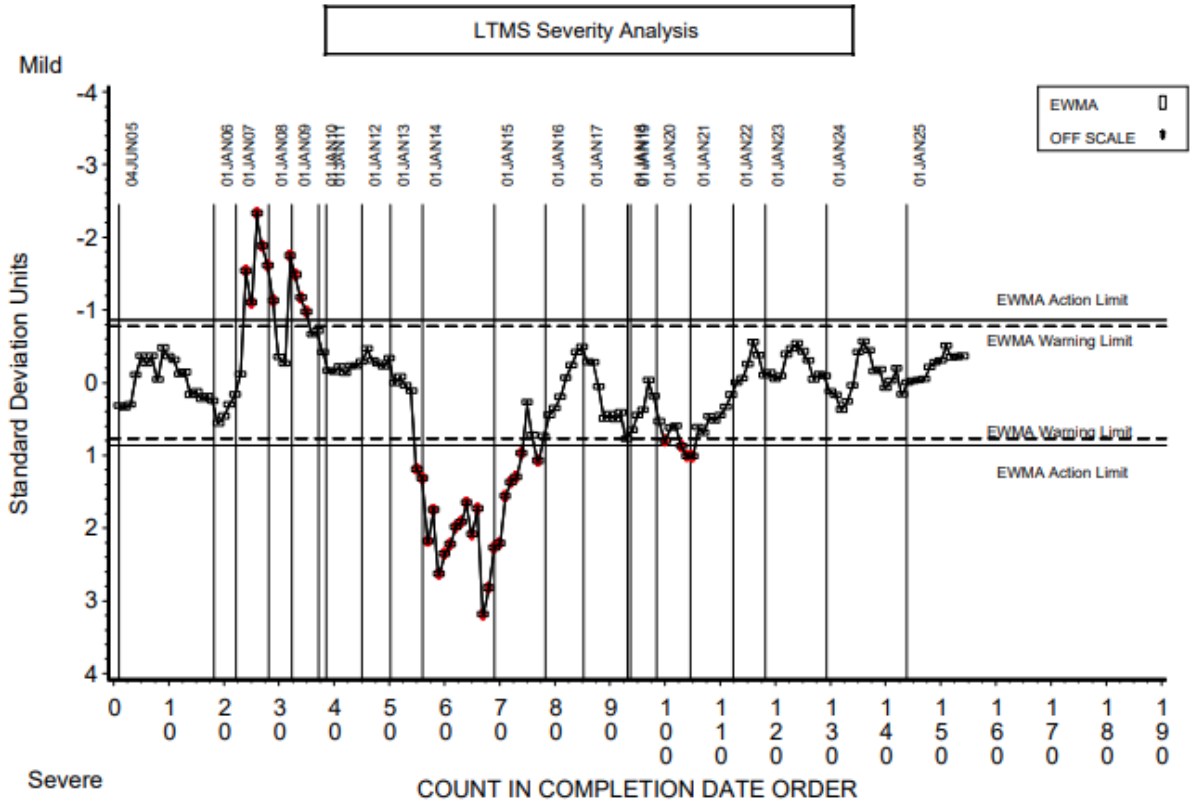
Cummins SP Report

- Questions?

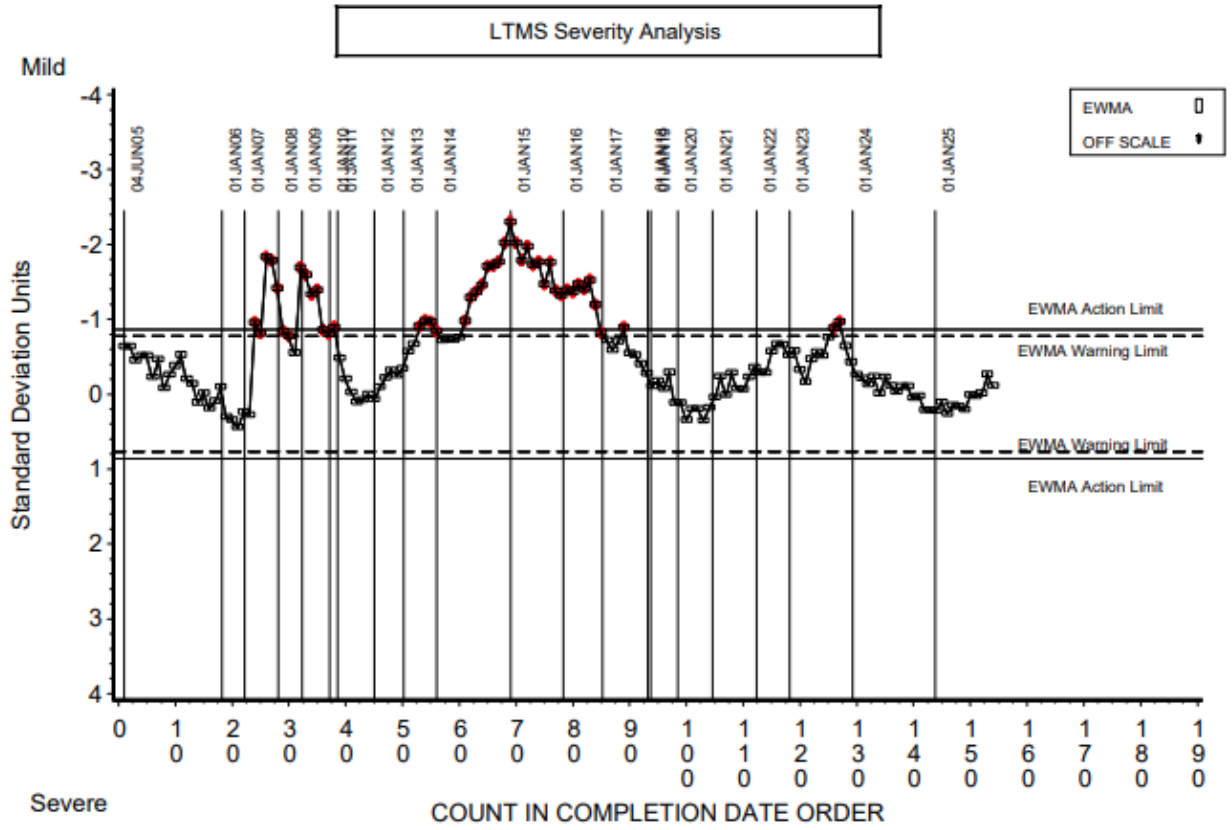
Cummins SP Report

ISB Test Status

Camshaft

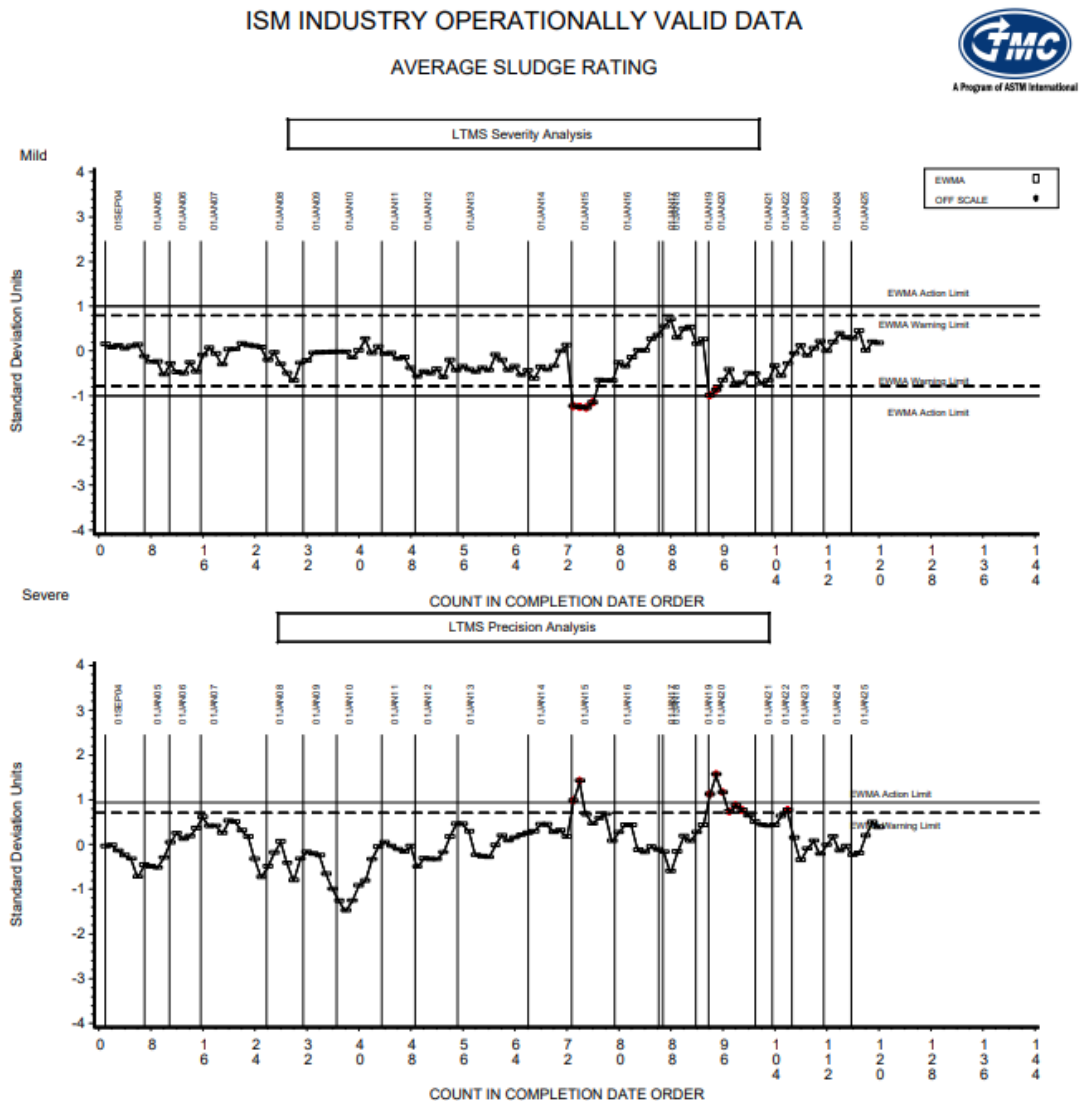


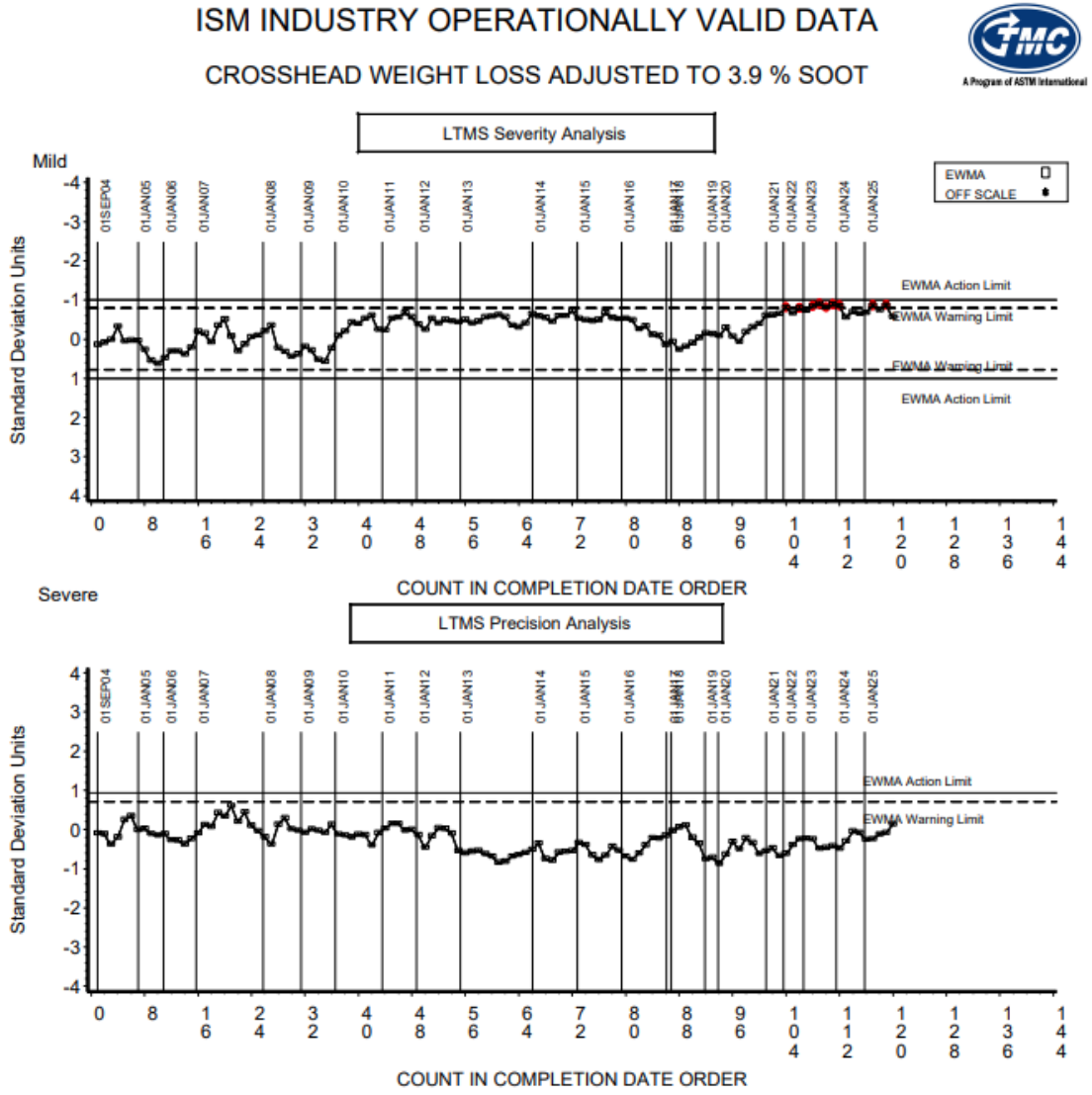
Tappet



Cummins SP Report

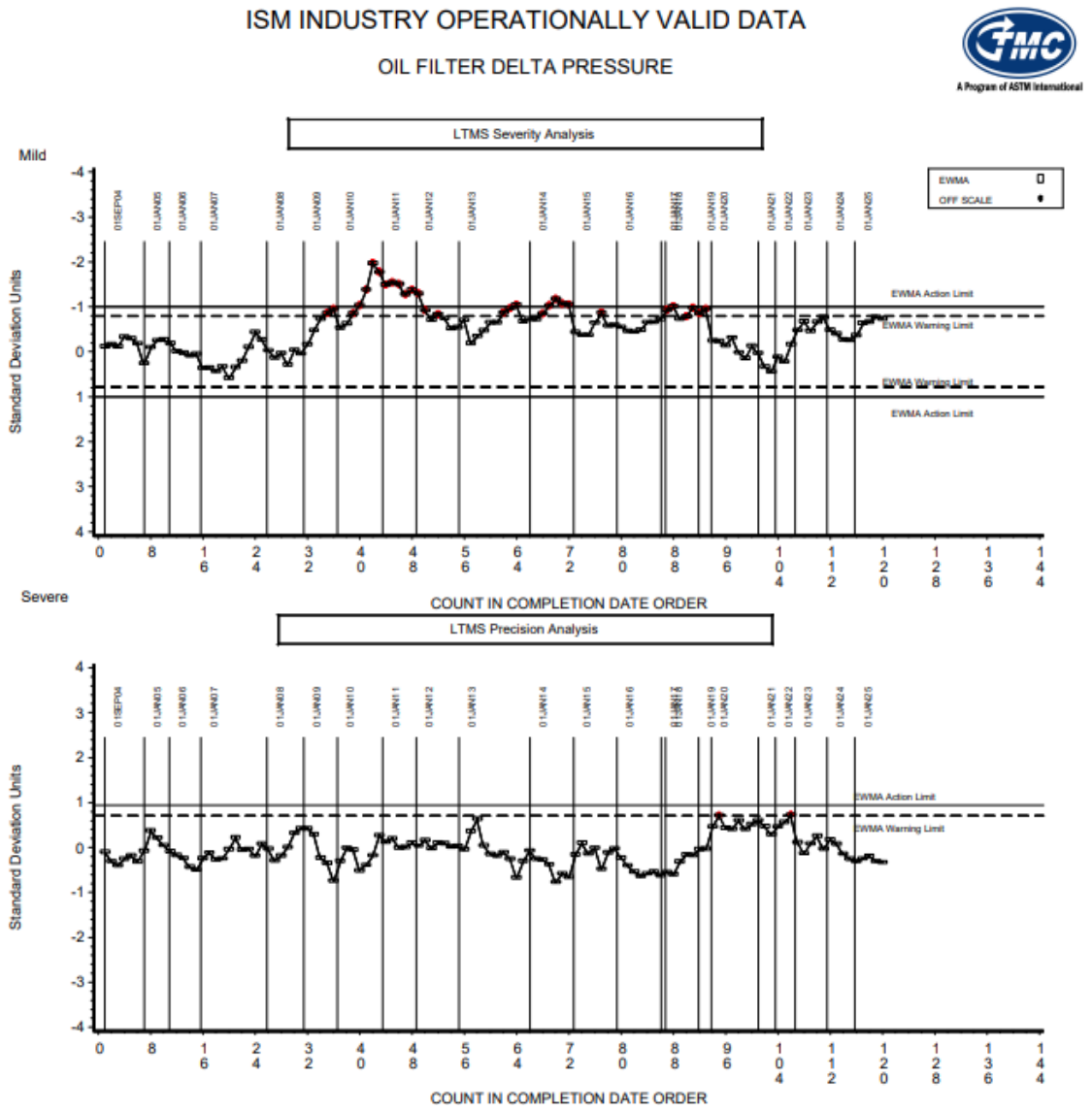
ISM Test Status

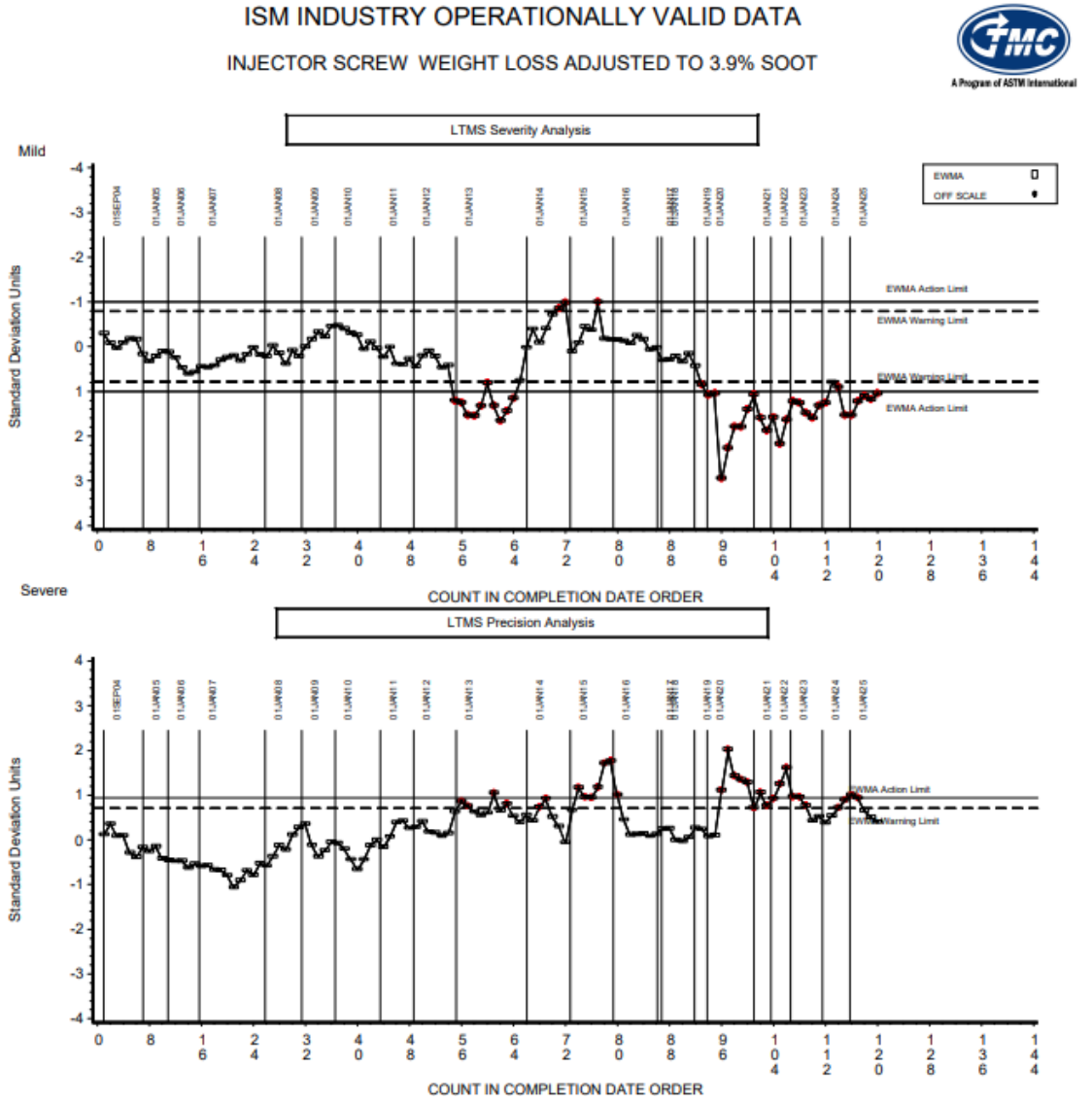




Cummins SP Report

ISM Test Status



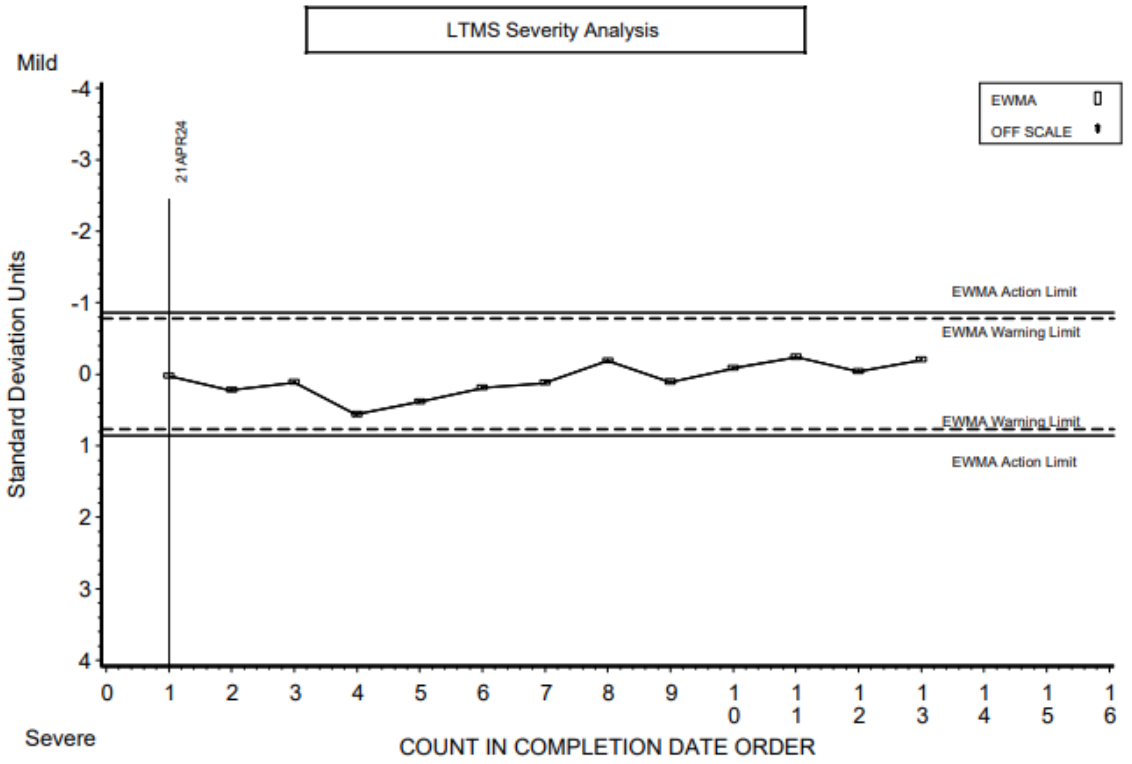


Cummins SP Report

ISBV Test Status

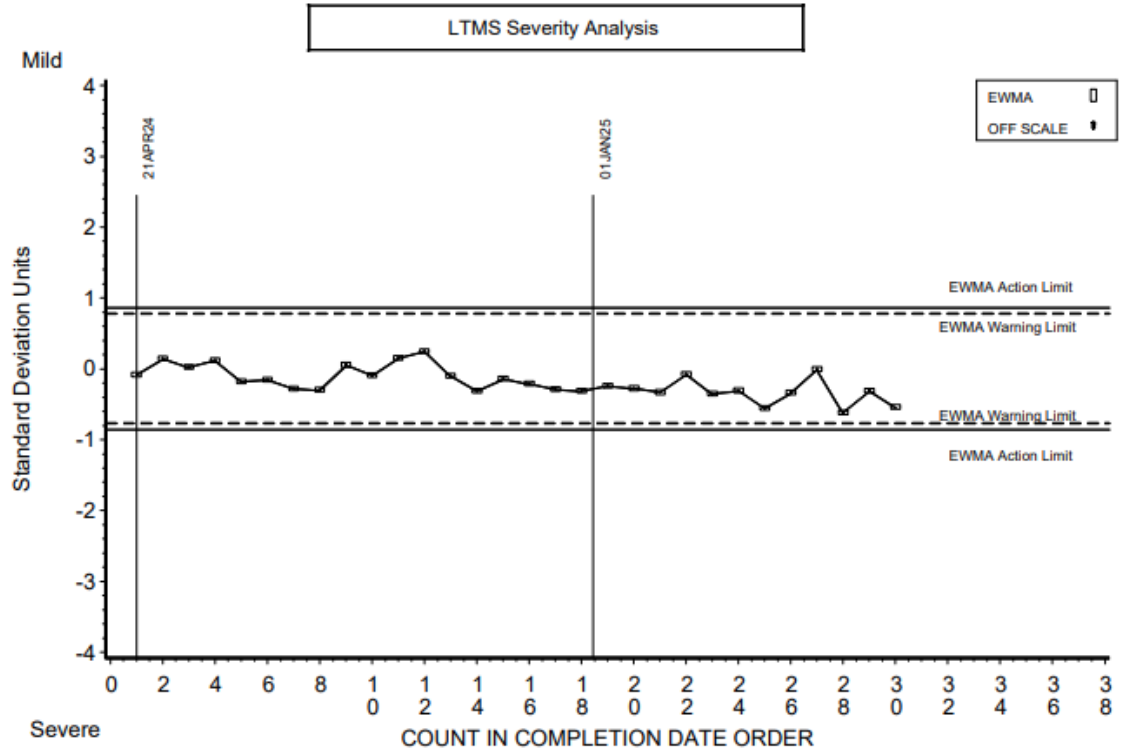
CUMMINS ISB VISCOSITY TEST 108 HR INDUSTRY OPERATIONALLY VALID

FINAL MRV VISCOSITY [NM, SOLID, FROZEN, <, >]



CUMMINS ISB VISCOSITY TEST 108 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 4 cSt [>]

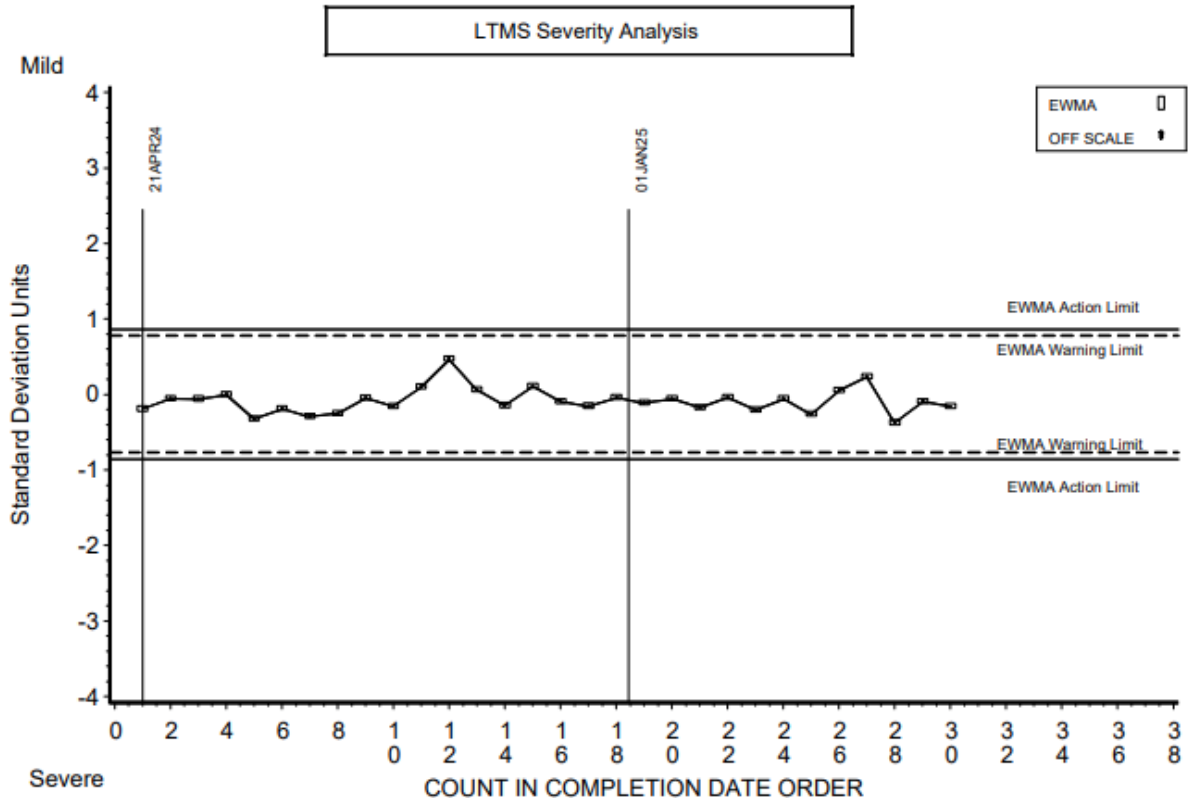


Cummins SP Report

ISBV Test Status

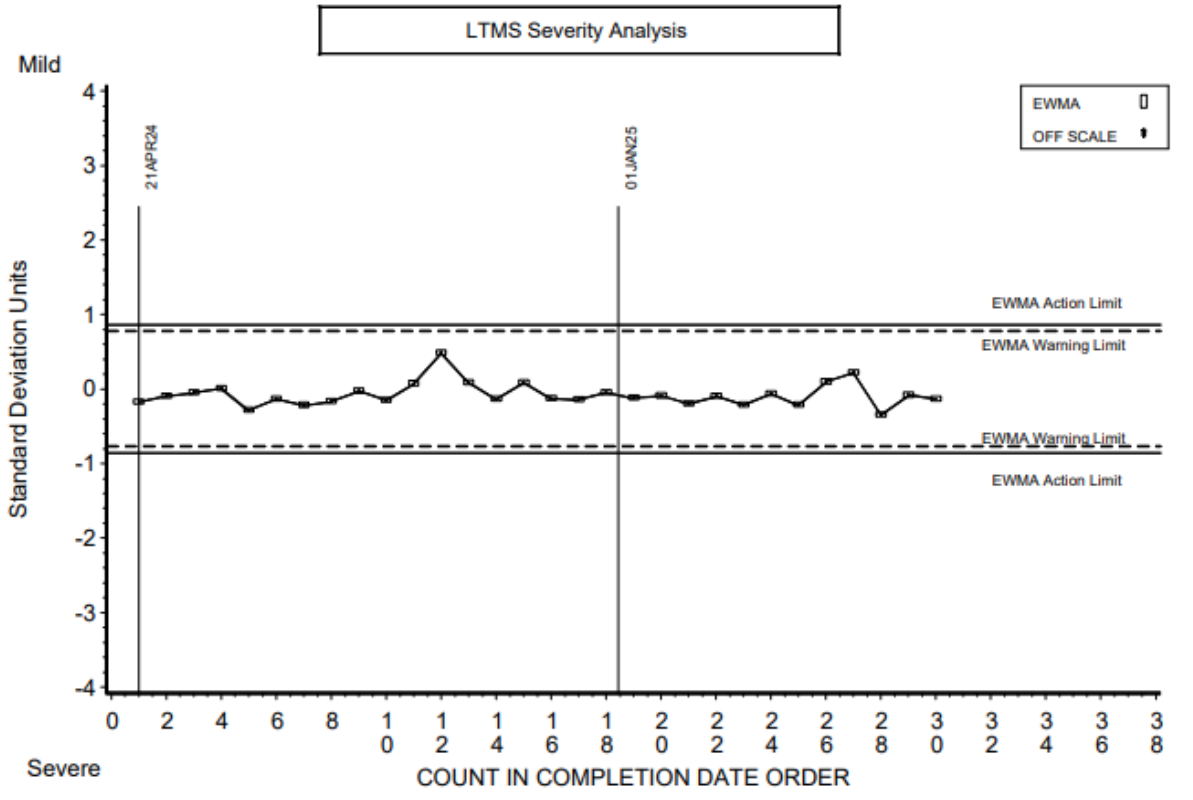
CUMMINS ISB VISCOSITY TEST 108 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 12 cSt [>]



CUMMINS ISB VISCOSITY TEST 108 HR INDUSTRY OPERATIONALLY VALID

FINAL SOOT % AT 15 cSt [>]



Mack / Volvo Surveillance Panel Update

December 9, 2025

Andrew Smith - SP Chair

Meetings

- Surveillance Panel held 1 meeting in the last period:
  - 10/16/2025
- Topics discussed:
  - T-13 ICF Statistical Analysis due to severity alarm
  - T-8 Equivalency to ISBV Matrix Funding Request
  - T-13 Head Supply and Part Number Change
- Information Letters
  - None this period

Reference Oil Inventory

Test	Reference Oil	TMC Inventory from Semi-Annual Report (Gallons)	Supply
Mack T-8	TMC 1005-5	232	2 Years
Mack T-11	TMC 822-2	296	~1.5 Years
Mack T-12	TMC 821-4	1824	5+ Years
Volvo T-13	TMC 823-1	850	5+ Years
	TMC 824	625	5+ Years

T8

- CLOG initiative for T8E – ISB Viscosity 108 Equivalency Matrix
  - Funding request submitted
  - Estimated to start Q1 2026

- Current action items
  - Review Test Severity

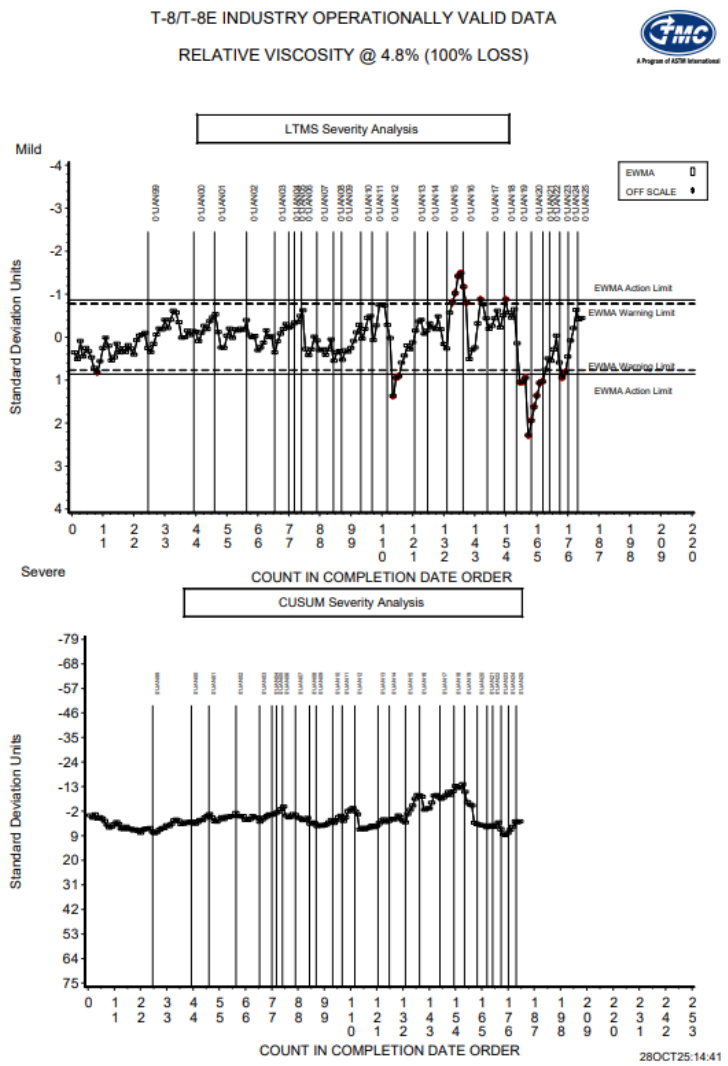
- Test Severity
  - Viscosity Increase at 3.8% Soot still in Action Alarm to be reviewed
  - RV48 and RV2 are in control

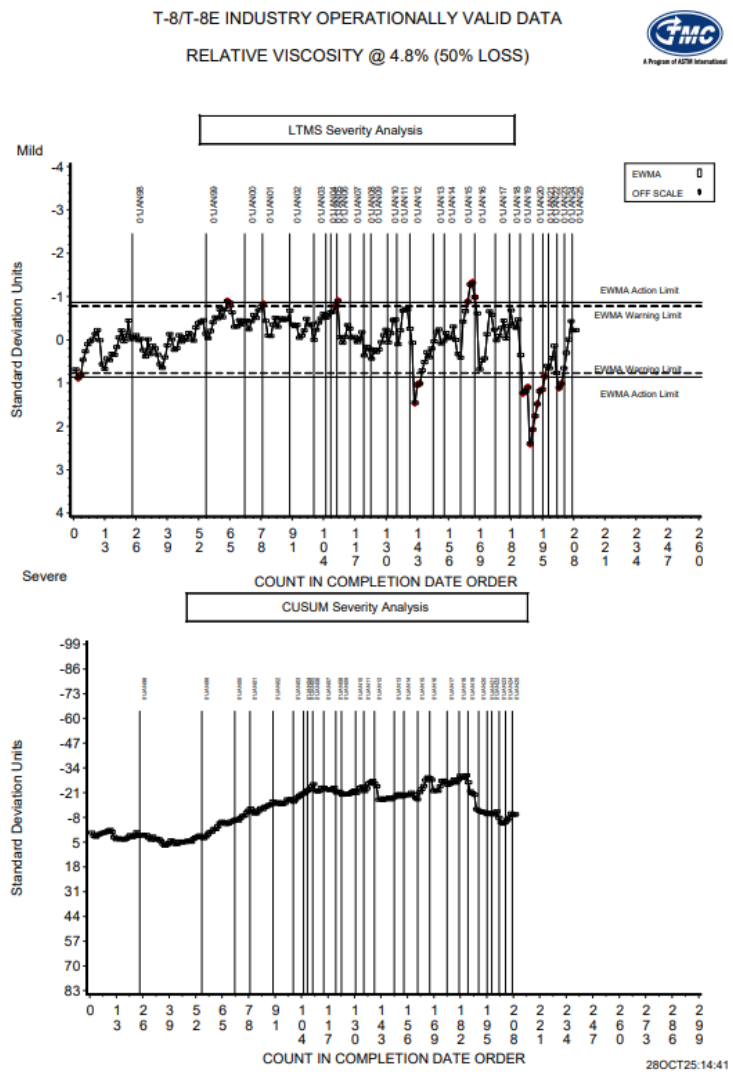
Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	1	
Failed Calibration Test	OC	0	
Aborted	XC	0	
Total		**1**	

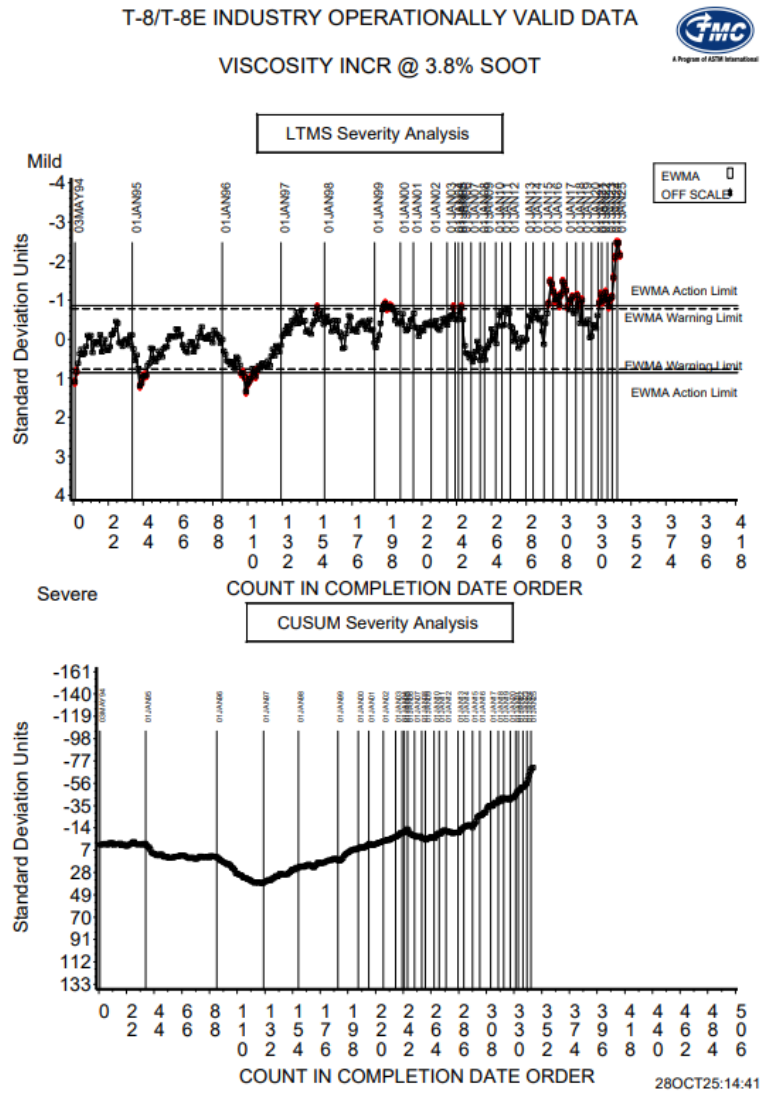
Labs	Referenced Stands
2	2

- Currently running last batch of hardware, no issues at this time

T8 Control Charts







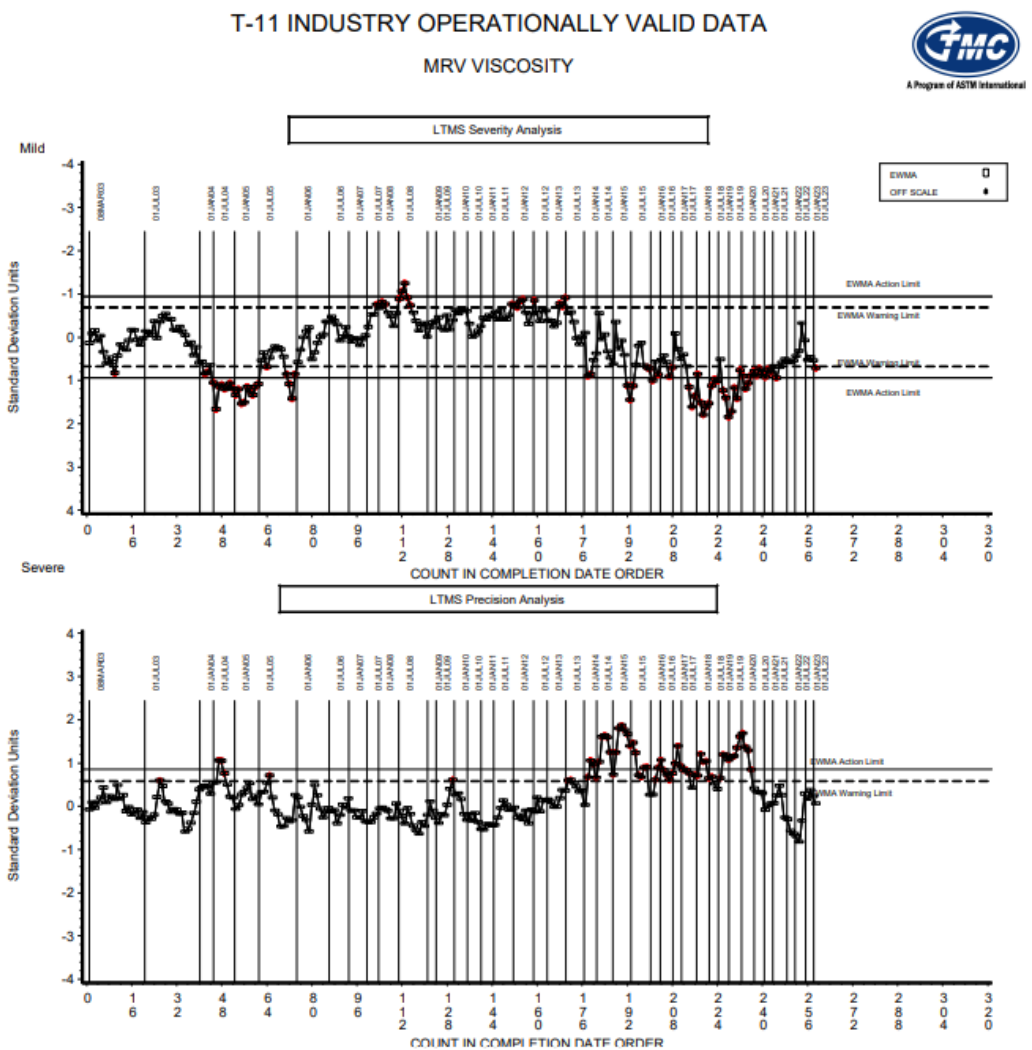
T11

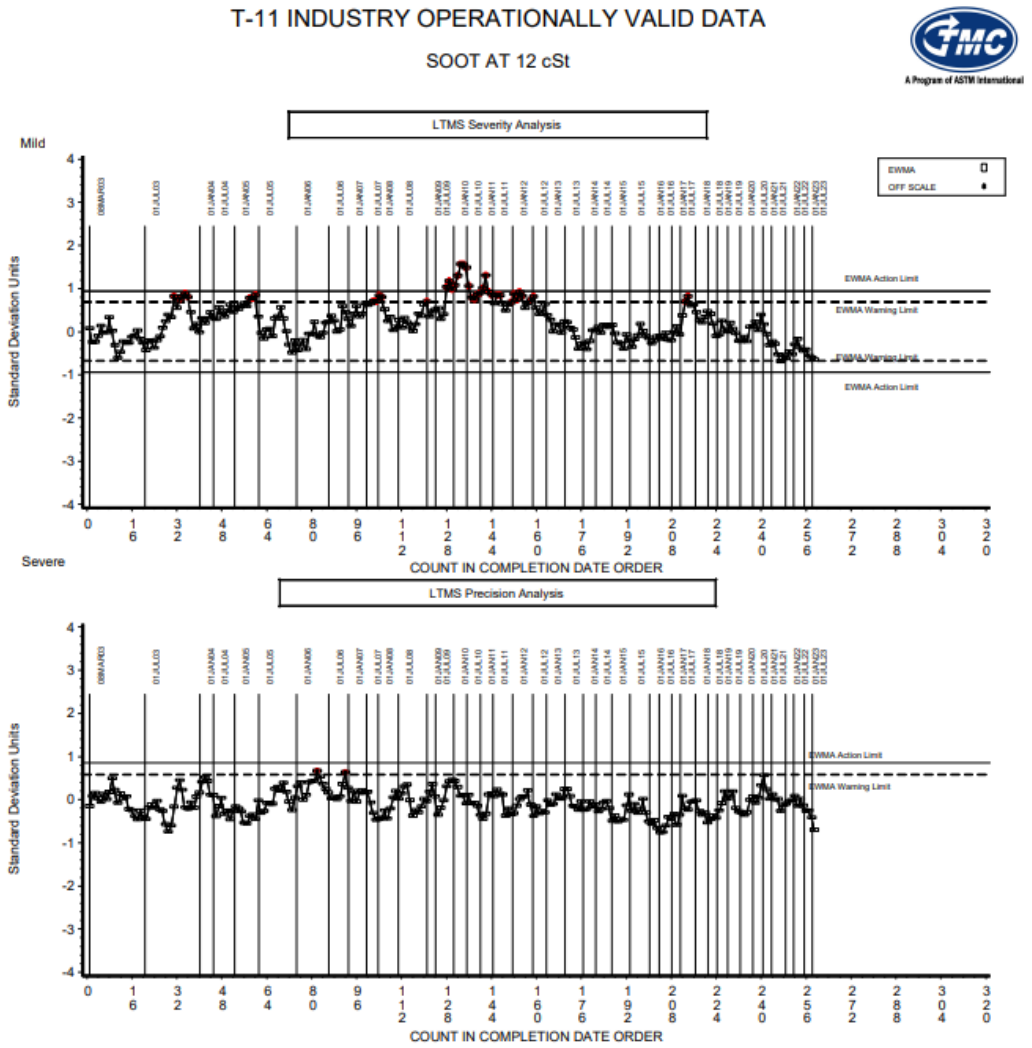
- Test Severity
  - MRV Warning Alarm to be monitored with additional data
  - Soot4 Action Alarm (has been in action alarm since 2016)
    - Deemed non-critical, little variation
  - Soot and Soot5 under control
- Currently running last batch of hardware, no issues at this time

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
Failed Calibration Test	OC	0	
Aborted	XC	0	
Total		**2**	

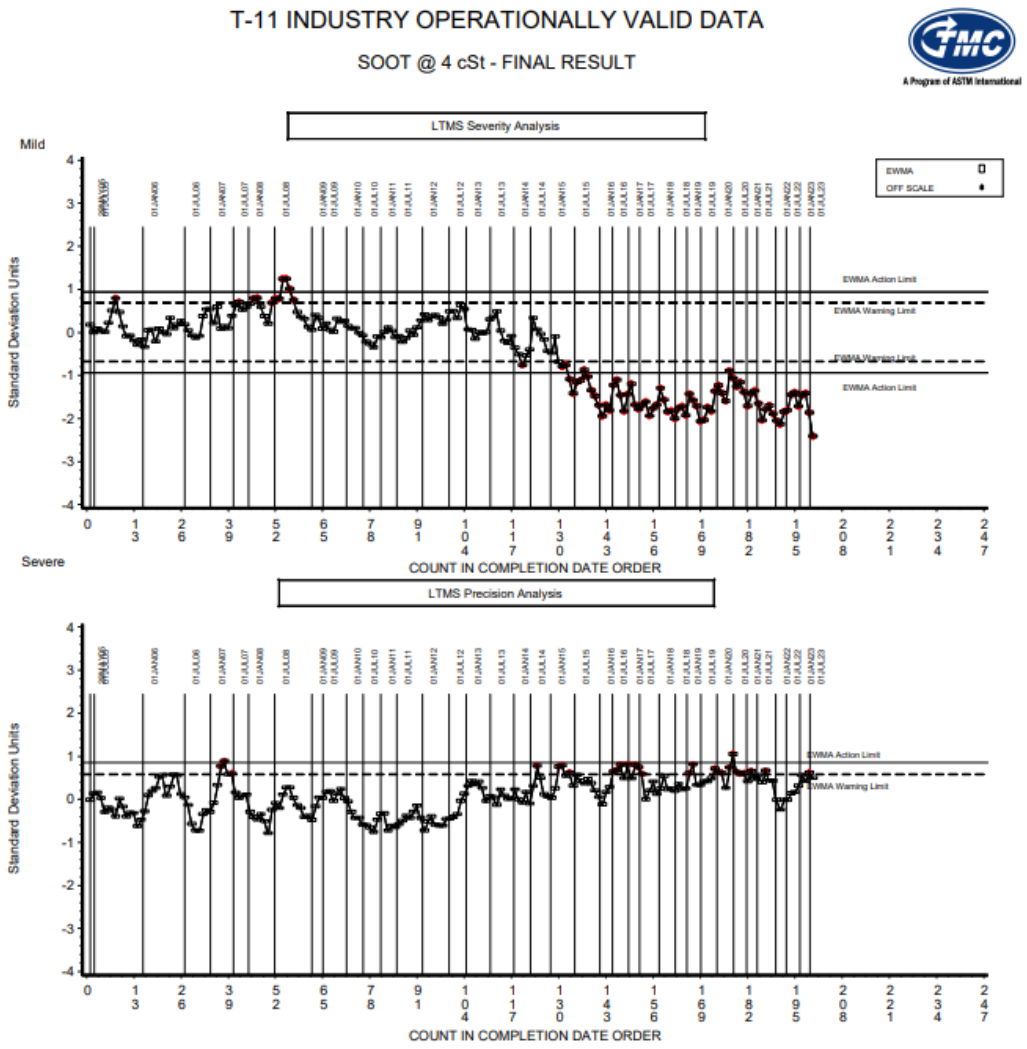
Labs	Referenced Stands
2	2

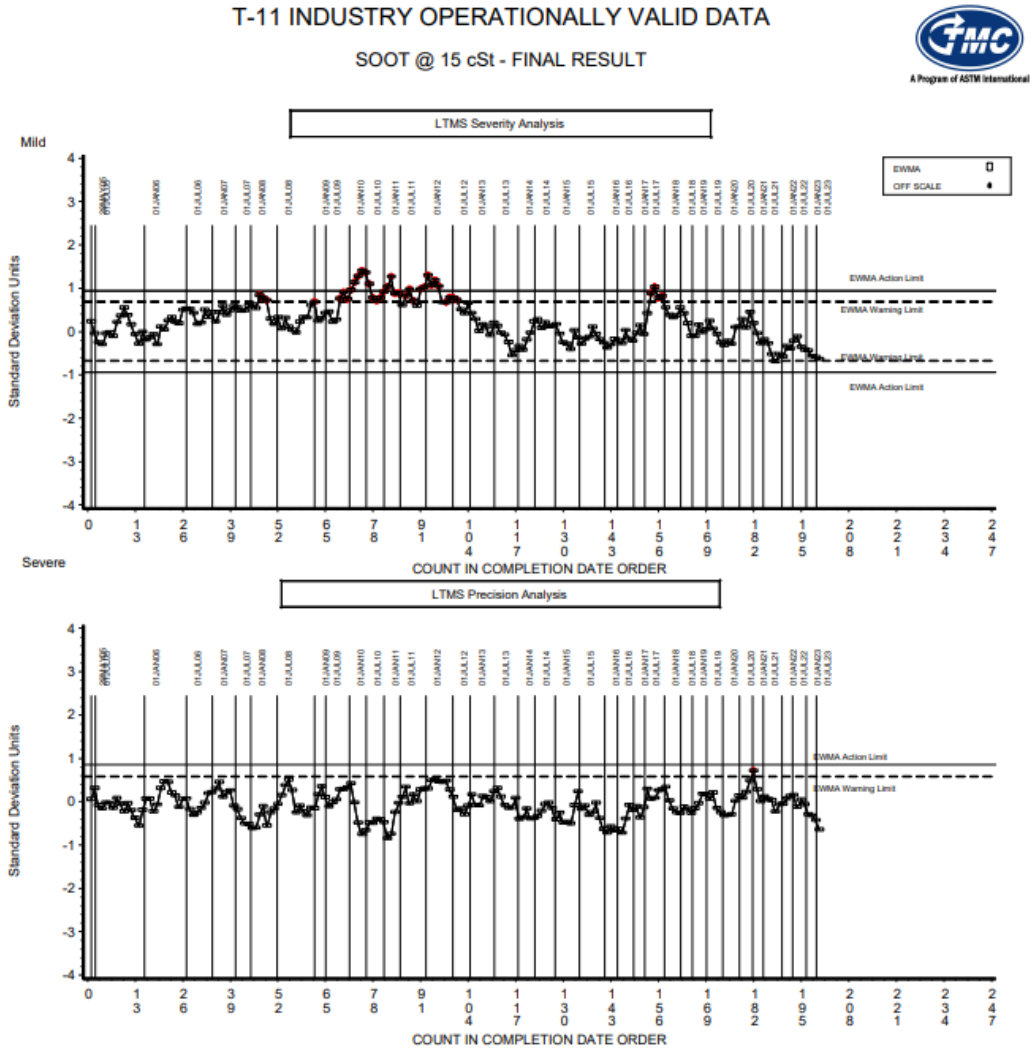
T11 Control Charts





T11 Control Charts





T12

- No updates this period

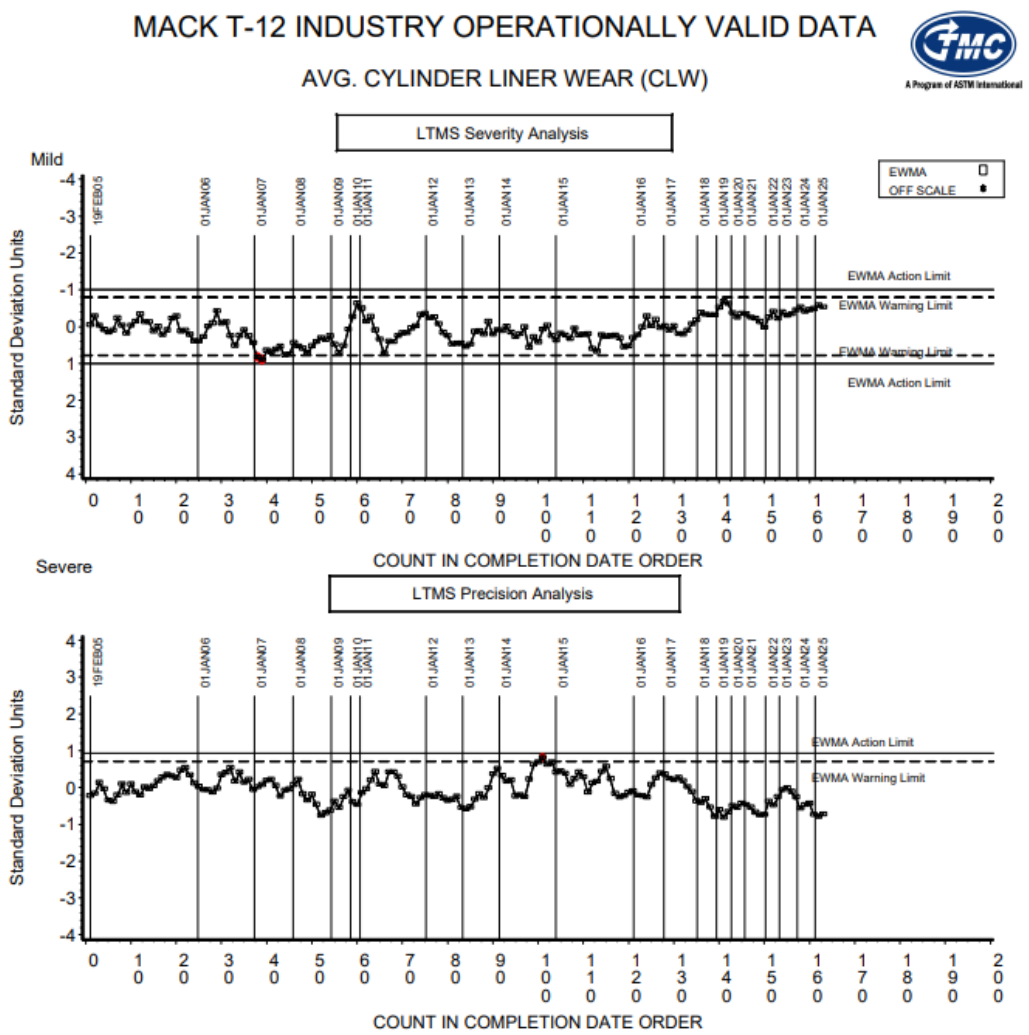
- Test Severity
  - CLW, OC, PB, PB2, TRWL all under control

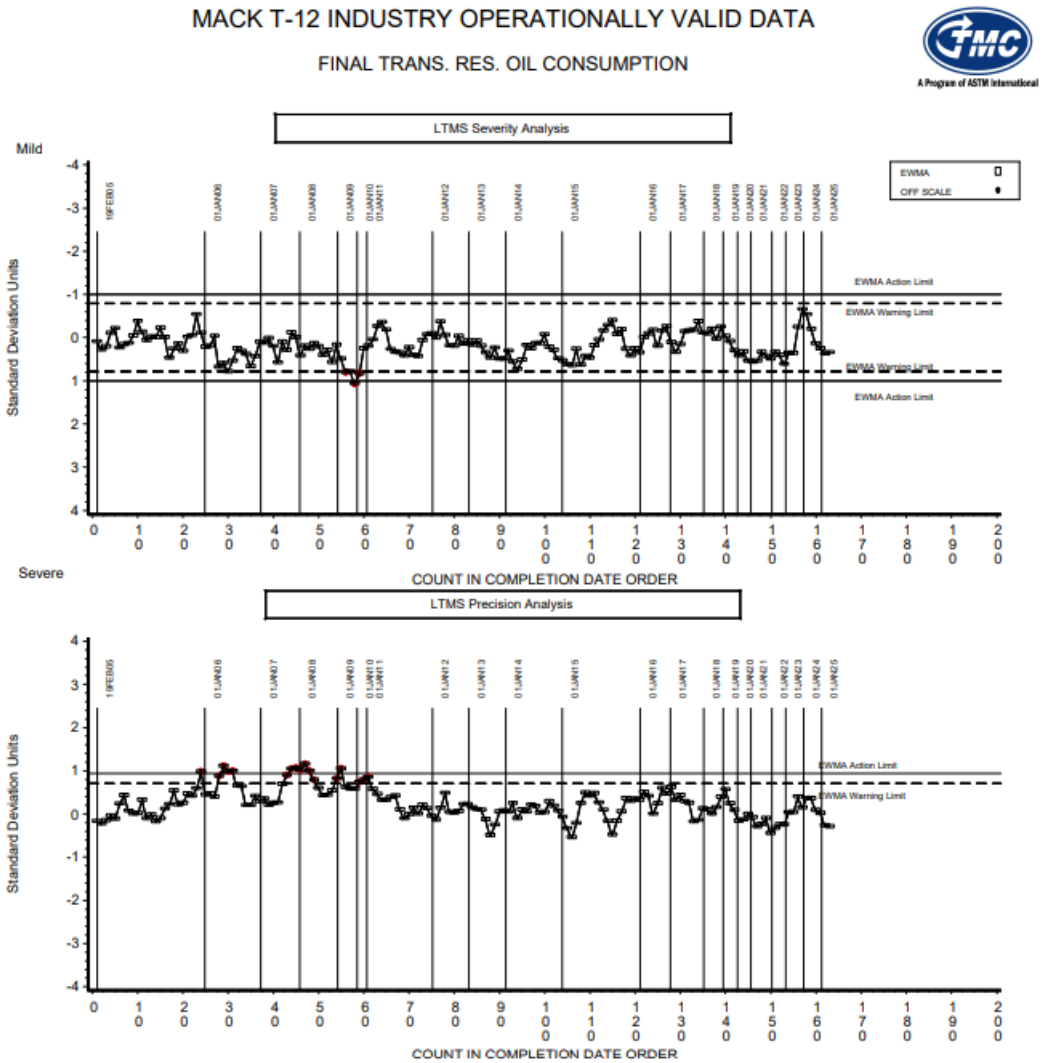
Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
Failed Calibration Test	OC	0	
Aborted	XC	0	
Total		**2**	

Labs	Referenced Stands
2	2

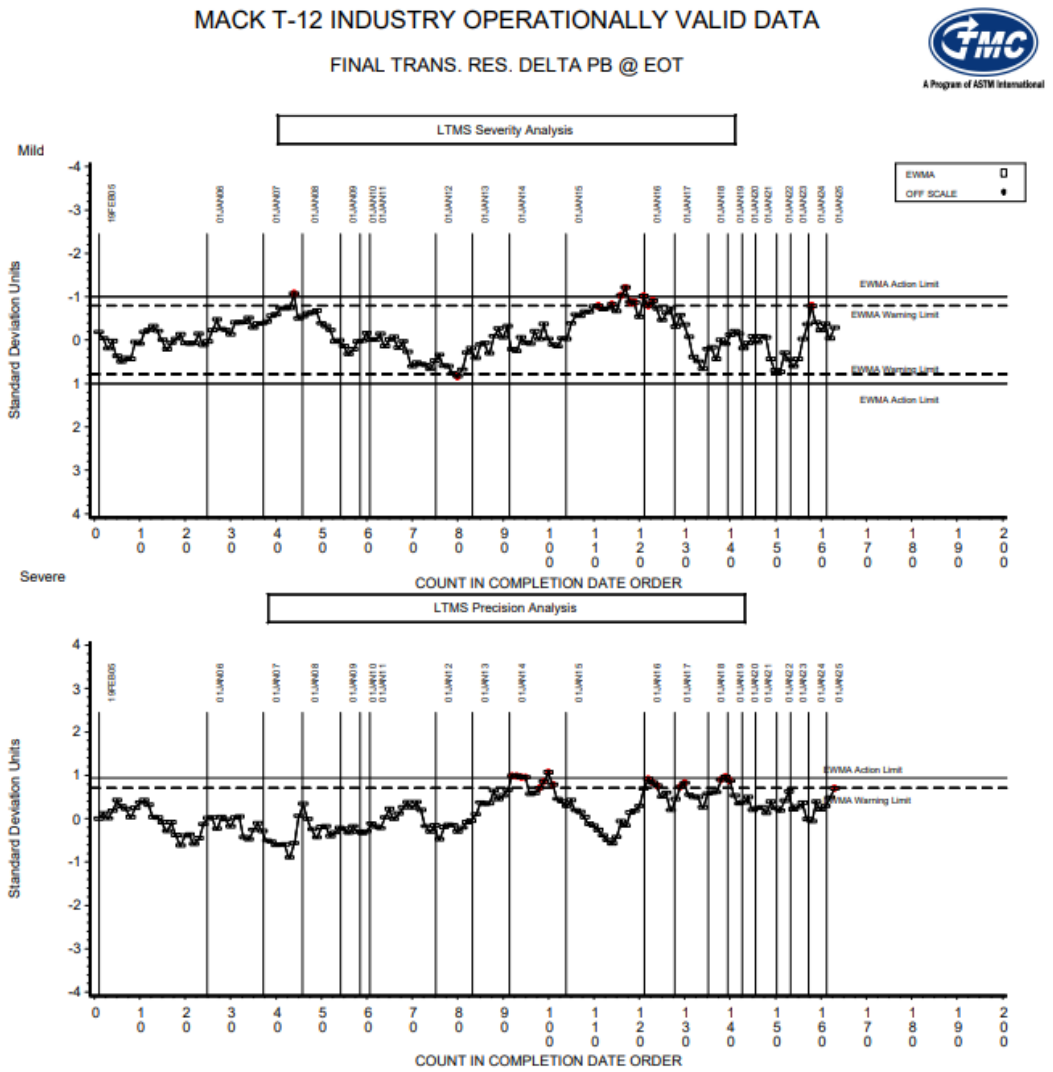
- Currently running last batch of hardware, no issues at this time

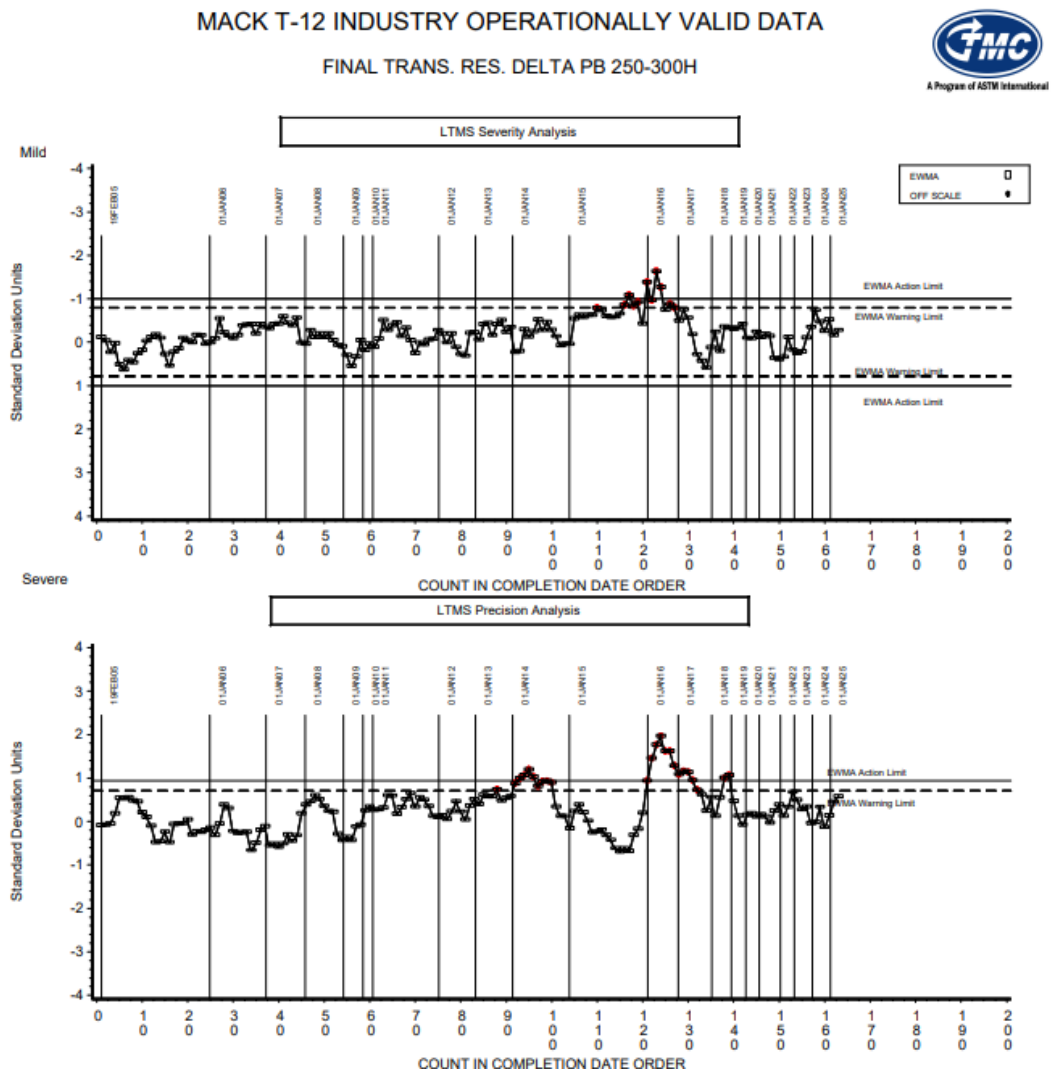
T12 Control Charts



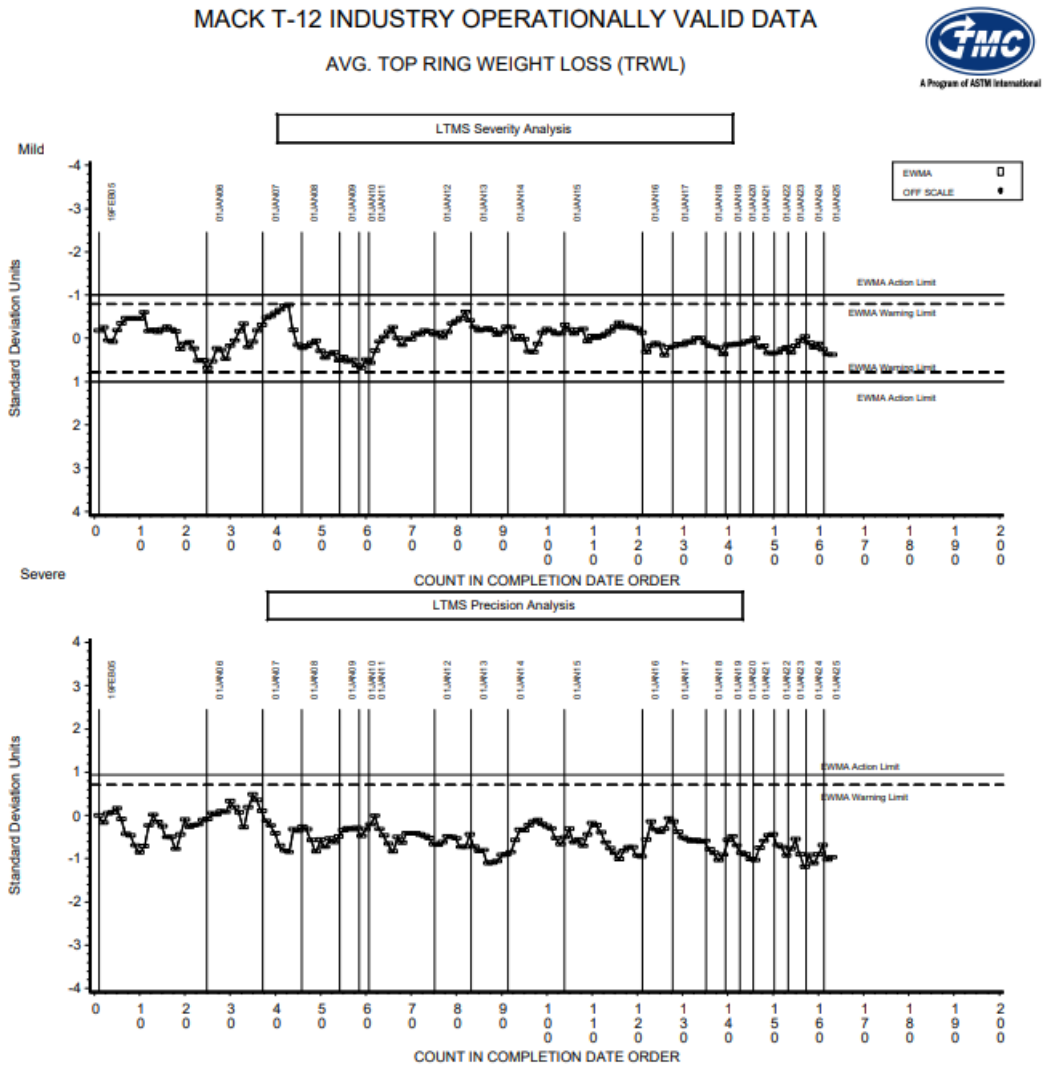


T12 Control Charts





T12 Control Charts



T13

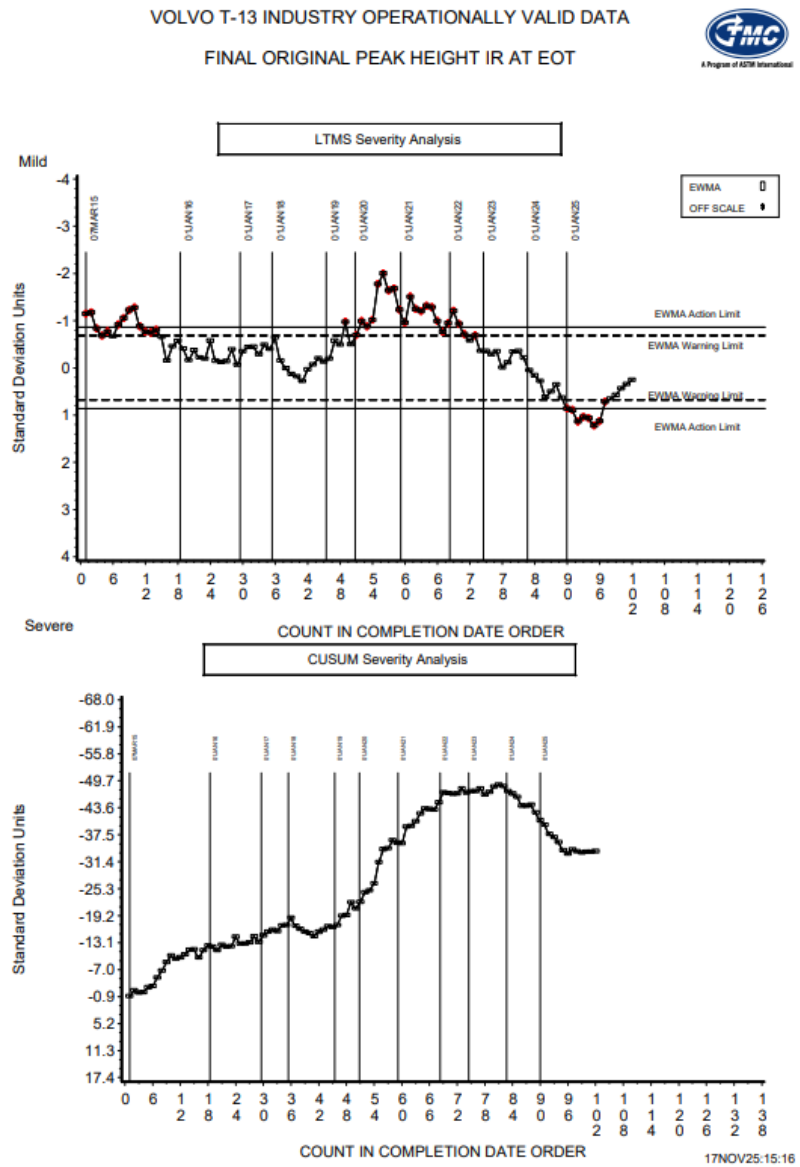
- ICF Updates and Analysis
  - New ICF's for batch E liners
  - -19.9 for IRPH
  - +.361 for SQRT(KV40C)
  - Control charts reset with new liner references
  - Changes will be monitored and reviewed after 5 additional valid reference runs
- New Head part number
  - Panel reviewing what/if any changes there are to the new heads and how to implement into tests

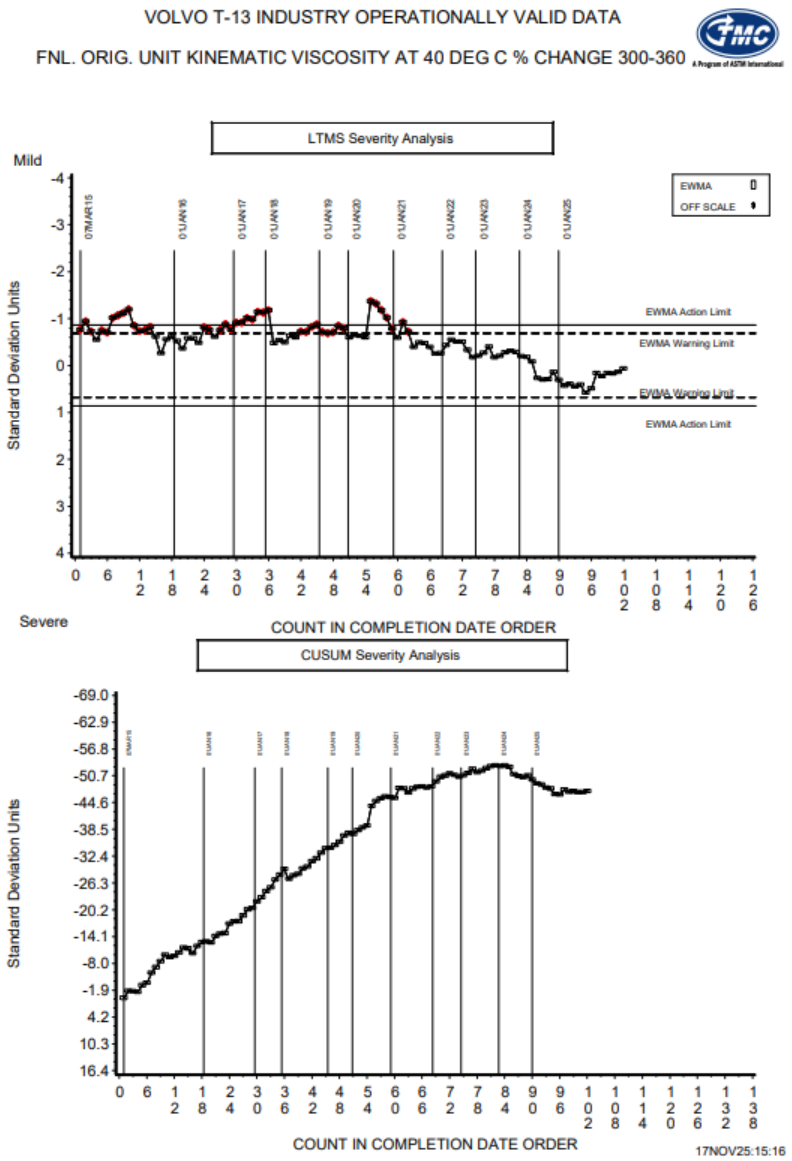
- Test Severity
  - IRPH and KV40 under control with the updated ICF

Test Status	Validity Code	#
Acceptable Calibration Test	AC	5
Failed Calibration Test	OC	0
Invalid	LC	1
Aborted	XC	0
Total		**6**

Labs	Referenced Stands
4	10

T13 Control Charts





Mack/Volvo SP Update

- Questions?

Caterpillar Surveillance Panel

HDEOCP Update

Jacob Goodale, S.P Chairman, December 2025

Meetings

- Surveillance panel held 1 meeting
  - October 15th

Next Meeting

- Not Set

Motions

- Surveillance panel held 1 meeting
  - October 15th
    - Elimination of the 2nd 833-2 reference oil run for COAT
      - Motion carried unanimously
    - Reference period adjustments for C13 Deposit Test to enable coordination of TMC 831-5 runs
      - Motion carried unanimously

Key Updates

- Surveillance Panel
  - Shelby Skelton has volunteered to join as Secretary
- COAT
  - TMC 833-2 additional referencing criteria suspended
  - Batch C Filter timeline planning underway
- C13 Deposit Test
  - Coordinated reference planned for early 2026 to introduce TMC 831-5 re-blend

Reference Oils

Oil	Reference Oil Blend	Test	TMC Inventory	Remaining from Initial Blend
TMC 809	TMC 809-1	1K,1N	1816	20%
TMC 822	TMC 822-2	1R	296	7%
TMC 831	TMC 831-5	C13	1722	91%
TMC 832	TMC 832-1	COAT	1214	62%
	TMC 832-2	COAT	514	70%
TMC 833	TMC 833-1	COAT	110	9%
	TMC 833-2	COAT	689	64%
TMC 1005	TMC 1005-5	EOAT	232	6%
	TMC 1005-6	COAT, EOAT	238	50%
	TMC 1005-7	1R,1P	981	100%

Updates:

- TMC 833-1: Supply limited
- TMC 833-2: Approved for use in COAT
- TMC 831-5: Introduction in 2026 through coordinated references

Caterpillar C13 (ASTM D7549)

Labs	Stands
4	6

Reference Test Activity (As of October 2025)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	6	
TOTAL		**6**	

Test Severity

- TGC is in severity warning alarm in the mild direction
- 2RTC is in severity warning alarm in the severe direction
- 2RTC is in precision action alarm
- All other parameters are in control

Caterpillar COAT (ASTM D8047)

Labs	Stands
3	3

Reference Test Activity (As of October 2025)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	4	
Failed Calibration Test	OC	1	
Informational	NN	4	
TOTAL		**9**	

Test Severity

- AAVE is in severity action alarm in the severe direction

Caterpillar SCOTE 1k (ASTM D6750)

Labs	Stands
2	2

Reference Test Activity (As of October 2025)

Test Status	Validity Code	#	Cause
Acceptable Calibration Test	AC	2	
TOTAL		**0**	

Test Severity

- 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 1N (ASTM D6750)

Labs	Stands
1	1

Reference Test Activity (As of October 2025)

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

Test Severity

- As no 1N tests were conducted during this period, no statement about severity can be made

Caterpillar SCOTE 1P (ASTM D6681)

Labs	Stands
1	1

Reference Test Activity (As of October 2025)

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

Test Severity

- As no 1P tests were conducted during this period, no statement about test severity can be made

Caterpillar SCOTE 1R (ASTM D6923)

Labs	Stands
0	0

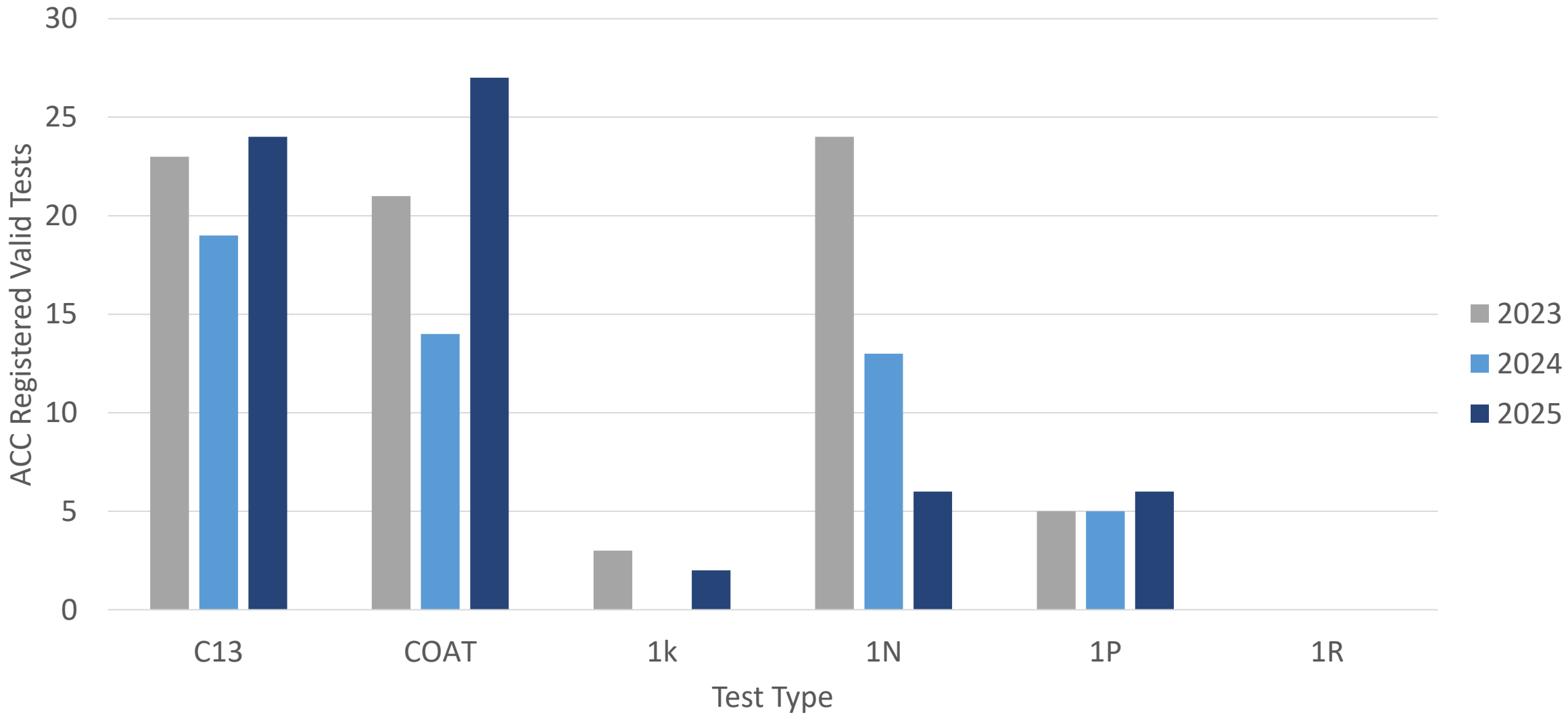
Reference Test Activity (Since June 2024)

Test Status	Validity Code	#	Cause
Aborted	XC	0	
TOTAL		**0**	

Test Severity

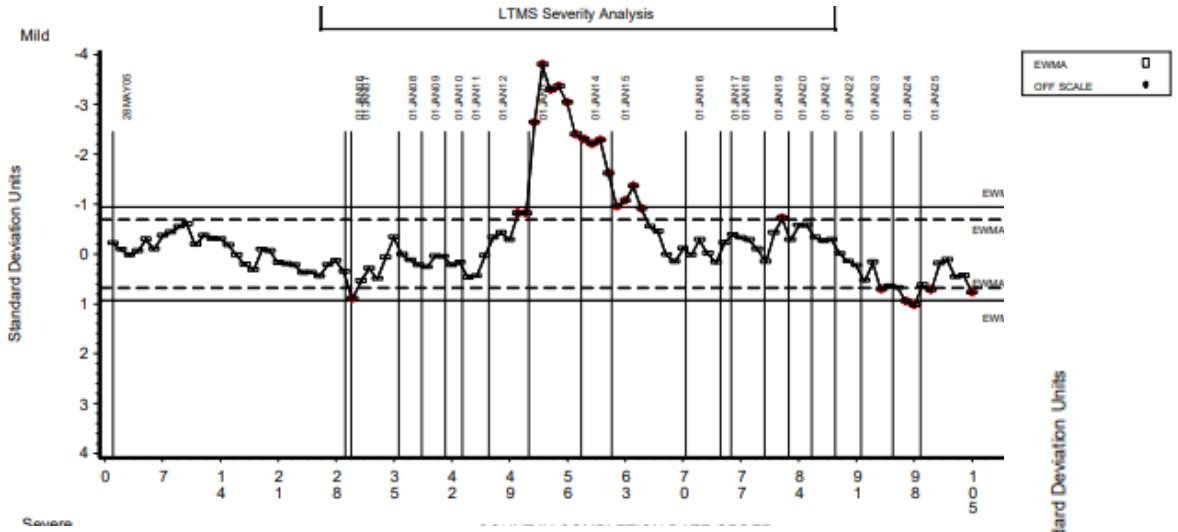
- No chartable 1R Tests run during this period no statement on test severity can be made.

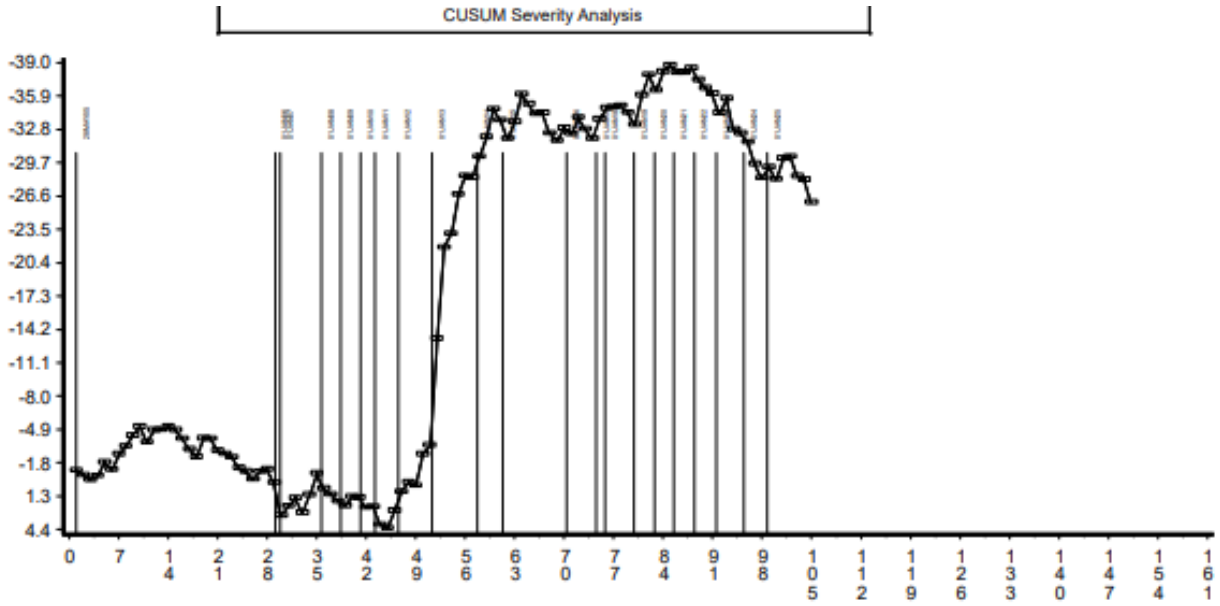
Candidate Activity

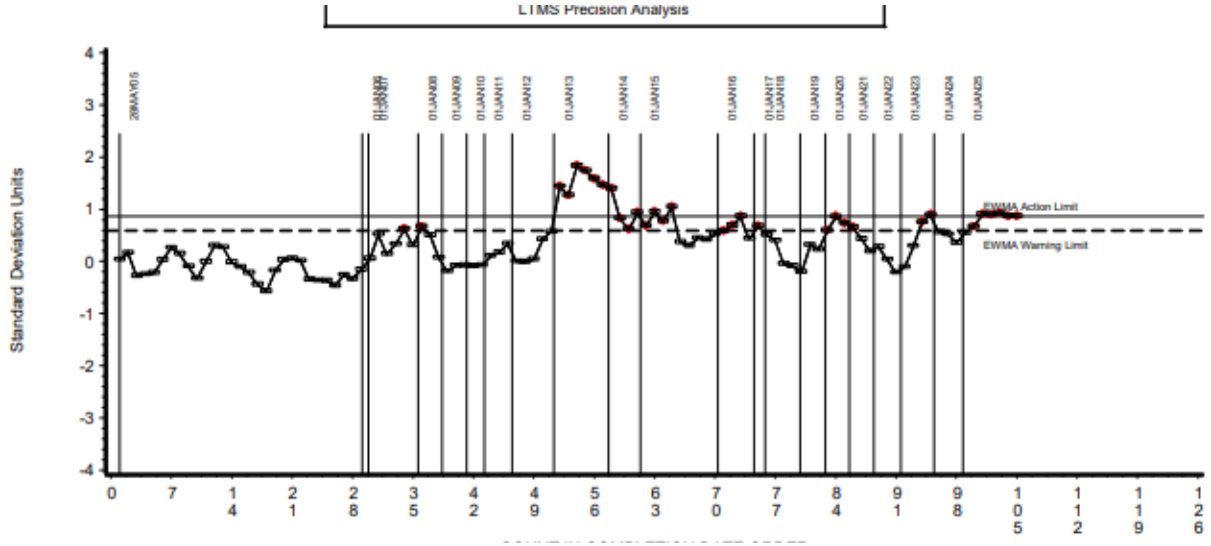


Appendix
Charts

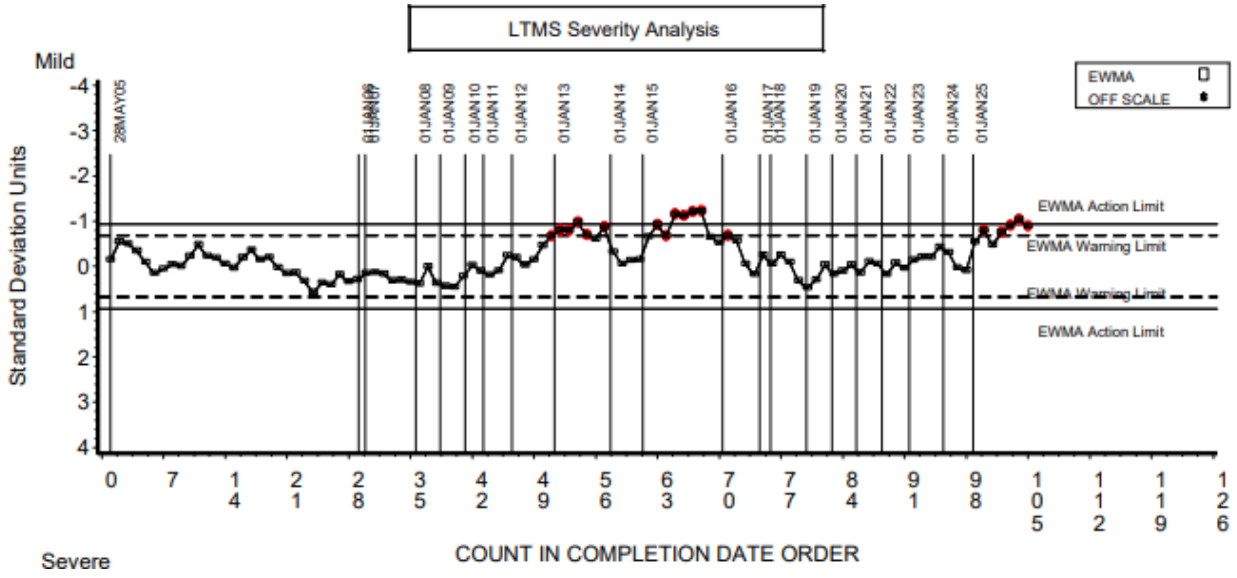
Caterpillar C13 Charts-2nd Ring Top Carbon

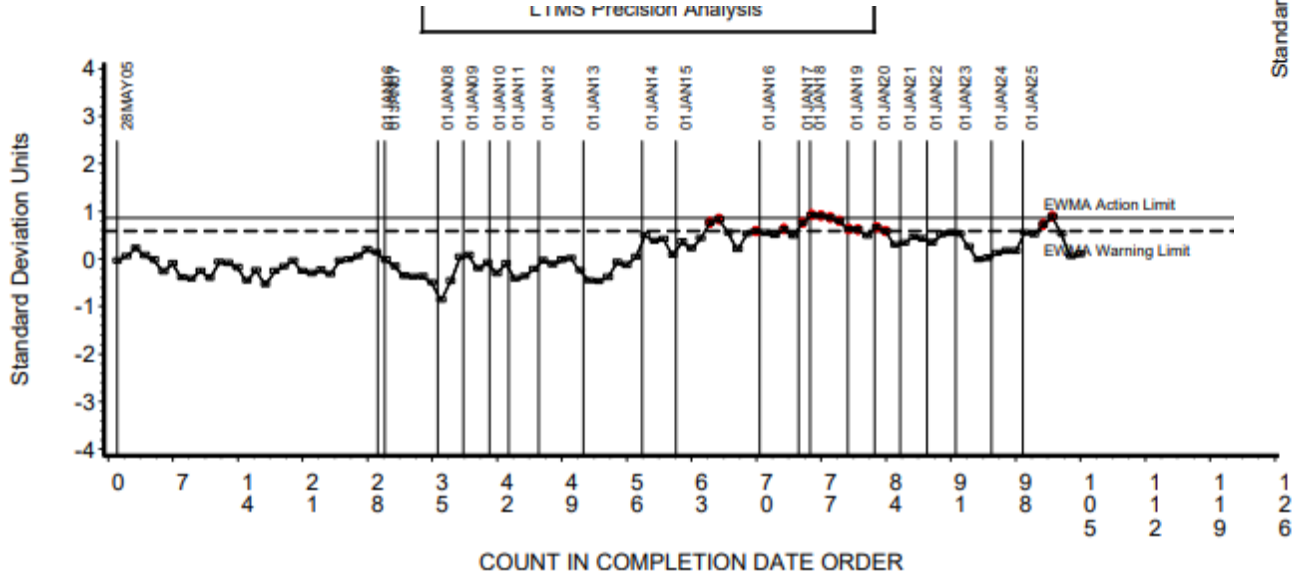


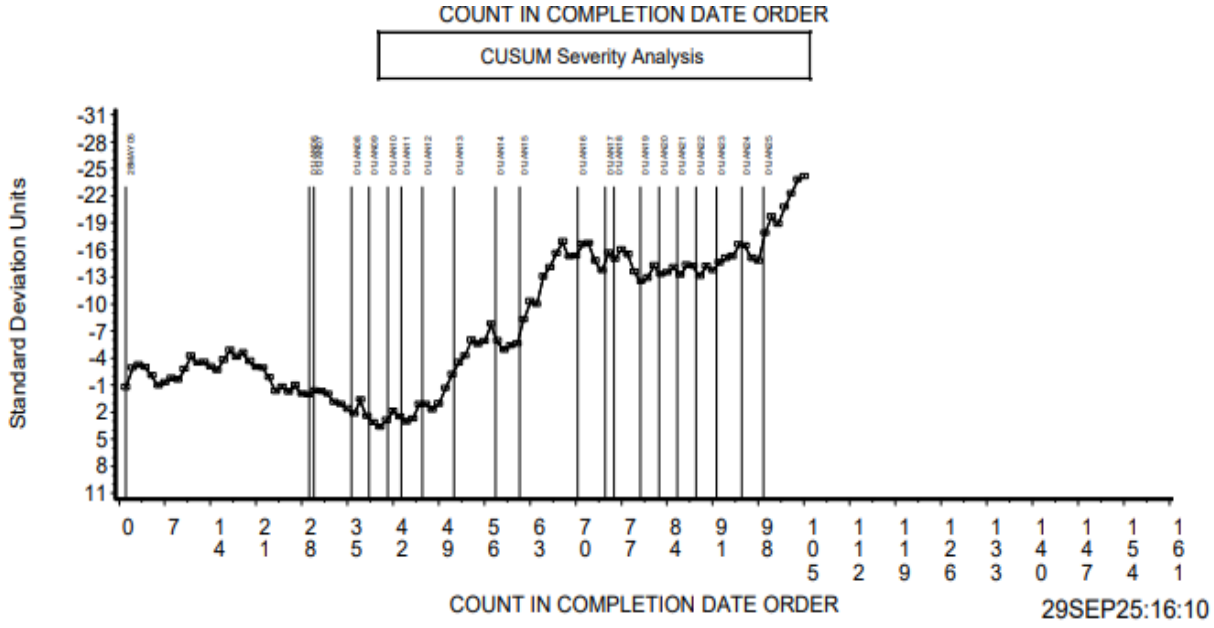




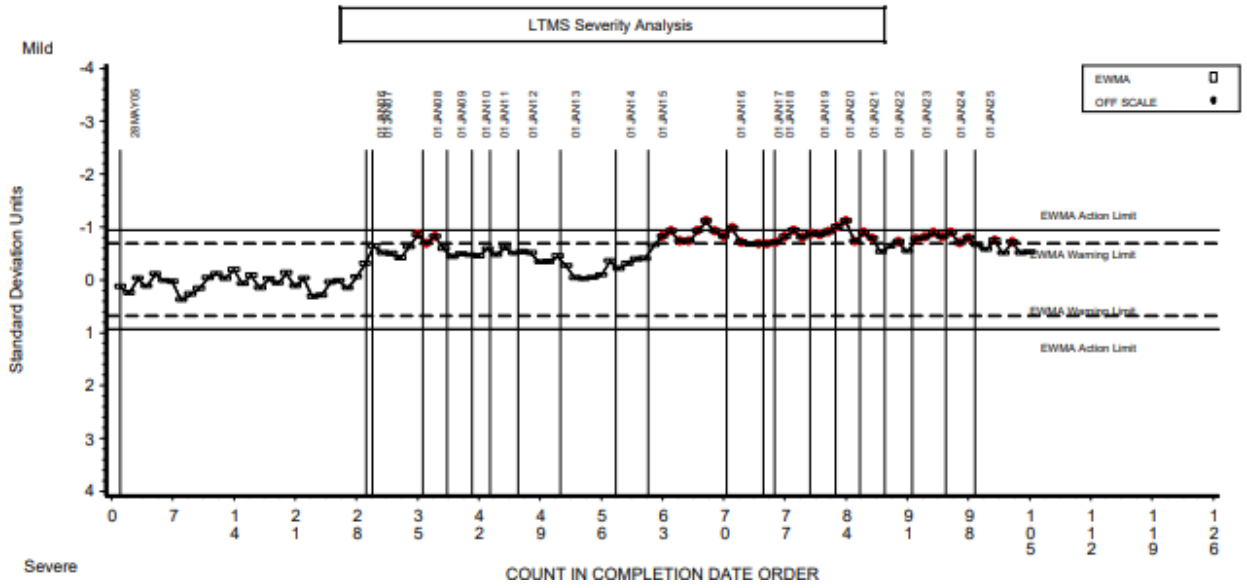
Caterpillar C13 Charts-Top Groove Carbon

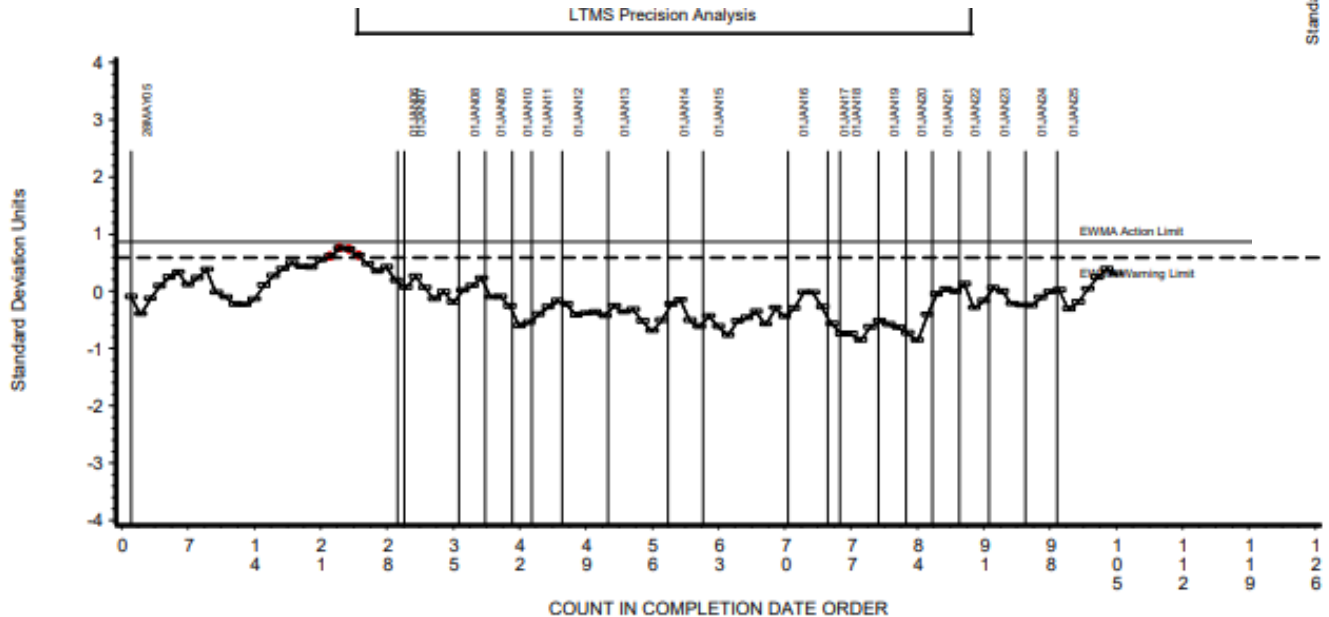


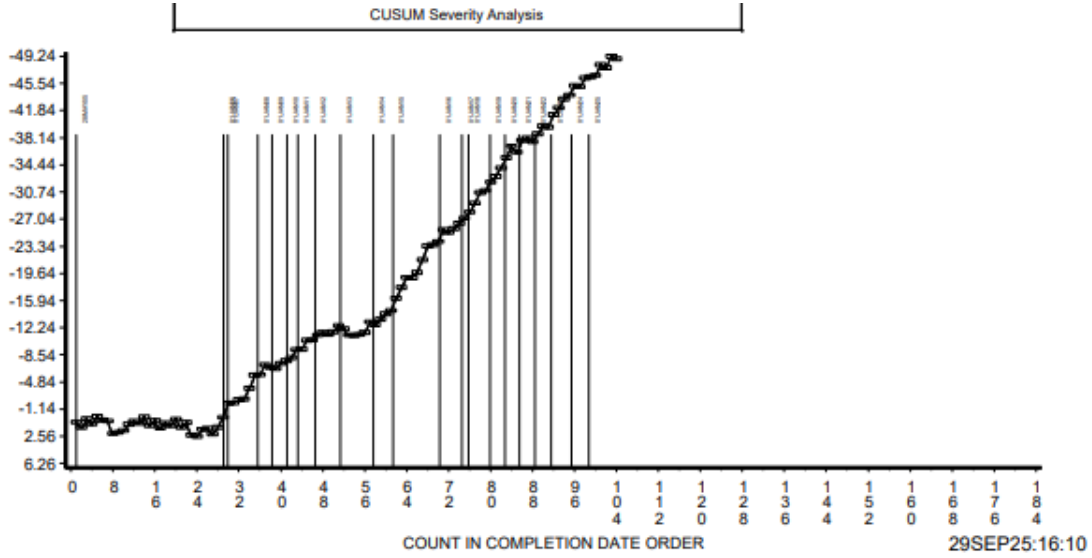




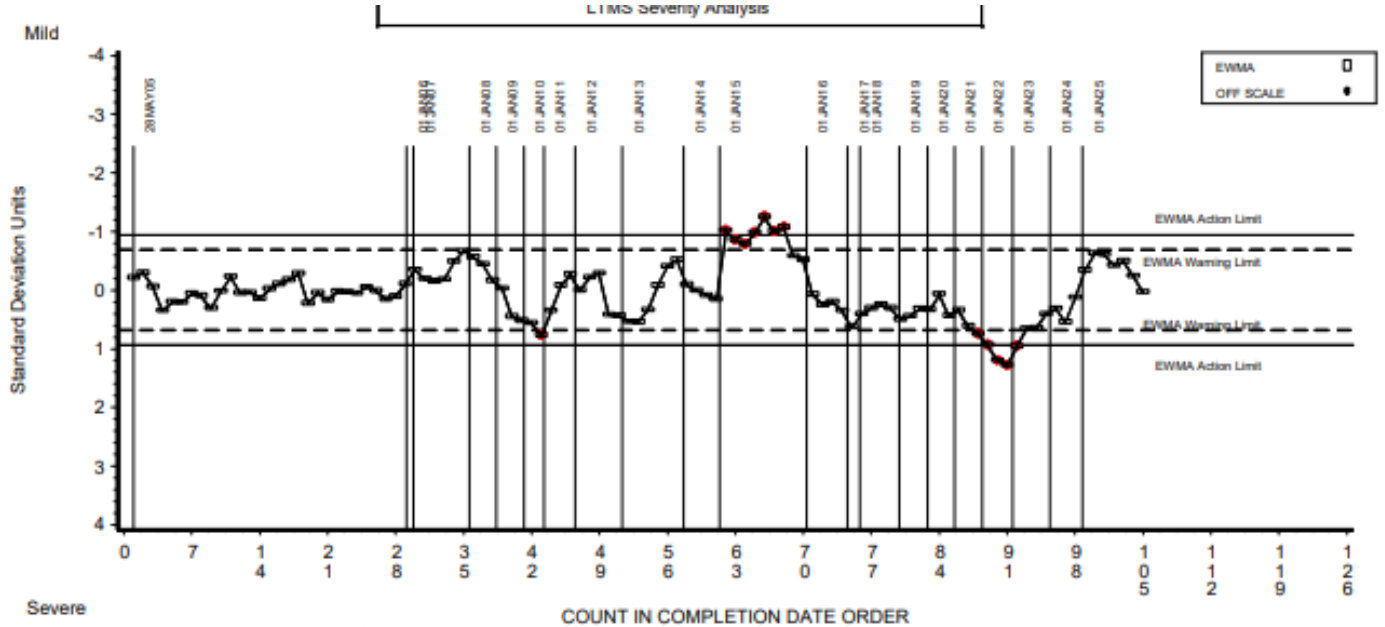
Caterpillar C13 Charts- Top Land Carbon

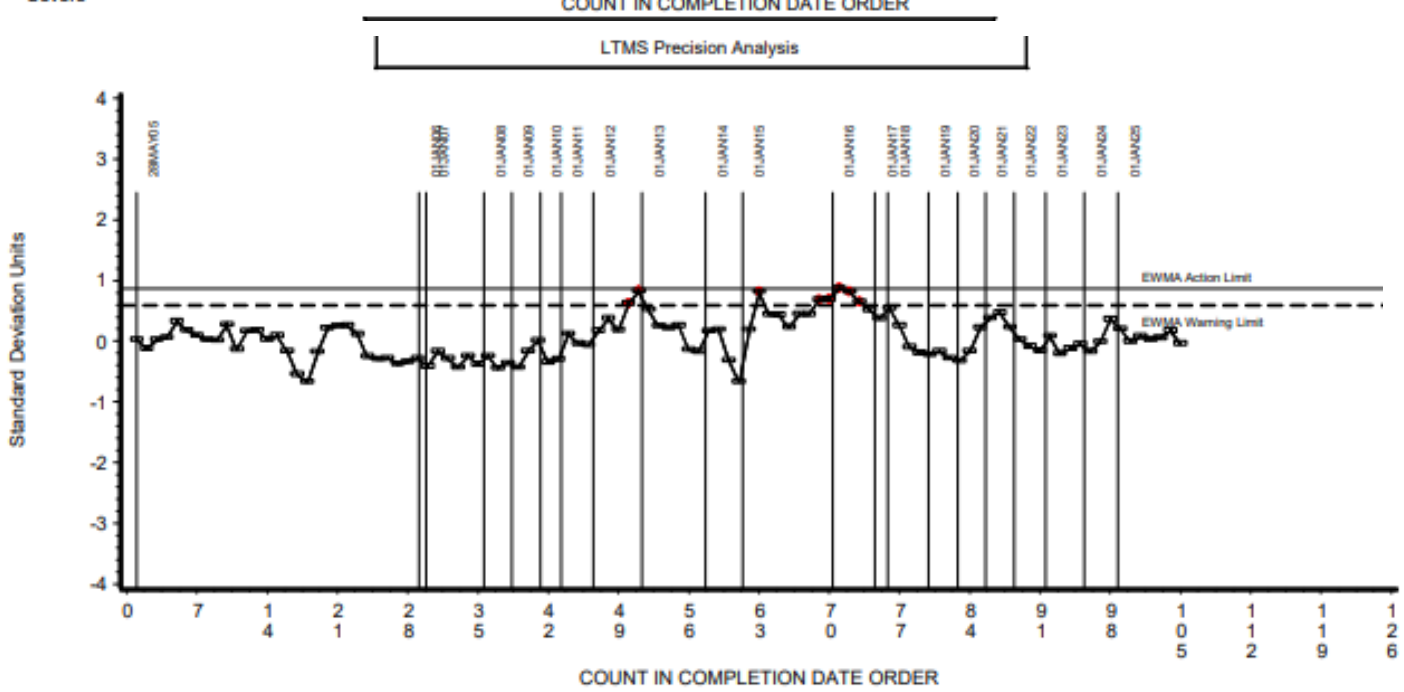


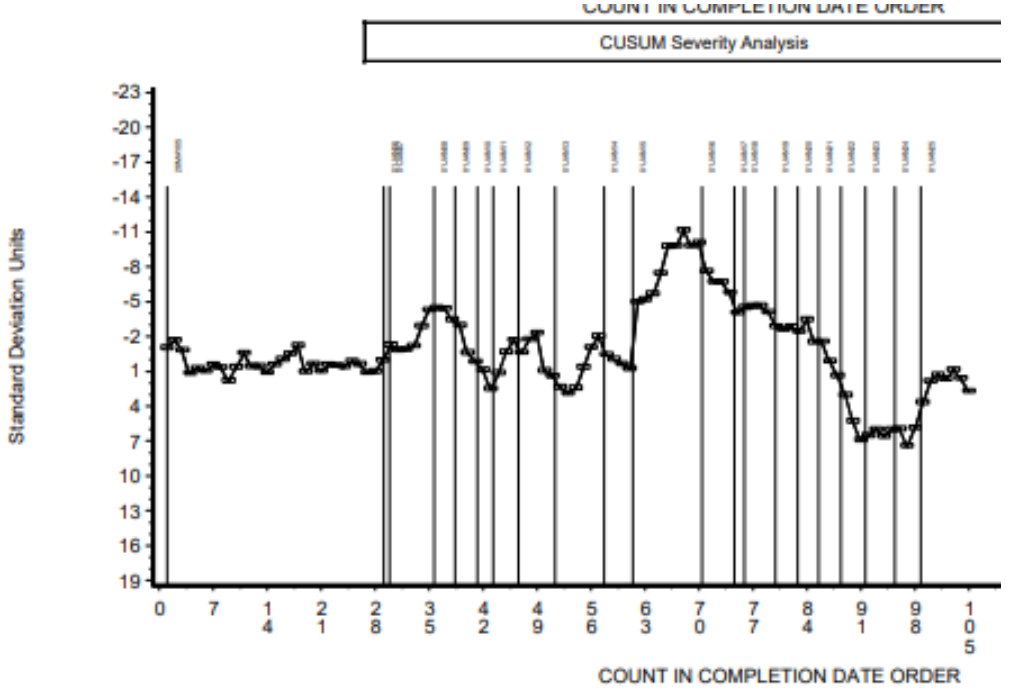




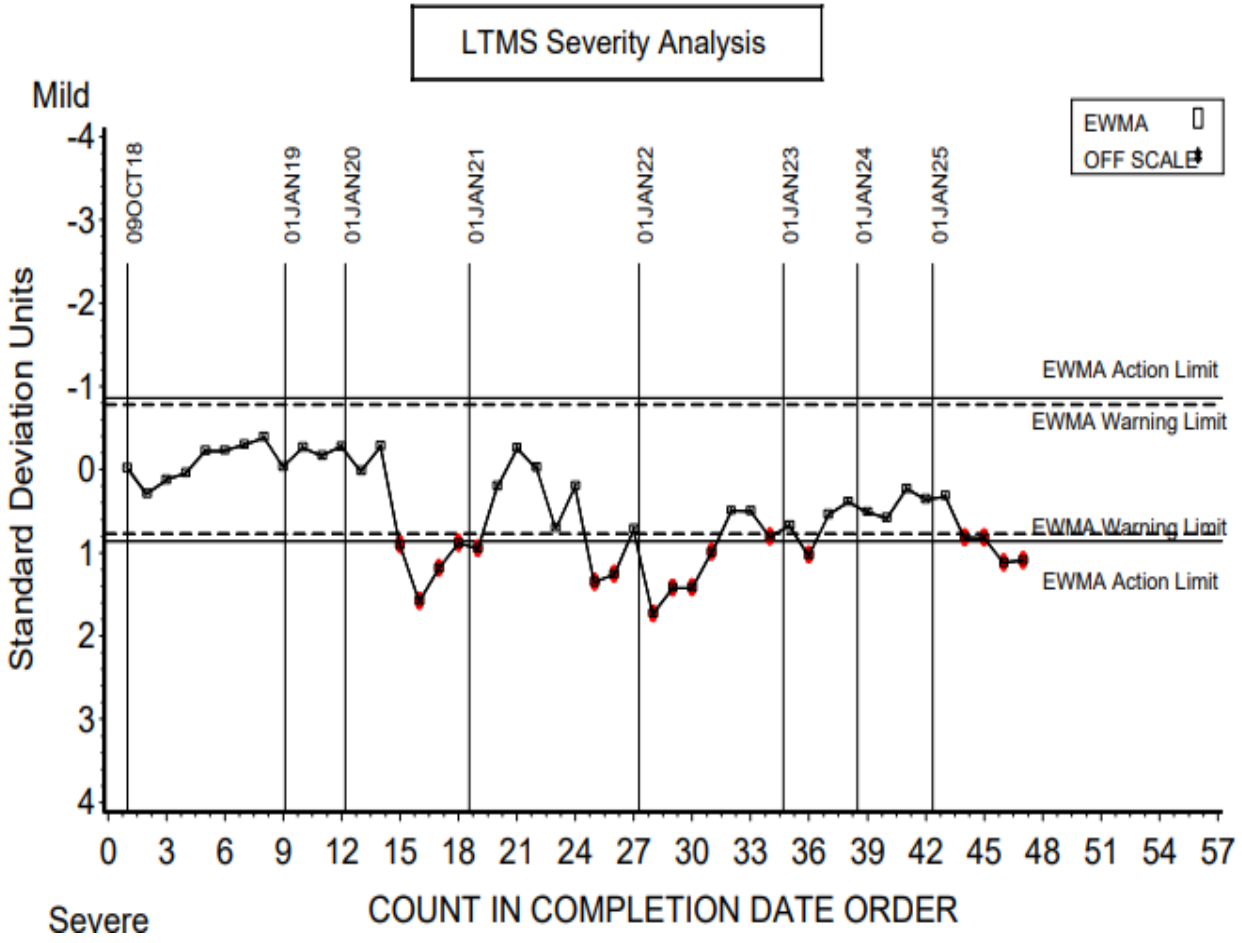
Caterpillar C13 Charts- Oil Consumption Delta

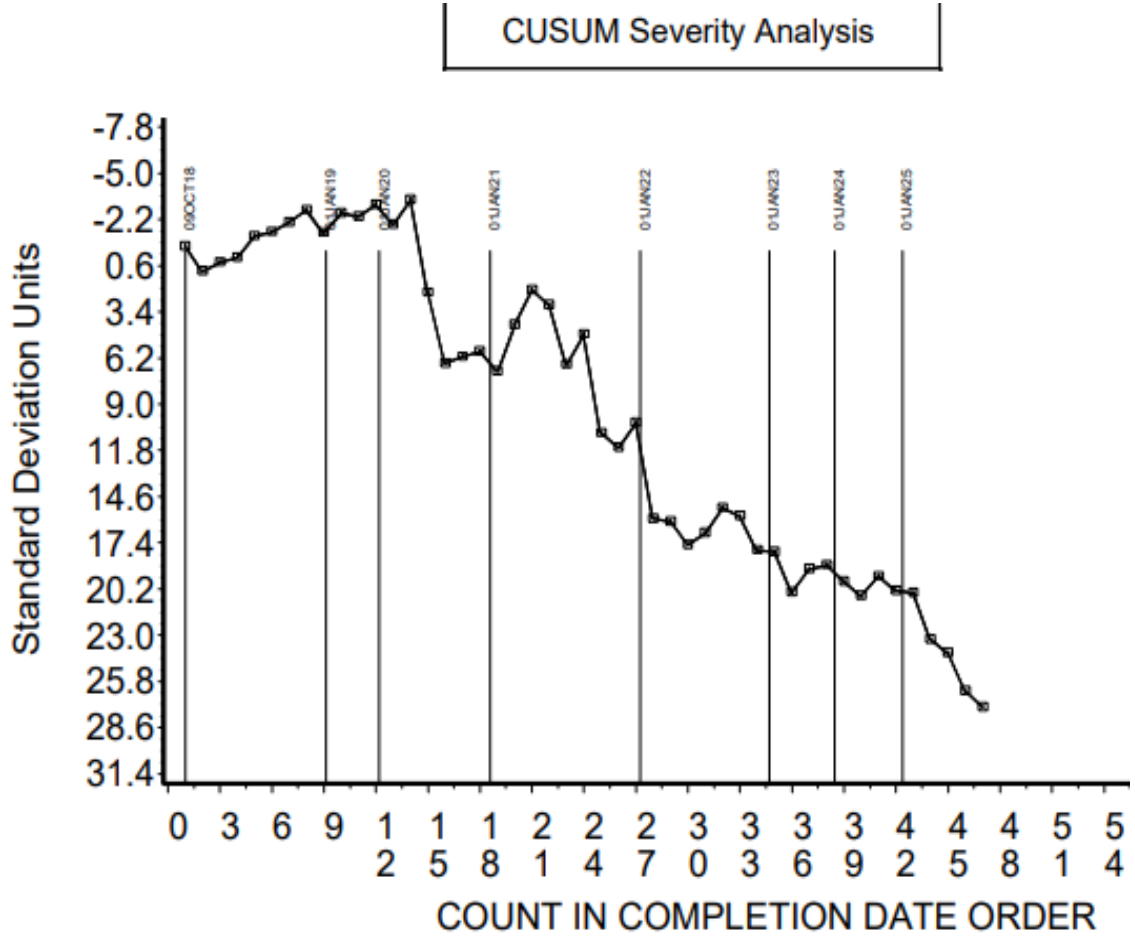




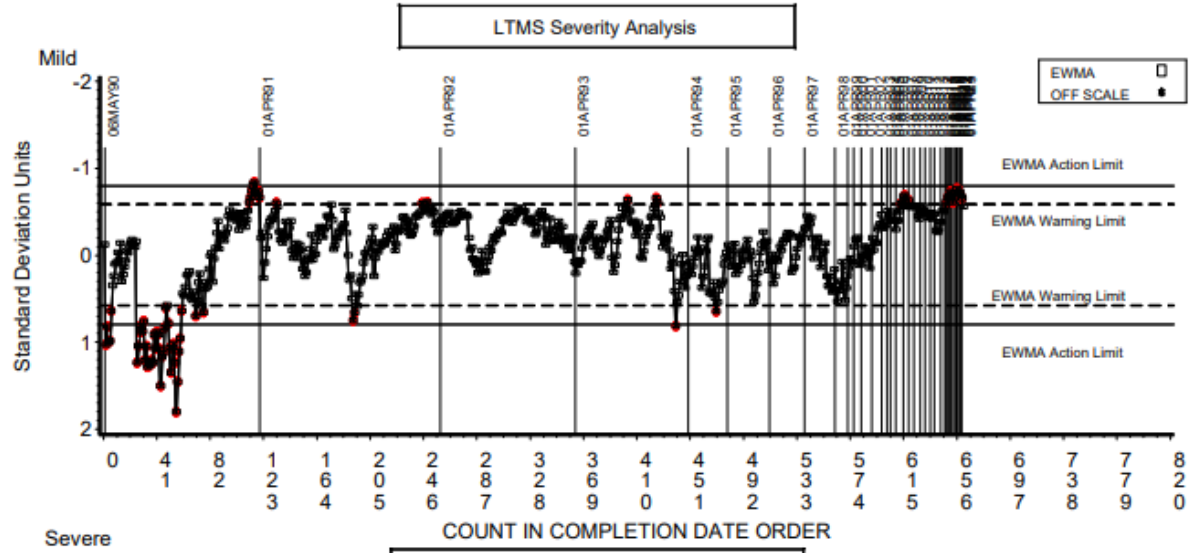


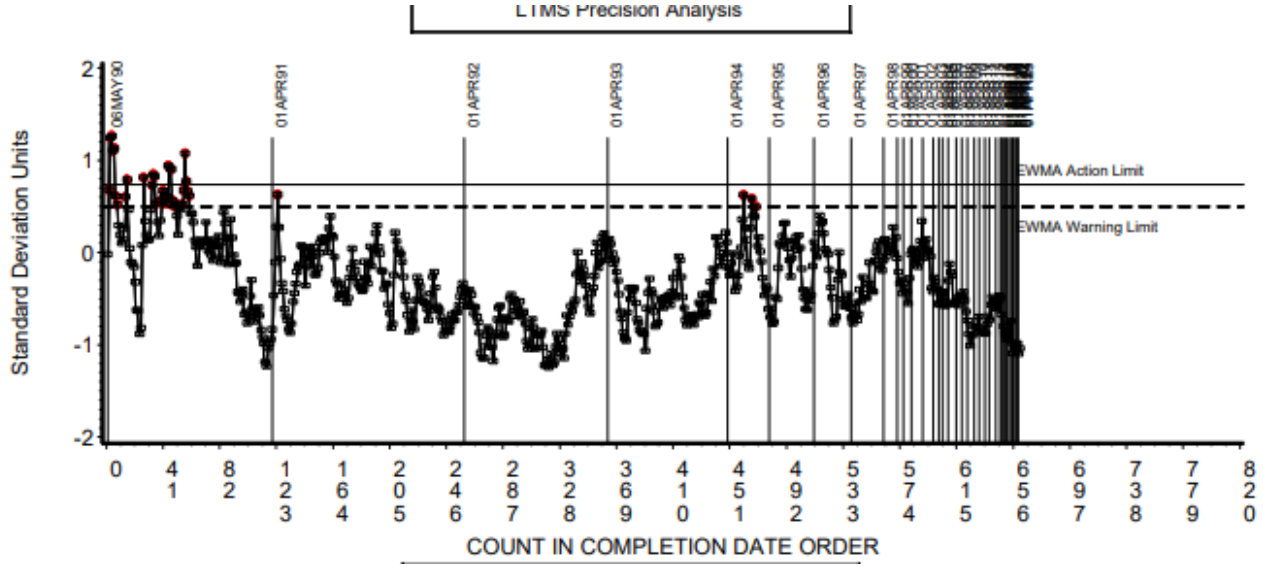
Caterpillar COAT Charts- Corrected Average Oil Aeration over Test Hours 40 - 50

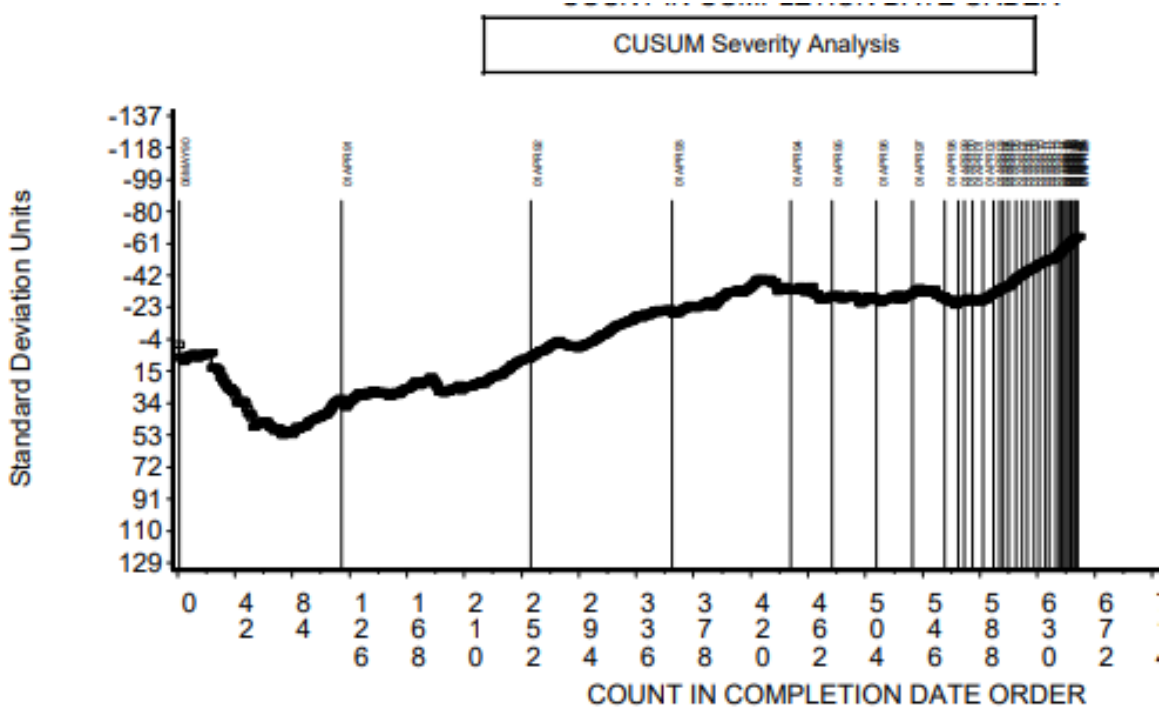




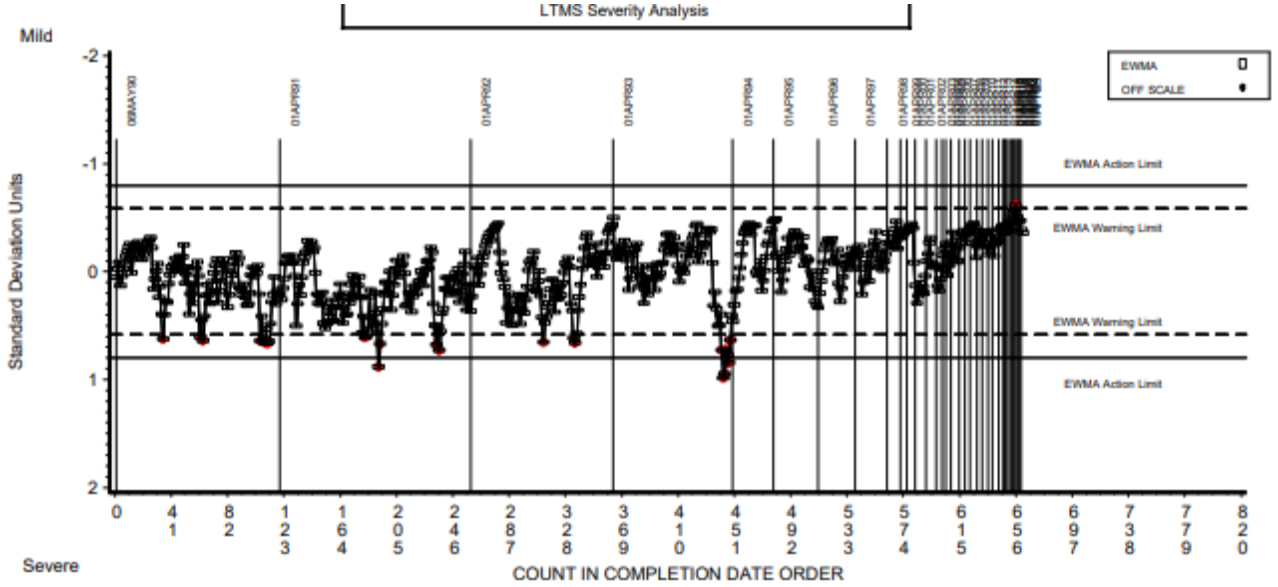
Caterpillar SCOTE 1k Charts- Final TGF

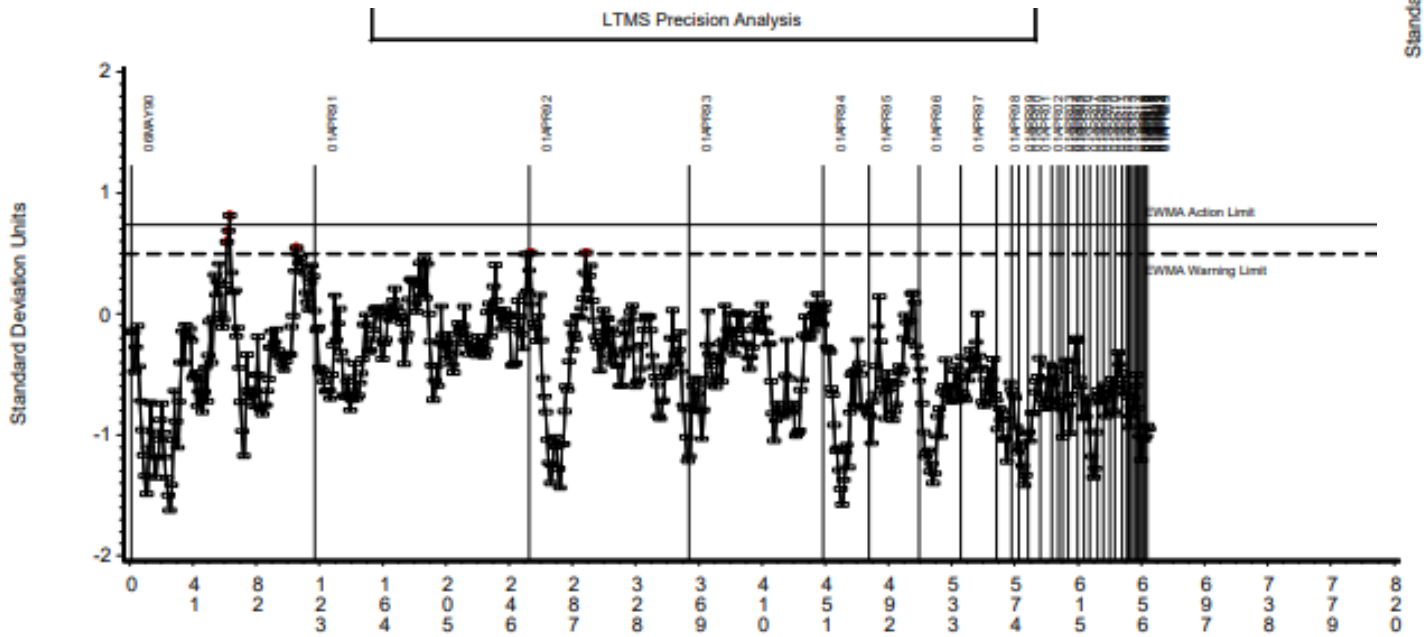


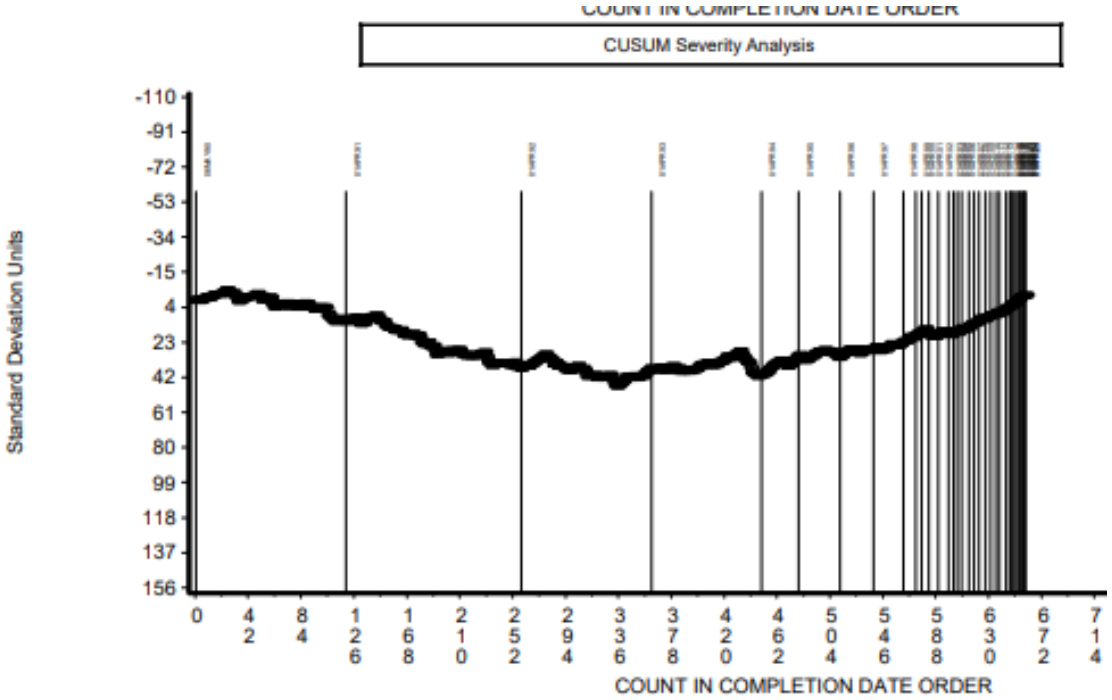




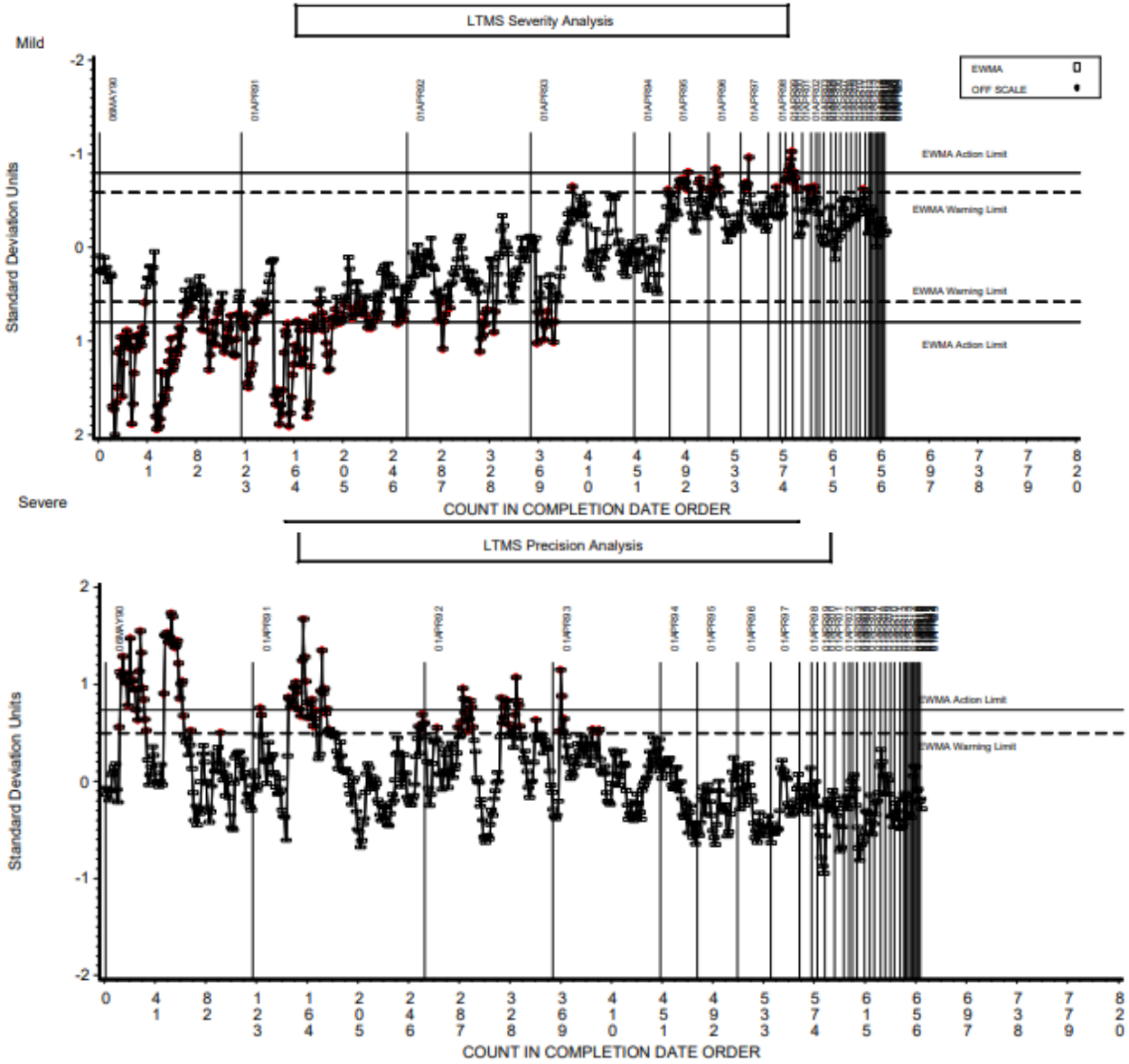
Caterpillar SCOTE 1k Charts- Final TLHC

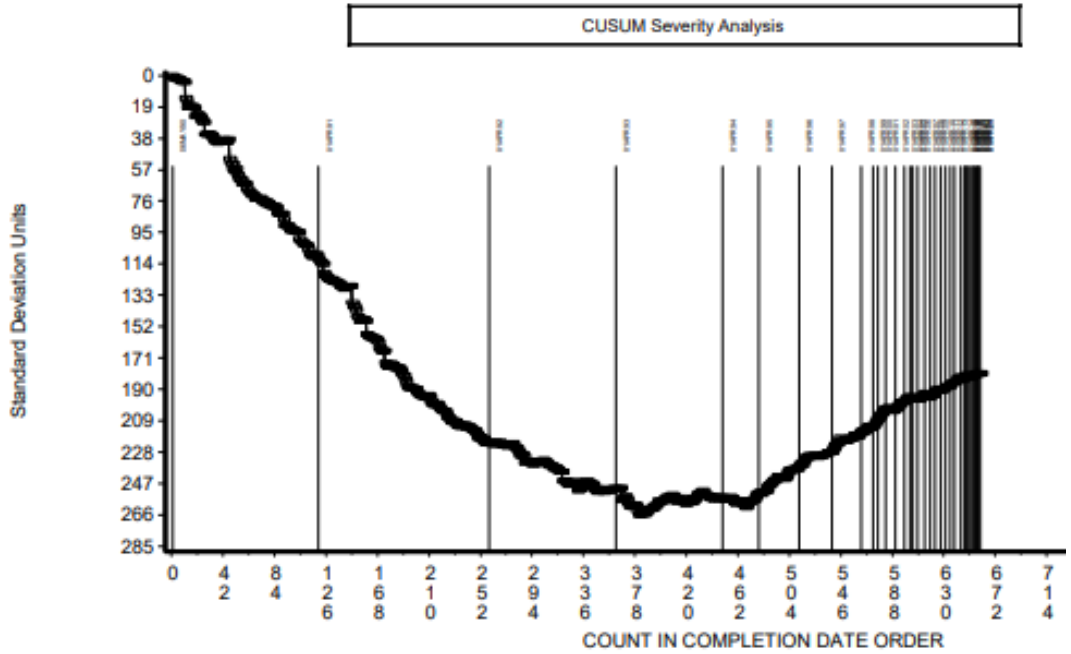




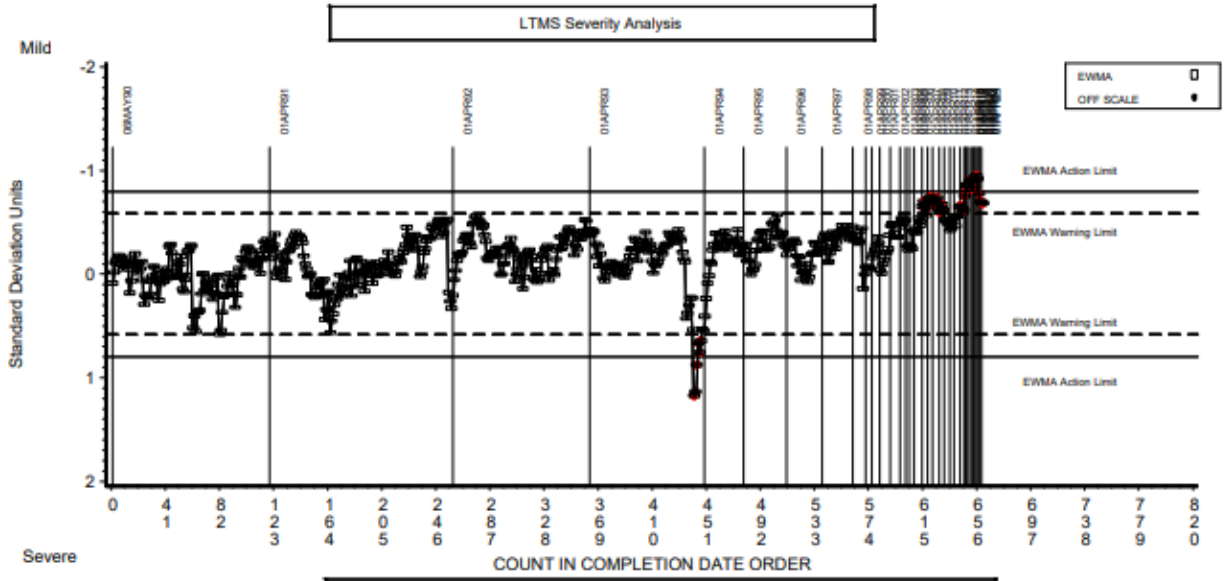


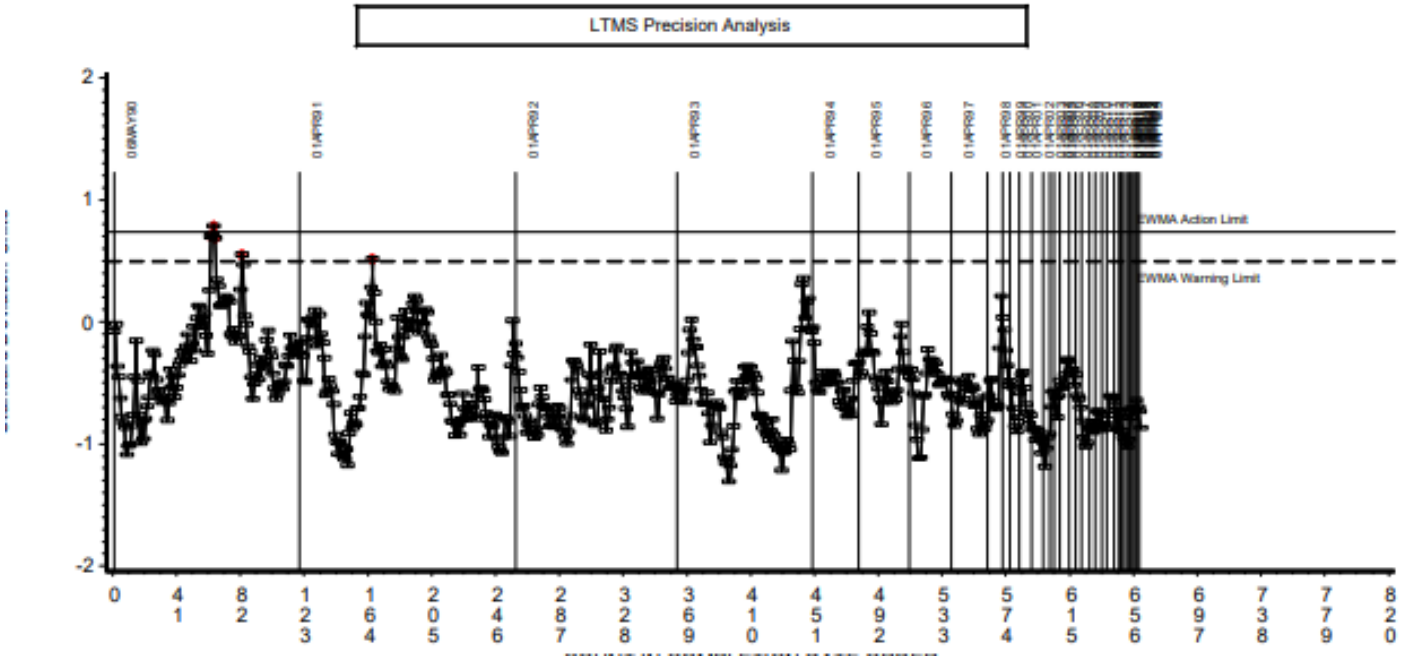
Caterpillar SCOTE 1k Charts- Final Weighted Total Demerits

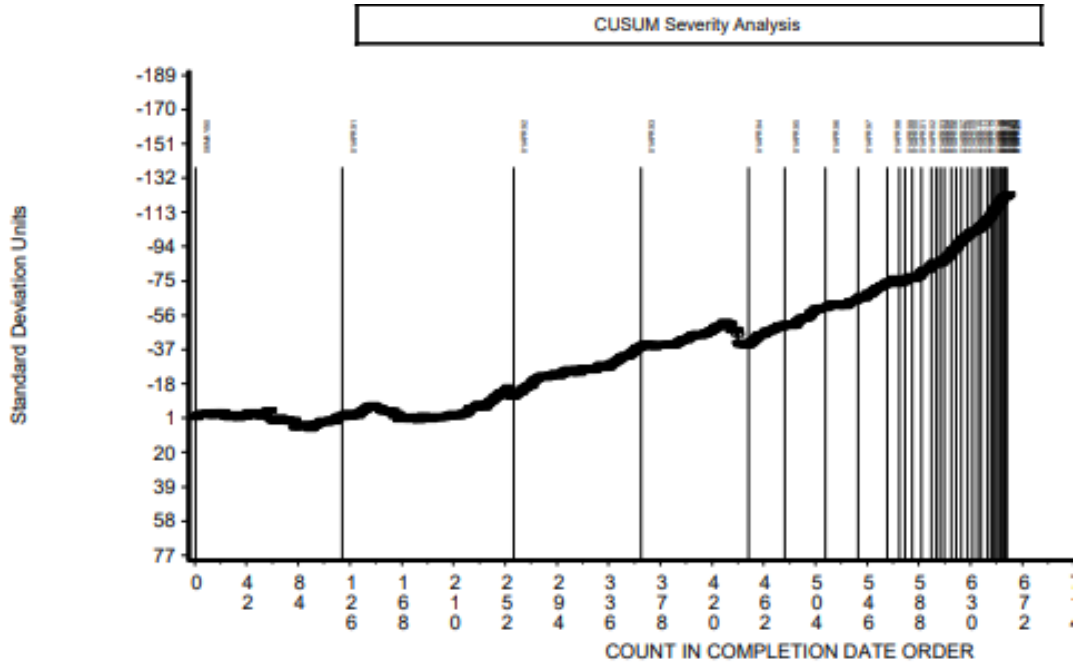




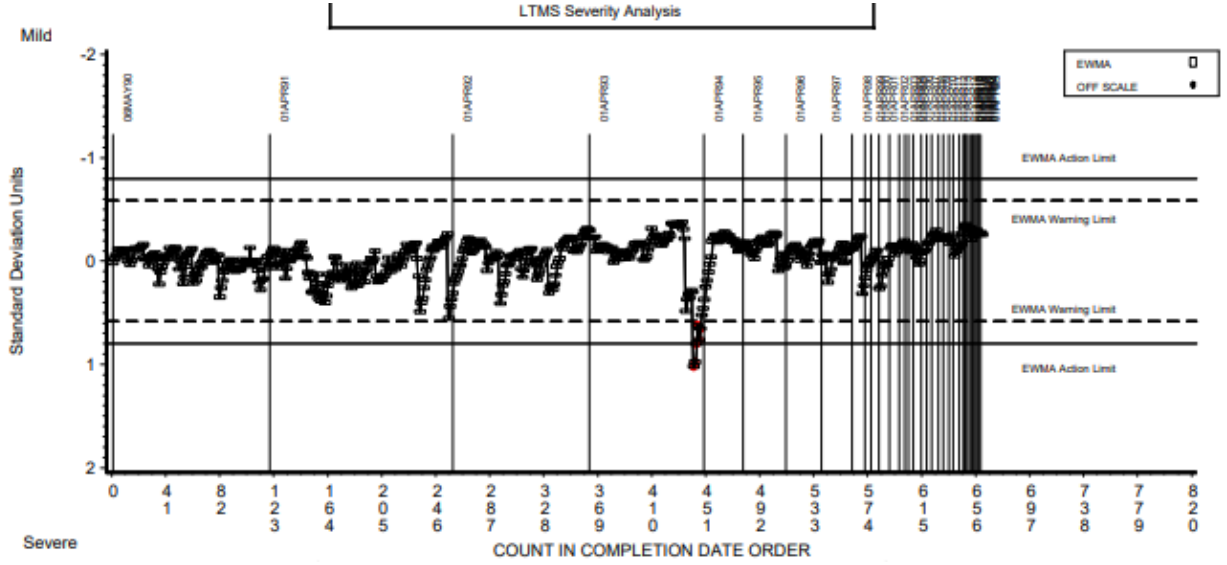
Caterpillar SCOTE 1k Charts- Final BSOC

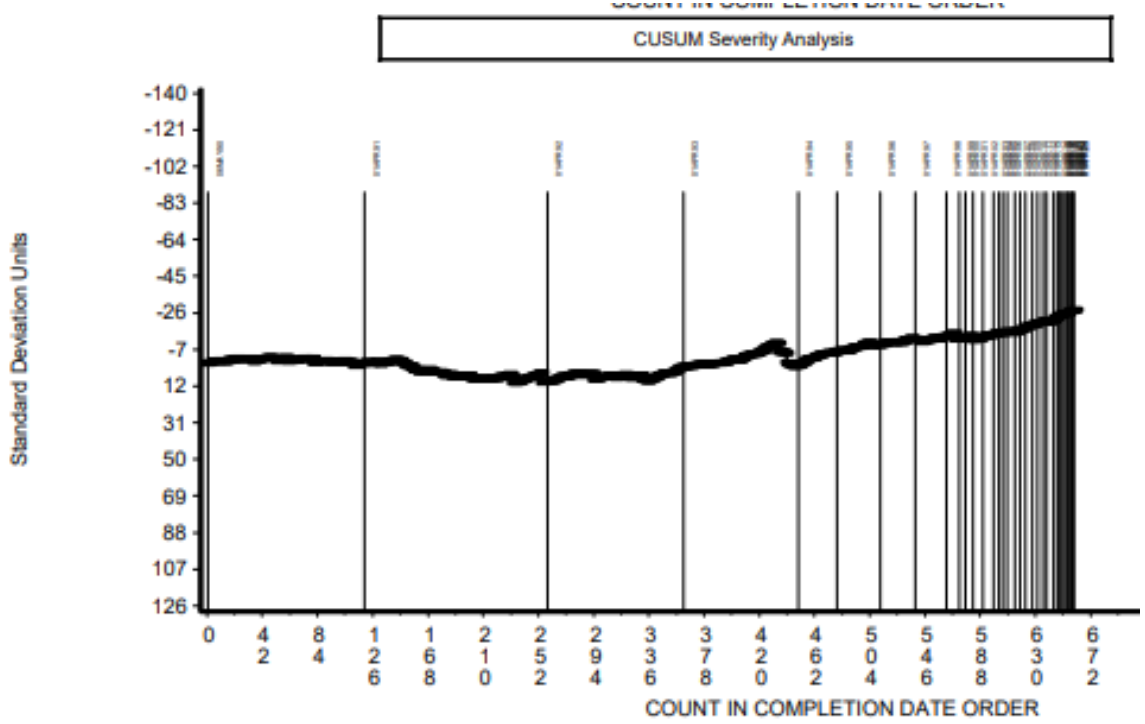


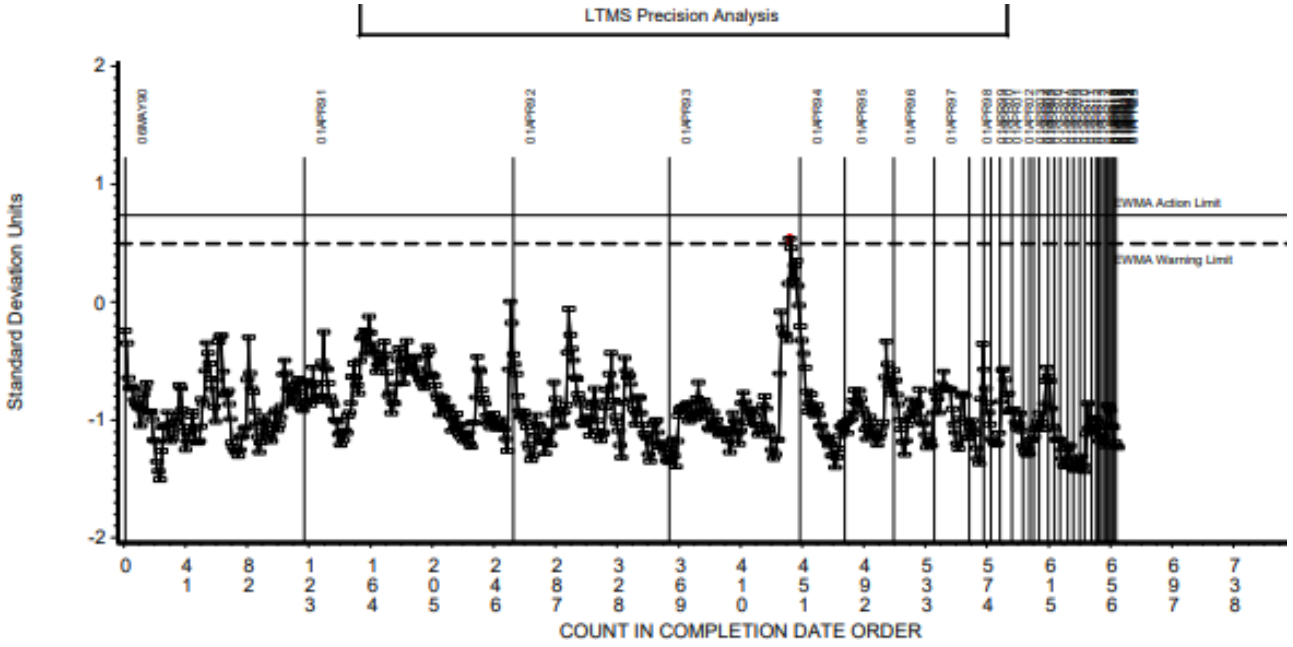




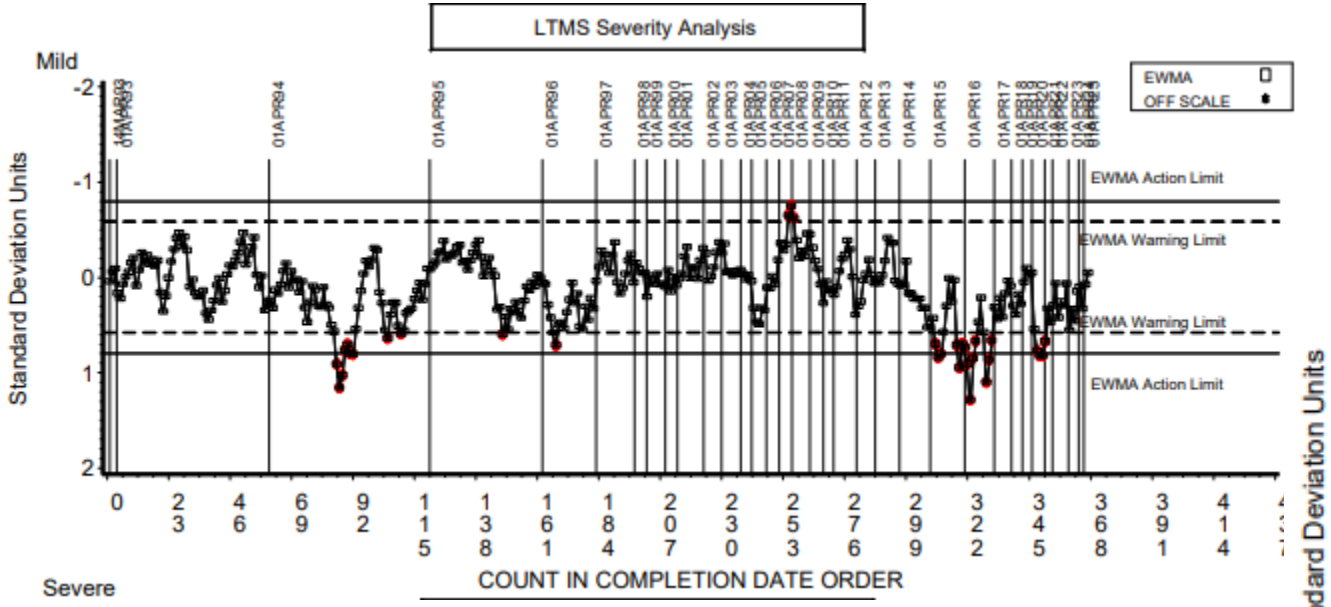
Caterpillar SCOTE 1k Charts- EOTOC

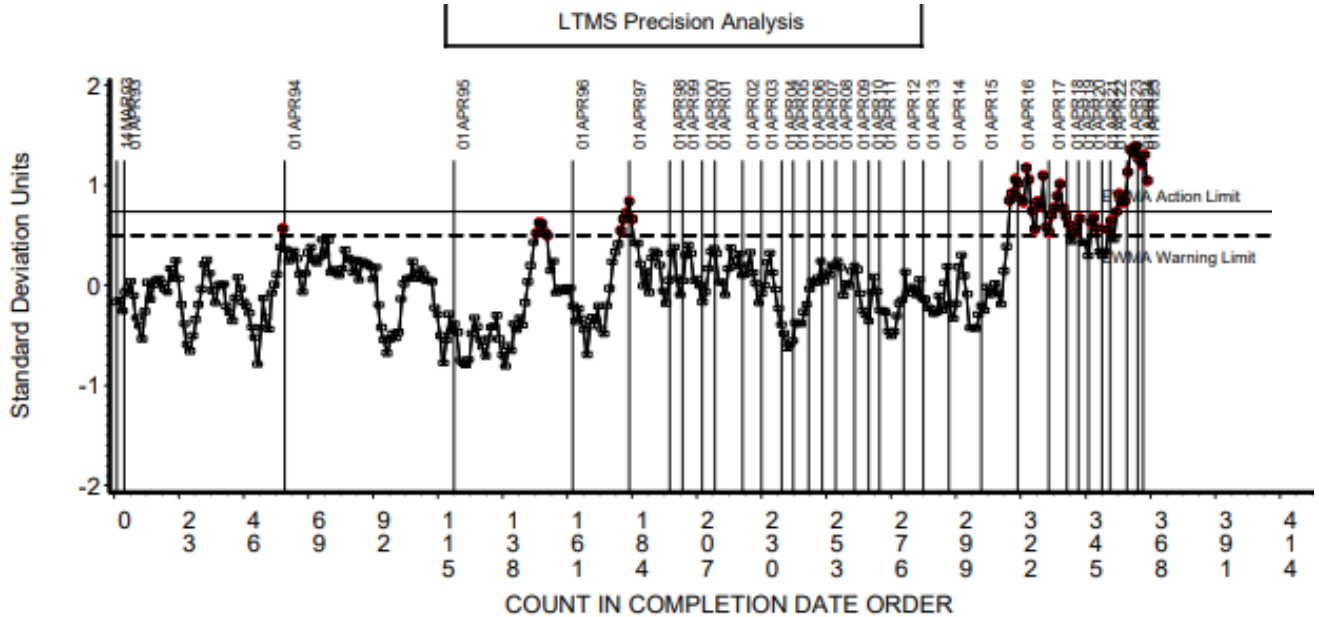


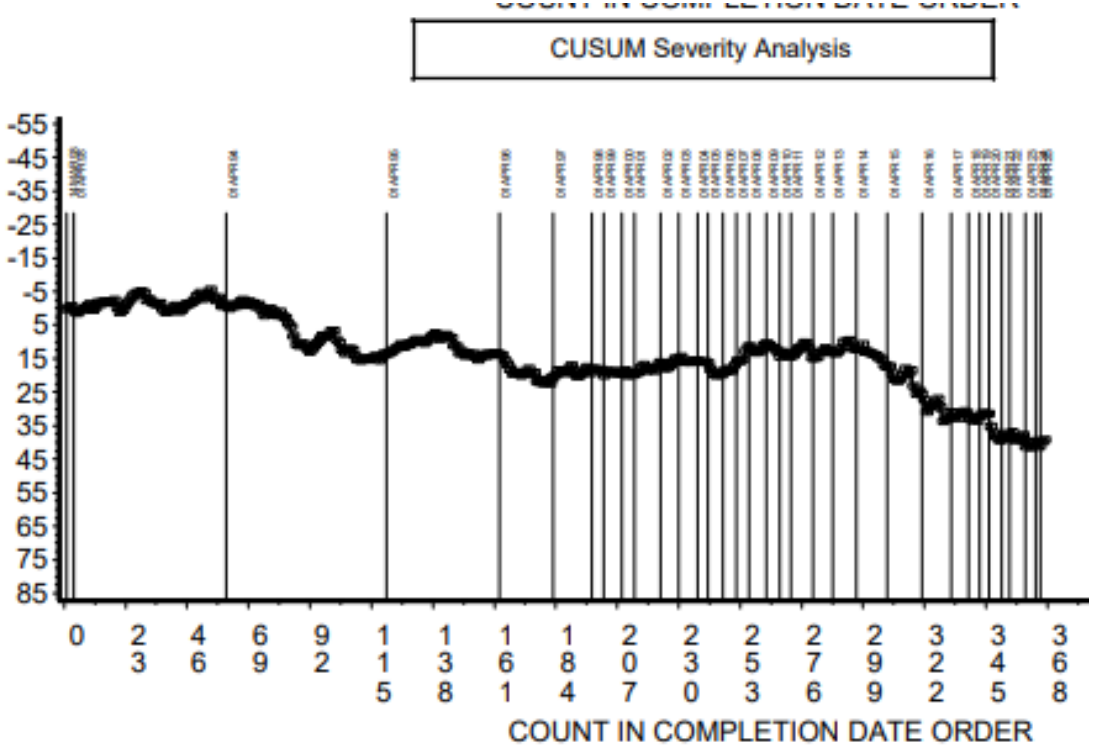




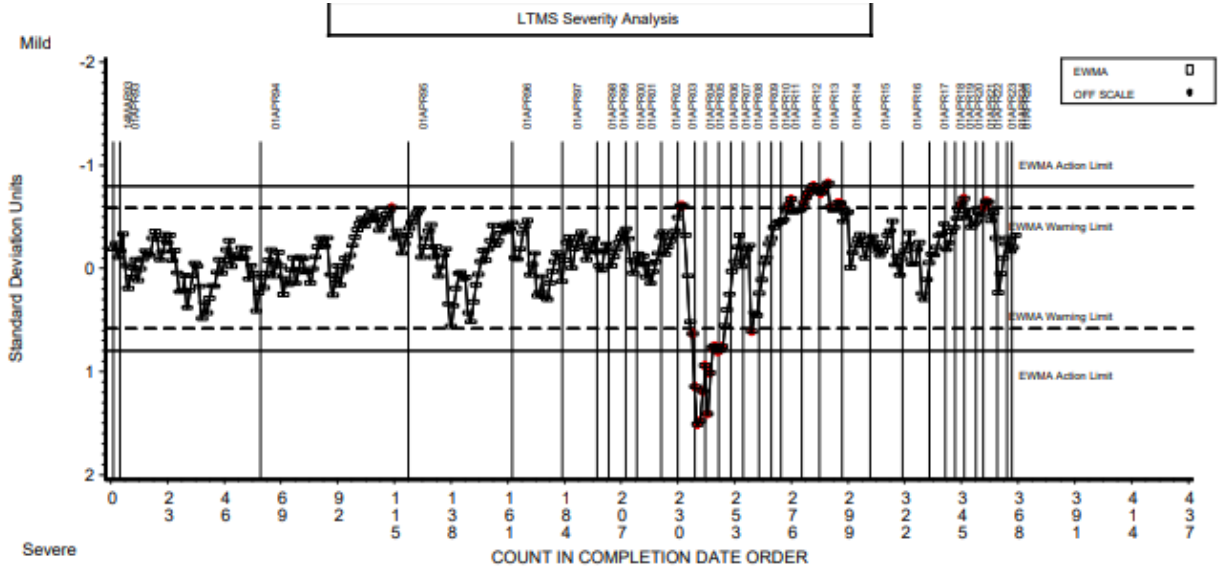
Caterpillar SCOTE 1N Charts- Final TGF

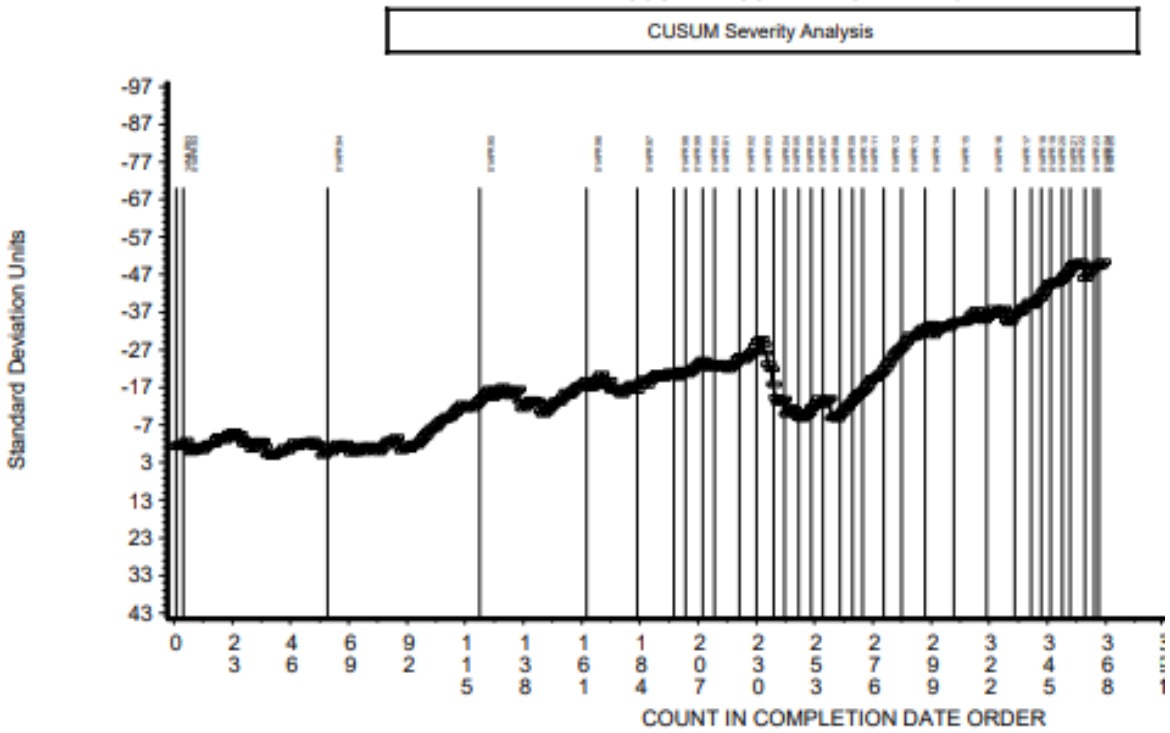


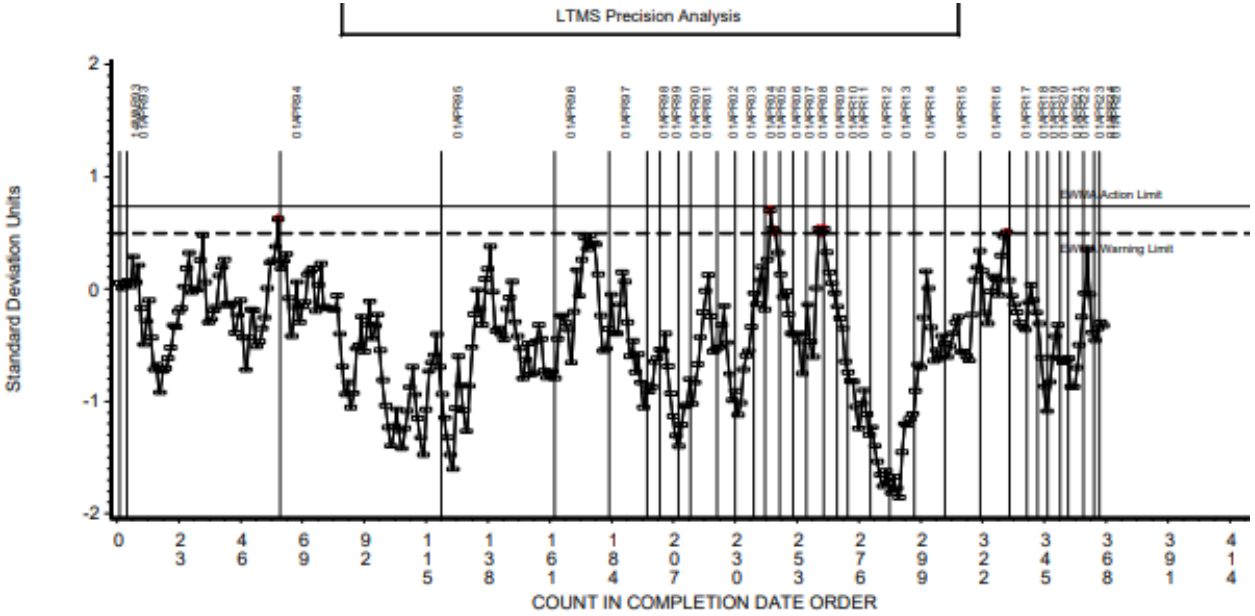




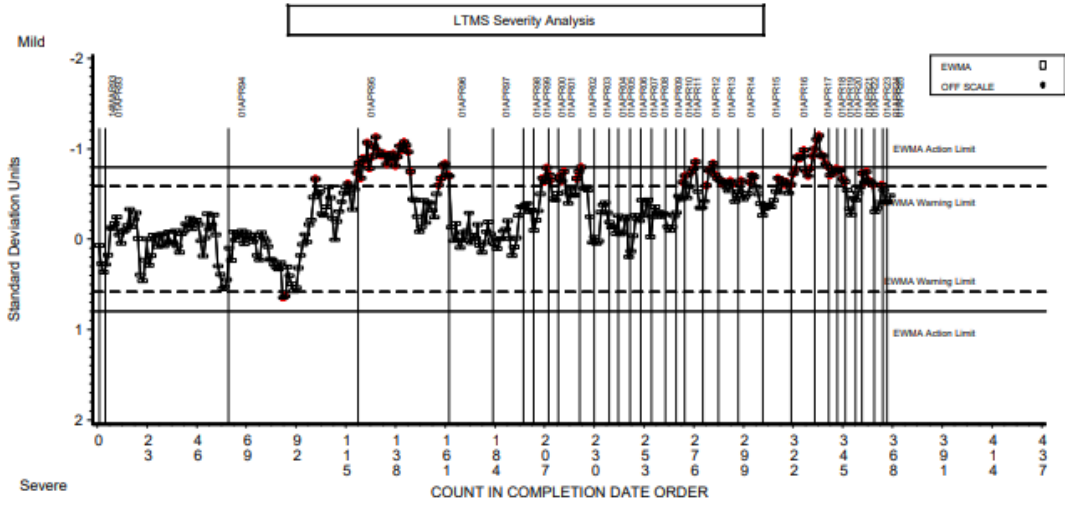
Caterpillar SCOTE 1N Charts- Top land Heavy Carbon

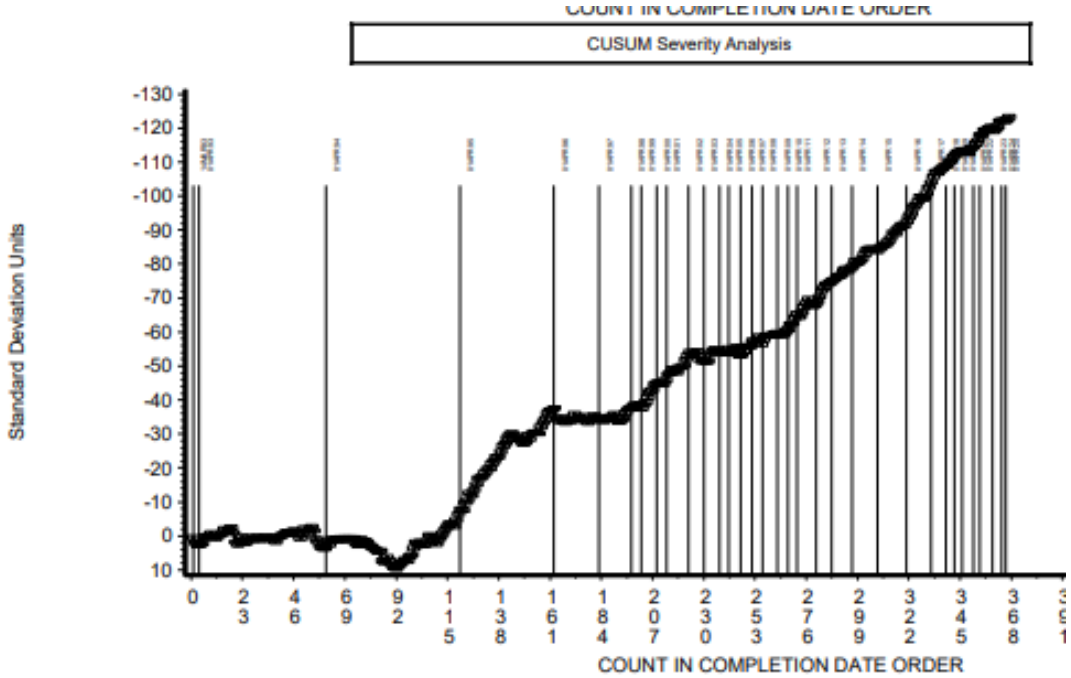


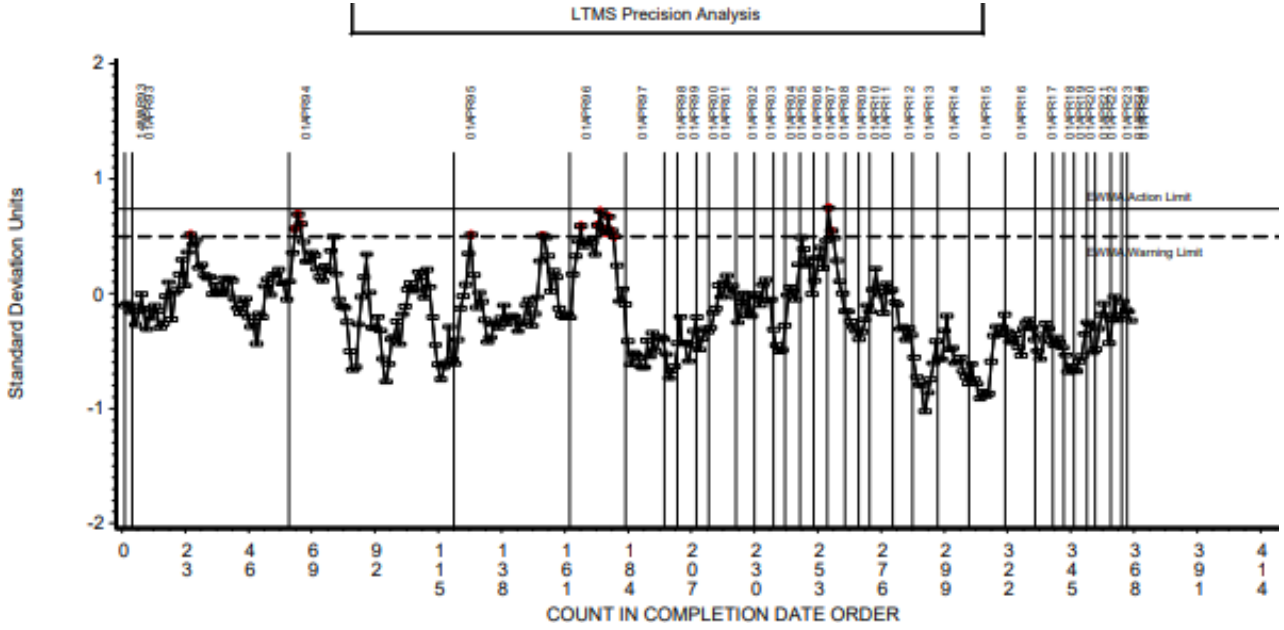




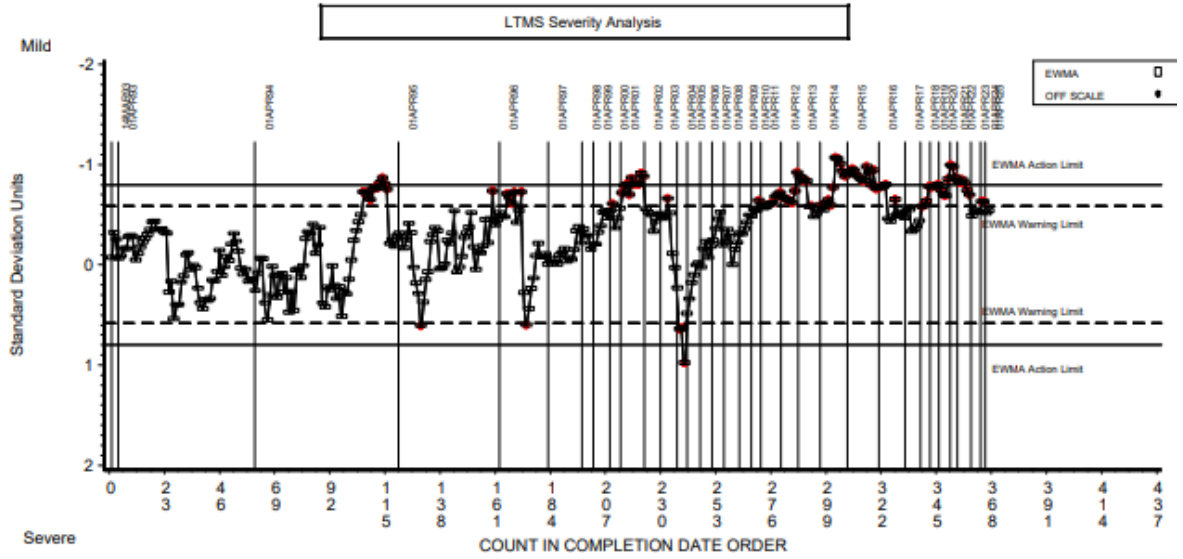
Caterpillar SCOTE 1N Charts- Final Weighted Total Demerits

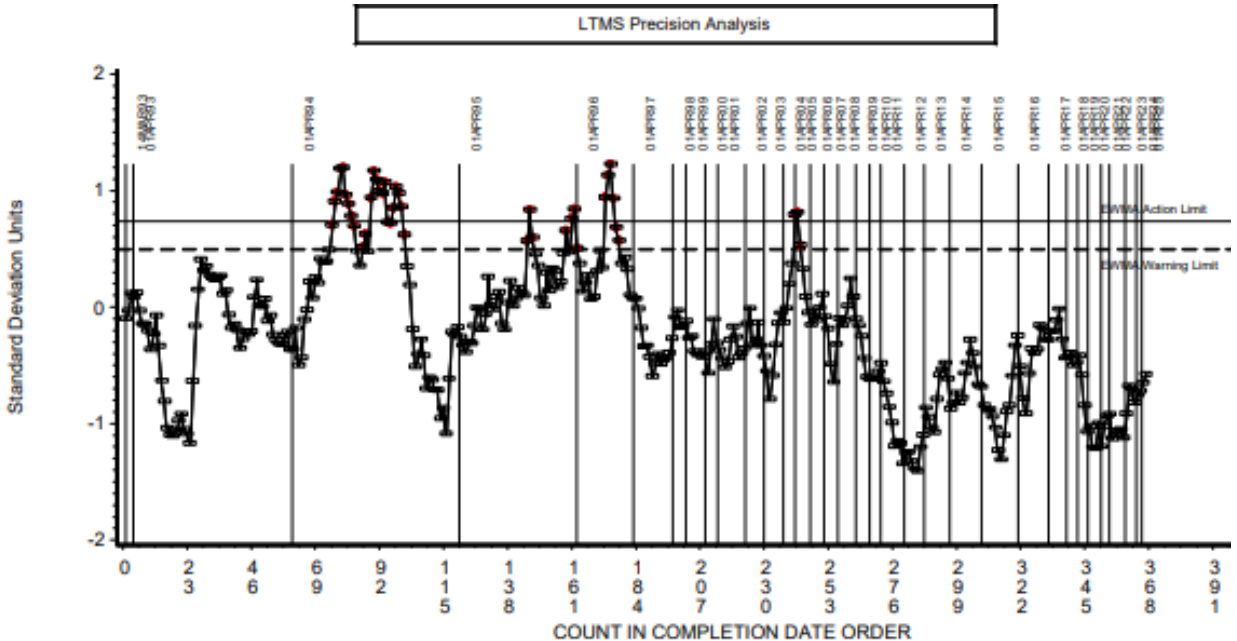


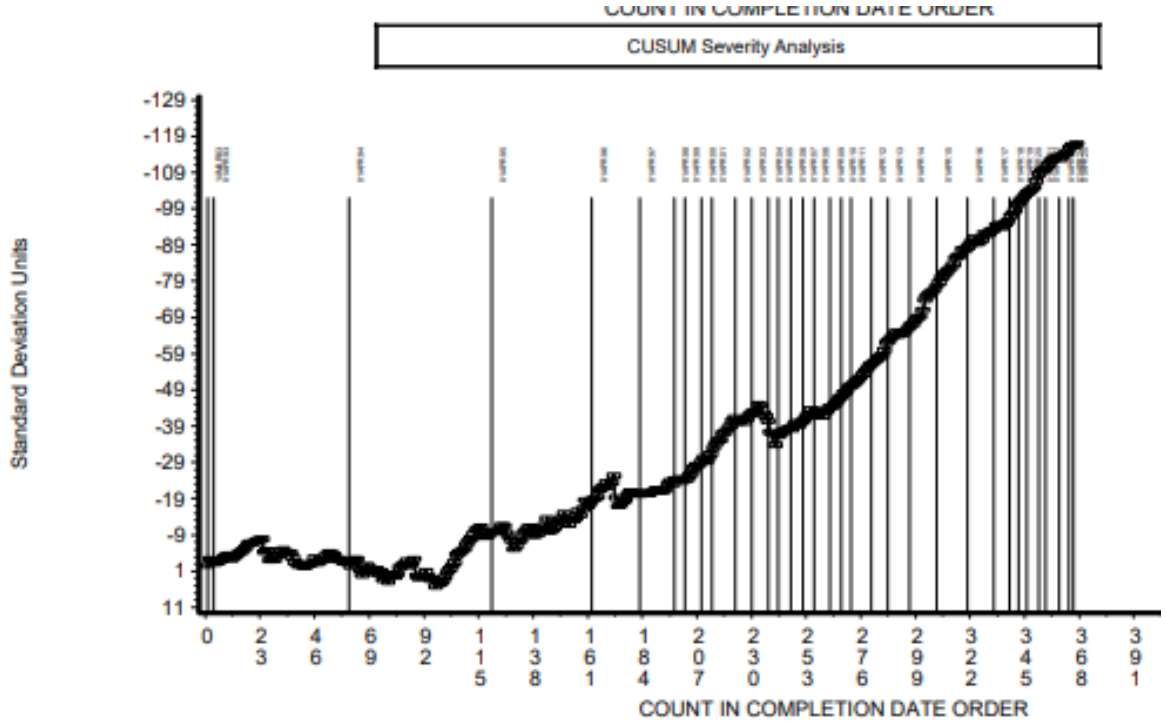




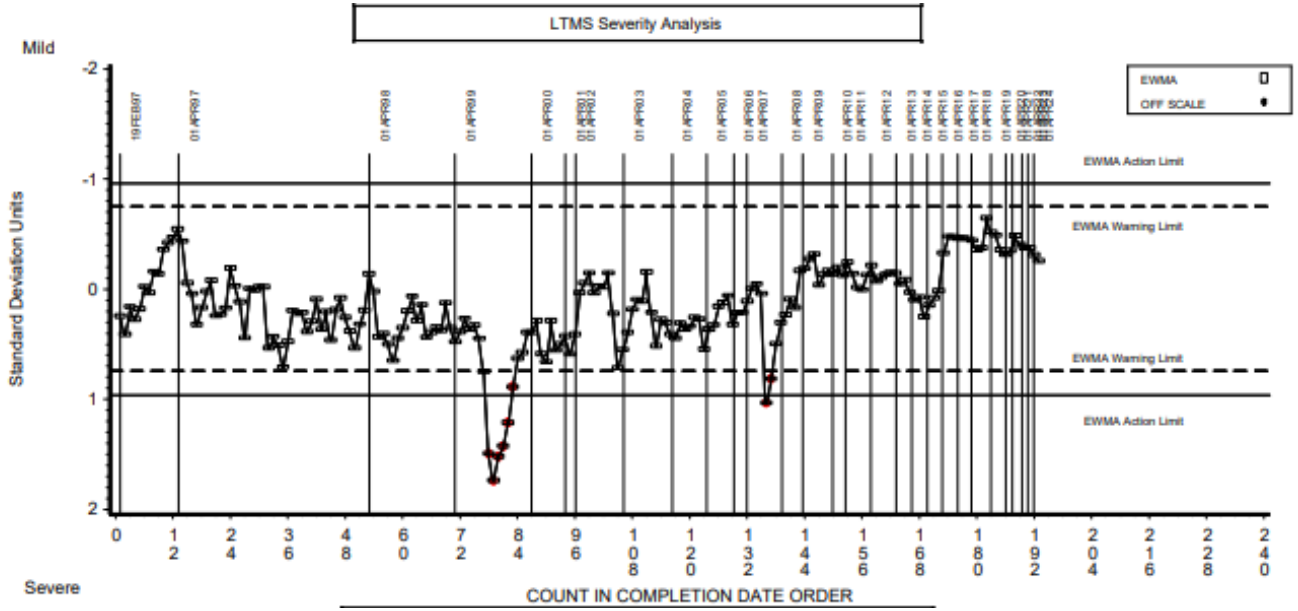
Caterpillar SCOTE 1N Charts- Final BSOC

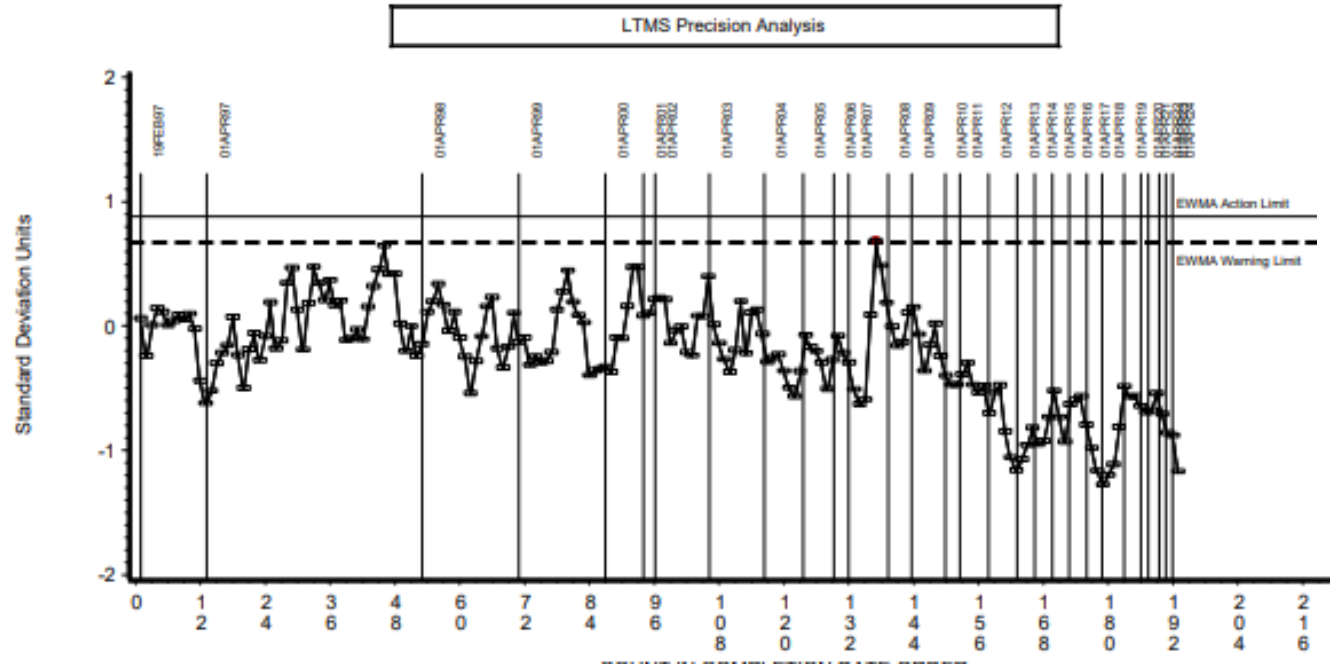


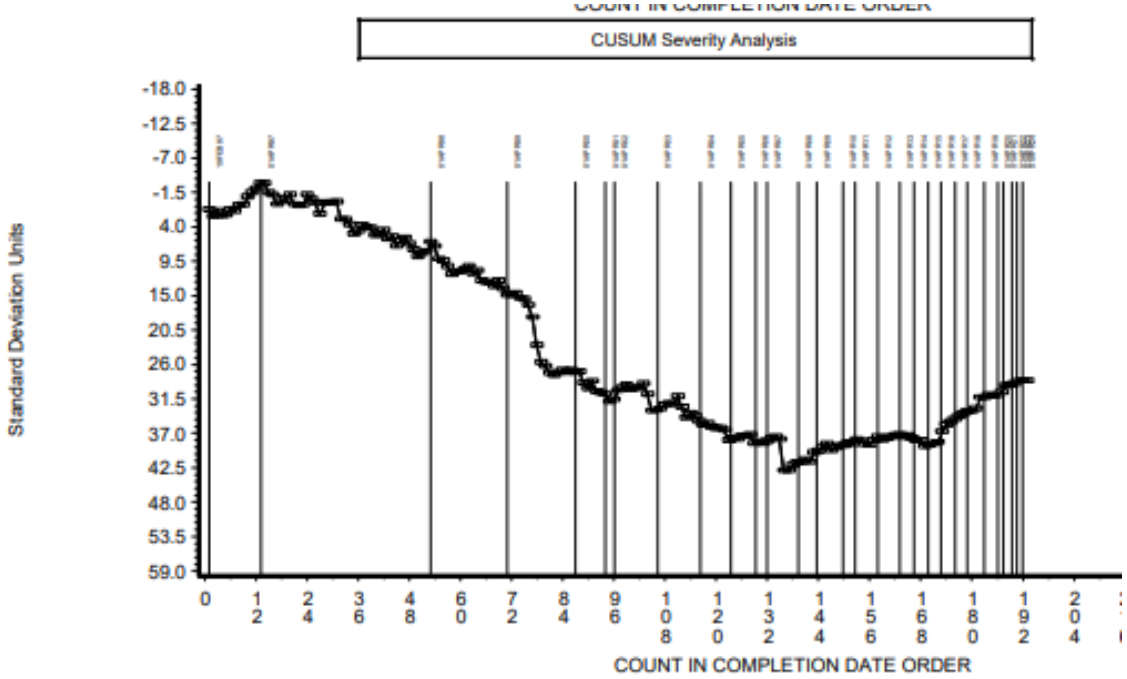




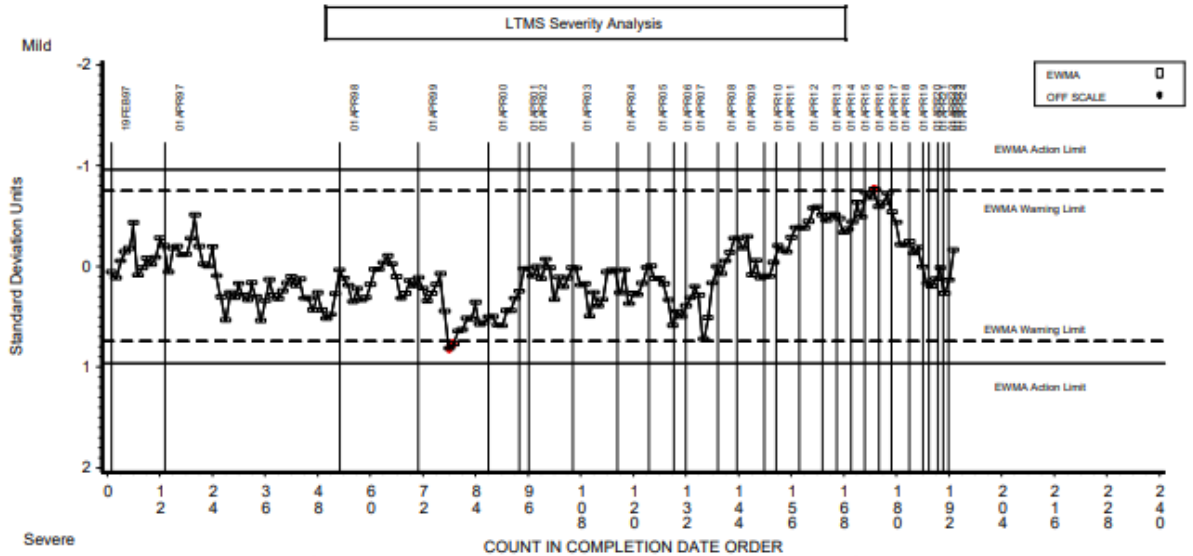
Caterpillar SCOTE 1P Charts- Top Groove Carbon

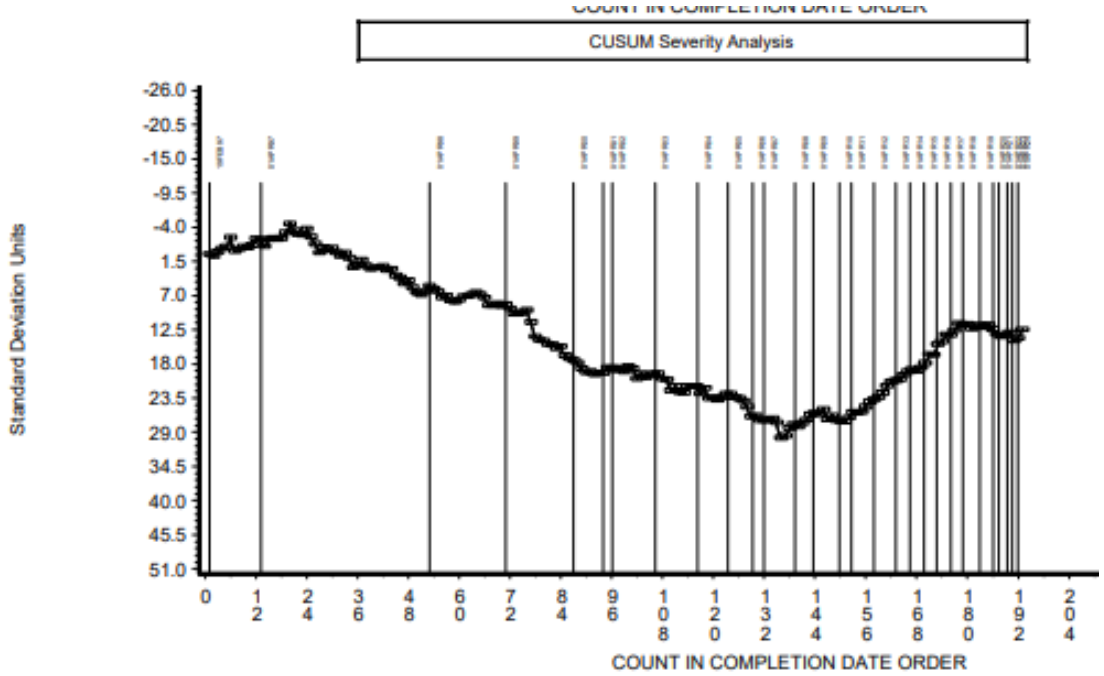


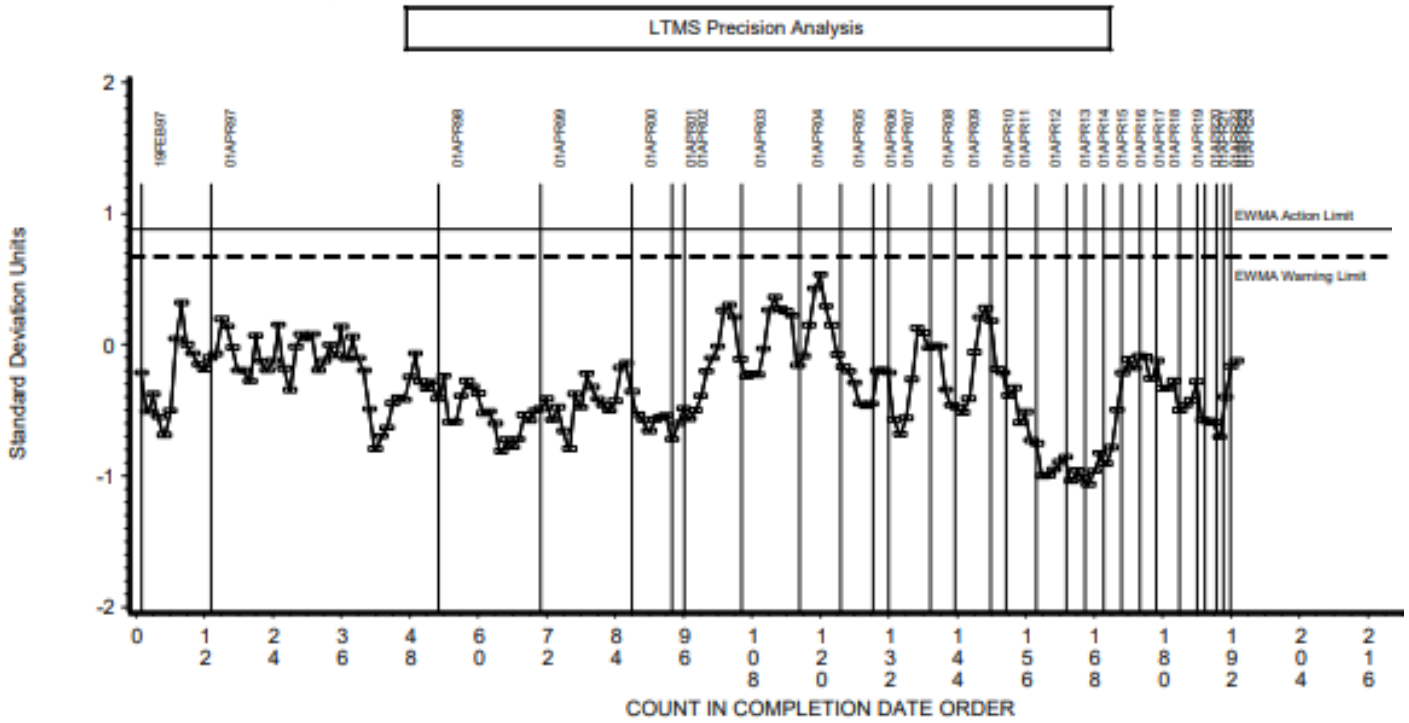




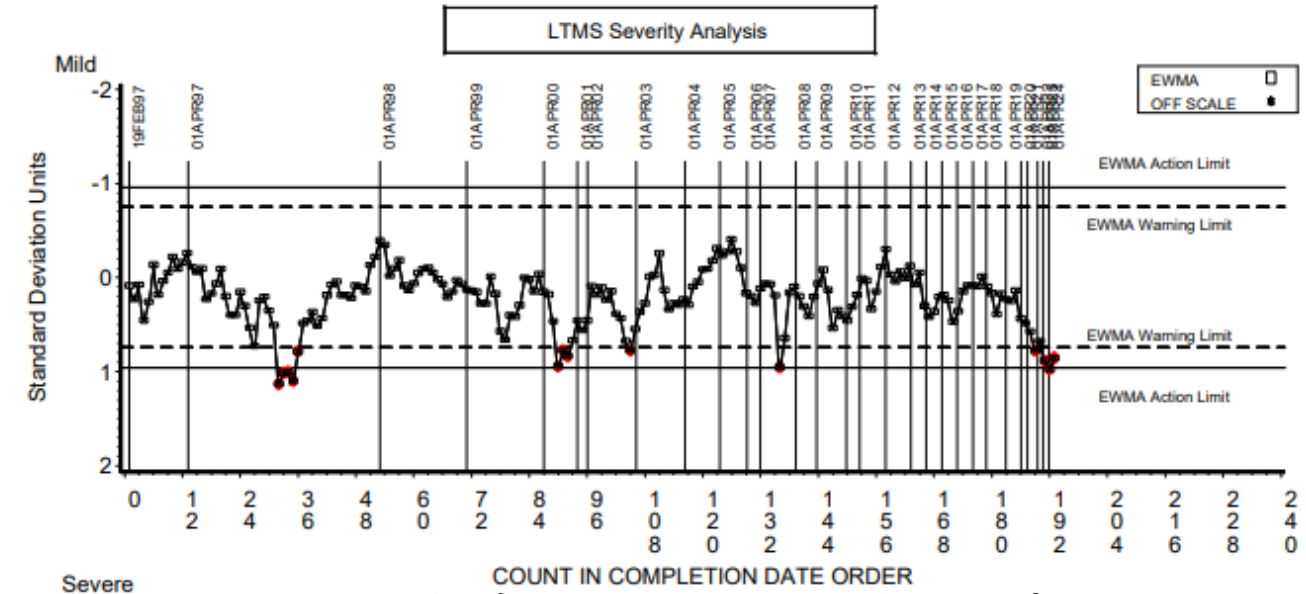
Caterpillar SCOTE 1P Charts- Top Land Carbon

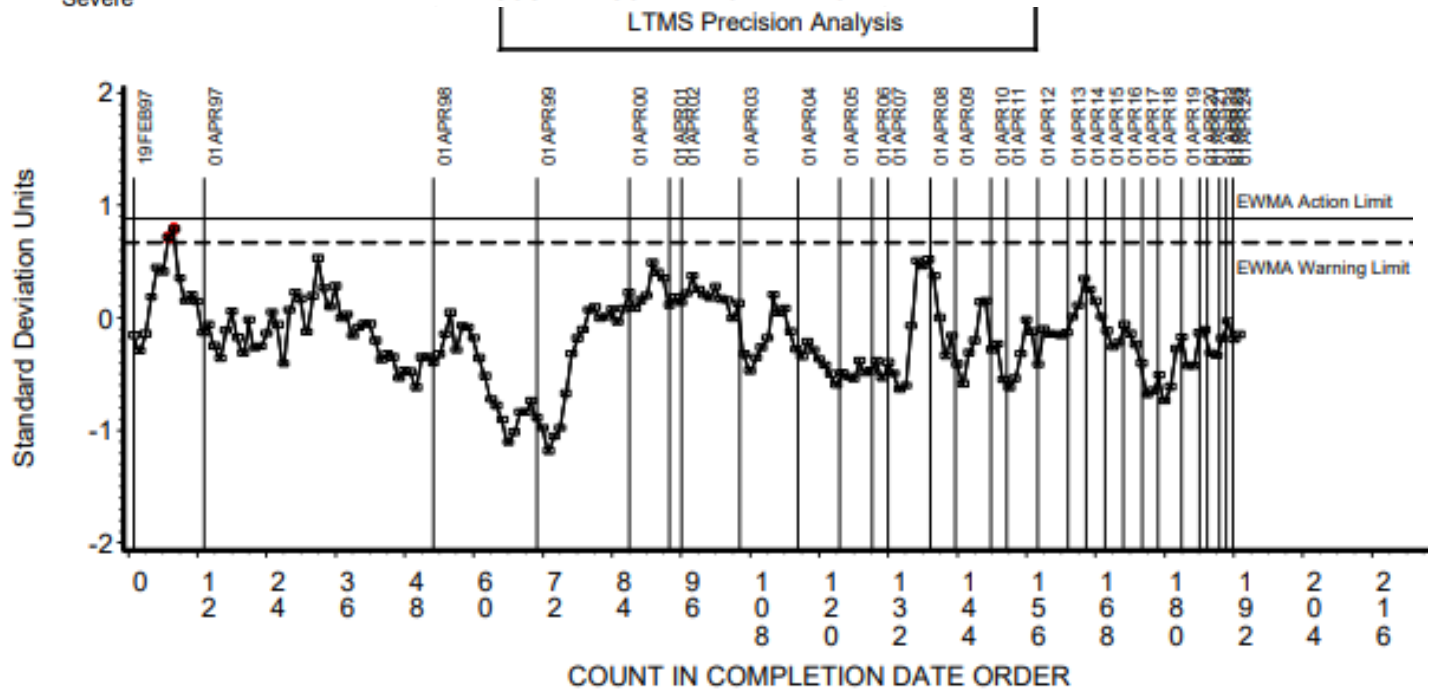


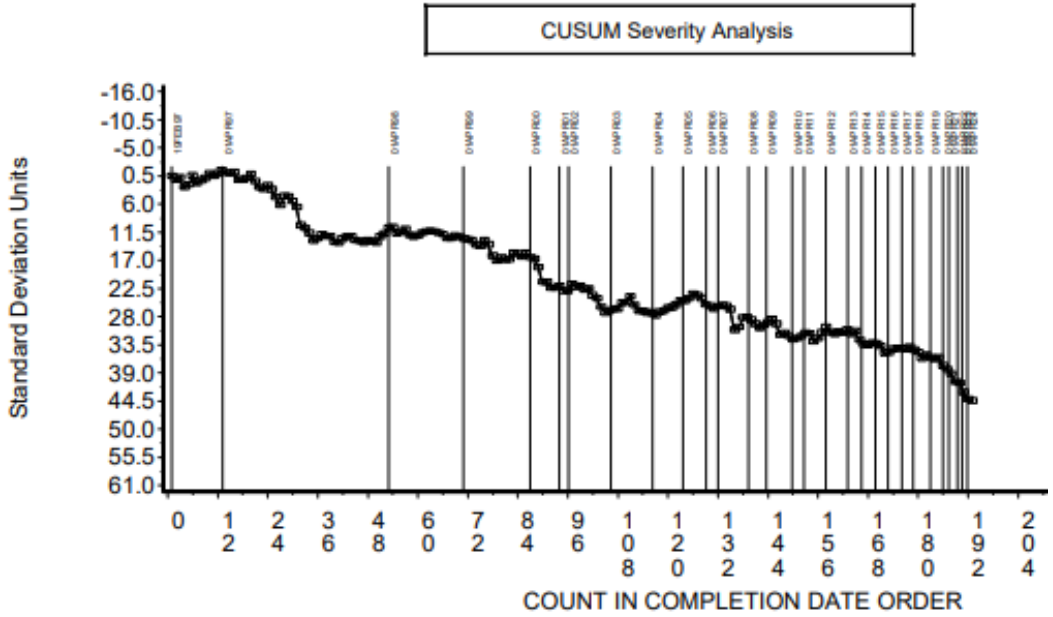




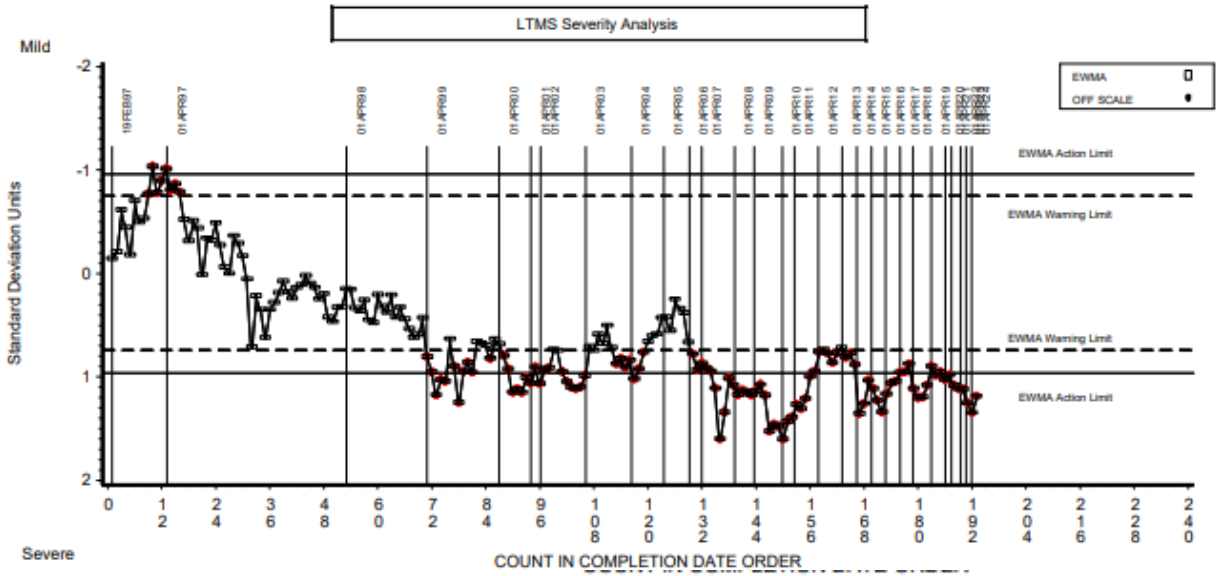
Caterpillar SCOTE 1P Charts- Weighted Total Demerits

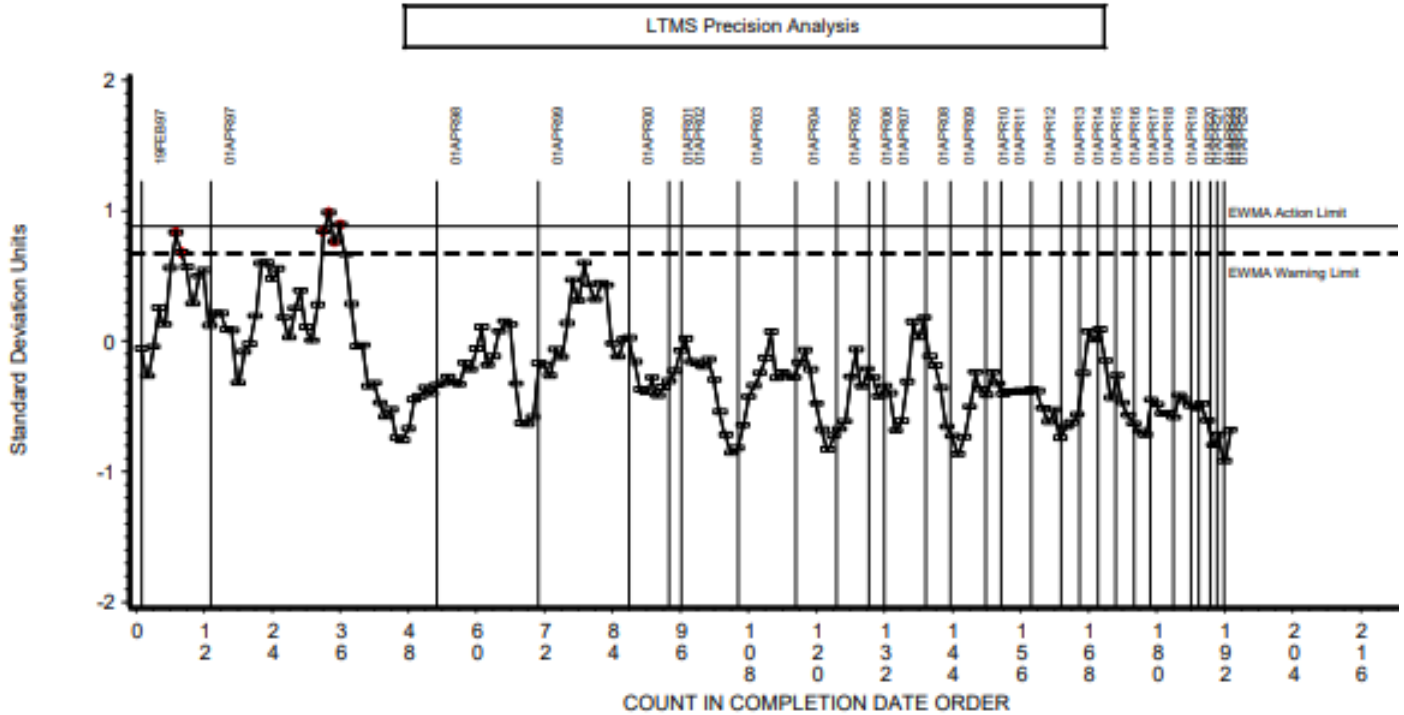


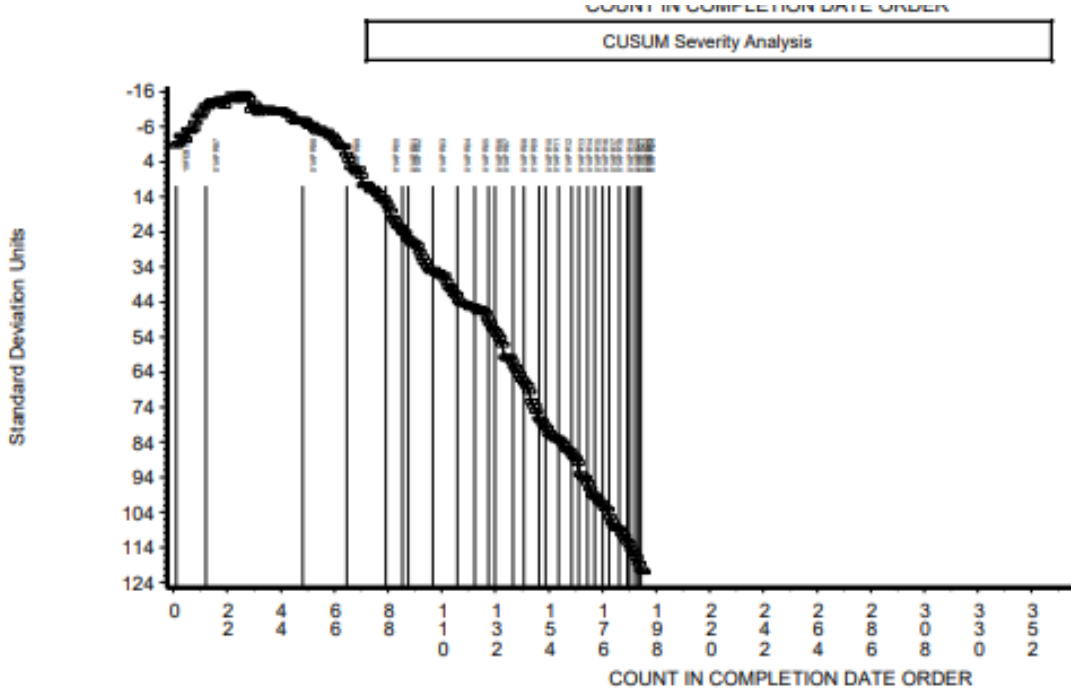




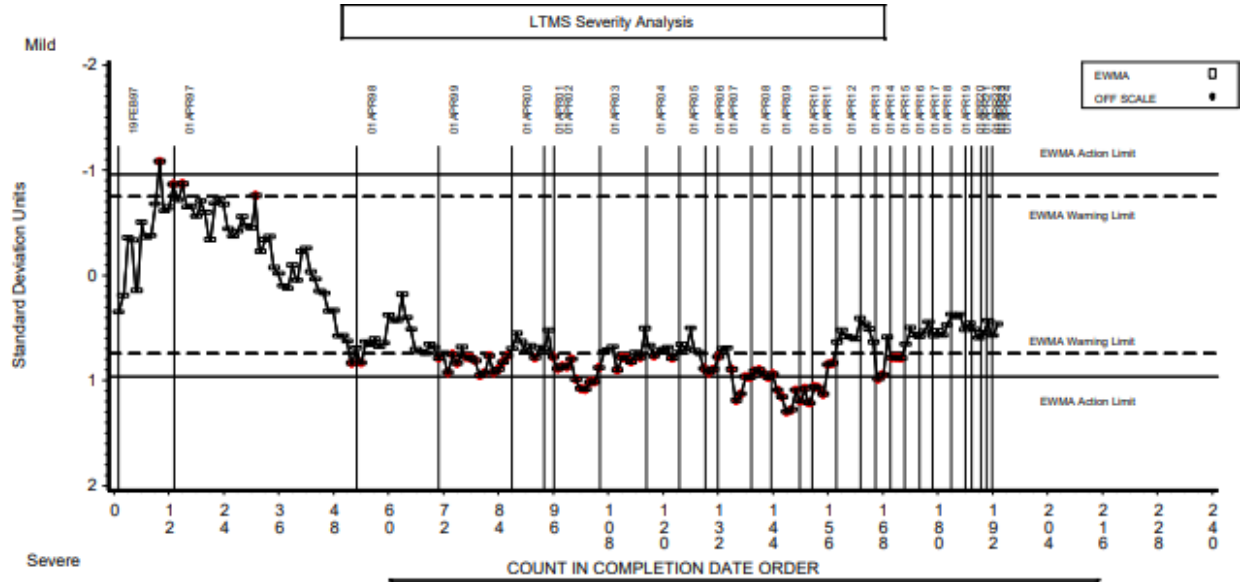
Caterpillar SCOTE 1P Charts- EOTOC

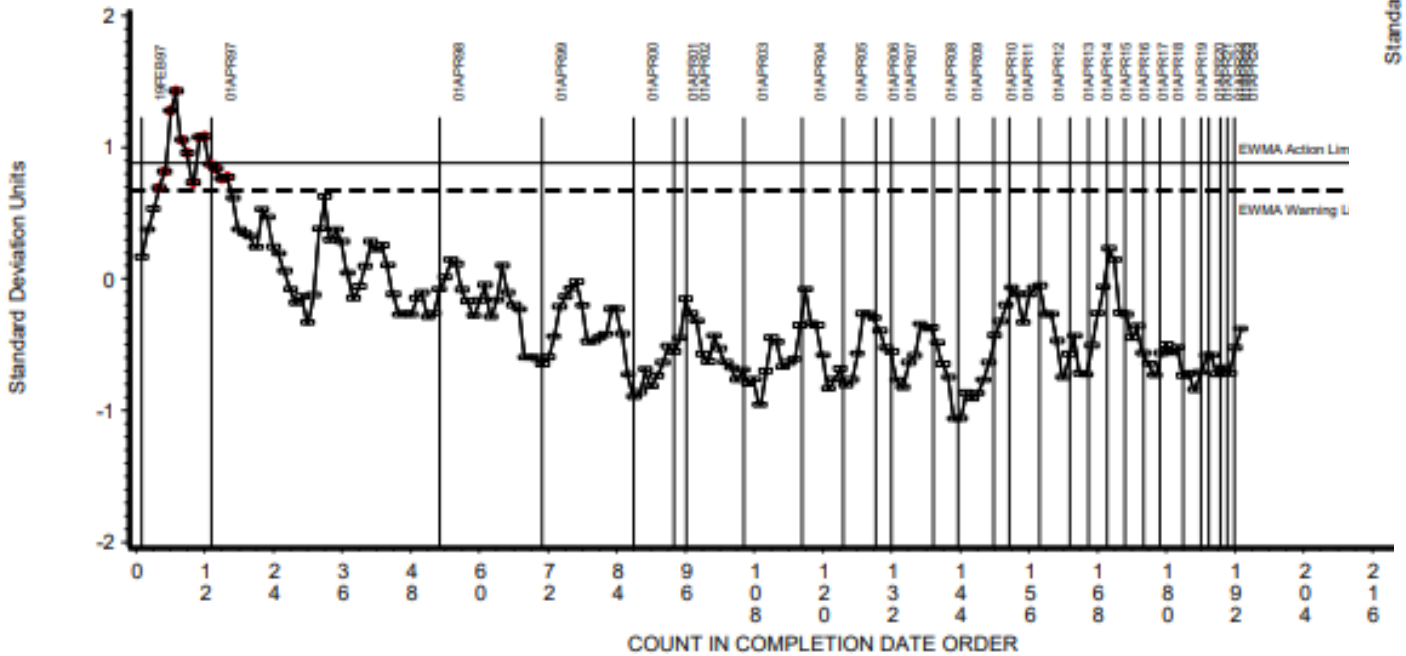


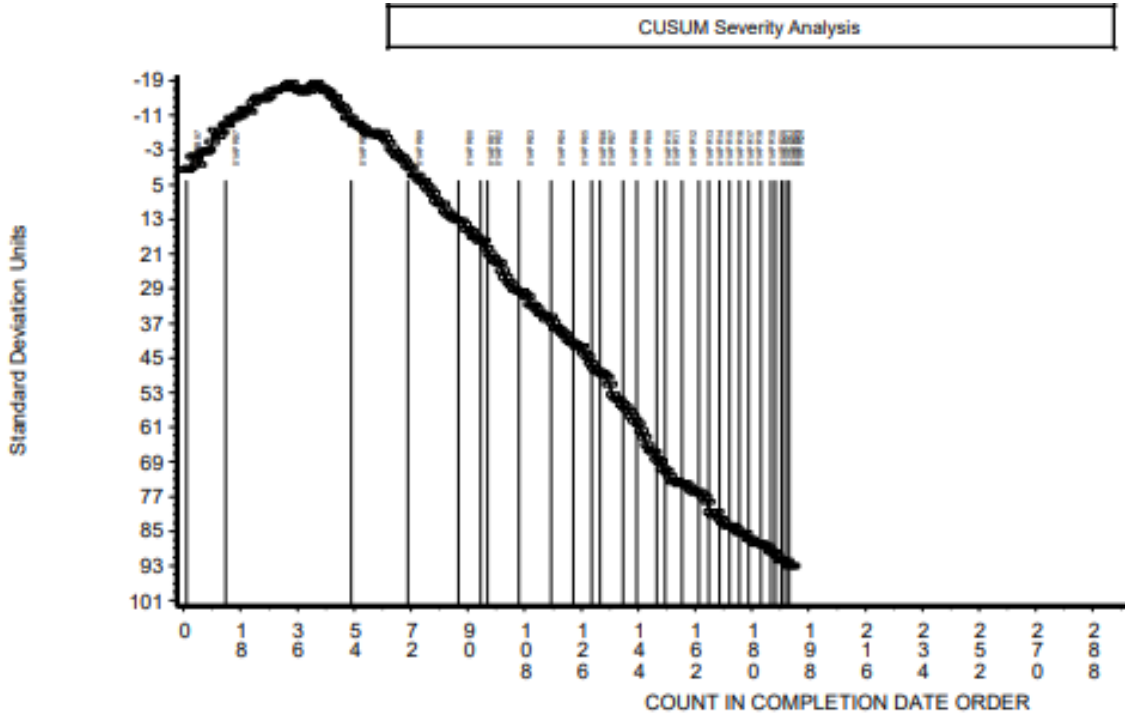




Caterpillar SCOTE 1P Charts- Oil Consumption







Ford VTWT Update

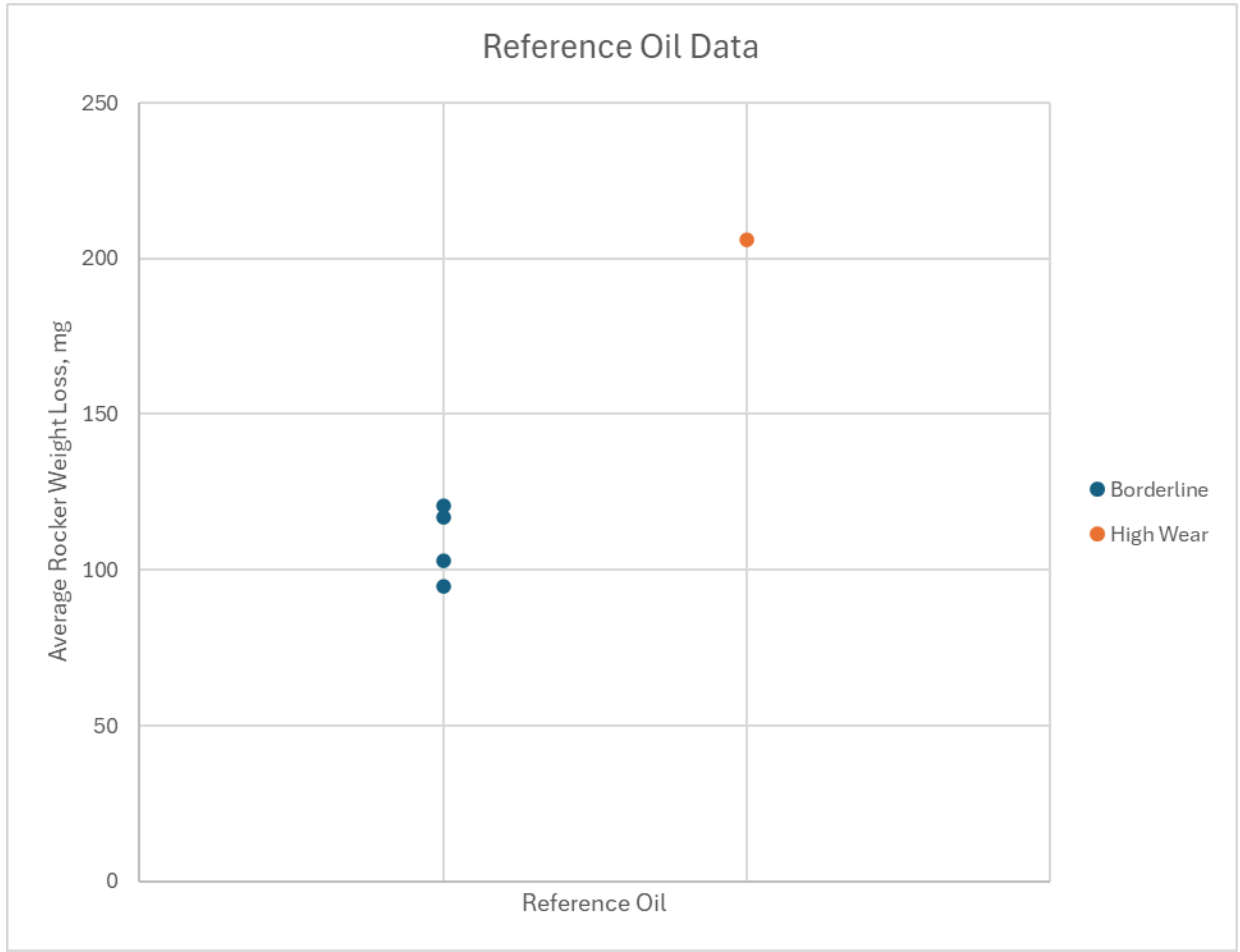
December 9, 2025

Updates and Next Steps

- Model Year 2023 Status:
  - Procedure Finalization in-person meeting to be scheduled in mid-January
  - Long-term ECM supply established
  - Total Test Time reduced to 175hrs targeting 5.25% soot
  - Oil filter part number specified
  - Update report forms/data dictionary
  - Adequate parts and oil for testing

Reference Data

- 5 runs on updated procedure with MY23 Engines
  - 4 on “borderline” oil
  - 1 on high wear oil to check discrimination
- 1 additional run on each fluid expected
- 2 additional borderline fluid runs expected on current stands
- Plan to set initial target for borderline reference oil after these 7 tests completed
  - To be reviewed again as more data is generated



Ford VTWT Update

- Questions?

Chevron Oronite

ASTM D4485 Action and SP Update

Laura Birnbaumer

December 2025 Heavy Duty Engine Oil Class Panel

ADDING UP®

ASTM D4485 Action and SP Update

1. **Additional Sections of D4485 to be Updated for API CL-4 and API FB-4**
   - Section 2
   - Section 4
   - Section 5
   - Section 6
2. **Standard Deviations for Hydrogenated Nitrile (HNBR)**
   - Annex A5
3. **Changes to the Methodology of Updating D4485**
   - Straight to Ballot vs Information Letters

Chevron Oronite

ADDING UP

In Parallel PC12 D4485 Additions/Updates

ASTM D4485 Section 2 lists the Reference Documents used in the Specification

- Section 2.1 is for ASTM Standards
  - Move to recommend to ASTM D02.B0 to add to ASTM D4485 Section 2.1
    - D8617 Standard Test Method for Evaluation of Automotive Engine Oils for Soot-Viscosity Performance in a Cummins ISB Medium-Duty Diesel Engine
    - D8074 Standard Test Method for Evaluation of Diesel Engine Oils in DD13 Diesel Engine

In Parallel PC12 D4485 Additions/Updates

ASTM D4485 Section 4 outlines the Performance Classification divided into categories with the performance measurements

- Move to recommend to ASTM D02.B0 to add to ASTM D4485 Section 4
  - 4.1.7 *CL-4 or FB-4*—Oil meeting the performance requirements measured in the following diesel engine tests, and bench and chemical tests.
    - 4.1.7.1 Test Method D8048, the Volvo T-13 diesel engine test method, is used to evaluate the oxidation resistance performance of engine oils in turbocharged and intercooled four-cycle diesel engines equipped with EGR and running on ultra-low sulfur diesel fuel.
    - 4.1.7.2 Test Method D8047, the Caterpillar-C13 Engine Oil Aeration Test (COAT) method, evaluates an engine oil's resistance to aeration under high-engine-speed, zero load conditions using a direct-injection, turbocharged, after-cooled, six-cylinder diesel engine.
    - 4.1.7.3 Method D7549, the Caterpillar C13 Advanced Combustion Emission Reduction Technology (ACERT) is an in-line six-cylinder engine used to measure engine oil consumption and piston deposits. The engine is equipped with a single-piece forged steel piston used in emission controlled engines. This engine test uses fuel with ultra low sulfur content of 15 mg/kg.
    - 4.1.7.4 Test Method D7484, the Cummins ISB diesel engine test, is used to evaluate oil performance with respect to cam and tappet wear with high soot level in the engine oil. This is an inline six cylinder turbo-charged engine with a common-rail fuel system for emission control. This engine test uses fuel with ultra low sulfur content of 15 mg/kg.

In Parallel PC12 D4485 Additions/Updates

- 4.1.7.5 Test Method D7468, the Cummins ISM diesel engine test, is used to evaluate oil performance with respect to valve train wear, sludge and oil filter plugging with a high soot level in the engine oil. This is an in-line six cylinder, turbo-charged engine with EGR for emission control. This engine test uses fuel with sulfur content of 500 mg/kg.
- 4.1.7.6 Test Method D8617, the ISB Soot-Viscosity diesel engine test, evaluates the viscosity increase and soot concentration (loading) performance in a turbocharged and intercooled four-cycle diesel engine equipped with EGR and featuring an EPA 2004 emissions configuration.
- 4.1.7.7 Test Method D8074, the DD13 Scuff test, evaluates the liner scuffing and ring distress performance in turbocharged and intercooled four-cycle diesel engines equipped with EGR, uncoated top rings, and running on ultra-low sulfur diesel fuel.
- 4.1.7.8 Test Method D6896 (MRV TP-1) has been shown to predict field failures resulting from poor low temperature pumpability of used engine oils.
- 4.1.7.9 Test Method D7109, a diesel injector shear test, has been shown to correlate with permanent shear loss of engine oils in medium-duty direct injection diesel engines used in broadly based field operations.
- 4.1.7.10 Test Method D6594 operated at 135 °C, a high temperature corrosion bench test (HTCBT), has been shown to predict corrosion of engine oil-lubricated copper and lead containing components used in diesel engines.
- 4.1.7.11 Test Methods D4741, D4683, and D5481 High Temperature High Shear (HTHS) tests are part of the SAE J300 Viscosity Classification System.

In Parallel PC12 D4485 Additions/Updates

- 4.1.7.12 Test Method D892, a foaming test, Sequences I, II, and III, has been shown to predict foaming of engine oils in diesel engines.
- 4.1.7.13 Test Method D7216, the Elastomer Compatibility Test, is used to measure the performance of six widely used elastomer compounds when exposed to diesel engine oils.
- 4.1.7.14 Test Method D874, Sulfated Ash, is used to determine the sulfated ash from unused lubricating oils containing additives. These additives usually contain one or more of the following metals: barium, calcium, magnesium, zinc, potassium, sodium, and tin. The elements sulfur, phosphorus, and chlorine can also be present in combined form.
- 4.1.7.14 Licensing of the API CL-4 or FB-4 category by the American Petroleum Institute (API) requires that candidate oils meet the performance requirements in this specification, and that the oils be tested in accordance with the protocols described in the ACC Petroleum Additives Product Approval Code of Practice. The methodology detailed in the ACC Code will help ensure that an engine oil meets its intended performance specification. (See Appendix X3 for more information.)

In Parallel PC12 D4485 Additions/Updates

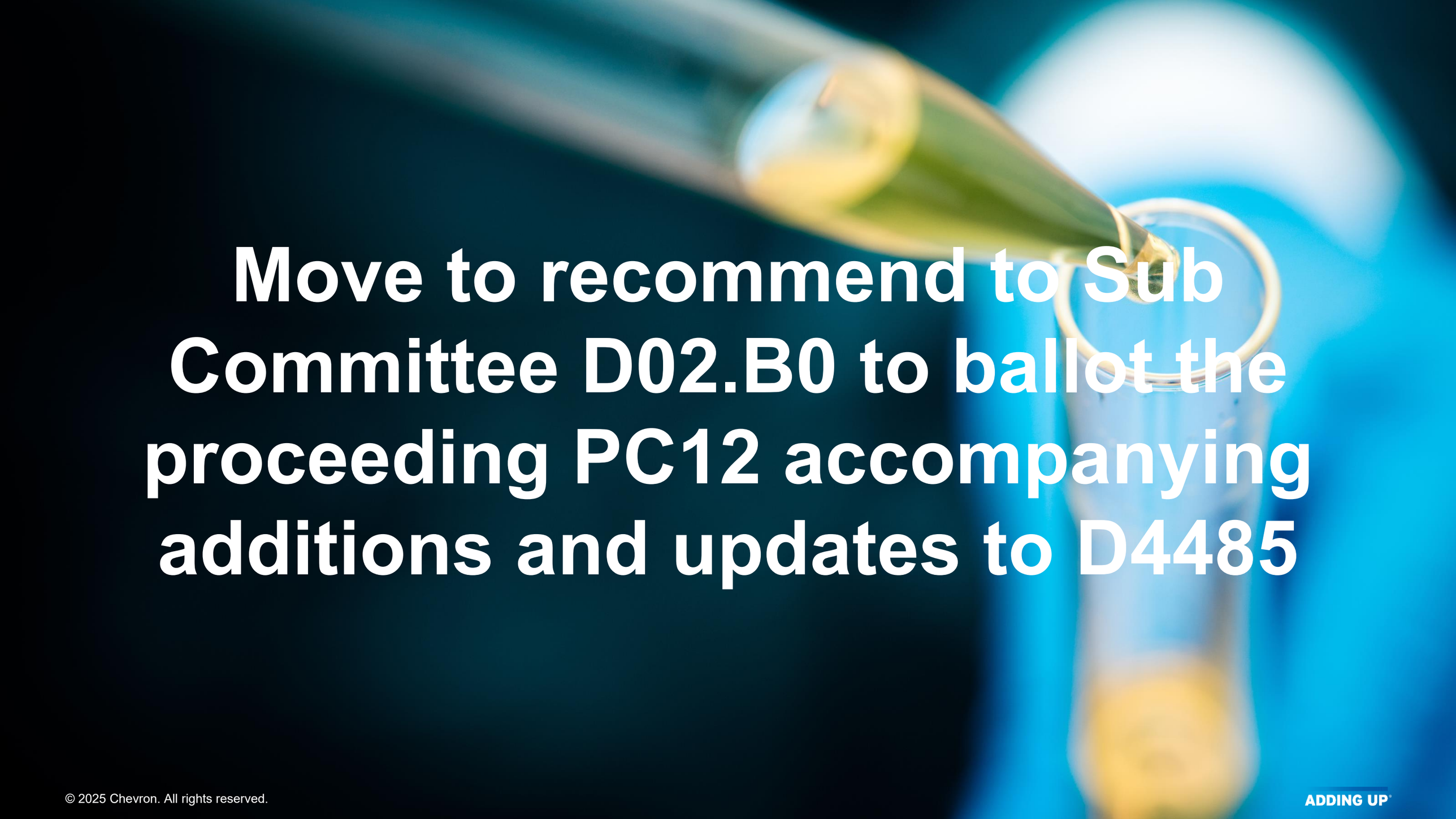
ASTM D4485 Section 5 outlines the Performance Requirements

- Move to recommend to ASTM D02.B0 to add to ASTM D4485 Section 5
  - 5.1 The oils identified by the categories discussed in Section 4 shall conform to the requirements listed in Tables 1-8.
    - [A successful PC-12 ballot adds Tables 7 and 8 to D4485.]
  - Note 4-In practice, Engine oils are often labeled with service category designation have some combination of S, C and F prefixes.

In Parallel PC12 D4485 Additions/Updates

ASTM D4485 Section 6 outlines the Test Procedures

- Move to recommend to ASTM D02.B0 to add to ASTM D4485 Section 6
  - 6.10 For CL-4 or FB-4 test results to be valid from the following test types, they shall have been conducted in stands/equipment in current calibration by the TMC: Test Methods D874, D5800, D6594, D7216, D7468, D7484, D7549, D8047, D8048, D8074 and D8617.



Move to recommend to Sub Committee D02.B0 to ballot the proceeding PC12 accompanying additions and updates to D4485

ADDING UP®

ASTM D4485 Annex A5
HD Specification Elastomer Adjusted Limits

HD Specification Elastomer Adjusted Limits

ASTM D4485 Annex A.5 describes a statistical method to account for the inherent test variability in the elastomer compatibility test method. The need to take account of the inherent test variability arises in part because batch-to-batch, sheet-to-sheet and within-sheet variations in the properties of the reference elastomers can be sufficiently large that they complicate making a decision as to whether or not a candidate oil has passed the elastomer compatibility requirements.

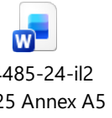
In 2024, with the introduction of reference oil SL107, this Annex was updated, not only with the new initial Total and Within-Laboratory Standard Deviation Estimates and examples, but with a new link to the TMC website and the understanding that the Total and Within-Laboratory Standard Deviation Estimates will be recalculated every February from a rolling 24 months of data.

This past summer, after the EOEC SP met, starting at the end of 2024 and continuing into 2025, to decide the targets for the new Hydrogenated Nitrile elastomer, John Loop of the TMC calculated the Total and Within-Laboratory Standard Deviation Estimates from the data generated during the ILS.

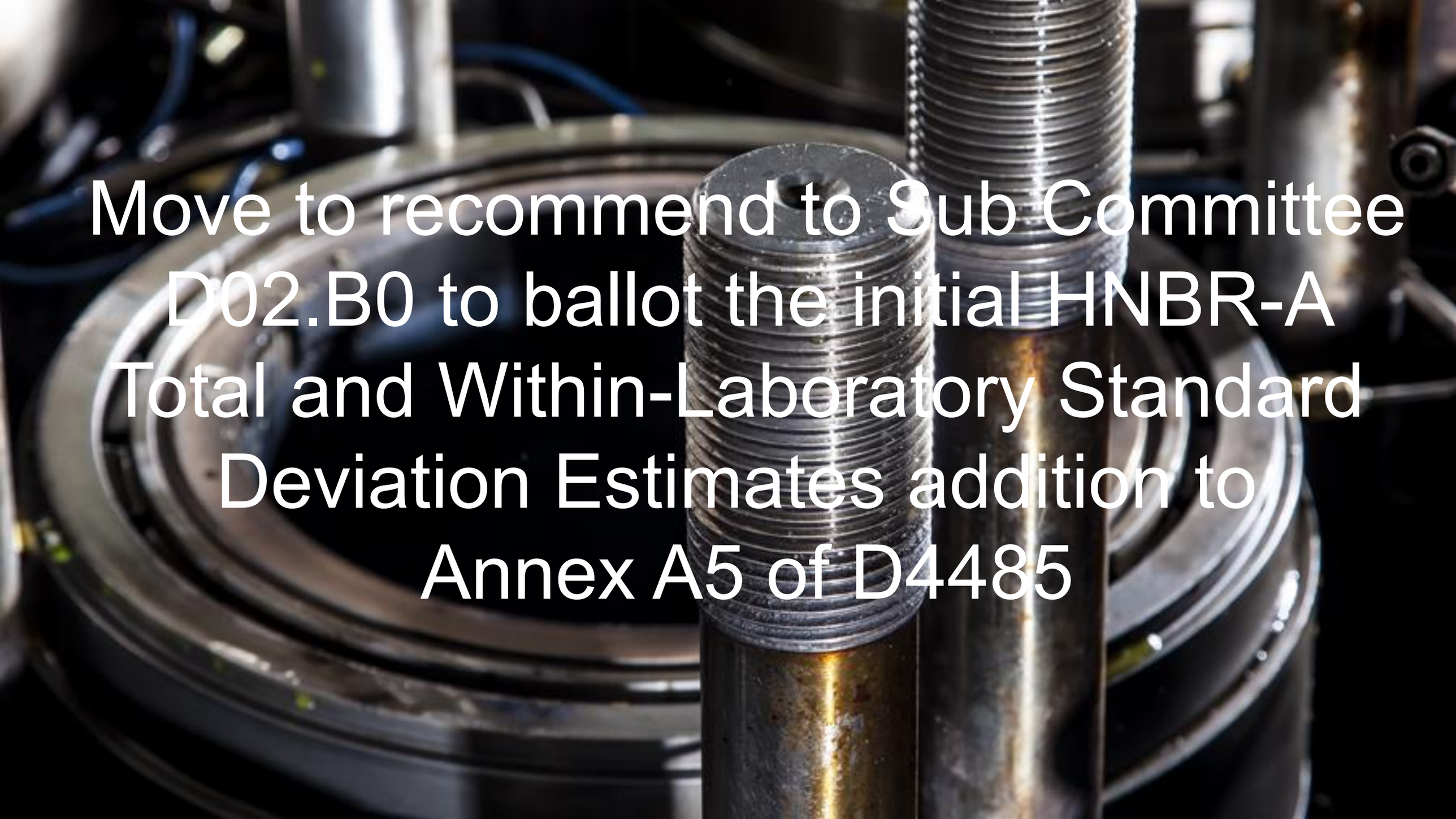
- Emails between statisticians, TMC, D4485 SP Chair, Elastomer SP Chair and subject matter experts included.

HD Specification Elastomer Adjusted Limits

Other questions were raised so additional clarification and updated examples were added to become D4485-24-il2 2025 Annex A5.



Request is to send the Total and Within-Laboratory Standard Deviation Estimates from il2 to ballot. Actual ballot will be updated to CL-4 and FB-4. HNBR-A Total and Within-Laboratory Standard Deviation Estimates will be updated in February with the results to date.



Move to recommend to Sub Committee D02.B0 to ballot the initial HNBR-A Total and Within-Laboratory Standard Deviation Estimates addition to Annex A5 of D4485

Changes to the Methodology of Updating D4485

Changes to the Methodology of Updating D4485

The ASTM D4485 Surveillance Panel was created to efficiently address type-os and other errors, omissions, and general questions in D4485. But it does not have “technical” responsibility for D4485.

- Technical responsibility for D4485 is with the two Class Panels..
  - This is different than the Test Method SPs which do have technical responsibility.

The Information Letter system was created to make changes to the Test Method public quickly after the SP agreed to that change. The change is then subsequently balloted through the ASTM system.

Because D4485 takes content from many different ASTM groups, it was hard to fit its updates into the current Information Letter system.

Going forward, changes to D4485 will proceed straight to ASTM ballot.

- Because concurrent with Main D02 Committee, D4485 ballots will follow the ASTM ballot cycle.

There are items that either a CP or the SP have agreed to that will now proceed to ballot targeting the first ballot date in 2026.

Chevron Oronite

Thank you

ADDING UP

Smith, Andrew

From: John G Loop <jgl@astmtmc.org>
Sent: Tuesday, October 22, 2024 9:04 PM
To: Martinez, Josephine
Cc: Birnbaumer, Laura; Birke, Michael A. (mbirke) (SwRI); Dvorak, Todd
Subject: [**EXTERNAL**] RE: RE: RE: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Jo,

I've only calculated these values two times, and the first time was after a brief amount of consultation with Doyle Boese.

Doyle said that the "within lab" values were calculated by creating a model that included "LAB" as a Model Effect. And when I did this using the historical TMC data, the results came close to the results which were originally posted by the TMC when the StDEV's for the variable limits first were calculated (I can only assume by TMC personnel using SAS database computation systems). So, I assumed that Doyle was correct and that this was the way to make these calculations.

The "within lab" standard deviations tend to be smaller than the "whole / all" standard deviation results both historically and for the two previous times I calculated them. I used JMP17 to make a simple model (Analyze -> Fit Model) and did not throw out any datapoints regardless of whether any "appeared' to be outliers. I don't think that any data was thrown out in the original calculations done years ago.

Based upon the process described above, I pulled together the data for HNBR1 (EOECH) dataset and came up with these numbers today:

		VOL	HARD	TENS	ELONG
	AVERAGE	4.13	-1.53	7.74	2.95
Whole	STDEV	0.19	0.60	6.80	10.42
	MAX	4.65	0	20.07	23
	MIN	2.72	-3	-33.9	-34.8
Within Lab		0.16	0.51	5.53	7.72

"Whole" is the straight STDEV calculation of the dataset. "Within Lab" was determined using a JMP17 model (= Root Mean Square Error) with LAB as the only Model Effect.

I can't say that I fully understand the how's/why's of these calculations to get the STDEV's. I just followed the instructions that were provided to me.

So, if you (or Todd) think that this isn't the correct way to make these calculations, please let me know.

Regards,

John

A Program of ASTM International

From: Martinez, Josephine <JoMartinez@chevron.com>
Sent: Tuesday, October 22, 2024 3:04 PM
To: John G Loop <jgl@astmtmc.org>
Cc: Birnbaumer, Laura <LABI@chevron.com>; Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Subject: RE: RE: RE: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Great! Thanks, John! I just downloaded the D4485 and saw the changes in Annex A5.

Trying to calculate the standard deviations for HNBR. Would you be able to calculate this?

What is the **within lab** standard deviation? Is it the variability of the 6 samples within a test run or variability of tests within the lab?

We presented the below total and within lab standard deviations at the SP meeting last week. I thought the n=6 used to calculate standard error in D4485 is the number of tests ran in the RR but it is the number of samples per test run. So I calculated the within test run standard deviations below.

Elastomer		Volume	Hardness	Tensile	Elongation
HNBR	total	0.16	0.52	4.94	9.26
	within lab	0.08	0.39	4.61	8.45
	within run	0.13	0.48	5.73	6.90

Noticed that there are some outliers if you look at individual measurements. See attached.

Regards,
Jo

From: John G Loop <jgl@astmtmc.org>
Sent: Tuesday, October 22, 2024 11:26 AM
To: Martinez, Josephine <JoMartinez@chevron.com>; Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Cc: Birnbaumer, Laura <LABI@chevron.com>
Subject: [**EXTERNAL**] RE: RE: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Hello Jo,

Hope all is well with you.

The current 2024 EOEC standard deviations used to create the adjusted limits are found here. This memo also explains that this practice was recently resumed, but with the new reference oil (SL107).

I do not know who generated the original standard deviations in the 2001 to 2005 timeframe with RO 1006. I did not inherit any files that look like the one you have attached but appreciate getting that file from you today. I had to start from scratch when I generated the standard deviations for 2023 and 2024.

Regards,

John

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From: Martinez, Josephine <JoMartinez@chevron.com>
Sent: Tuesday, October 22, 2024 2:01 PM
To: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>; Dvorak, Todd <Todd.Dvorak@Infineum.com>; John G Loop <jgl@astmtmc.org>
Cc: Birnbaumer, Laura <LABI@chevron.com>
Subject: RE: RE: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Haha thanks, Mike.

John, please see attached. Seems the last update was in 2005.

Regards,
Jo

From: Birke, Mike <mike.birke@swri.org>
Sent: Tuesday, October 22, 2024 10:56 AM
To: Martinez, Josephine <JoMartinez@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>; John Loop <jgl@astmtmc.org>
Cc: Birnbaumer, Laura <LABI@chevron.com>
Subject: [**EXTERNAL**] RE: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Good question! That was way before my time!

Maybe John could ask around at TMC.

John,

Any idea on this one? I'm not that old!

From: Martinez, Josephine
Sent: Tuesday, October 22, 2024 12:48 PM
To: Birke, Mike <mike.birke@swri.org>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Cc: Birnbaumer, Laura <LABI@chevron.com>
Subject: FW: PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

[EXTERNAL EMAIL]
Hi, Mike. Who calculates and updates the attached standard deviations in TMC?

Regards,
Jo

From: Martinez, Josephine
Sent: Thursday, October 3, 2024 9:28 AM
To: Dvorak, Todd <Todd.Dvorak@Infineum.com>; Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>
Cc: Birnbaumer, Laura <LABI@chevron.com>
Subject: RE: [**EXTERNAL**] PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Thanks, Todd!

Laura wants the standard deviations for the update in Annex A5 of D4485. Please see attached current standard deviations. I can calculate these so it can be presented at the SP. Laura can then present it in the Class Panel.

Regards,
Jo

From: Dvorak, Todd <Todd.Dvorak@Infineum.com>
Sent: Wednesday, October 2, 2024 10:46 AM
To: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>; Martinez, Josephine <JoMartinez@chevron.com>
Subject: [**EXTERNAL**] PC12-HNBR-Elastomer-Analysis-10-02-24.pptx

Hi Mike – The attached is the completed HNBR elastomer analysis. Please feel free to distribute.
Thanks
Todd

Smith, Andrew

From: John G Loop <jgl@astmtmc.org>
Sent: Wednesday, July 9, 2025 2:28 PM
To: Birnbaumer, Laura; Birke, Michael A. (mbirke) (SwRI); Martinez, Josephine; Dvorak, Todd
Subject: [**EXTERNAL**] RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

EOECH is the TMC test name for EOEC Hydrogenated Nitrile Butyl Rubber (HNBR-A) – the new elastomer for PC-12

Regards,

John

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From: Birnbaumer, Laura <LABI@chevron.com>
Sent: Wednesday, July 9, 2025 3:19 PM
To: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>; John G Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Subject: RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

John - EOECH?

I will make the changes Jo highlighted below and send the updated Annex A5 to the facilitator so we can get an Information Letter out with the next ASTM ballot.

Thank you all for all of your assistance.

Regards,
Laura Birnbaumer
Automotive Engine Oil
Product Adaptation and Qualification Program Manager
labi@chevron.com

Chevron Oronite Company LLC
100 Chevron Way, 50
Richmond, CA 94572
Tel 510 242 5942

Mobile 510 367 3388
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From: Birke, Mike <mike.birke@swri.org>
Sent: Wednesday, July 9, 2025 12:08 PM
To: John G Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>; Birnbaumer, Laura <LABI@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Subject: [**EXTERNAL**] RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

With confirmation from the Esteemed Stats Group, I agree that a review by the SP is not necessary!

Mike Birke
Southwest Research Institute
Petroleum Products Research Department
Office of Automotive Engineering
(210) 522-5310 Phone

From: John G Loop <jgl@astmtmc.org>
Sent: Wednesday, July 9, 2025 1:57 PM
To: Martinez, Josephine <JoMartinez@chevron.com>; Birnbaumer, Laura <LABI@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Cc: Birke, Mike <mike.birke@swri.org>
Subject: RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

[EXTERNAL EMAIL]
Hello Jo,

Thanks for double checking my work. Glad you caught that typo in EOECH elongation.

Laura:

It is true that this past year's update of the EOEC STDEV's was done without SP review. However, in the previous year the SP was given a chance to look at the STDEVs so that they could review the data since we had just resumed this process of updating the STDEVs annually. I was suggesting that the SP

have a chance to look at the EOECH data since this will be the very first time that the EOECH STDEV's will be published.

However, since Todd & Jo have reviewed this and they are OK with the STDEV numbers (with the one correction), then I am OK with releasing these provided that Chairperson Birke also agrees that the review with SP is not needed (following with the confirmation from Stats Group).

Regards,

John

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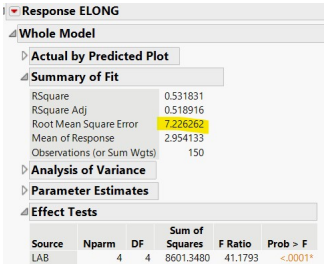
From: Martinez, Josephine <JoMartinez@chevron.com>
Sent: Wednesday, July 9, 2025 2:35 PM
To: Birnbaumer, Laura <LABI@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>; John G Loop <jgl@astmtmc.org>
Cc: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>
Subject: RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

Laura,

Todd and I talked and we are good with John's numbers. Except for a typo with Elongation within-lab stdev – it should be 7.23 instead of 7.72.



Response ELONG

Whole Model

Actual by Predicted Plot

Summary of Fit

RSquare	0.531831
RSquare Adj	0.518916
Root Mean Square Error	7.226262
Mean of Response	2.954133
Observations (or Sum Wgts)	150

Analysis of Variance

Parameter Estimates

Effect Tests

Source	Nparm	DF	Sum of Squares	F Ratio	Prob > F
LAB	4	4	8601.3480	41.1793	<.0001*

A5.5.3 looks good now differentiating candidate oil vs test oil having 6 samples. Thanks for clarifying that.

Then the math in example A5.3 looks good except for MAC Tensile Strength variable limit should be -SL107-8.7

fixed	Volume	Hardness	TS	Elong
NBR	0.5	0.9	4.5	5.4
VMQ	2.5	1.7	4.2	5.6
ACM	0.5	1.4	5.8	8.6
FKM	0.2	1.7	3.3	5.1
MAC	1.5	1.2	4.8	6.4
HNBR	0.2	0.5	5.6	8.5
variable				
NBR	0.6	1.3	6.0	7.3
VMQ	2.0	1.6	5.1	7.1
ACM	0.6	1.9	7.9	11.7
FKM	0.2	1.8	3.2	5.3
MAC	1.9	1.6	6.7	8.5
HNBR	0.2	0.6	6.3	8.8

Elastomer	Volume	Hardness	Tensile Strength	Elongation at Break
Nitrile (NBR)	(+5, -3)	(+7, -5)	(+10, -SL107-30)	(+10, -SL107-17)
Silicone (VMQ)	(+SL107, -3)	(+5, -SL107)	(+10, -45)	(+20, -30)
Polyacrylate (ACM)	(+5, -3)	(+8, -5)	(+18, -15)	(+10, -35)
Fluoroelastomer (FKM)	(+5, -2)	(+7, -5)	(+10, -SL107+2)	(+10, -SL107)
Vamac G (MAC)	(+SL107+2, -3)	(+5, -SL107-2)	(+10, -SL107+2)	(+10, -SL107+10)
Nitrile (NBR)	(+5.5, -3.5)	(+7.9, -5.9)	(+14.5, -SL107-36.0)	(+15.4, -SL107-24.3)
Silicone (VMQ)	(+SL107+2.0, -5.5)	(+6.7, -SL107-1.6)	(+14.2, -49.2)	(-25.6, -35.6)
Polyacrylate (ACM)	(+5.5, -3.5)	(+9.4, -6.4)	(+23.8, -20.8)	(+18.6, -43.6)
Fluoroelastomer (FKM)	(+5.2, -2.2)	(+8.7, -6.7)	(+13.3, -SL107-5.2)	(+15.1, -SL107-5.3)
Vamac G (MAC)	(+SL107+3.9, -4.5)	(+6.2, -SL107-3.6)	(+14.8, -SL107-8.7)	(+16.4, -SL107-18.5)

Regards,
Jo

From: Birnbaumer, Laura <LABI@chevron.com>
Sent: Tuesday, July 8, 2025 1:15 PM
To: Dvorak, Todd <Todd.Dvorak@Infineum.com>; John G Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>
Cc: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>
Subject: RE: [**EXTERNAL**] RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

Thank you Todd and John,

I am really learning a lot about Annex A5 that I did not appreciate before.

The Stats Group was great and calculated the initial Standard Deviations when they analyzed the Targets. In A5 language, the numbers below would be the TOTAL numbers.

I thought the October 2024 calculations were updated calculations from the SG's initial calculations which is why I used them in the 2025 D4485. As Todd said, they seem to be close. And I wanted to be sure I was using the latest Standard Deviations.

I didn't think the EOEC SP approved the TMC yearly Standard Deviations calculations before they were published for lab use. Does that need to happen?

I didn't see any strong objections to using the October 2024 numbers and since labs are starting to run the test, even through there are no limits currently, wanted to get an updated D4485 published. The numbers will be recalculated in January with the other elastomers.

Regards,
Laura Birnbaumer
Automotive Engine Oil
Product Adaptation and Qualification Program Manager
labi@chevron.com

Chevron Oronite Company LLC
100 Chevron Way, 50
Richmond, CA 94572
Tel 510 242 5942

Mobile 510 367 3388
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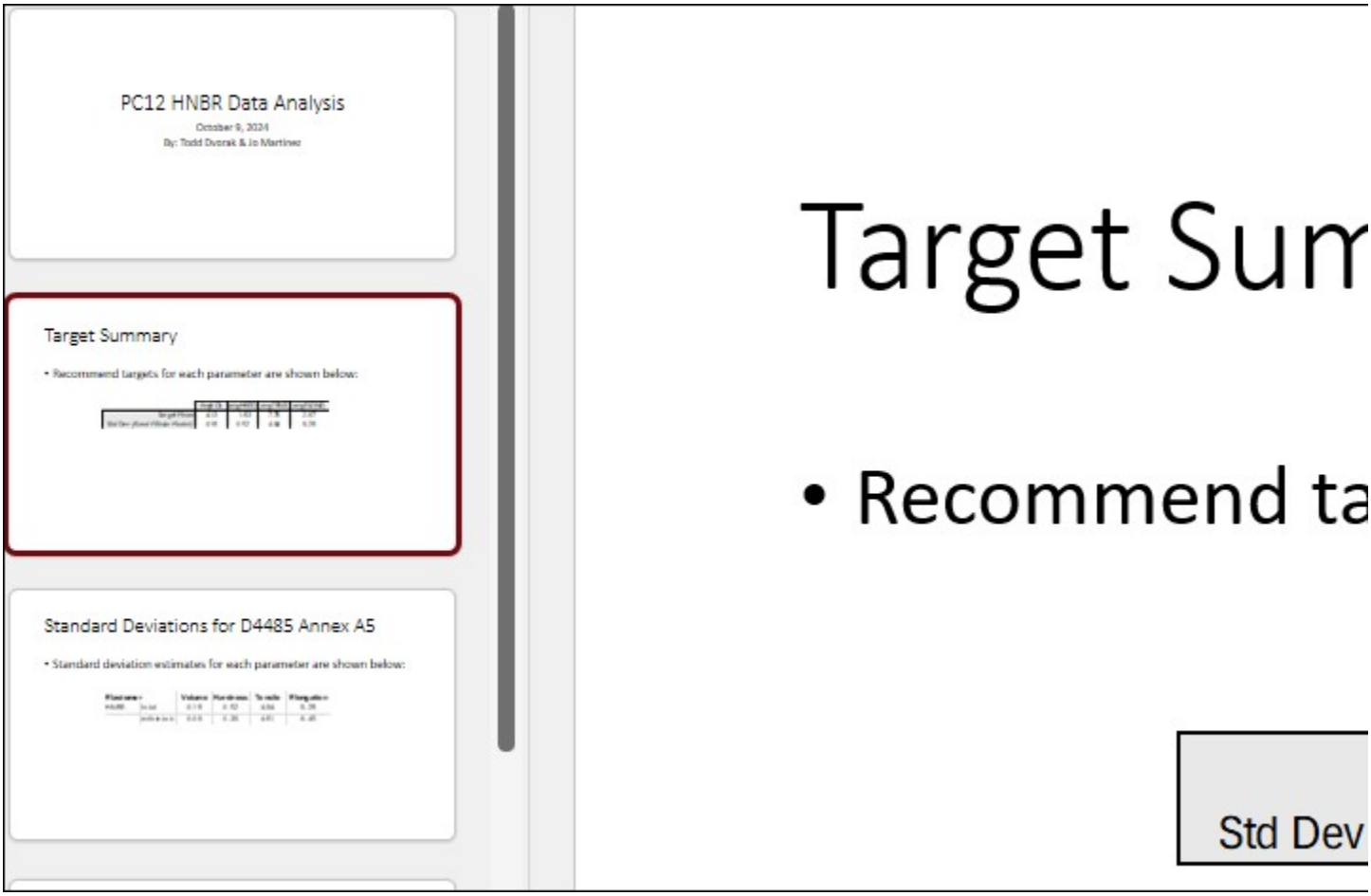
From: Dvorak, Todd <Todd.Dvorak@Infineum.com>
Sent: Tuesday, July 8, 2025 12:53 PM
To: John G Loop <jgl@astmtmc.org>; Birnbaumer, Laura <LABI@chevron.com>; Martinez, Josephine <JoMartinez@chevron.com>
Cc: Birke, Michael A. (mbirke) (SwRI) <mike.birke@swri.org>
Subject: [**EXTERNAL**] RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

Hi John – It looks like Jo and I worked on this last October. (The document filename is "PC12-HNBR-Elastomer-Analysis-10-09-24.pptx.") The Targets and standard deviations in your worksheet seem to match up with the Target summary. As such, I'm ok with publishing the targets and standard deviations.
Thanks-
Todd



From: John G Loop <jgl@astmtmc.org>
Sent: Tuesday, July 8, 2025 2:09 PM

To: Birnbaumer, Laura <LABI@chevron.com>; Martinez, Josephine <JoMartinez@chevron.com>; Dvorak, Todd <Todd.Dvorak@Infineum.com>
Cc: Birke, Mike <mike.birke@swri.org>
Subject: RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

*** External Email - Think Before You Click ***

Laura, Jo and Todd,

Regarding:

John – I have an October 22, 2024 email from you to Jo, Mike Birke and Todd Dvorak and me with initial standard deviations for the new HNBR1. I put these standard deviations in D4485. Are these ok or do you have other ones you want to publish?

I looked through all of my EOEC meeting notes and I could not find where the EOEC SP reviewed the data I sent to you in my email of October 2024 (for the STDEV's for the new EOECH elastomer type). Therefore, I can't say that the STDEV's for EOECH have officially been confirmed.

I have attached the EOECH Round Robin dataset and my analysis with the STDEV's estimates on SHEET1. I suggest that Jo and/or Todd give it a quick look-over and if there is agreement, then we can put these STDEV estimates in front of the EOEC SP for official approval and publication.

Regards,

John

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From: Birnbaumer, Laura <LABI@chevron.com>
Sent: Tuesday, July 8, 2025 11:42 AM
To: Donndelinger, Vince <Vince.Donndelinger@Lubrizol.com>; John G Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>; slclark@comcast.net
Subject: RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

Thanks Vince.

Laura Birnbaumer
Automotive Engine Oil
Product Adaptation and Qualification Program Manager
labi@chevron.com

Chevron Oronite Company LLC

100 Chevron Way, 50
Richmond, CA 94572
Tel 510 242 5942
Mobile 510 367 3388
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From: Donndelinger, Vince <Vince.Donndelinger@Lubrizol.com>
Sent: Tuesday, July 8, 2025 6:04 AM
To: Birnbaumer, Laura <LABI@chevron.com>; John Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>; slclark@comcast.net
Subject: [**EXTERNAL**] RE: D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

Laura,

Annex A5 looks good to me. I like the candidate oil clarifications and the reference to D7216 for clarification of the 6 specimens.

Thank you,

Vince

Vince Donndelinger (VIDN)
Analytical Chemist
Blend Test Services (BTS)

The Lubrizol Corporation
29400 Lakeland Boulevard
Wickliffe, OH 44092
1-440-347-6589
vince.donndelinger@lubrizol.com

From: Birnbaumer, Laura <LABI@chevron.com>
Sent: Monday, July 7, 2025 9:36 PM
To: John Loop <jgl@astmtmc.org>; Martinez, Josephine <JoMartinez@chevron.com>; Donndelinger, Vince <Vince.Donndelinger@Lubrizol.com>; slclark@comcast.net
Subject: [EXTERNAL] D4485-24 Master Copy (Sid Annex A5 Update) 2025.doc starts on page 26

John, Jo, Vince and Sid,

I have updated and hopefully clarified Annex A5, Adjusted Limits, of D4485. Annex 5 starts on page 26 and the changes are in purple.

Vince – did I incorporate all of the clarifications we had talked about? Is there anything else now that you see the full Annex.

Jo – please read the new A.5.5 and see if that makes it clearer why the number of observations is 6. Please also check my math in Table A5.3 – as you requested.

John – I have an October 22, 2024 email from you to Jo, Mike Birke and Todd Dvorak and me with initial standard deviations for the new HNBR1. I put these standard deviations in D4485. Are these ok or do you have other ones you want to publish?

Please respond by July 15 so I can make the next ASTM ballot deadline with an Information Letter.

Thanks for all your help in making D4485 the best it can be.

Regards,
Laura Birnbaumer
Automotive Engine Oil
Product Adaptation and Qualification Program Manager
labi@chevron.com

Chevron Oronite Company LLC
100 Chevron Way, 50
Richmond, CA 94572
Tel 510 242 5942
Mobile 510 367 3388
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TO: Mike Kasimirsky
From: Sid Clark
Subj: Information Letter D4485-24-il2 2025 (Annex A5 Updates for Reference Oil SL107)
Date: ~~8/20/2025~~ 8/26/2025

A5. PROCEDURE FOR DERIVING ELASTOMER COMPATIBILITY ADJUSTED SPECIFICATION LIMITS FOR DIESEL ENGINE OIL CATEGORIES

A5.1 Background

A5.1.1 This annex describes a statistical method to account for the inherent test variability in the elastomer compatibility test method. The need to take account of the inherent test variability arises in part because batch-to-batch, sheet-to-sheet and within-sheet variations in the properties of the reference elastomers (the four elastomers listed for the CI-4 category in Table 3, the five elastomers listed for the CJ-4 category in Table 4, the CK-4 category in Table 5, and the FA-4 category in Table 6) can be sufficiently large that they complicate making a decision as to whether or not a candidate oil has passed the elastomer compatibility requirements.

A5.1.2 Applying this statistical method to the unadjusted specification limits noted in Tables 3 - 6 produces the adjusted specification limits. *Passing* candidate-oil results shall lie within the range defined by the adjusted specification limits.

A5.1.3 The statistical method for determining the adjusted specification limits uses updated information about the industry test variability relevant to the time frame in which the candidate oil is tested. The TMC provides the updated information based on test results obtained by different test laboratories with different batches of reference elastomers on the same TMC SL107 reference oil.

A5.2 Unadjusted Specification Limits

A5.2.1 The unadjusted specification limits are shown for the CJ-4 category in Table 4. (These are reproduced in Table A5.1 for comparison purposes.) The test method involves twenty criteria. These criteria are the unadjusted specified limits for the four elastomer types (nitrile, silicone, polyacrylate, fluoroelastomer and vamac), with changes in four properties (volume, hardness, tensile strength and elongation at break). (The unadjusted specification limits are shown for the CI-4 category in Table 3, the CK-4 category in Table 5, and the FA-4 category in Table 6.)

TABLE A5.1 Unadjusted Specification Limits for the Elastomer Test Method as Part of the CJ-4 Engine Oil Category

Elastomer	Volume Change, %	Hardness Change, Points	Tensile Strength Change, MPa	Elongation at Break Change, %
Nitrile (NBR)	(+5, -3)	(+7, -5)	(+10, -SL107-30)	(+10, -SL107-17)
Silicone (VMQ)	(+SL107, -3)	(+5, -SL107)	(+10, -45)	(+20, -30)
Polyacrylate (ACM)	(+5, -3)	(+8, -5)	(+18, -15)	(+10, -35)
Fluoroelastomer (FKM)	(+5, -2)	(+7, -5)	(+10, -SL107+2)	(+10, -SL107)
Vamac G (MAC)	(+SL107+2, -3)	(+5, -SL107-2)	(+10, -SL107+2)	(+10, -SL107+10)

A5.3 Adjusted Specification Limits

A5.3.1 The adjusted specification limits are calculated by adjusting the numerical limits in Tables 3 - 6 (referred to as *fixed limits*), and the TMC SL107 limit in Tables 3 - 6 (referred to as a *variable limit*). The reference oil TMC SL107 is run in parallel with the candidate oil as a control for each experiment. The TMC SL107 limit ties back to the original TMC 1006 performance; it is this tie-back that accounts for the additional +/- adjustment to the performance of TMC SL107.

A5.3.2 The adjusted specification limits are determined as the unadjusted specification limits plus (in absolute terms) an amount to account for test variability.

A5.4 Inherent Test Variability

A5.4.1 Table A5.2 shows the initial TMC SL107 standard deviation estimates of the five reference elastomers and the four performance parameters, as reported by the TMC. The standard deviation estimates, applicable at the time a test oil is evaluated, are obtained from the TMC website (https://www.astmtmc.org/ftp/docs/d4485/D7216_Adjusted_Specification_Limit_Data/). With the introduction of

SL107 Adjusted Specification Limits in 2023, the standard deviation took into account the data to date. Starting in 2025, the standard deviation will take into account a rolling 24 months of data and will be updated annually in February.

TABLE A5.2 Total and Within-Laboratory Standard Deviation Estimates for the Four Reference Elastomers[A, C]

Elastomer		Volume Change	Hardness Change	Tensile Strength Change	Elongation at Break Change
Nitrile (NBR)	Total	0.57	1.16	5.53	6.57
Nitrile (NBR)	Within-Lab	0.53	1.12	5.22	6.36
Silicone (VMQ)	Total	3.08	2.13	5.14	6.82
Silicone (VMQ)	Within-Lab	1.72	1.40	4.42	6.18
Polyacrylate (ACM)	Total	0.57	1.70	7.14	10.50
Polyacrylate (ACM)	Within-Lab	0.54	1.63	6.93	10.24
Fluoroelastomer (FKM)	Total	0.21	2.14	4.02	6.20
Fluoroelastomer (FKM)	Within-Lab	0.20	1.58	2.82	4.64
Vamac G (MAC)	Total	1.88	1.46	5.82	7.84
Vamac G (MAC)	Within-Lab	1.69	1.37	5.84	7.44
Hydrogenated Nitrile Butyl (HNBR)	Total	0.19	0.60	6.80	10.42
Hydrogenated Nitrile Butyl (HNBR)	Within-Lab	0.16	0.51	5.53	7.23

[A] All data for Nitrile, Silicone, Polyacrylate, Fluoroelastomer and Vamac collected for EOEC Calibration runs using SL107 reference oil through December 31, 2023. Data is active through January 31, 2025. For future Standard Deviation Estimates, see "https://www.astmtmc.org/ftp/docs/d4485/D7216_Adjusted_Specification_Limit_Data/".

[C] Data for Hydrogenated Nitrile Butyl collected for EOEC Calibration runs using SL 107 reference oil through October 22, 2024. Data active through January 31, 2026. For future Standard Deviation Estimates, see https://www.astmtmc.org/ftp/docs/d4485/D7216_Adjusted_Specification_Limit_Data/".

A5.5 **Adjusted Specification Limits—Calculations**

A5.5.1 *Calculation of Fixed Limits:*

A5.5.1.1 Calculate the standard error of the candidate-oil mean by dividing the appropriate *total standard deviation* estimate by the square root of the number of observations in the test sample. The number of observations in the test sample, in the absence of outliers, is six.[B]

A5.5.1.2 Multiply the standard error of the candidate-oil mean by 2.0.

A5.5.1.3 Add or subtract the resulting number to or from the respective upper or lower unadjusted specification limits to obtain the *fixed* adjusted specification limit(s).

A5.5.2 *Calculation of Variable Limits:*

A5.5.2.1 Calculate the standard error of the candidate-oil mean by dividing the appropriate *within-lab standard deviation* estimate by the square root of the number of observations in the test sample. The number of observations in the test sample, in the absence of outliers, is six.[B]

A5.5.2.2 Multiply the standard error of the ~~test~~ candidate -oil mean by 2.8.

A5.5.2.3 Add or subtract the resulting number to or from the mean result obtained with TMC SL107 (run in parallel with the test oil) to obtain either the upper or lower *variable* adjusted specification limit.

[B] Refer to ASTM D7216 Standard Test Method for Determining Automotive Engine Oil Compatibility with Typical Seal Elastomers

A5.5.3 Table A5.3 shows an example of the calculated adjusted specification limits.

TABLE A5.3 An Example of Adjusted Specification Limits for the Four Reference Elastomers—Applicable for the Period February 1, 2024 to January 31, 2025[D]

Elastomer	Volume Change, %	Hardness Change, Points	Tensile Strength Change, %	Elongation at Break Change, %
Nitrile (NBR)	(+5.5, -3.5)	(+7.9, -5.9)	(+14.5, -SL107-36.0)	(+15.4, -SL107-24.3)
Silicone (VMQ)	(+SL107+2.0, -5.5)	(+6.7, -SL107-1.6)	(+14.2, -49.2)	(-25.6, -35.6)
Polyacrylate (ACM)	(+5.5, -3.5)	(+9.4, -6.4)	(+23.8, -20.8)	(+18.6, -43.6)
Fluoroelastomer (FKM)	(+5.2, -2.2)	(+8.7, -6.7)	(+13.3, -SL107-5.2)	(+15.1, -SL107-5.3)
Vamac G (MAC)	(+SL107+3.9, -4.5)	(+6.2, -SL107-3.6)	(+14.8, -SL107-8.7)	(+16.4, -SL107-18.5)

[D] Based on unadjusted specification limits, standard deviation estimates shown in Table A5.2, and six observations in all cases.

A5.6 Comparison of Unadjusted and Adjusted Specification Limits

A5.6.1 Table A5.1 reproduces the unadjusted specification limits for comparison with the above adjusted specification limits.

Ballot Issue Date: 10/24/2025 **Closing Date:** 11/23/2025

Staff Manager: Alyson Fick

Next Sub Committee Meeting Is 12/11/25 In Houston, Tx
Revisions, New Standards And Withdrawals Without Negatives Will Be On Next Main Committee Ballot

SUBCOMMITTEE OFFICERS:

SUB CHAIR		Joseph M Franklin
SUB V-C		Dennis Gaal

BALLOT STATISTICS:

Committee	Sent	Returned	% Returned
D02.B0	158	95	60.12

Item	Sub	Action		Committee	AFF	NEG	ABST	PCNT
001	B0	REVISION D4485-2024 Specification for Performance of Active API Service Category Engine Oils		D02.B0	38.00	0.00	57.00	100.00
		TECHNICAL CONTACT: Shawn D Whitacre						
		WORK ITEM: WK96777						
		new tables 7 & 8						

Negative Voters:

* Yong Li McFarland

Comments:

Brent Calcut
Michael Deegan
Dennis Gaal
Greer Gibbons
* William Howard ORyan

* INDICATES NON-OFFICIAL VOTING MEMBER

Negative

Ballot Number:	D02.B0 (25-04)	Close Date: NOVEMBER 23, 2025
Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
Member's Name:	Yong Li McFarland	
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Phone Nr:	522 2715	Fax Nr:
Email Address:	yongli.mcfarland@swri.org	
File Attachment:		
Statement:		

Section	**Statement**
Table 8 Bench Tests	In the FB-4 Category Bench Tests of Table 8, under the HTCBT (D6594), the temp is listed as 135 degrees F, where it should be listed as 135 degrees C. This would match the units for the test in Table 7 for HTCBT.

Affirmative with comment

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Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
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Phone Nr:	350-0640	Fax Nr:
Email Address:	brent.calcut@aftonchemical.com	
File Attachment:		
Statement:		

Section	**Statement**
Sect. 6, A8 and X2	In addition to Tables 7 and 8, several other Sections within D4485 need updating including adding Section 6.10 with new engine tests, adding Annex A8 with MTAC for CL-4 and FB-4 and adding X2.14 and X2.15 with API Descriptions.

Affirmative with comment

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Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
Member's Name:	Michael Deegan	
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Statement:		

Section	**Statement**
Introduction	ILSAC should be known as (International Lubricant Specification and Advisory Committee)
ILSAC GF-7a/b	Need to work on adding the new ILSAC GF-7a/b API SQ to the existing document.

Affirmative with comment

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Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
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Email Address:	DENNIS.A.GAAL@EXXONMOBIL.COM	
File Attachment:		
Statement:		

Section	**Statement**
Table 8	HTCBT, 135 °F (D6594) contains a typo and should be °C vs °F
Table 8	ISB Soot Viscosity (D8617 ISBV108) [F] - this would be more complete if method was listed as (D8617, Annex A9 ISBV108) and the footnote is likely not needed with this change as Annex A9 specifies the calibration requirements as relates to the ISBV108 test.
Table 8	Footnote F should be relabeled as Footnote E, as the Footnotes for Table 8 go from D to F.
Table 8, Footnote F	We believe this footnote as written can be misinterpreted as indicating that the ISBV108 results always need to come from a dual registered stand and/or that a valid result can be calculated from an ISBV156 test/report. We understand the clarification that was desired by NCDT members that resulted in this footnote. We believe the appropriate wording for this footnote would be "Results must be from a registered ISBV108 test. See D8617, Annex A9 for additional information about ISBV108".

Affirmative with comment

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Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
Member's Name:	Greer Gibbons	
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Email Address:	grgi@lubrizol.com	
File Attachment:		
Statement:		

Section	**Statement**
General	General comment: Confirm API category designations will be CL-4 and FB-4
T-13	Editorial: For the T-13, the parameter Avg. Oil Consumption, 48 h to 192 h, g/h, max - the max at the end should be removed since it's a report field (alternatively, replace max with average) This applies to both CL-4 and FB-4 tables 7 and 8
Footnote A	1. COAT footnote A should either be removed or included into Annex A7 2. Annex A7 is specific to CK-4, FA-4 MTEP and C13 and ISM Merit. Annex A7 either needs to be updated to include new categories (and action/decision from item 1 COAT) or a new annex A8 needs to be written. Preference would be to keep historical precedent and write a new Annex A8 for CL-4 or FB-4 MTEP and C13 and ISM merit calculations.
Sooted Oil MRV TP-1	This applies to both CL-4 and FB-4 tables 7 and 8 Question: Do we need to include "ISBV108" into the header? Should footnote D include result can come from either valid 108 or 156 stand and need dual calibrated stand requirement?
Sulfur	This applies to both CL-4 and FB-4 tables 7 and 8 Editorial: Split sulfur and phos requirement. Sulfur has D2622 as an acceptable method that should be included as well.
FB-4 ISBV108	This applies to both CL-4 and FB-4 tables 7 and 8 Limits question: Original strawpoll values were 4.8 / 4.6 / 4.5. Did FB-4 need to include the updated Z values and repeatability from RO822 since the T-11 concern was on CL-4?
General	For remainder of D4485 - what is process to approve updating footnotes of API S categories to include CL-4 and FB-4?

Affirmative with comment

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Item Number:	001	Revision Of D4485-2024 Specification for Performance of Active API Service Category Engine Oils WK96777 new tables 7 & 8(SEE VOLUME 05.02) TECHNICAL CONTACT: Shawn D Whitacre ShawnWhitacre@chevron.com (510) -24-2-35
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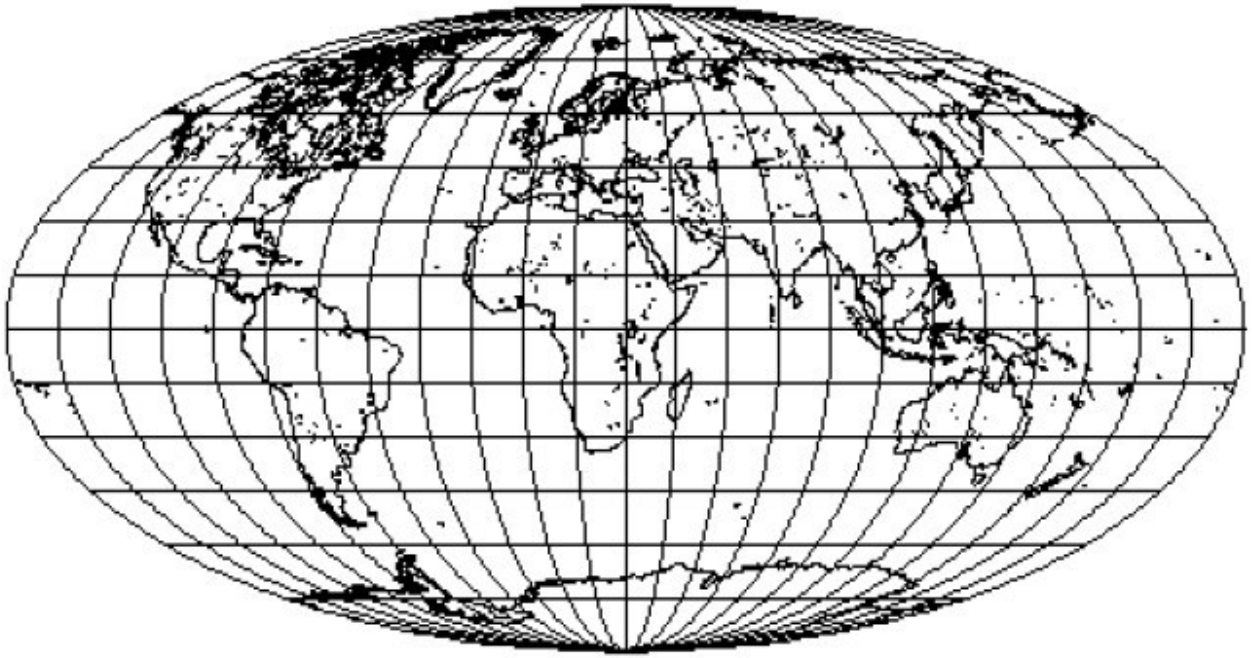
File Attachment:	1964159_D02B0000425_1.pdf	
Statement:		

Section	**Statement**
Introduction	ILSAC is no longer referred to as "International Lubricant Standardization and Approval Committee (ILSAC)" and should be revised to read "International Lubricant Specification Advisory Committee (ILSAC)" or alternately, "...such as International Lubricant Specification Advisory Committee (formerly International Lubricant Standardization and Approval Committee (ILSAC)". Introduction included here for reference and the pertinent text italicized and bolded for emphasis: "This specification covers all the currently active American Petroleum Institute (API) engine oil performance categories that have been defined in accordance with the ASTM consensus process. There are organizations with specifications not subject to the ASTM consensus process, such as the **International Lubricant Standardization and Approval Committee (ILSAC)**, American Petroleum Institute (API – SM, SN, SP Specifications), and the Association des Constructeurs Europeans d'Automobiles (ACEA). Certain of these specifications, which have been defined primarily by the use of current ASTM test methods, have also been included in the Appendixes for information."

INTERNATIONAL LUBRICANT SPECIFICATION
ADVISORY COMMITTEE



ILSAC GF-7A RECOMMENDATIONS FOR PASSENGER CAR ENGINE OILS