TMC TEST MONITORING CENTER | POWERED BY ASTM INTERNATIONAL

D02.B0.07 Semi-Annual Report Bench Test Monitoring

D874 (SASH), D5133 (GI), D5800 (NOACK), D6082 (HT FOAM), D6335 (TEOST), D6417 (GC VOL), D6557 (BRT), D6594 (HTCBT), D6794 (EOWT), D6795 (EOFT), D7097(MTEOS), D7216 (EOEC/LDEOC), D7528 (ROBO), and D8665 (EOGT)

April 1, 2026 – September 30, 2026

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Section	Topic		
Summary Items	Executive	Reference Oil Inventories	Additional Information
Section	Topic		
Test Area Status	**TEST**	**LABS***	**STANDS***
Sulfated Ash	D874	6 (+1)	N/A
Gelation Index (GI)	D5133	9 (+1)	44 (+1)
NOACK Volatility	D5800	13 (+0)	37 (-2)
High Temp Foam	D6082	8 (+1)	11 (+2)
TEOST	D6335	9 (+3)	16 (+4)
GC Volatility	D6417	7 (+0)	10 (+0)
* Between 4/1/2026 and 9/30/2026			

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Section	Topic		
Test Area Status (cont.)	**TEST**	**LABS***	**STANDS***
Ball Rust Test (BRT)	D6557	5 (+0)	5 (+0)
HTCBT	D6594	8 (-1)	24 (-1)
EOWT	D6794	6 (+0)	N/A
EOFT	D6795	6 (+0)	N/A
MTEOS	D7097	12 (+2)	36 (+3)
EOEC Elast. Compat.	D7216-E	8 (-1)	N/A
LDEOC Elast. Compat.	D7216-L	9 (+0)	N/A
ROBO	D7528	6 (+0)	32 (-3)
EOGT	D8665	2 (New Test)	N/A
* Between 4/1/2026 and 9/30/2026			

B0.07 Bench Testing Executive Summary

–D874 (Sulfated Ash)

– No failing calibration runs this period for D874. Reference test results were found to be on-target this semester. Final targets established for new Reference Oil 92.

–D5133 (Gelation Index)

– One additional lab and one more stand were calibrated this semester. Calibration testing remains mild with performance at -0.59s (-0.60s last period).

–D5800 (NOACK)

– Same number of labs, but two fewer rigs calibrated this semester. Precision remained similar to last semester, and Performance is more severe (0.50 s) versus (0.25 s) last period. All units are now NS2 (Procedure D) or NCK25G (Procedure B) units.

B0.07 Bench Testing Executive Summary

- D6082 (High Temperature Foam)
  - One new lab with two new stands added this period. Test is now trending Slightly Mild (-0.19s).
- D6335 (TEOST)
  - Three new labs and four additional stands were calibrated this semester. Performance (+0.33) has moved less severe this semester versus last semester (+0.71). Precision improved (10.76s) towards target and fail rate dropped significantly (15.8%) versus last semester (30.3%).
- D6417 (GC Volatility)
  - Number of Labs and Stands did not change since semester. Precision remains consistent and on-target. Severity is close to target, and similar to last semester.
- D6557 (BRT)
  - All calibrations continue to be run on RO 1006 only. A re-write of the procedure to add Gen 3 analysis system has been completed and an Information Letter issued. However, additional work is being conducted to determine if the new Gen 3 analysis system is more severe than the previous systems.

B0.07 Bench Testing Executive Summary

–D6594 (HTCBT)

– One fewer lab and stand was calibrated this semester. Labs have moved to Batch P coupons. Precision and Performance both regressed slightly for Copper. However, Precision and Performance both improved for Lead results.

–D6794 (EOWT)

– Same number of calibrated labs this semester. Surveillance Panel changed the calibration requirement to be based upon a 30-day period (not one with each candidate batch). RO79 is now exclusively used for EOWT Testing. However, a replacement for Reference Oil 79 still needs to be identified.

–D6795 (EOFT)

– Same number of calibrated labs this semester. Surveillance Panel changed the calibration requirement to be based upon a 30-day period (not one with each candidate batch). Reference Oil 88 has replaced Reference Oil 79 as the exclusive EOFT Reference oil.

B0.07 Bench Testing Executive Summary

–D7097 (MTEOS)

– Two added labs, and three more stands were calibrated this semester. Precision regressed to 9.18s, but Performance (Severity) stayed steady this period at 0.73s (0.71s last semester). All operationally valid tests this period report using Rod Batch N and Catalyst Batch 23AB.

–D7216 (EOEC)/D7216 (LDEOC)

– All calibrations are using Ref Oil SL107. One fewer lab calibrated EOEC elastomers this semester, and same number of labs calibrated LDEOC. A re-write of the D7216 procedure was completed in 2026, and additional updates have been added by the Surveillance Panel this semester. These changes are available in a published Information Letter.

–D7528 (ROBO)

– Same number of labs, but three fewer stands calibrated this semester. Precision remained steady at 0.23 (target 0.15). Performance (Severity) crossed over to slightly mild (-0.12).

–D8665 (EOGT)

– New Industry Bench Test. Four test results available from two labs.

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D02.B0.07
TMC Monitored Tests

ASTM D 874

Sulfated Ash

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change shown in parentheses)

Test	Labs	Stands
D874	6 (+1)	N/A
*As of 9/30/2026		

D874: Sulfated Ash

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	12
Unacceptable Calibration Test	OC	0
Informational Runs	MN/NN	1
Total		**13**

Number of Labs Reporting Data: 6

Fail Rate of Operationally Valid Tests: 0%

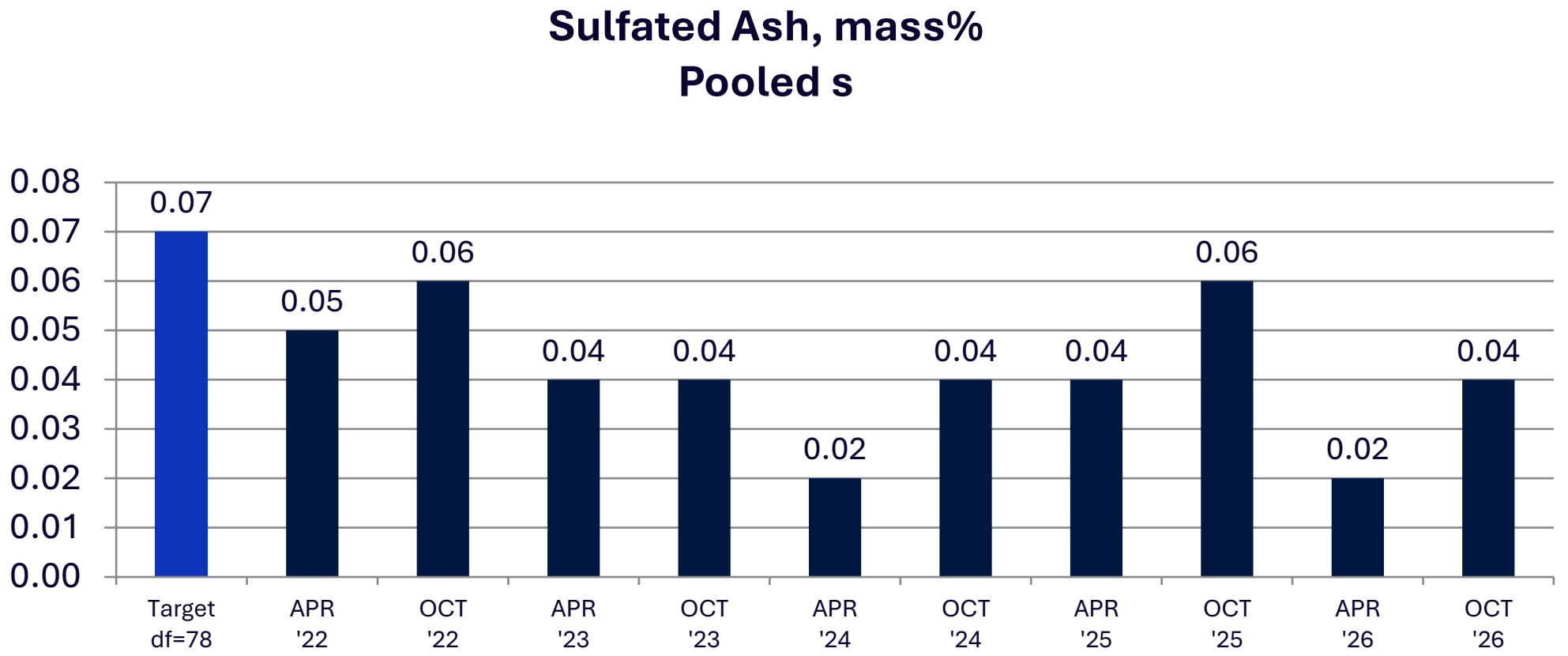
April 1, 2026 – September 30, 2026

D874: Sulfated Ash

Statistically Unacceptable Tests (OC)	No. Of Tests
Failing Calibrations	0

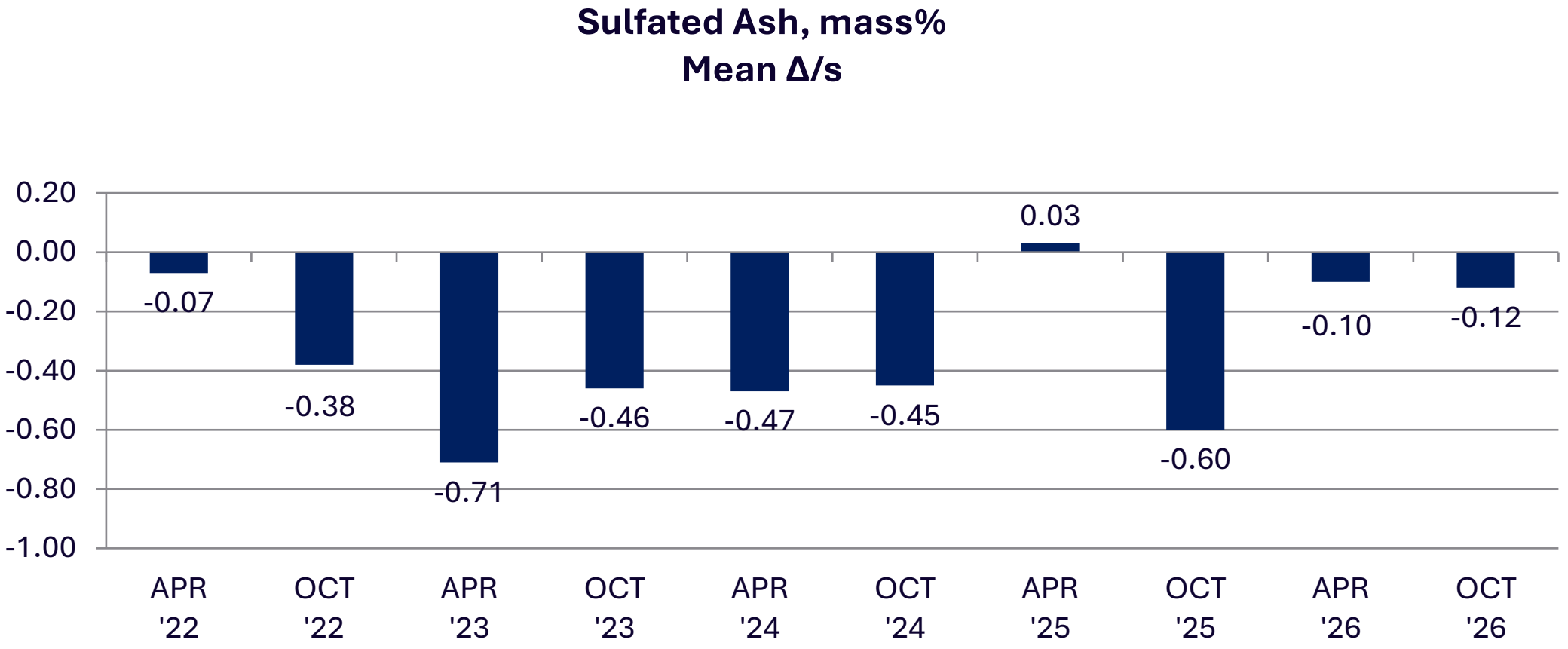
- No statistically unacceptable tests this report period.

D874: Sulfated Ash

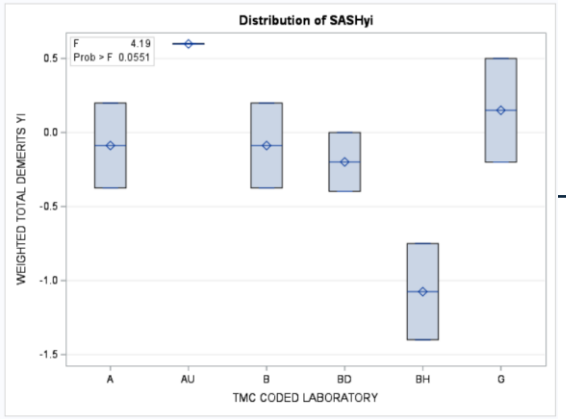


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D874: Sulfated Ash

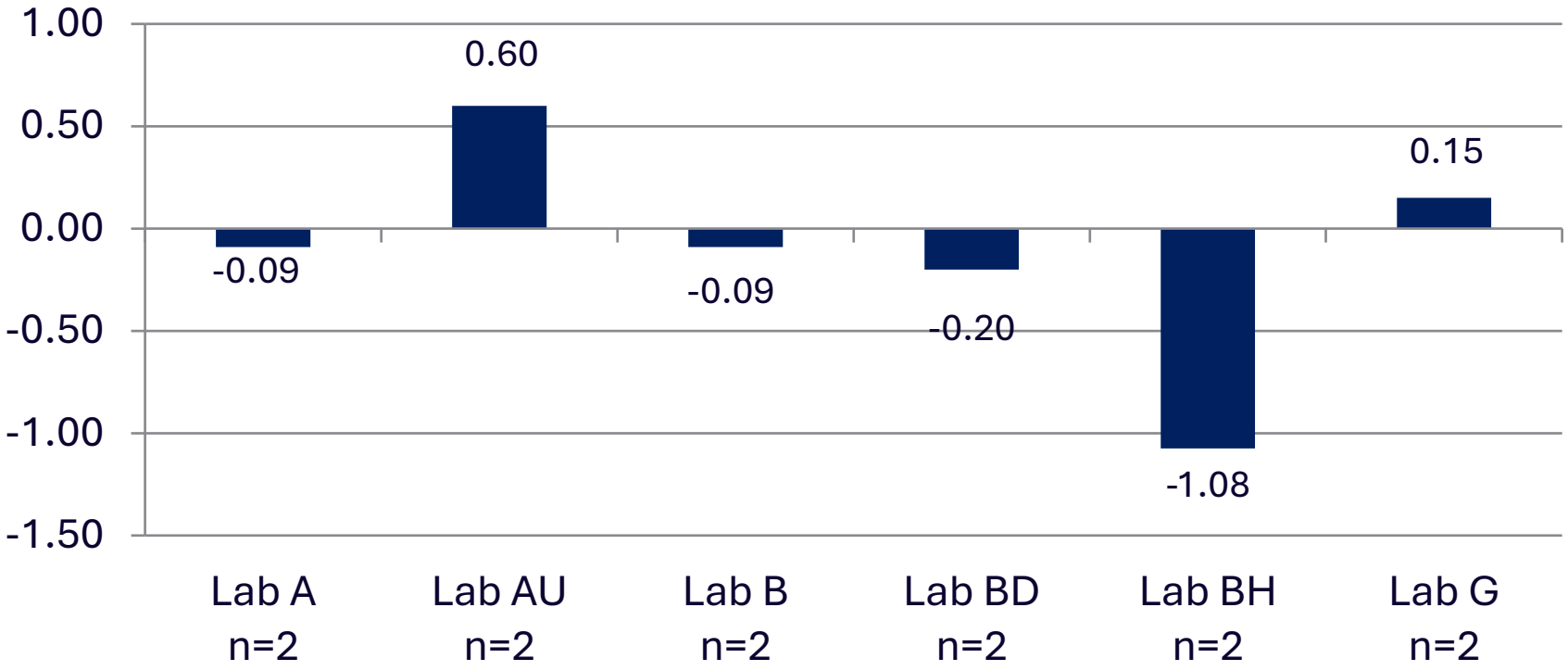


April 1, 2026 – September 30, 2026



D874: Sulfated Ash

Sulfated Ash, mass%
Mean Δ/s



April 1, 2026 – September 30, 2026

D874 (Sulfated Ash) Status

- Precision (Pooled s) improved slightly to 0.04 this semester.
- Performance (Mean Δ/s) at -0.12 was similar to last semester (-0.10).
- Only one Reference Oil 90 Calibration Sample is available for assignment. Reference Oil 90 assignments will conclude in the October2026-March2027 semester.
- Reference Oil 92 replaces Reference Oil 90 has been also been designated as the DailyQC fluid. Final targets were established for Reference Oil 92.

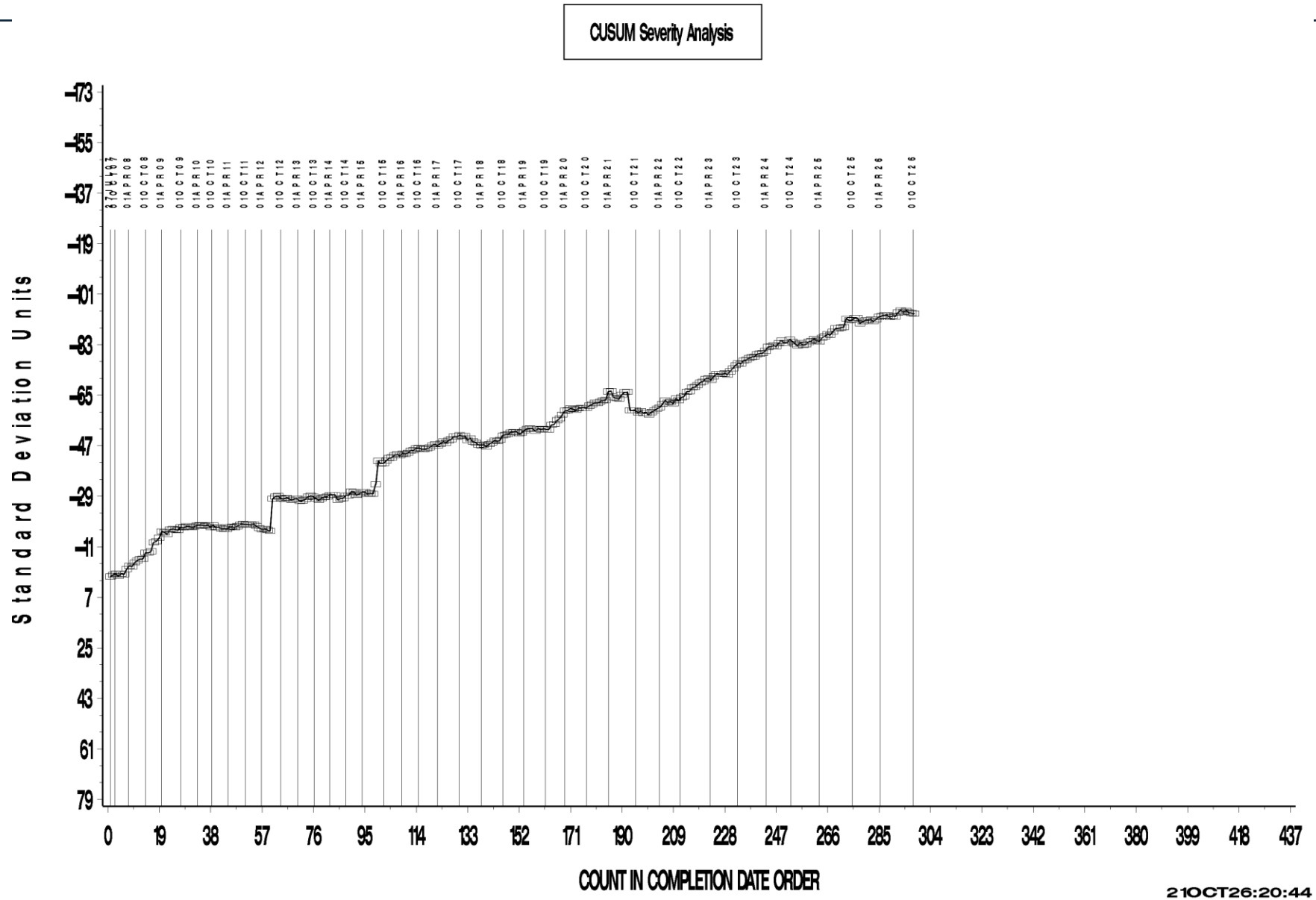
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D874 (Sulfated Ash) Technical Documents

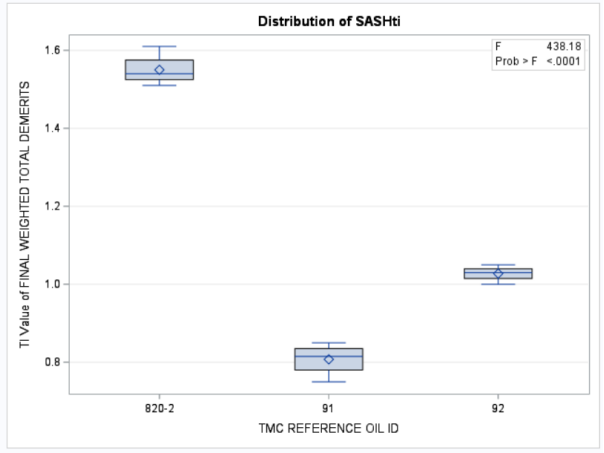
D874 Information Letters or Memos reported this semester

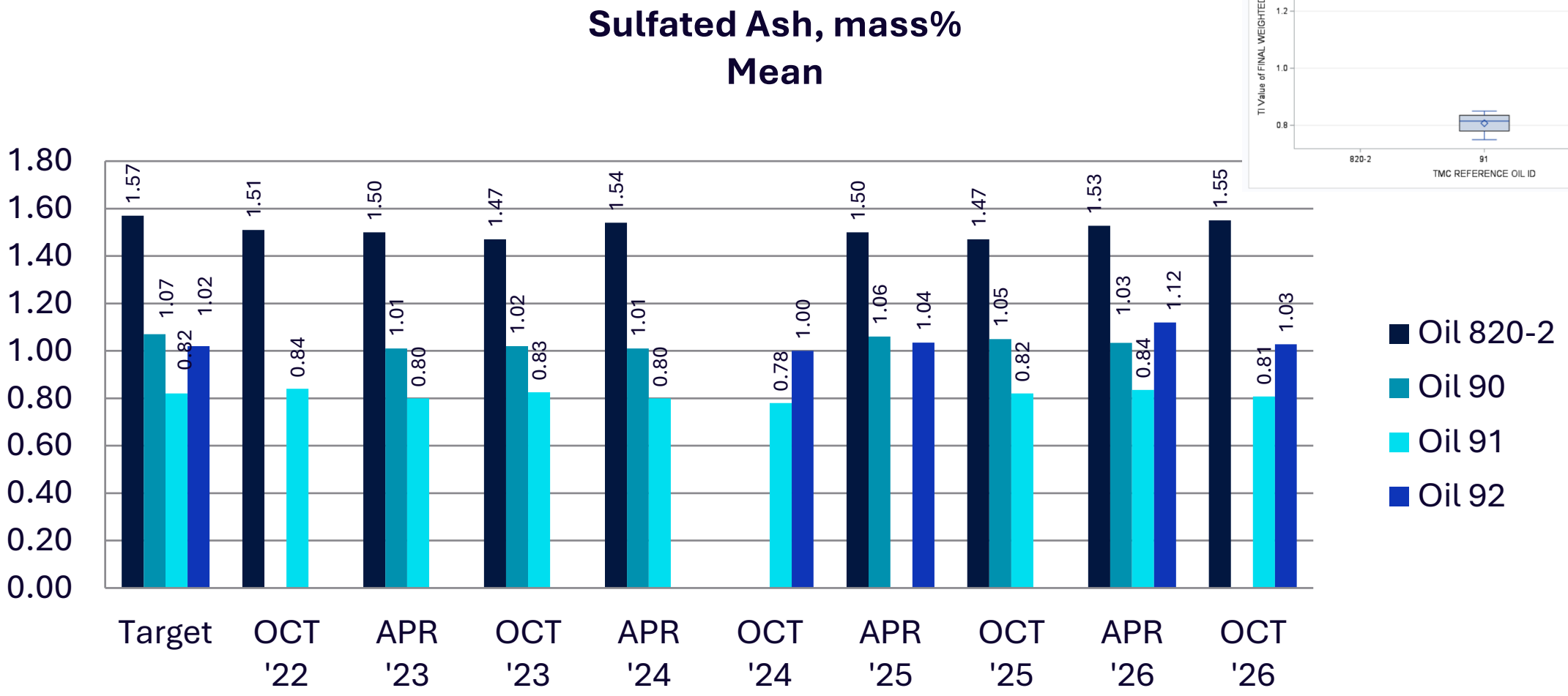
There were no Information Letters or Memos reported for D874 this semester.

D874 INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
TEST SAMPLE PERCENT SULFATED ASH



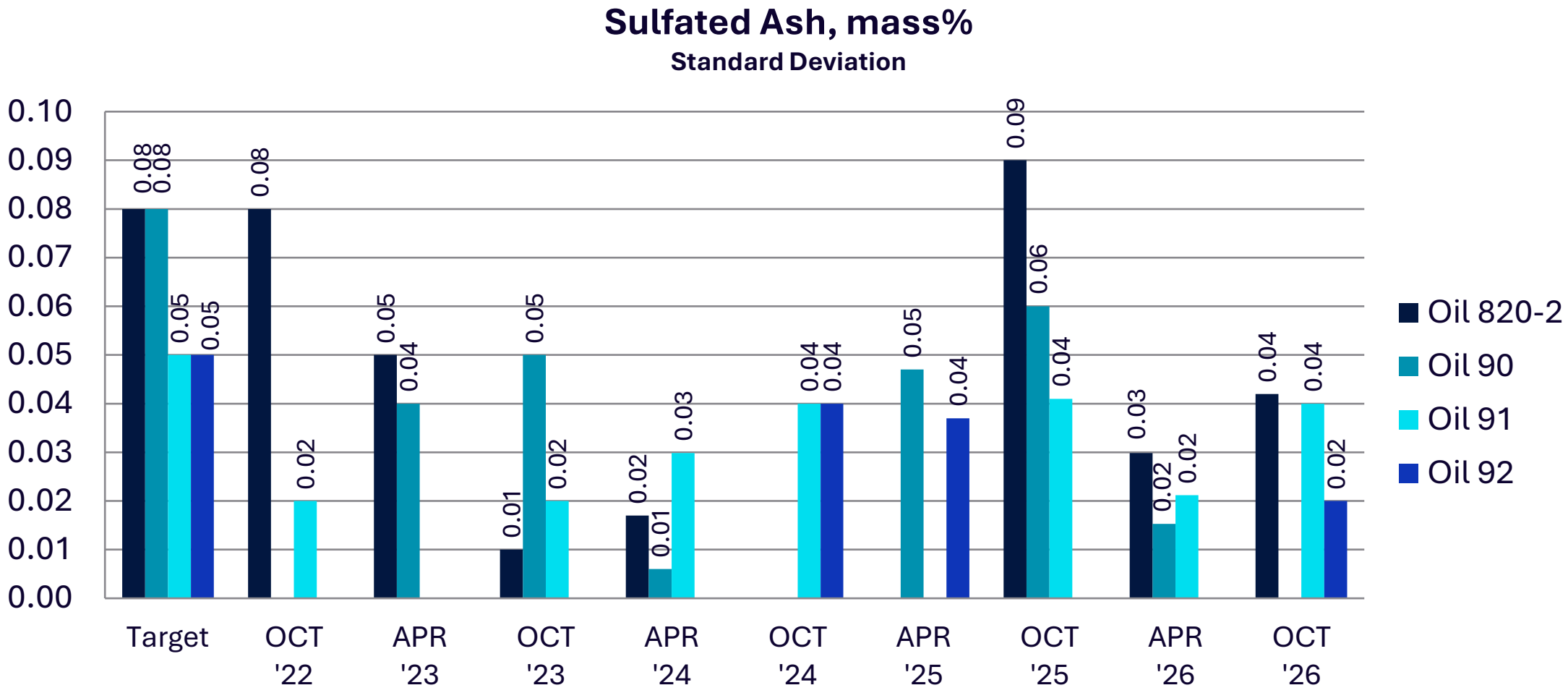
D874: Sulfated Ash





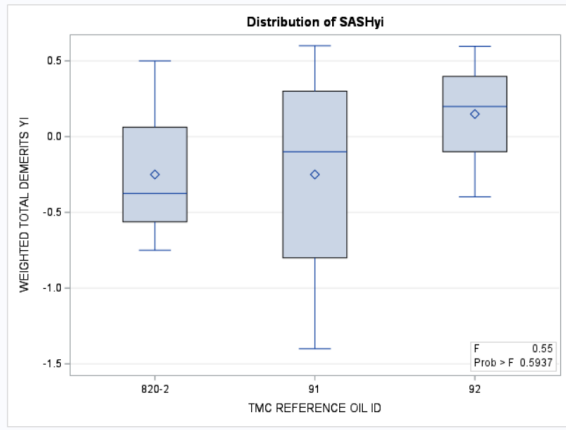
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D874: Sulfated Ash



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D874: Sulfated Ash



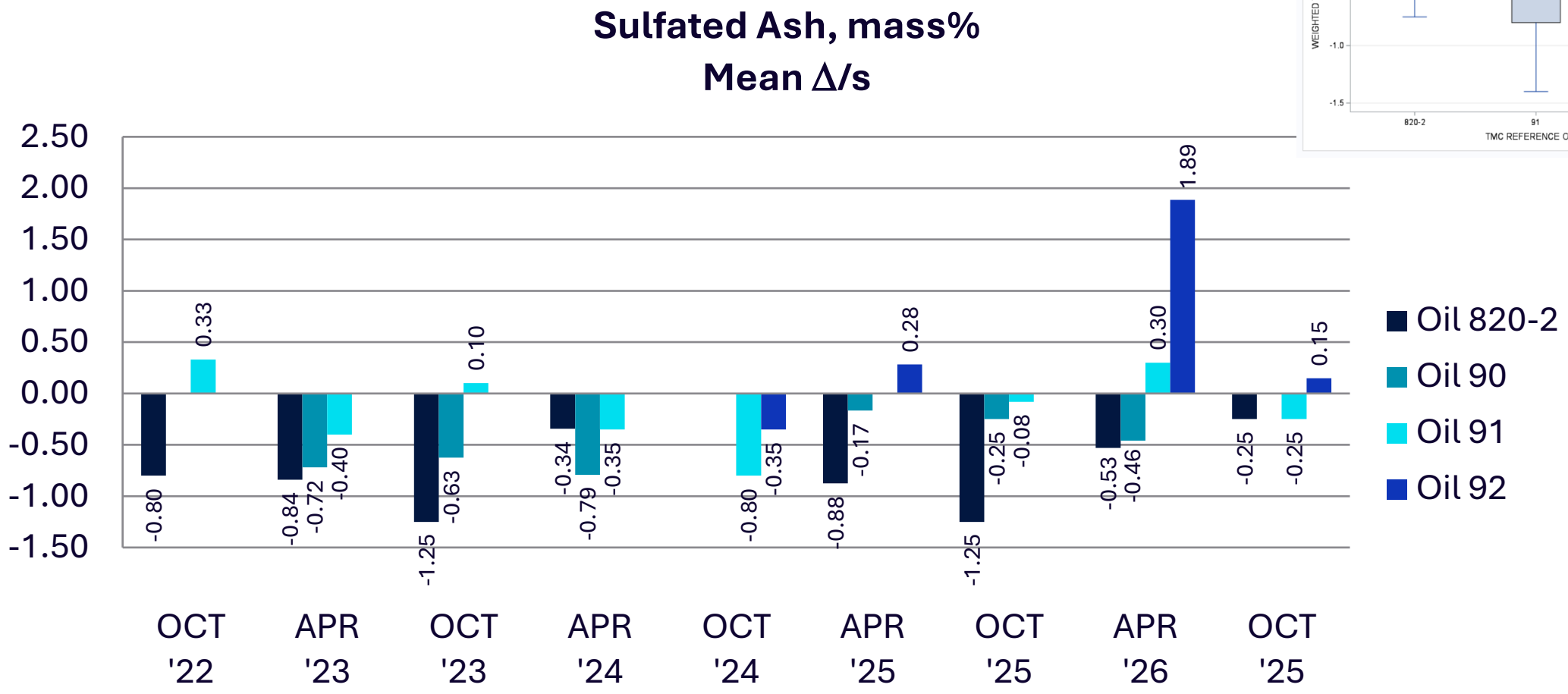


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Reference Oil Inventory

D874

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
820-2	2001	D874	5.8	<0.1	5+ years
91	2006	D874	2.8	<0.1	5+ years
92	2020	D874	49.7	2.7	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.

April 1, 2026 – September 30, 2026

D02.B0.07
TMC Monitored Tests

ASTM D 5133

Gelation Index (GI)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual Report)

Test	Labs	Stands
D5133	9 (+1)	44 (+1)
*As of 9/30/2026		

D5133: Gelation Index

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	58
Failed Calibration Test	OC	7
Operationally Invalidated by Lab	LC / LS / LN / XC / XS	1
Operationally Invalidated After Initially Reported as Valid	RC/RS	3
Acceptable Discrimination Tests	AS	21
Failed Discrimination Tests	OS	0
Informational Runs	NN / MN	1
Total		**91**

Number of Labs Reporting Data:	9	(previous 8)
Fail Rate of Operationally Valid Calibration Tests:	10.8%	(previous 11.1%)
Fail Rate of Operationally Valid Discrimination Tests:	0%	(previous 9.1%)

April 1, 2026 – September 30, 2026

D5133: Gelation Index

Statistically Unacceptable Calibration Tests (OC)	No. Of Tests
Gelation Index Severe	1
Gelation Index Mild	6
Total	**7**

- Three labs reported failing calibration tests this semester
- Of the SEVEN failing tests
  - 6-GIC17
  - 1-1009
- Six between -1.96 and -3.0 sd from target
- One greater than 3.0 sd from target

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D5133: Gelation Index

Statistically Unacceptable Discrimination Tests (OS)	No. Of Tests
Gelation Index Severe (> 7.2)	0
Total	**0**

- No Failing Discrimination Runs this Semester

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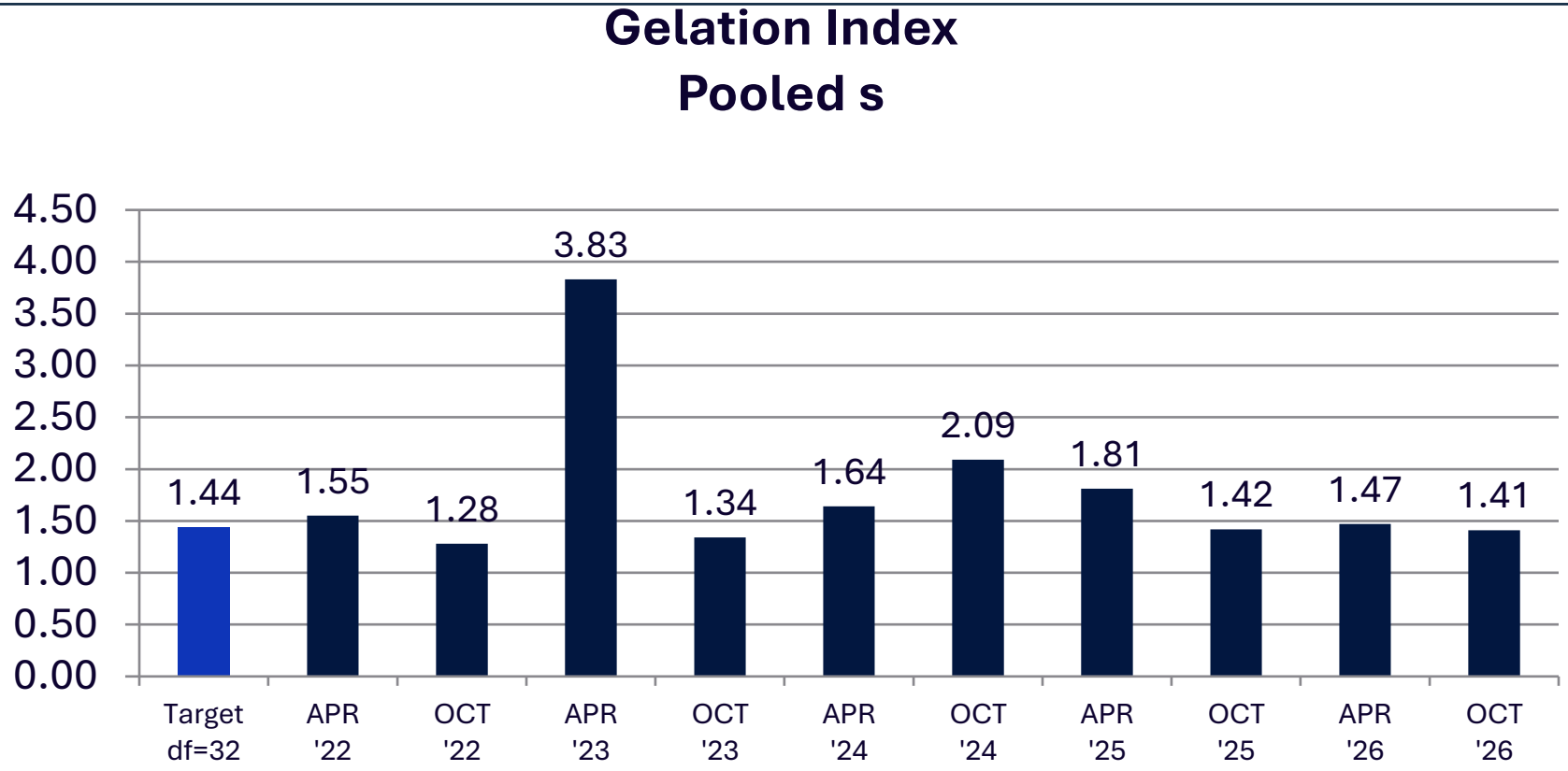
D5133: Gelation Index

Tests Excluded From Statistics (Operationally or Otherwise)	Validity Code	No. Tests
Lab Invalidated Runs	LC, LS, LN	1
TMC Invalidated Runs	RC, RS	3
Aborted Runs	XC, XS	0
Informational Runs (Acceptable Result)	NN	1
Informational Runs (Unacceptable Result)	MN	0
Total		**5**

- Invalid discrimination run (LS) due to computer failure
- Invalid calibration runs (RC) due to missing internal calibration deadline (360 days since last)

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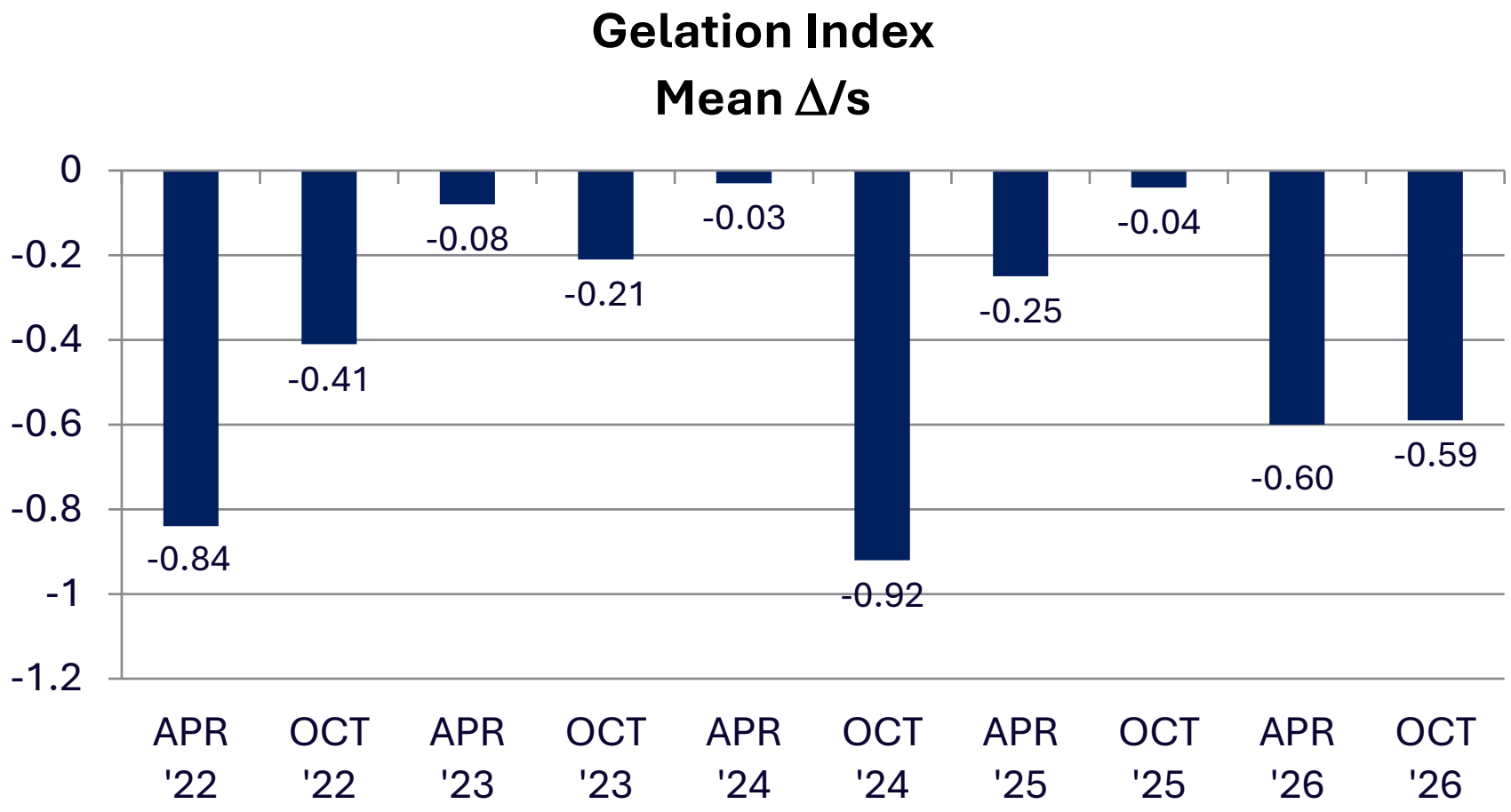
D5133 Precision Estimates



Target precision based upon GIA17 and 1009 reference oils 10/1/2020
Changed from bath to head-based monitoring scheme 10/1/2020

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D5133 Severity Estimates



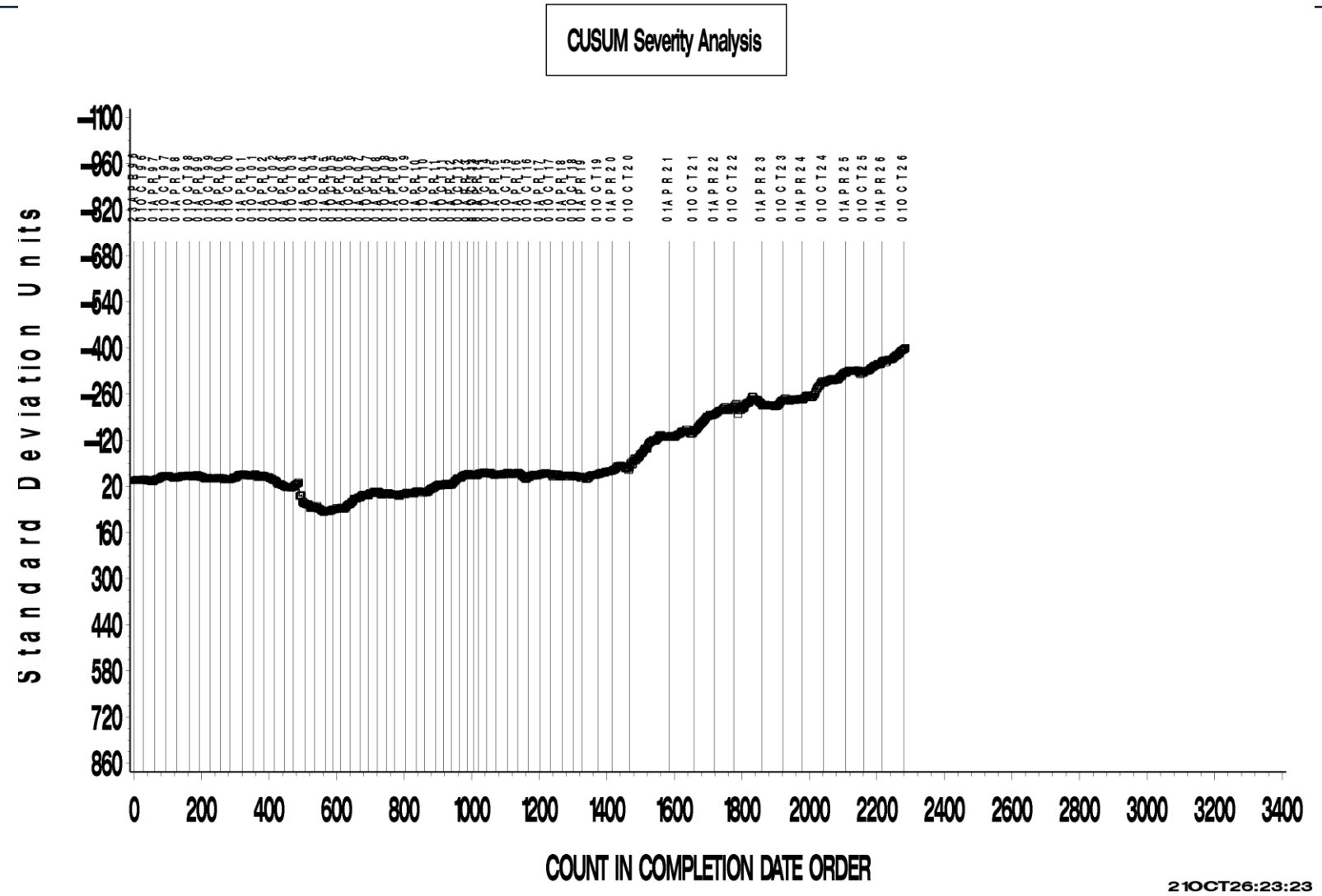
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D5133: Gelation Index Test Status

- Fail rate of operationally valid tests remained similar this semester at 10.8%
  - Fail rate last period was 11.1%
- Zero operationally valid discrimination runs failed this period
  - Three (3) discrimination runs failed last period
- Precision (Pooled s) 1.41 remained close to target (1.44).
- No change in Performance (Mean Δ/s) at -0.59 s vs last period (-0.60 s).

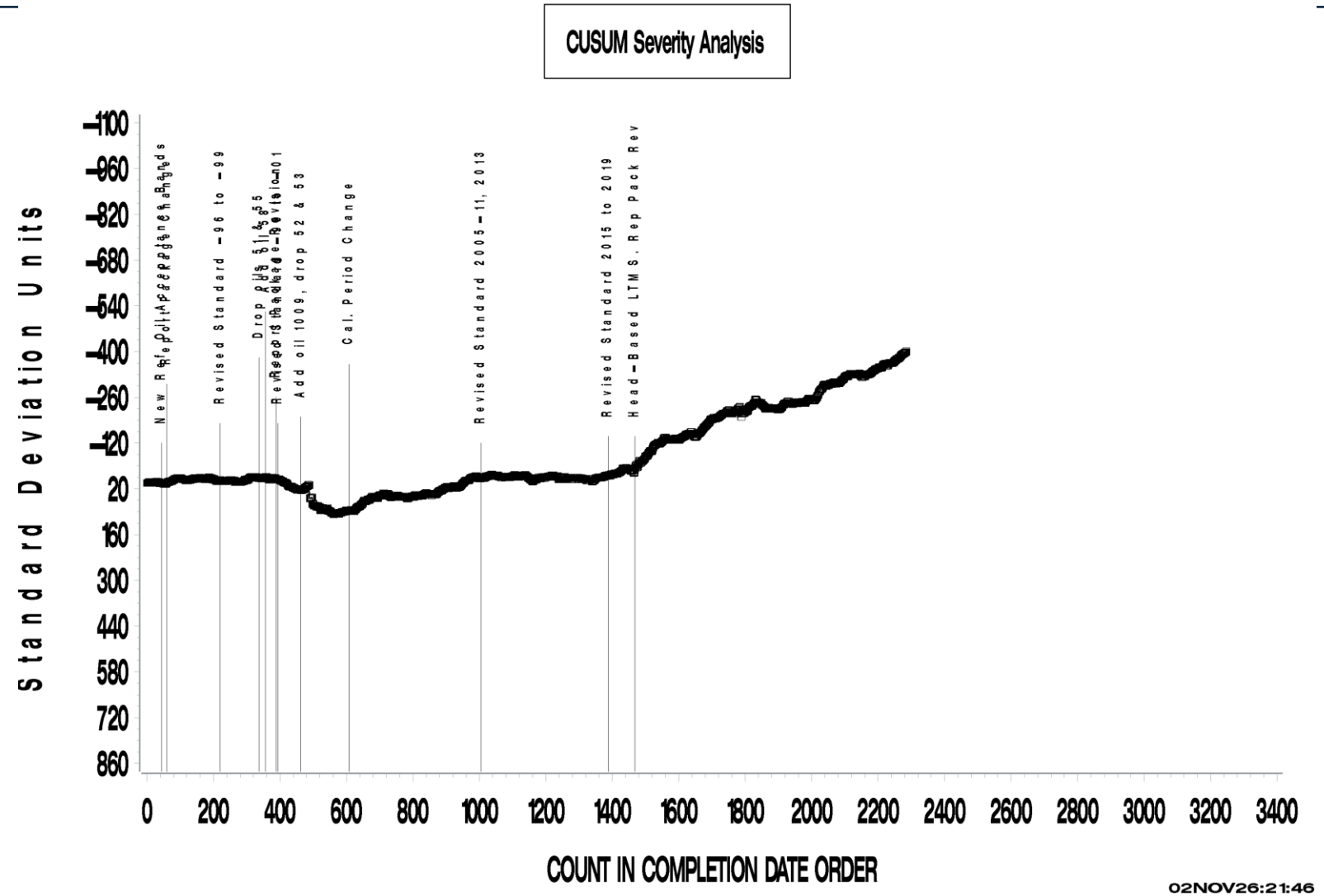
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D5133 GELATION INDEX INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
GELATION INDEX

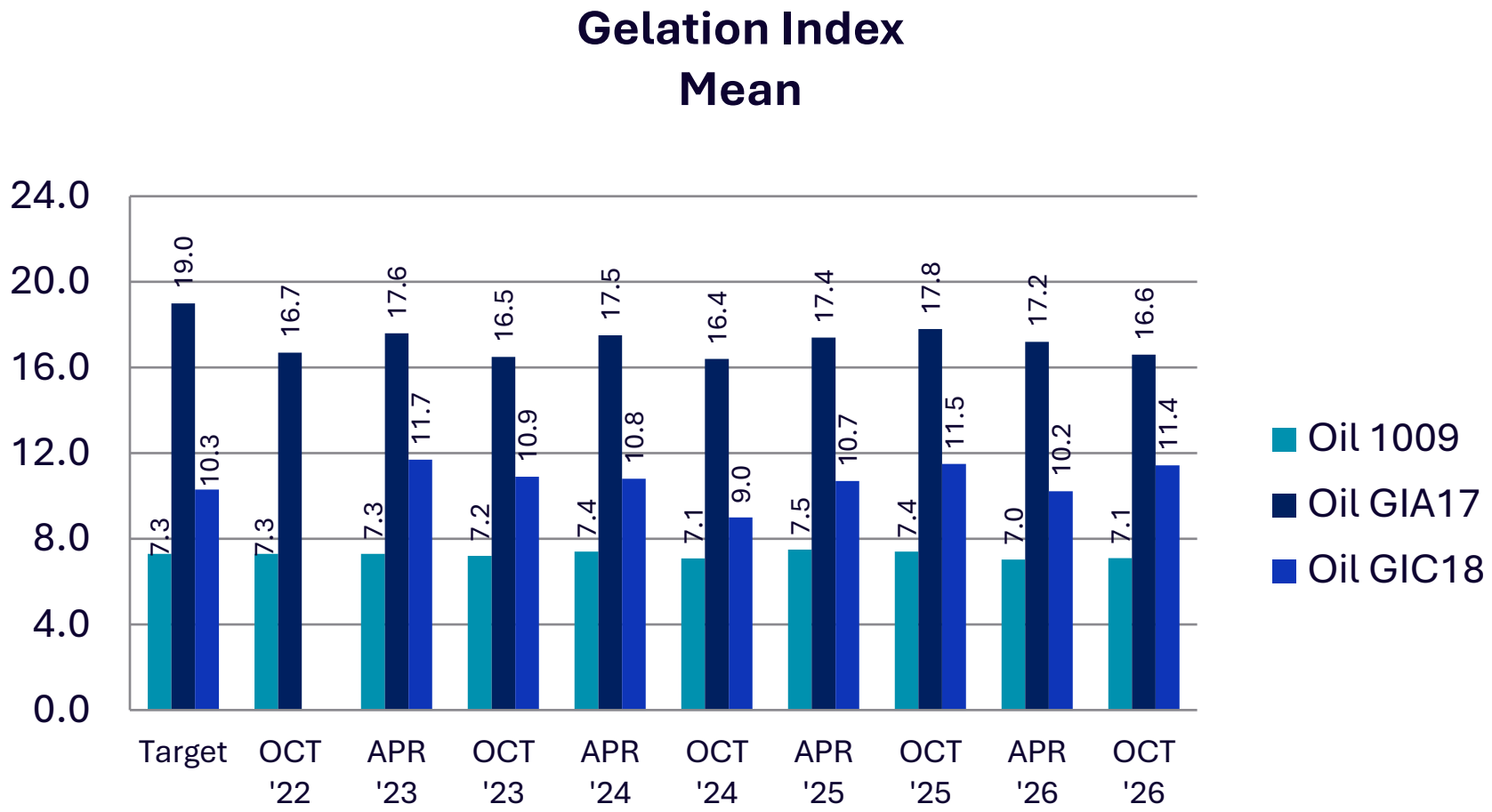


D5133 GELATION INDEX INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY HISTORY
GELATION INDEX

TEST MONITORING CENTER

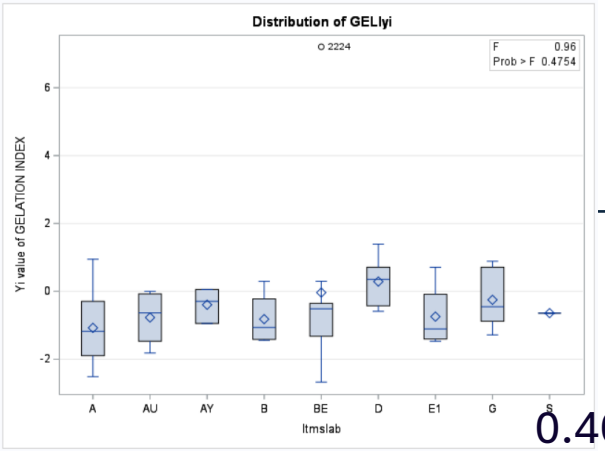


D5133 Performance by Oil



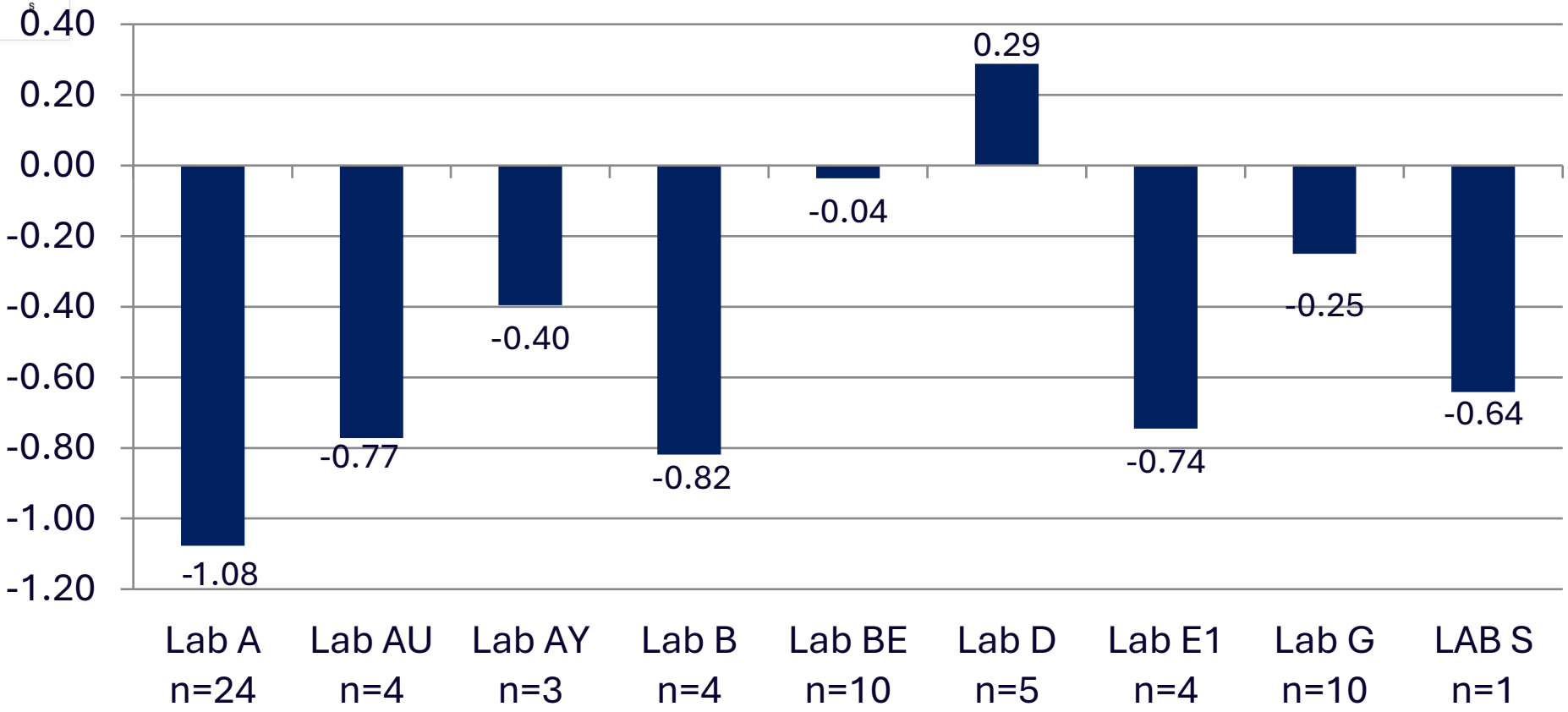
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D5133 Lab Severity Estimates



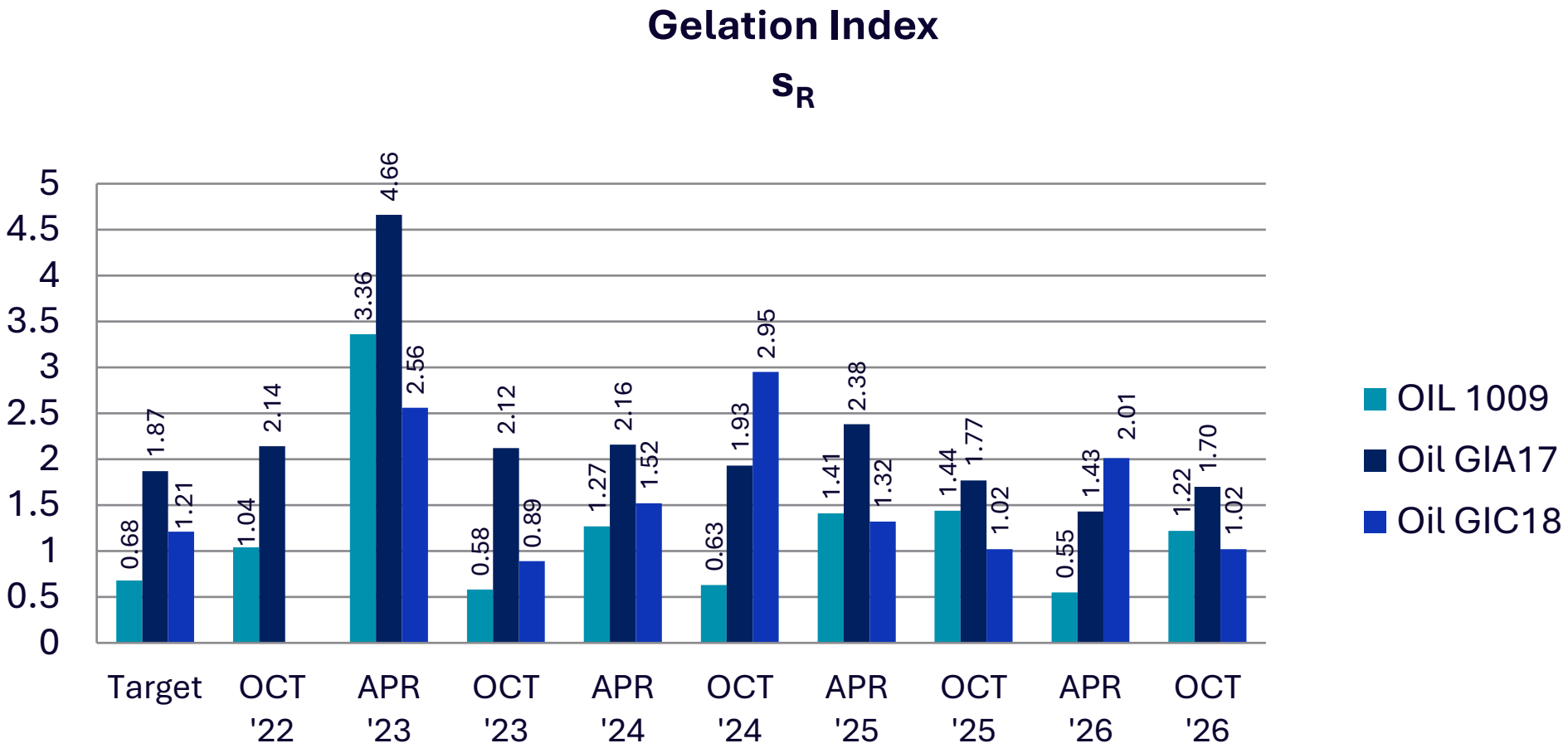
Gelation Index

Mean Δ/s



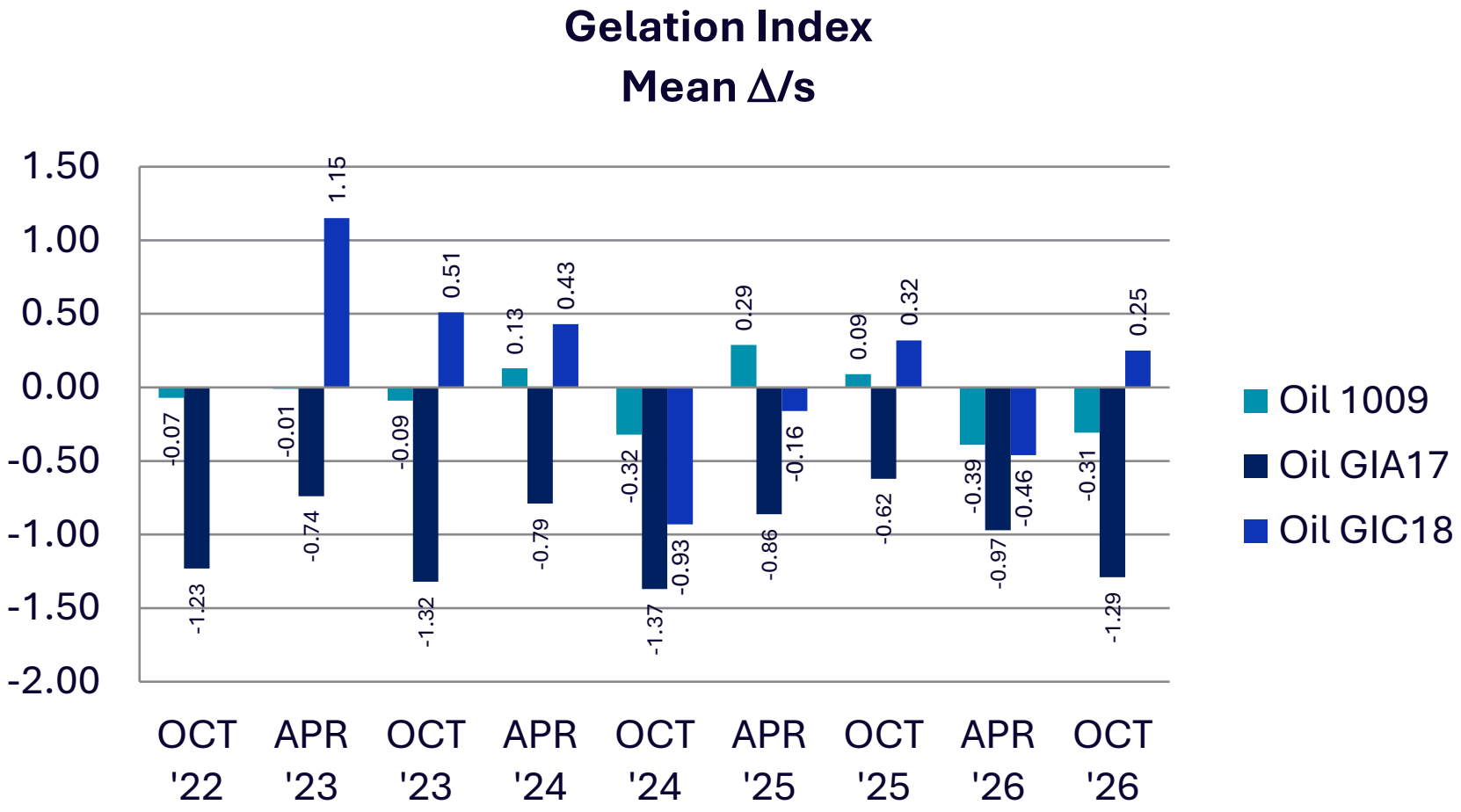
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D5133 Performance by Oil



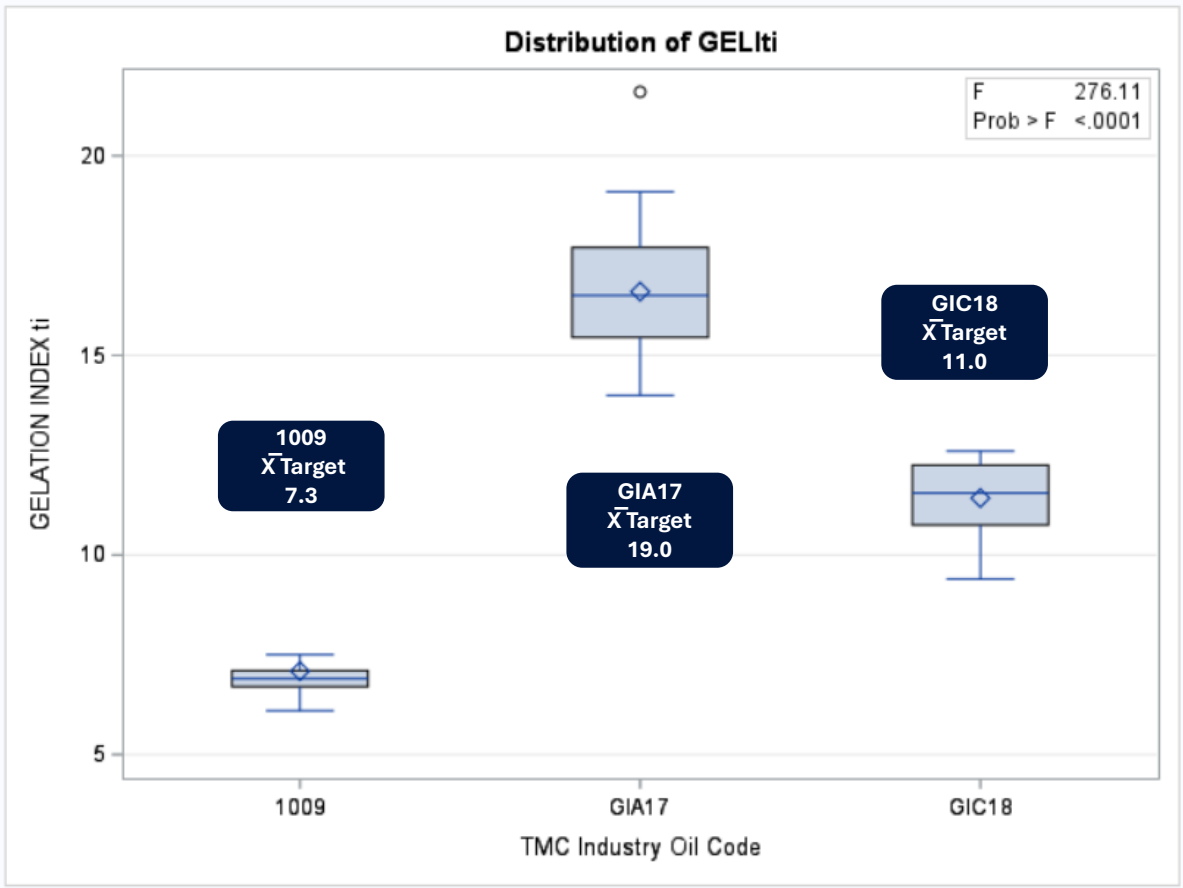
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D5133 Performance by Oil



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ASTM D5133 (GI): April26 – Sept26 Results



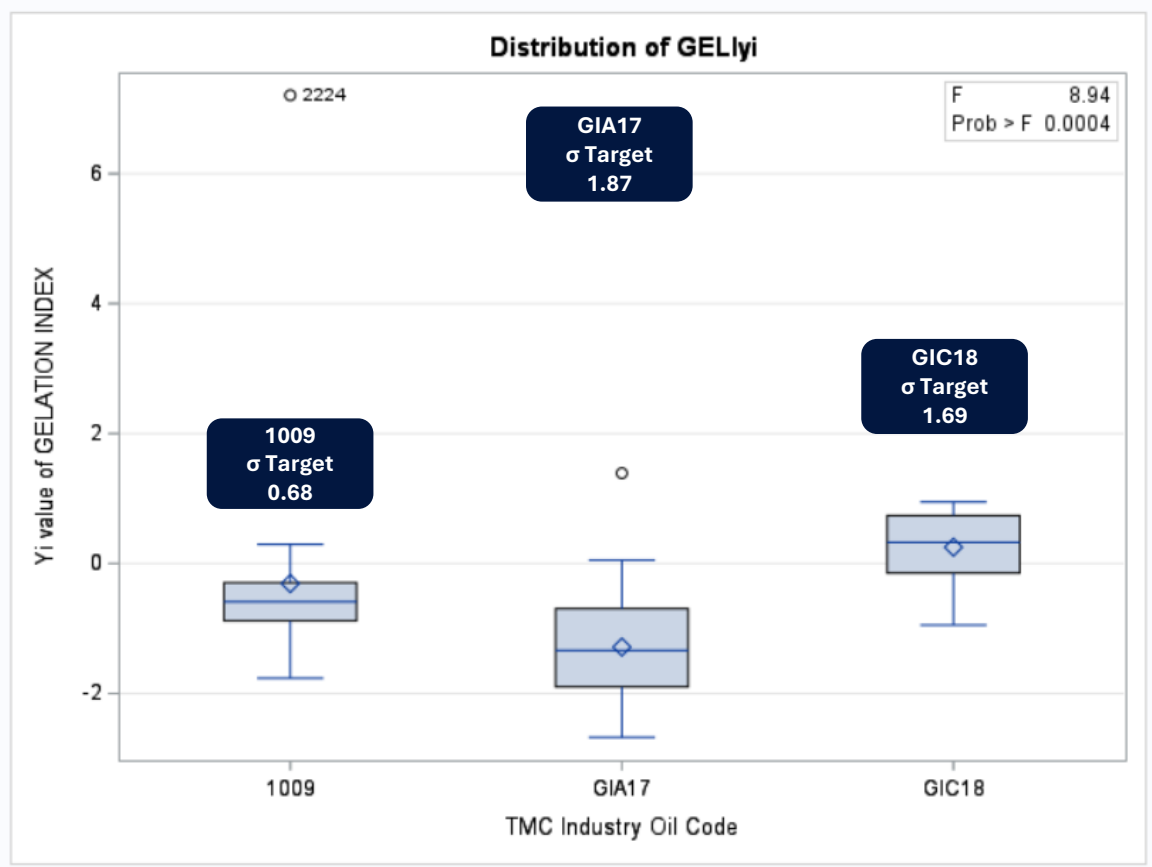


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Reference Oil Inventory

GI (D5133)

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
58[B]	1998	GI	111.1	0.1	5+ years
GIA17	2017	GI	4.8	0.1	5+ years
GIC18	2018	GI	7.5	0.1	5+ years
1009	2002	GI	32.9	0.1	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] Reference Oil 58 is used in multiple Bench Test Areas and is the Discrimination Oil in D5133 (GI)

April 1, 2026 – September 30, 2026

D02.B0.07
TMC Monitored Tests

ASTM D 5800

NOACK Volatility

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual Report)

Test	Labs	Stands
D5800	13 (+0)	37 (-2)

*Between 4/1/2026 and 9/30/2026

D5800: Evaporation Loss of Lubricating Oil by Noack Method

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	180
Failed Calibration Test	OC	25
Operationally Invalidated by LAB	LC, LN	2
Operationally Invalidated by TMC	RC	1
Aborted Test	XC	1
Acceptable Shakedown Run	NN	1
Unacceptable Shakedown Run	MN	0
Total		**210**

Number of Labs Reporting Data:	13	(previous 13)
Fail Rate of Operationally Valid Tests:	12.2%	(previous 4.23%)

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D5800: Evaporation Loss of Lubricating Oil by Noack Method

Statistically Unacceptable Tests (OC)	No. Of Tests
Ei Level 3 Alarm Mild	4
Ei Level 3 Alarm Severe	6
Zi Level 2 Alarm Severe	12
Zi Level 2 Alarm Mild	0
Zi Level 2 and Ei Level 3 Alarms, Mild	3
Zi Level 2 and Ei level 3 Alarms, SEVERE	0

- TWENTY-FIVE failed tests were on TWELVE different rigs at EIGHT different labs.
- FIVE operationally valid tests exceeded ±3.0 s this period.

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D5800: Evaporation Loss of Lubricating Oil by Noack Method

Failed (OC) Details	Procedure	Model	No. Tests
Zi Level 2 Alarm: Rigs (3xAU-2, G-7, 2xG-8, 4xBA-2, AY-4, BA-3) Severe	B	NCK25G	12
Ei Level 3 Alarm: Rigs (G-7) Mild, too imprecise to predict SA	B	NCK25G	1
Ei Level 3 Alarm: Rigs (G-8) Severe, too imprecise to predict SA	B	NCK25G	1
Ei Level 3 Alarm: Rigs (2xD-7, E1-7) Mild, too imprecise to predict SA	D	NS2	3
Ei Level 3 Alarm: Rigs (2xD-7,V-4, D-5, G-10, A-16) Severe, too imprecise to predict SA	D	NS2	5
Zi Level 2 Alarm Mild, Ei Level 3 Alarm Mild: Rigs (2xD-7, E1-7)	D	NS2	3
Total			**25**
Fail Rate of Operationally Valid Tests: 12.2%			

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D5800: Evaporation Loss of Lubricating Oil by Noack Method

Operationally Invalid Tests (LC, LN, RC)

Three labs had invalidated calibration runs this period

- One test was invalidated by Lab due to DAILY QC Out of Range (RC)
- One test was invalidated by Lab due to loose electrical connection (LN)
- One test was invalidated by Lab due to Pressure Issues (LC)

Informational, Non-Blind Tests (NN,MN)

One lab ran an informational (Non-Blind) Test

- One lab completed an informational run (shakedown) with result in range (NN)

Aborted Tests (XC)

One lab reported an aborted test

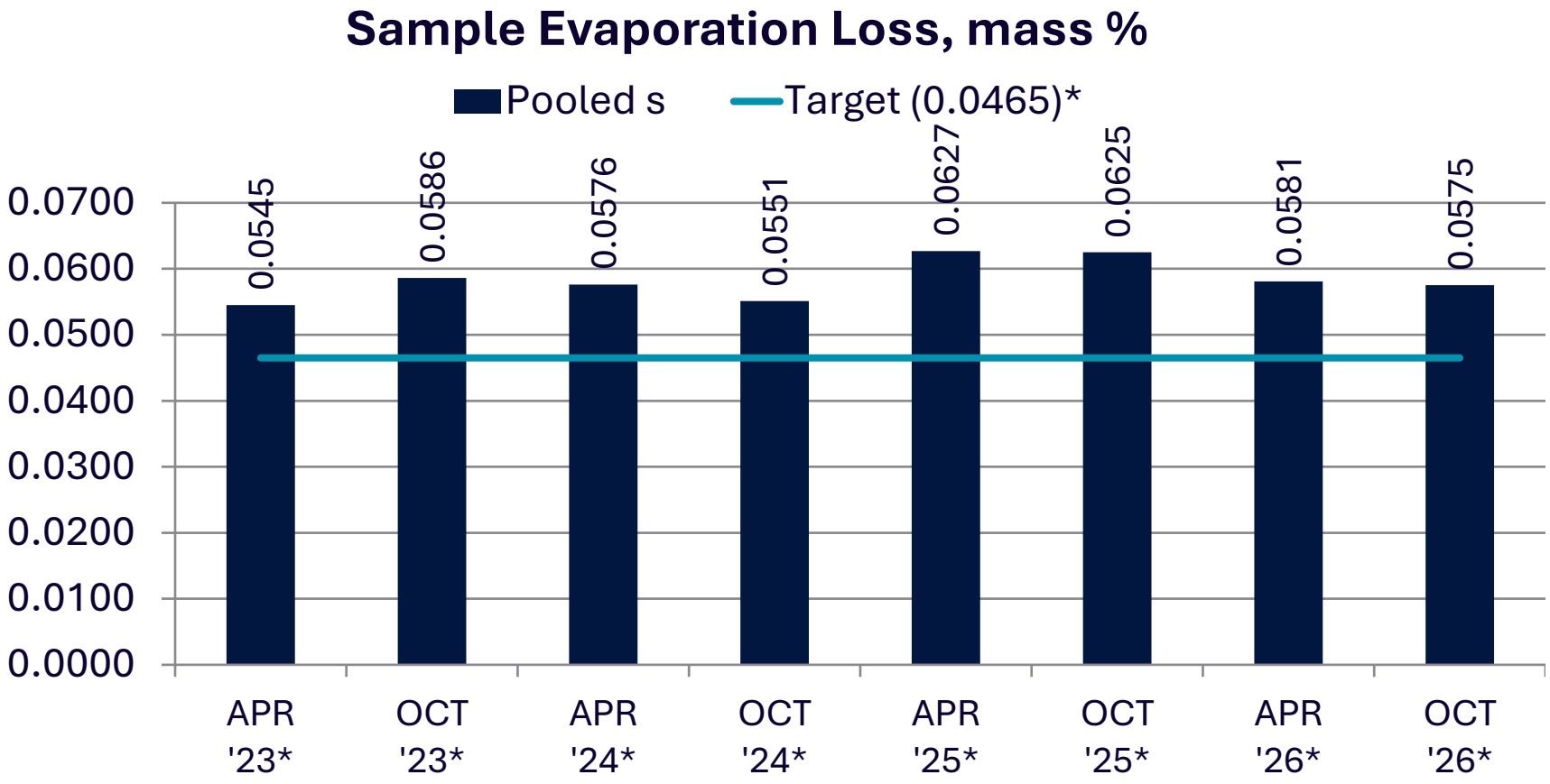
- One lab aborted a test when they recognized an issue with pressure control (XC)

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D5800 Technical Memos

No D5800 technical memos were issued by the TMC this period.

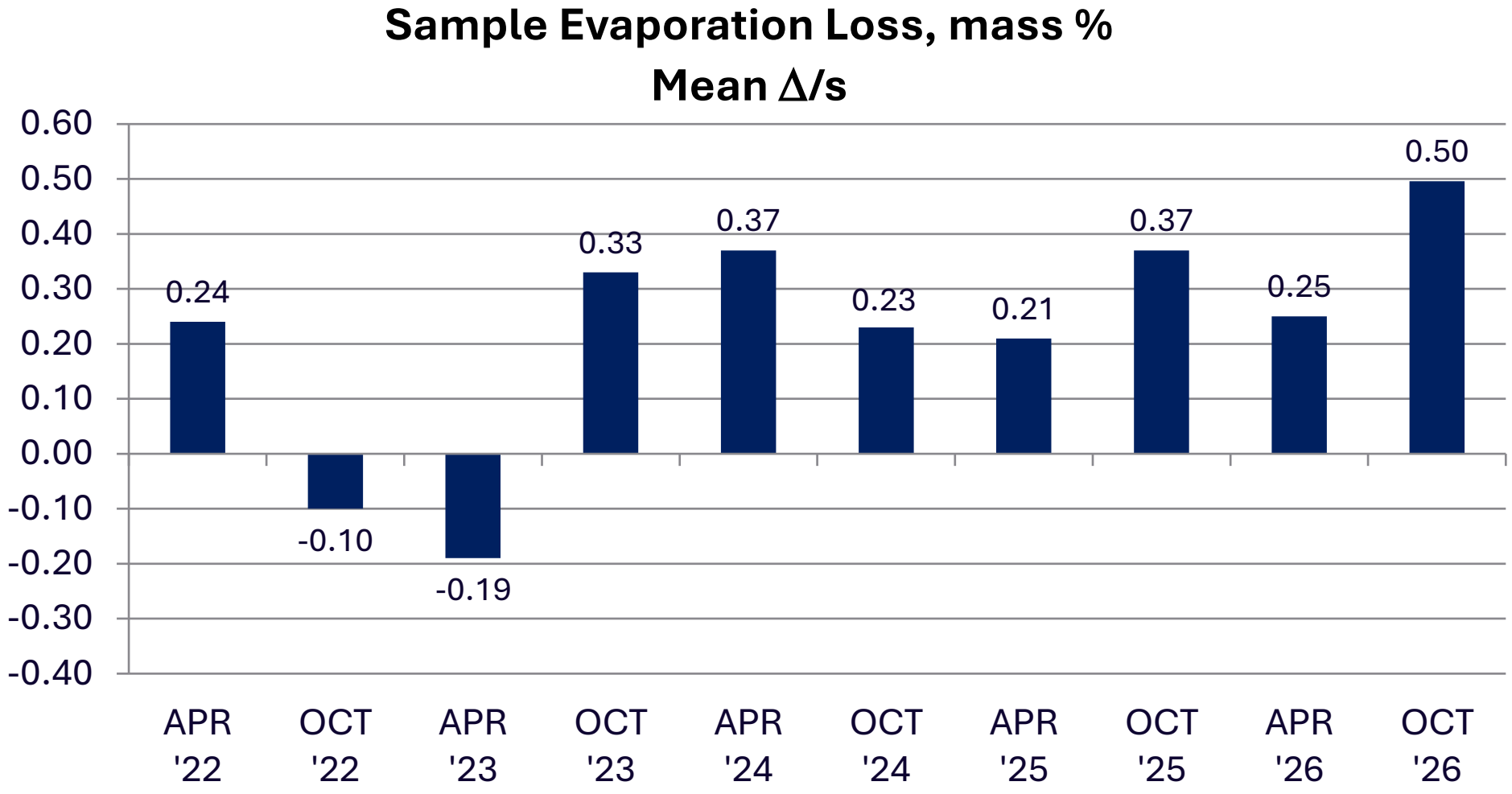
D5800 Precision Estimates



*Began monitoring natural log transformed test results on 20200207 making logarithmic scale changes for target and period precision estimates starting April 2020 report period.

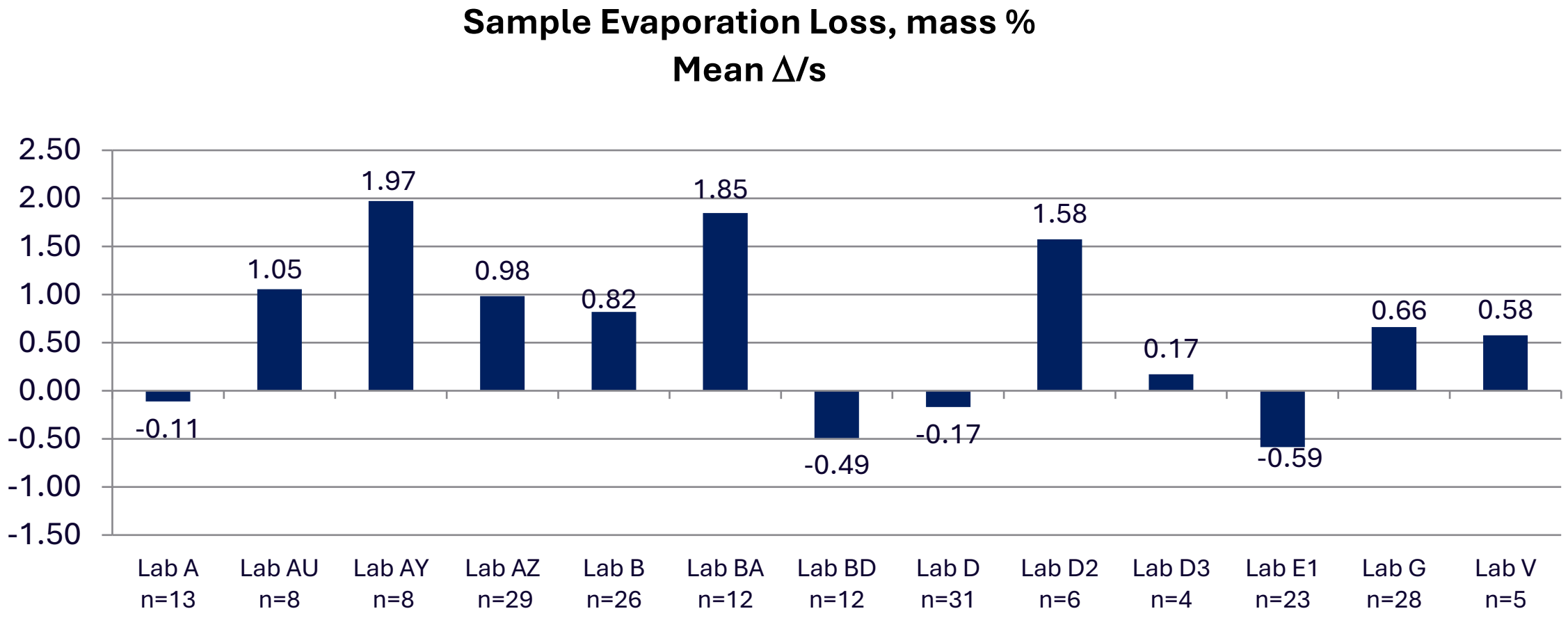
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D5800 Severity Estimates



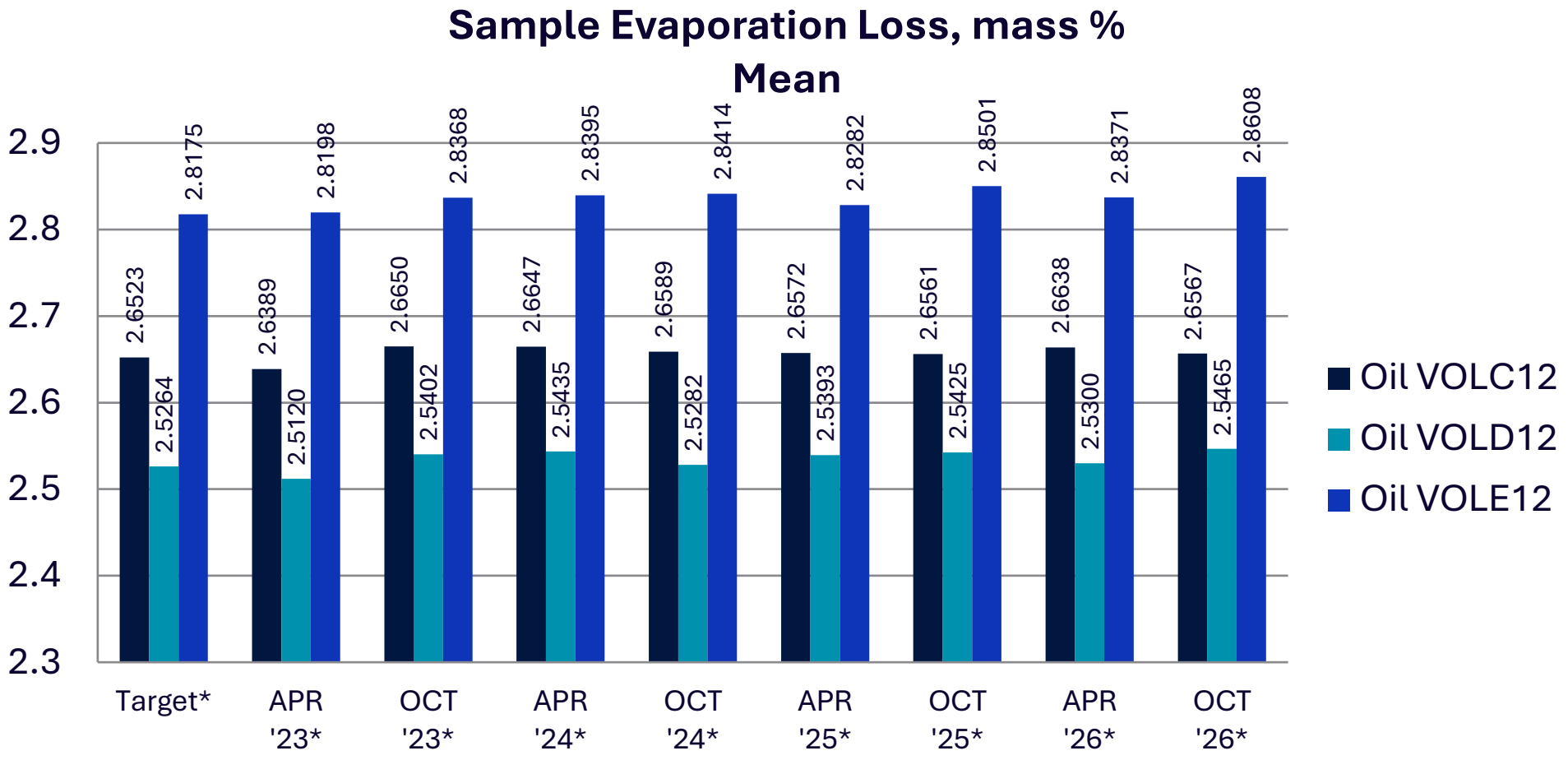
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D5800 Lab Severity Estimates



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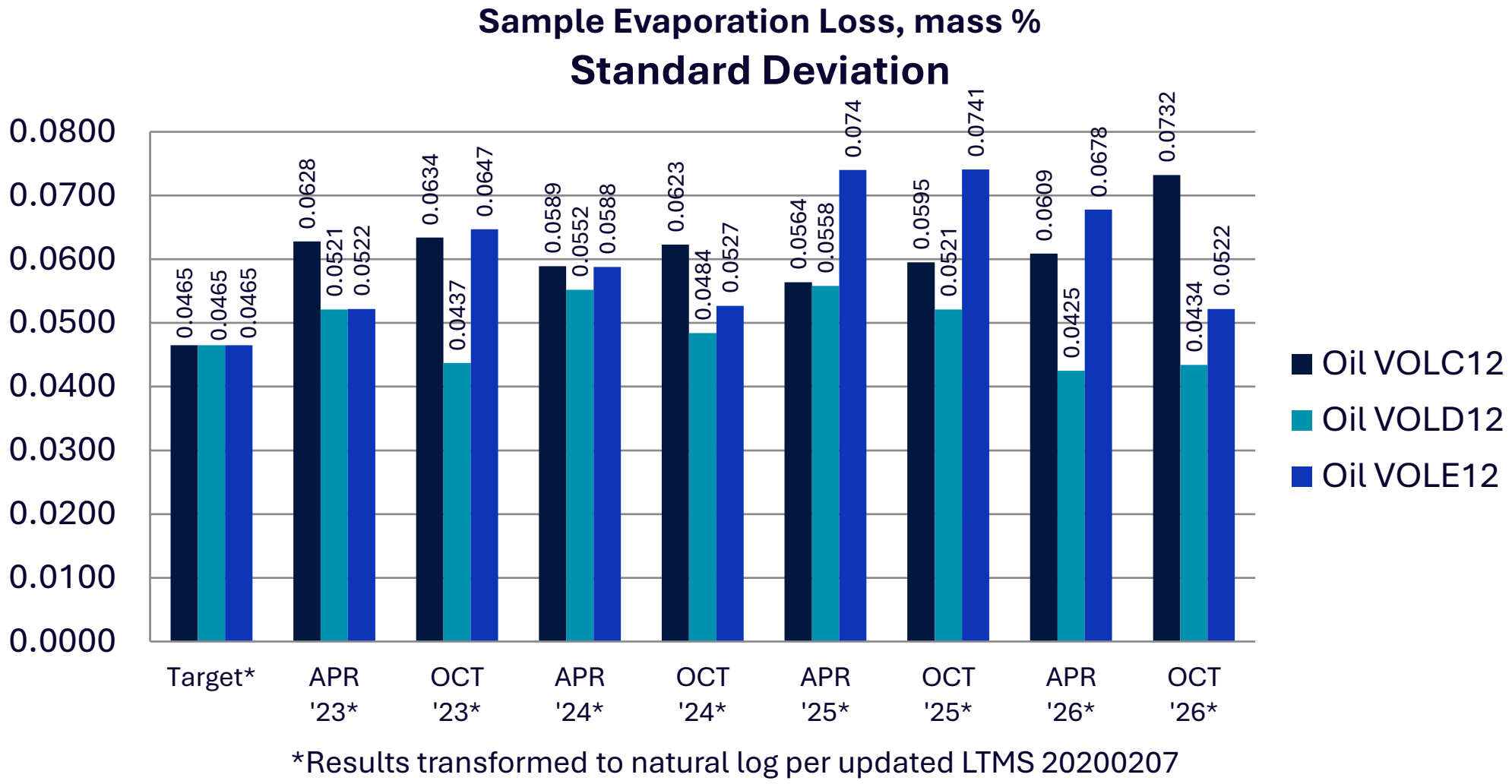
D5800 Performance by Oil



*Results transformed to natural log per updated LTMS 20200207

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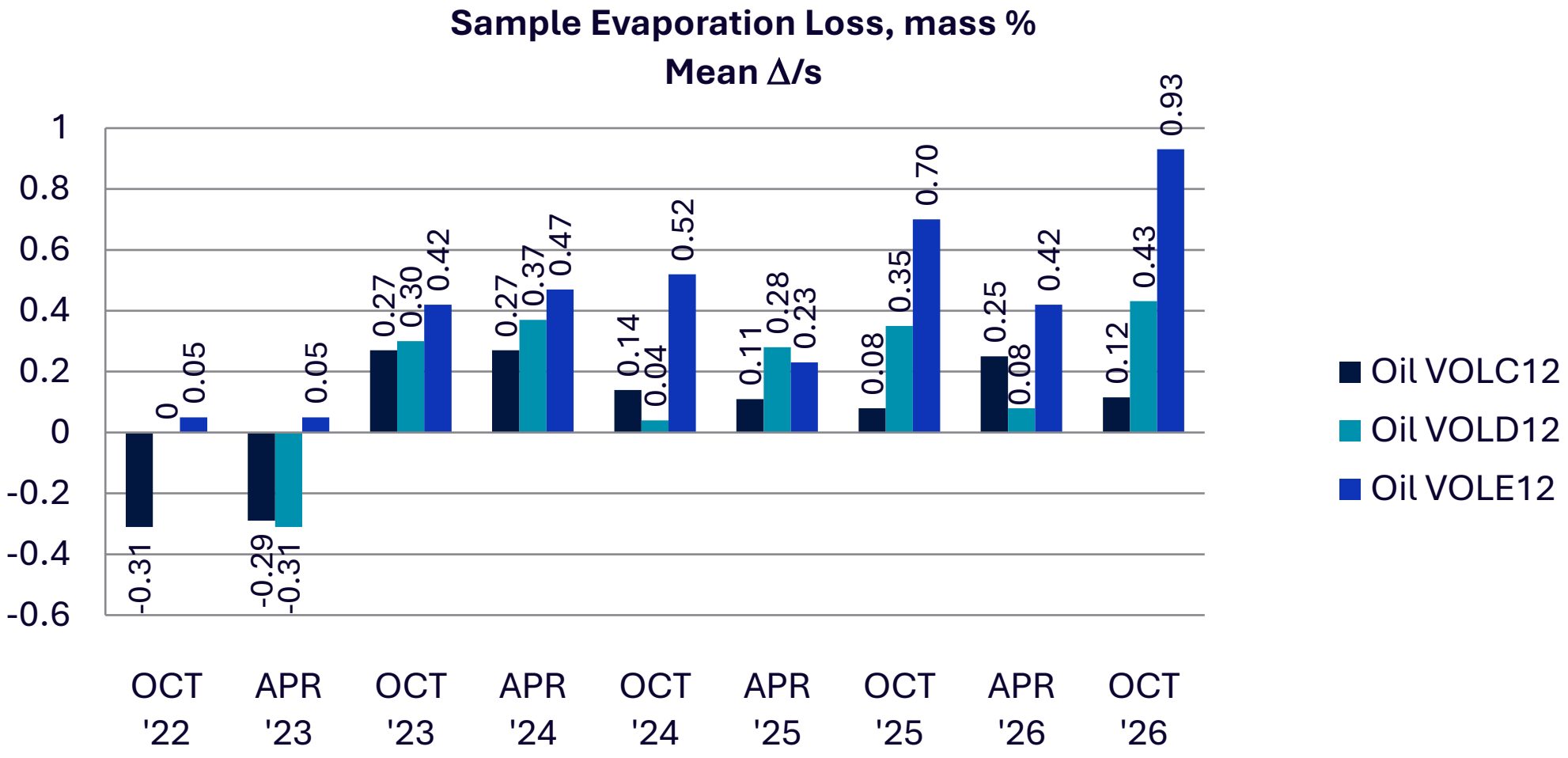
D5800 Performance by Oil



*Results transformed to natural log per updated LTMS 20200207

April 1, 2026 – September 30, 2026

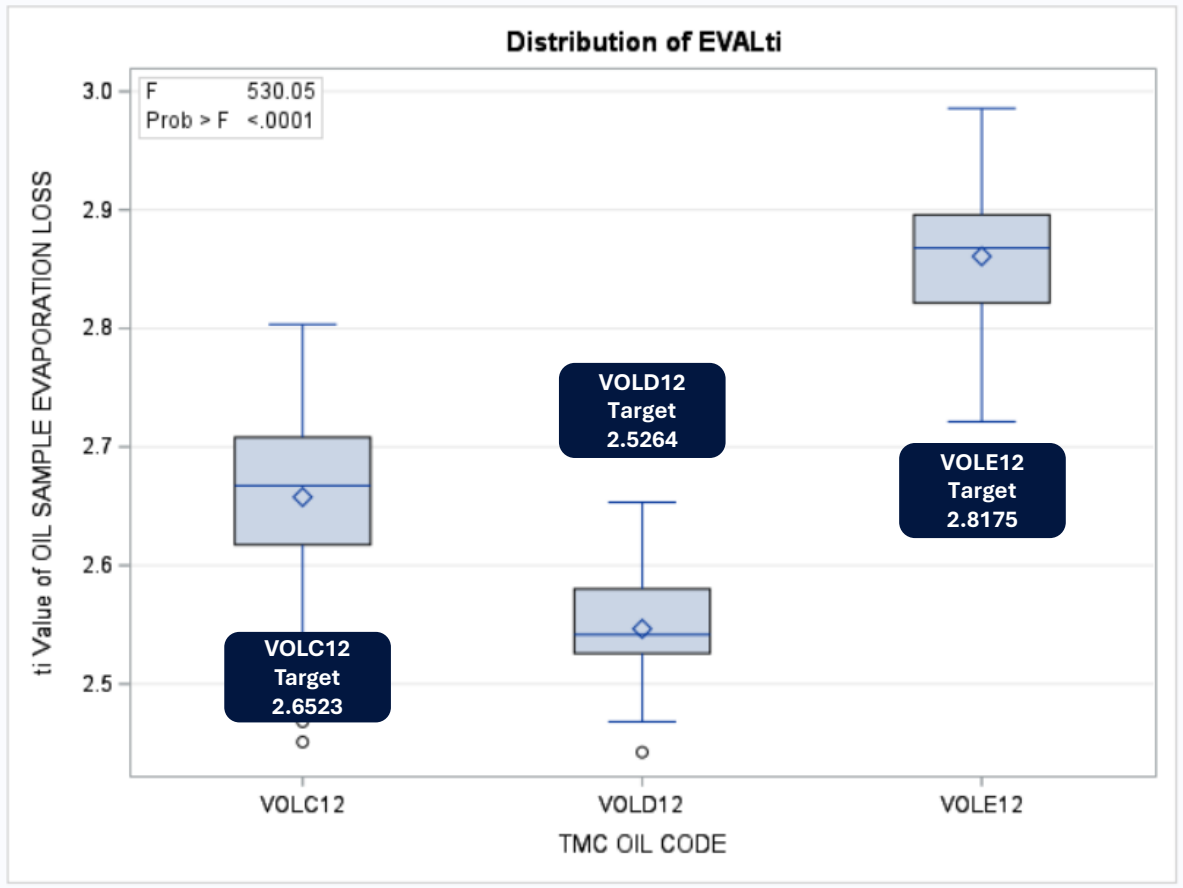
D5800 Performance by Oil

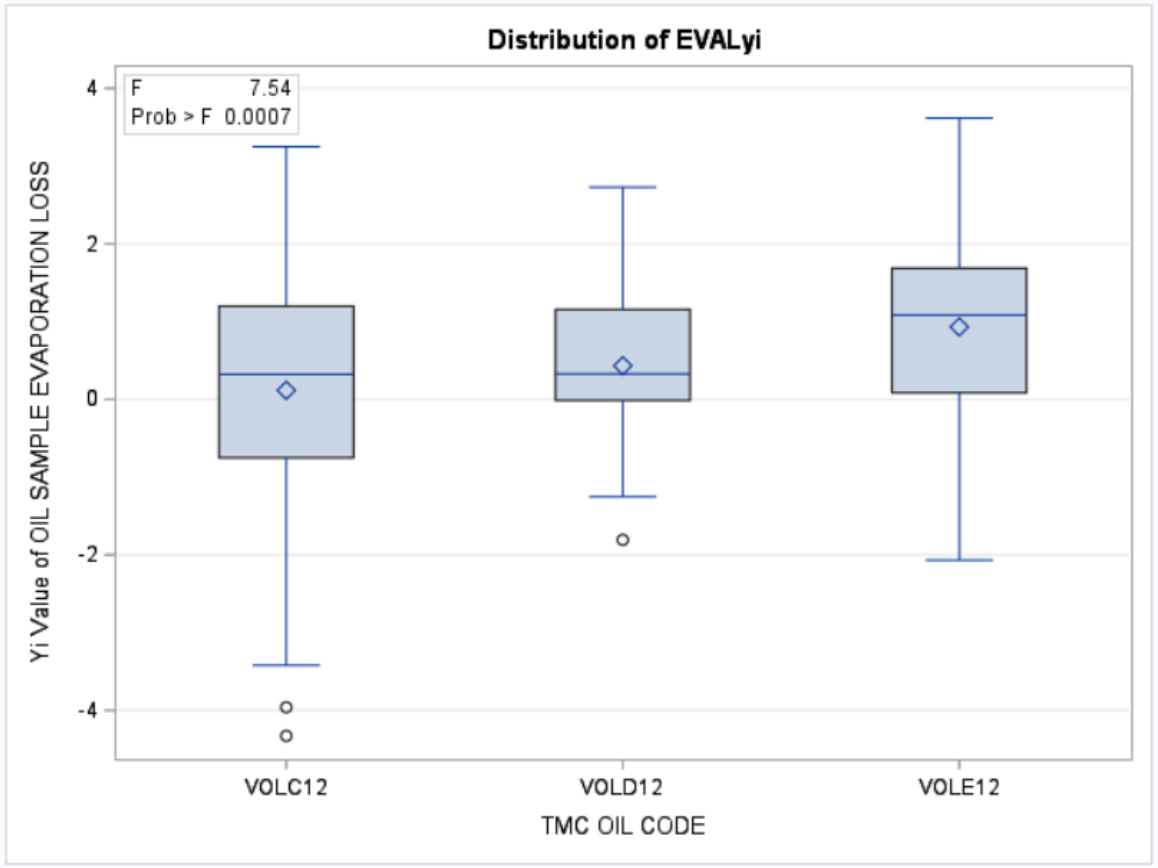


April 1, 2026 – September 30, 2026

ALL

All Procedures: OCT2025 – MAR2026 Results



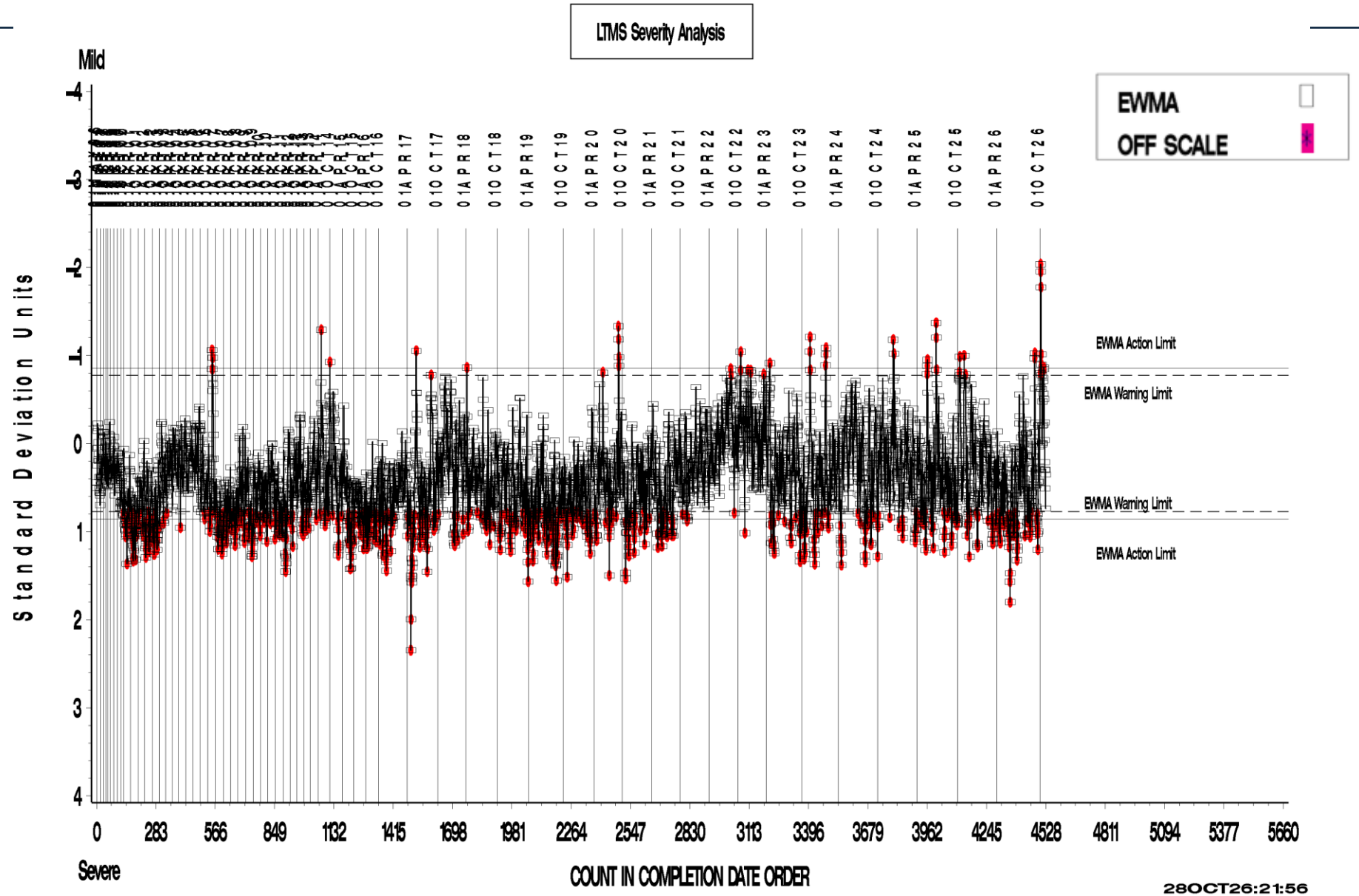


April 1, 2026 – September 30, 2026

ALL

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VALID DATA
LTMS Severity Analysis
EVAPORATION LOSS, MASS%

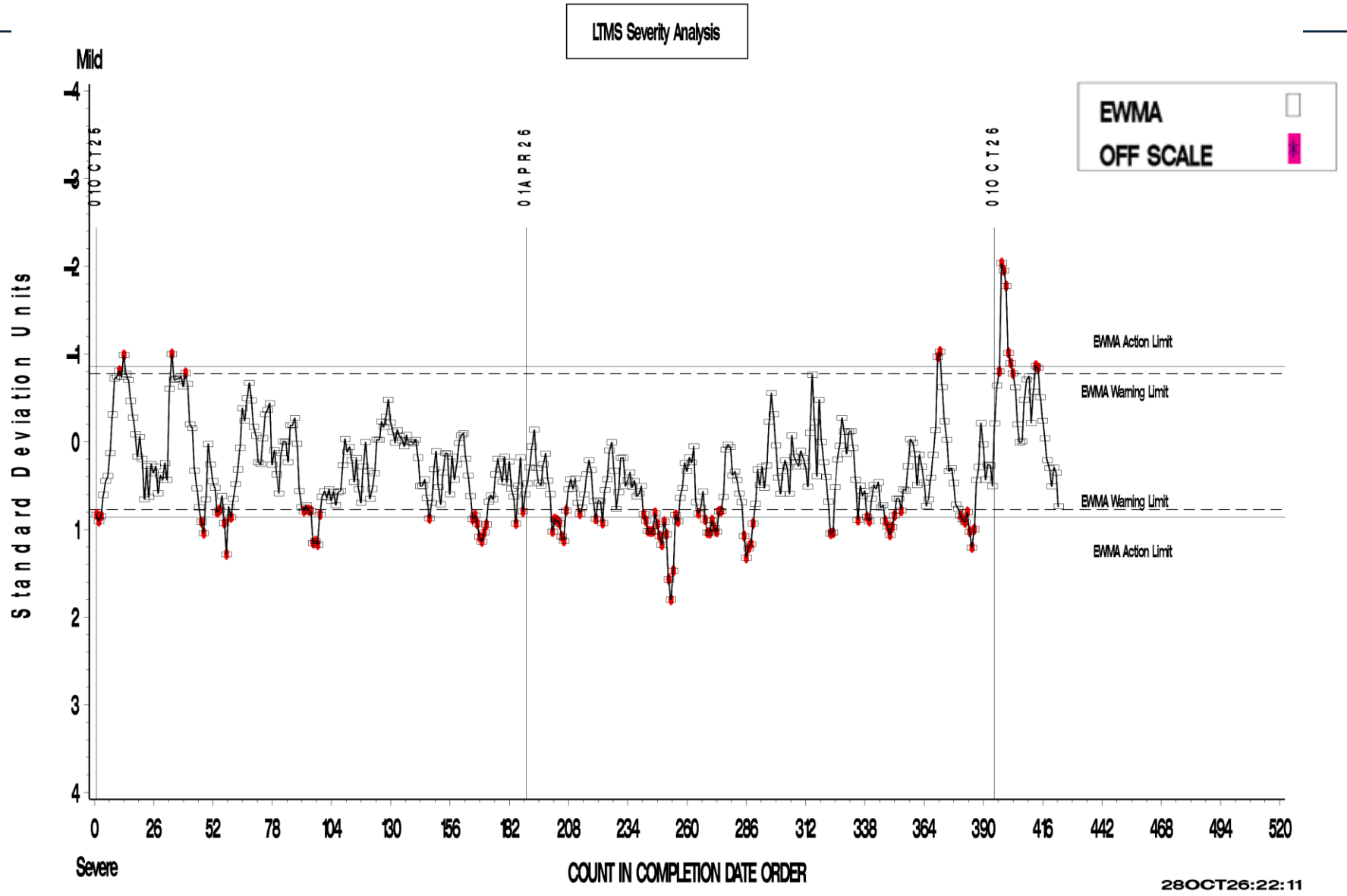
TMC TEST MONITORING CENTER



ALL

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VALID DATA
LTMS Severity Analysis (12m)
EVAPORATION LOSS, MASS%

TMC TEST MONITORING CENTER



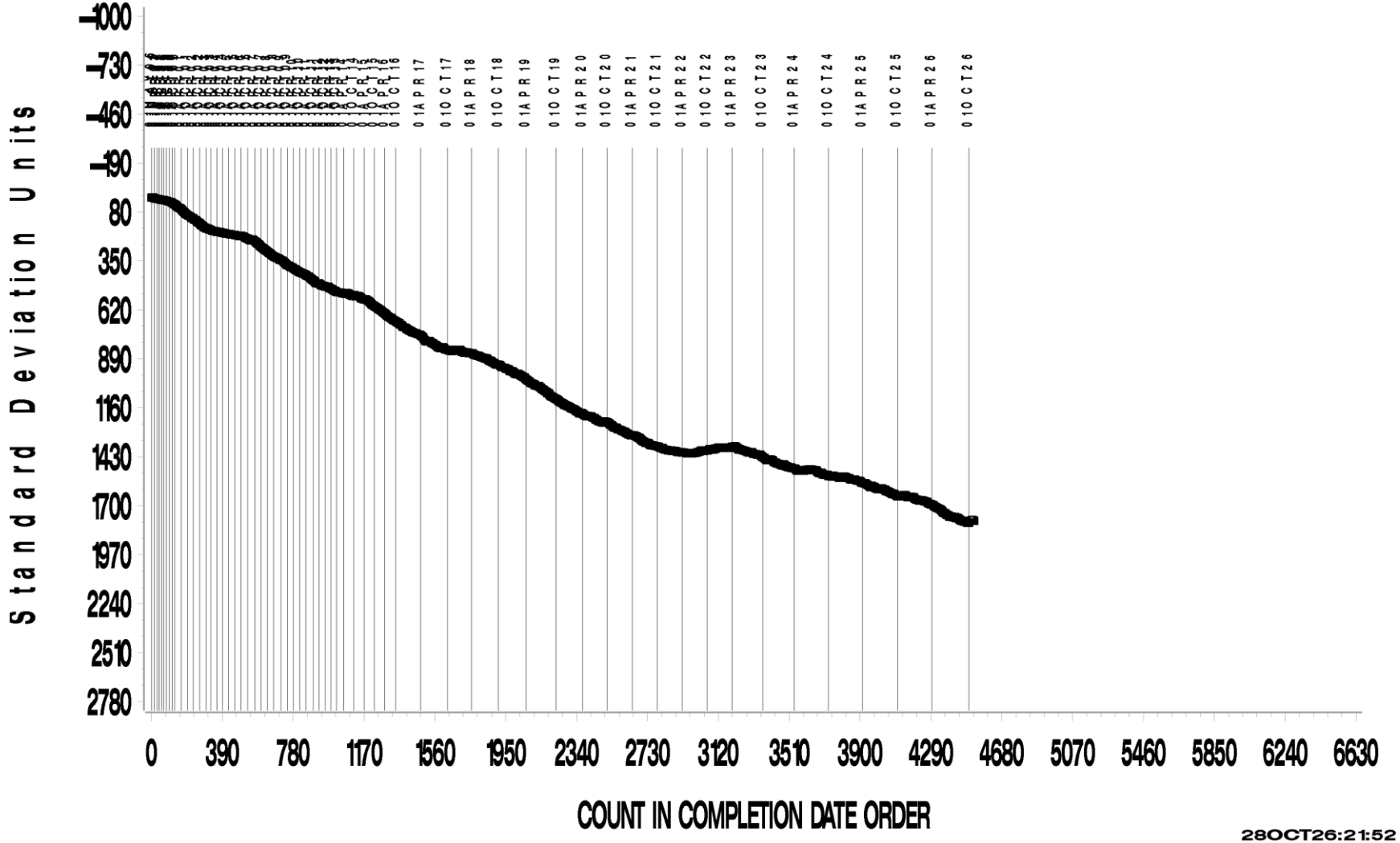
ALL

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
EVAPORATION LOSS, MASS%

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



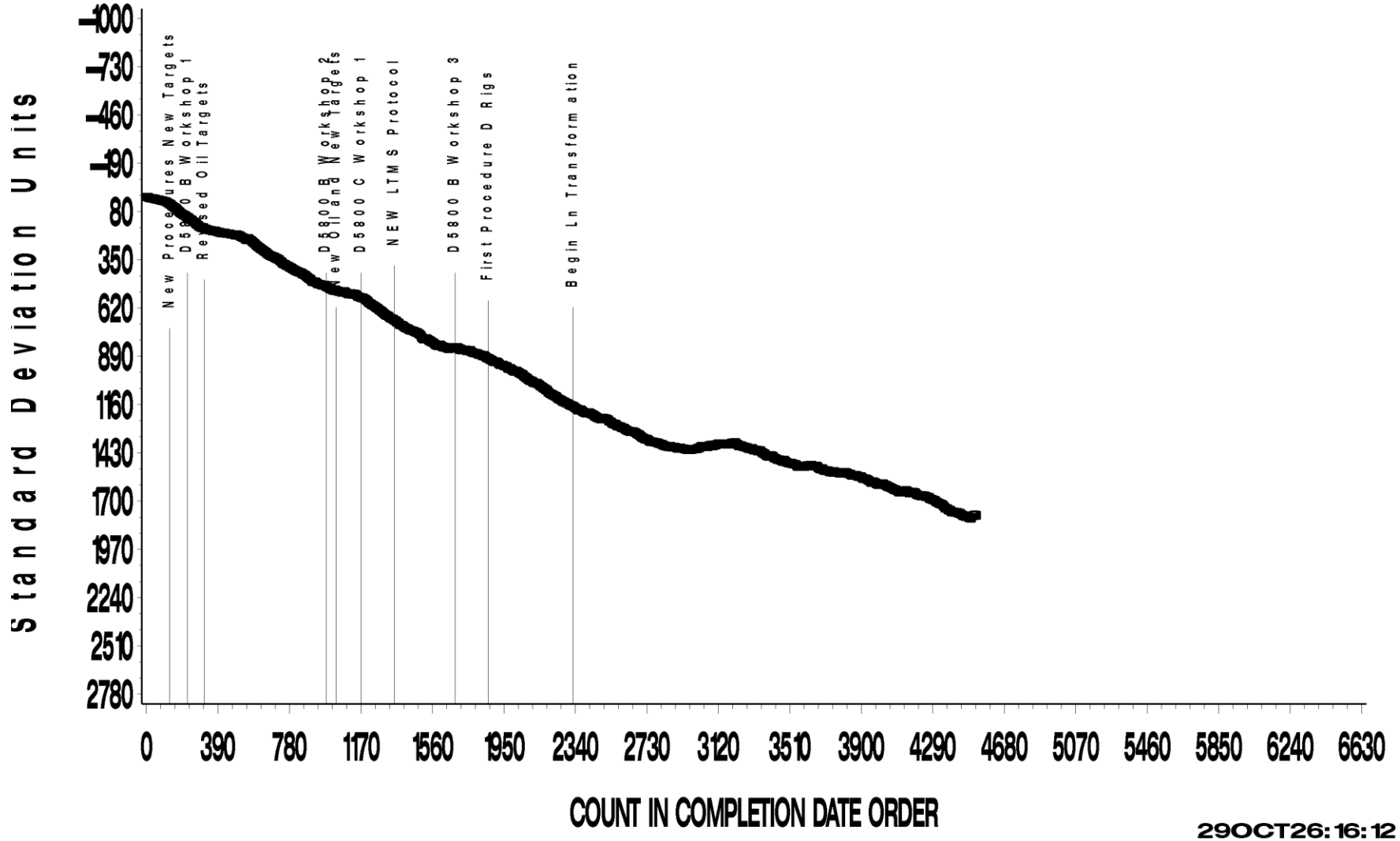
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ALL

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VAL
CUSUM by HISTORY
EVAPORATION LOSS, MASS%

TEST MONITORING CENTER

CUSUM Severity Analysis



29OCT26:16:12

D5800: Evaporation Loss of Lubricating Oil by Noack Method and Rig Model

Performance Comparison
Sample Evaporation Loss, Mass %

Model	n	df	Pooled s	Mean Δ/s
NCK2 (Procedure B)	0	0	n/a	n/a
NCK25G (Procedure B)	112	109	0.0393	1.12
NS2 (Procedure D)	93	90	0.0532	-0.25

0 (+0) Procedure B NCK2 Rig
22 (-1) Procedure B NCK25G Rigs in 8 Labs
16 (-1) Procedure D NS2 Rigs in 7 Labs

April 1, 2026 – September 30, 2026

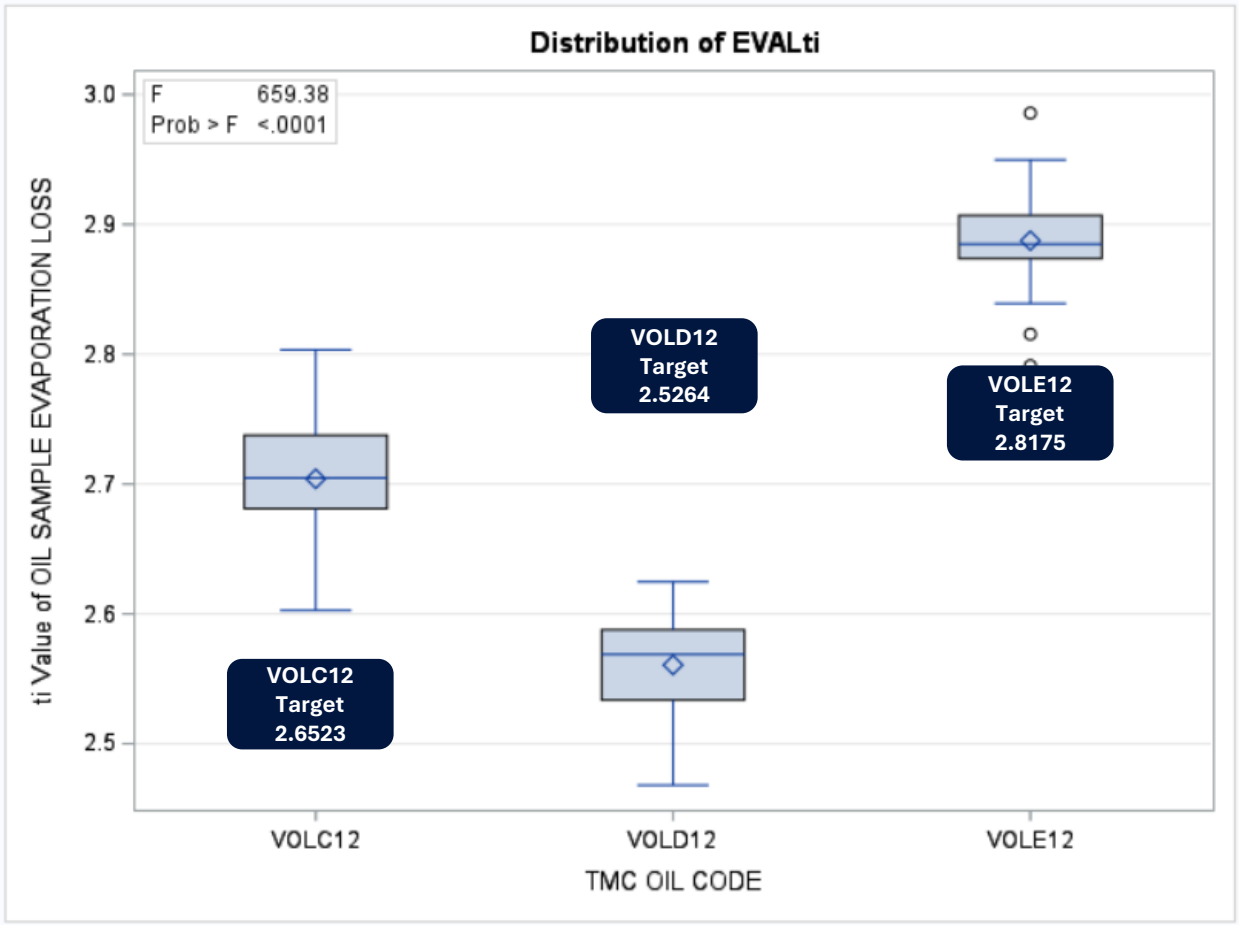
D5800: Evaporation Loss of Lubricating Oil by Noack Method: Industry Procedure B

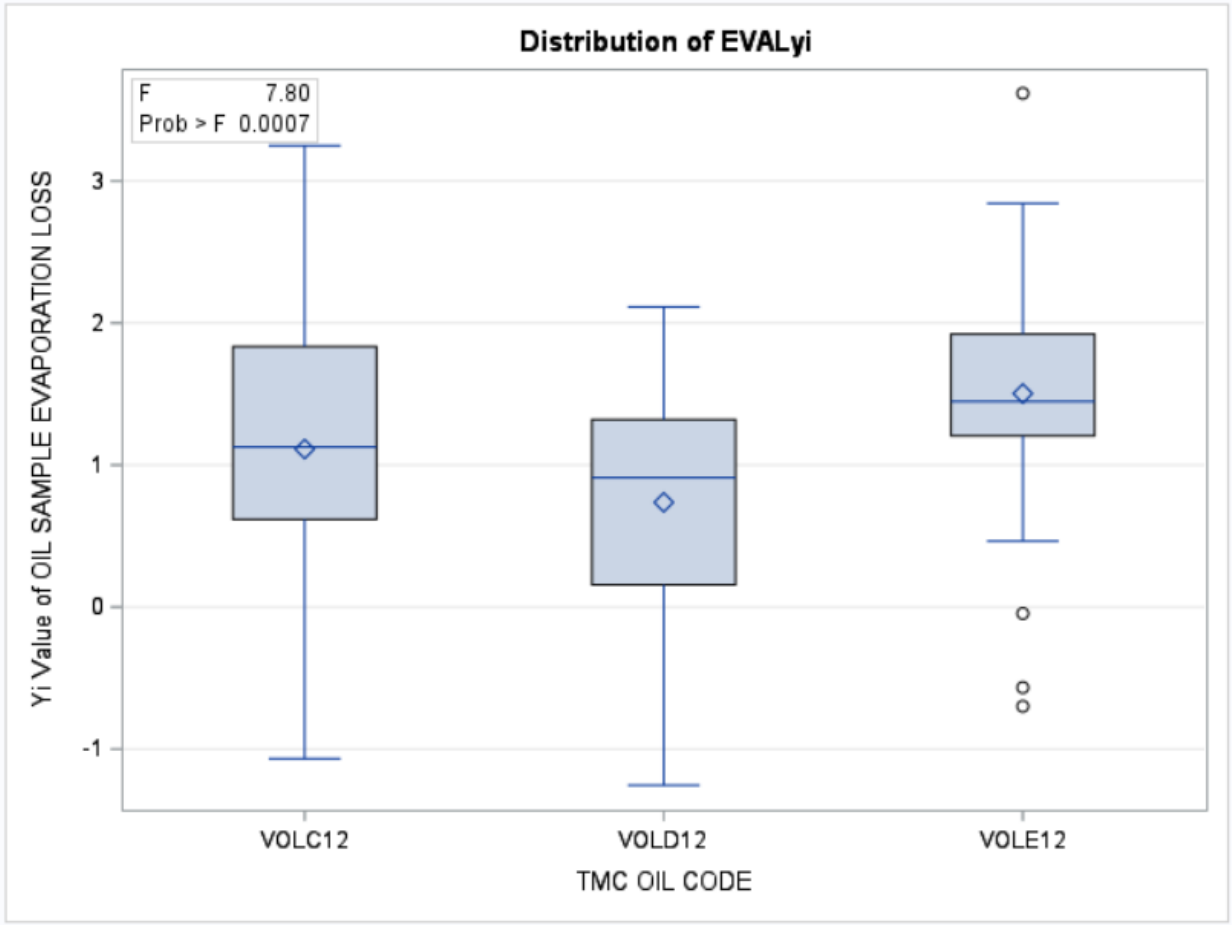
Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	98
Failed Calibration Test	OC	14
Total		**112**

Number of Labs Reporting Data: 8
Fail Rate of Operationally Valid Tests: 12.5% (last semester 4.0%)

April 1, 2026 – September 30, 2026

Procedure B: OCT2025 – MAR2026 Results



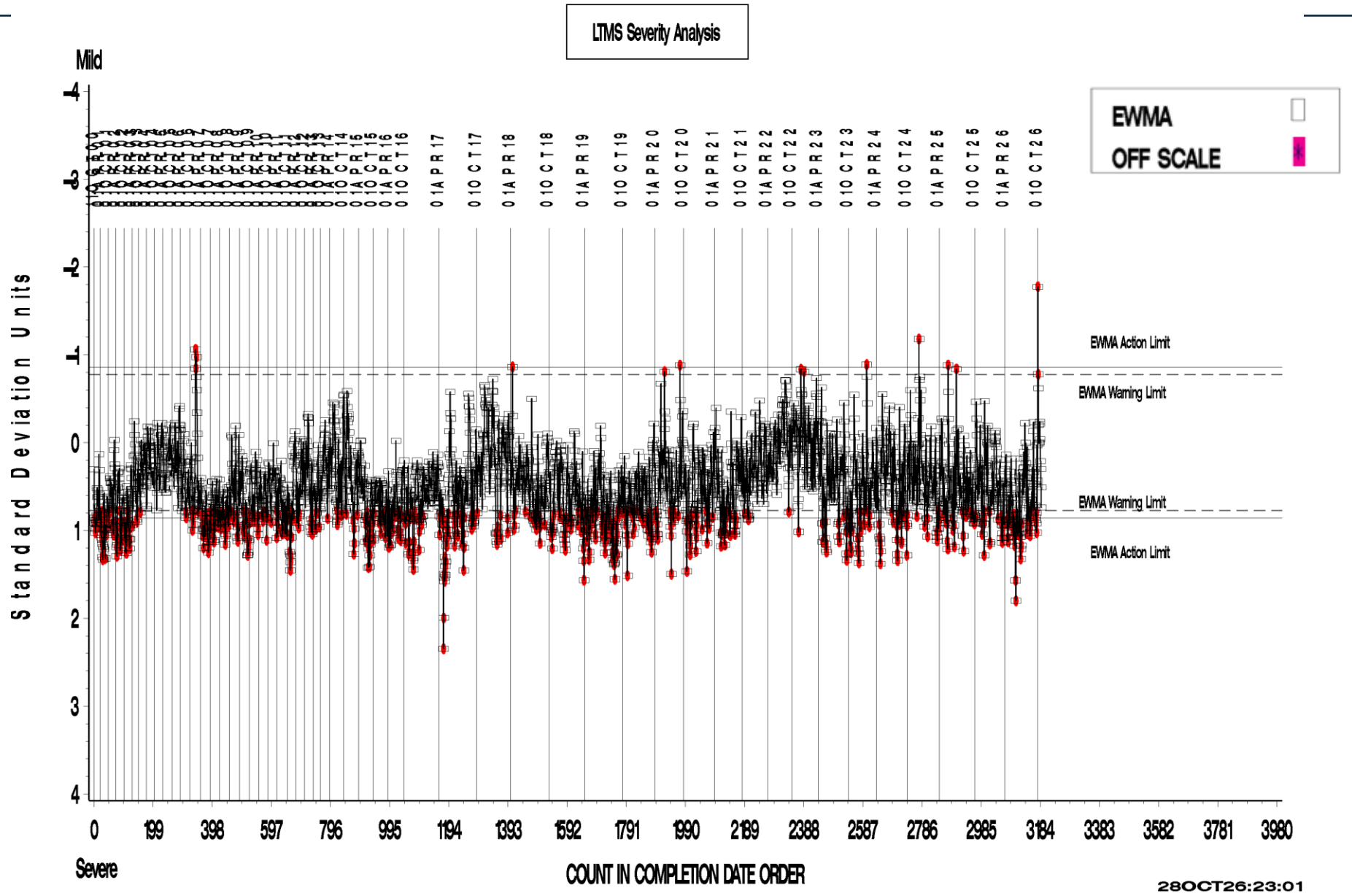


April 1, 2026 – September 30, 2026

B only

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VALID DATA
LTMS Severity Analysis (ProcB)
EVAPORATION LOSS, MASS%

TMC TEST MONITORING CENTER



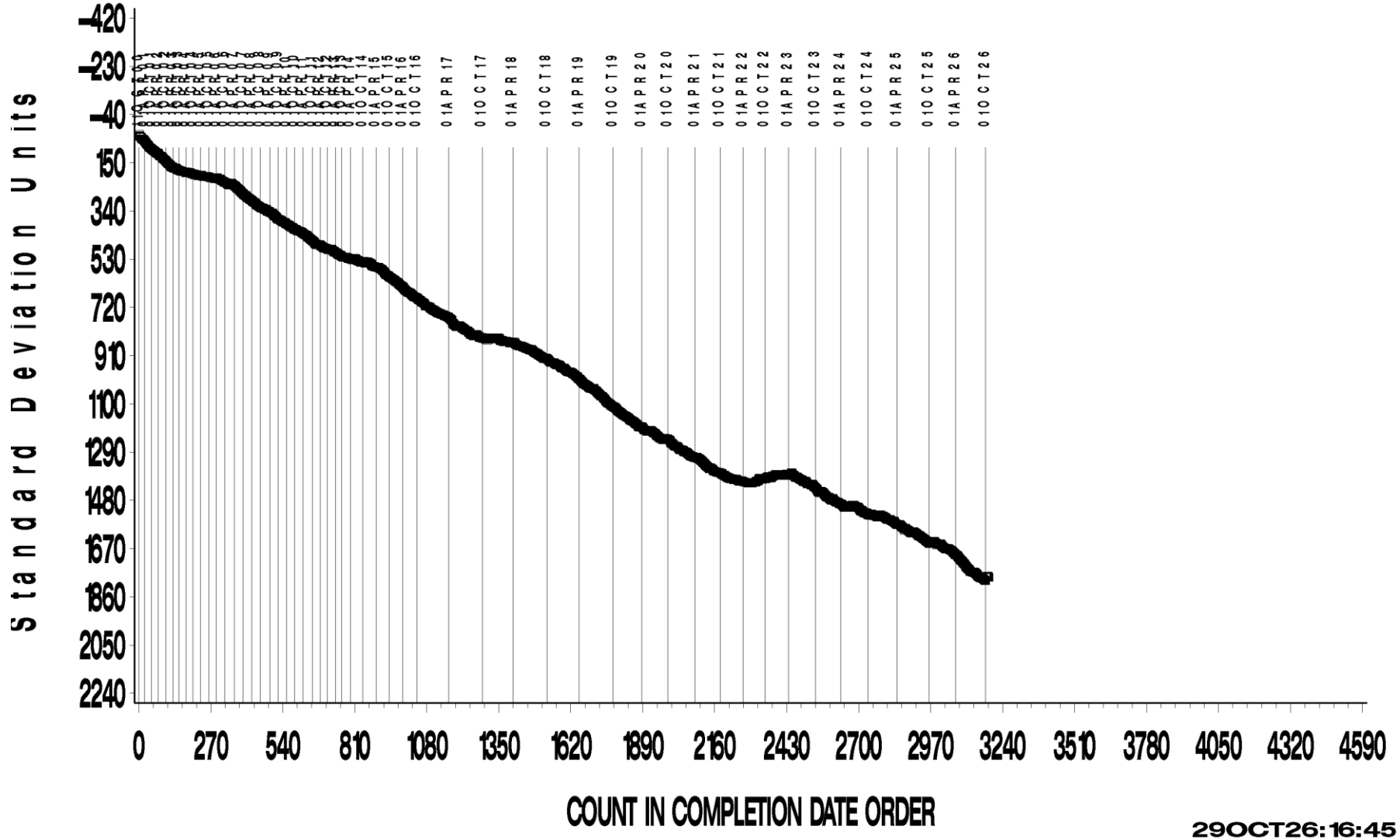
B only

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VAL

CUSUM Analysis (ProcB)

EVAPORATION LOSS, MASS%

CUSUM Severity Analysis



29OCT26:16:45

B only

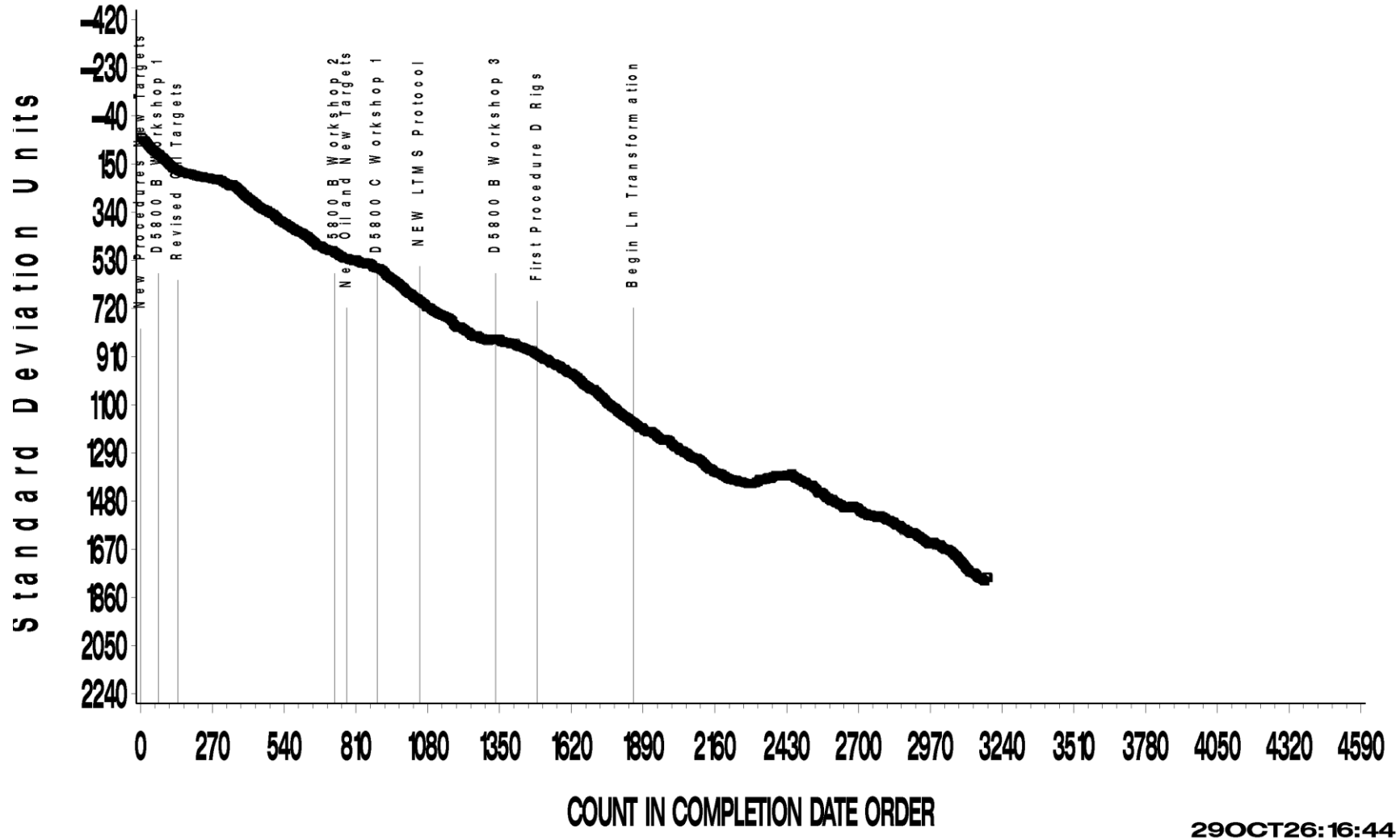
D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VAL

TEST MONITORING CENTER

CUSUM History (ProcB)

EVAPORATION LOSS, MASS%

CUSUM Severity Analysis



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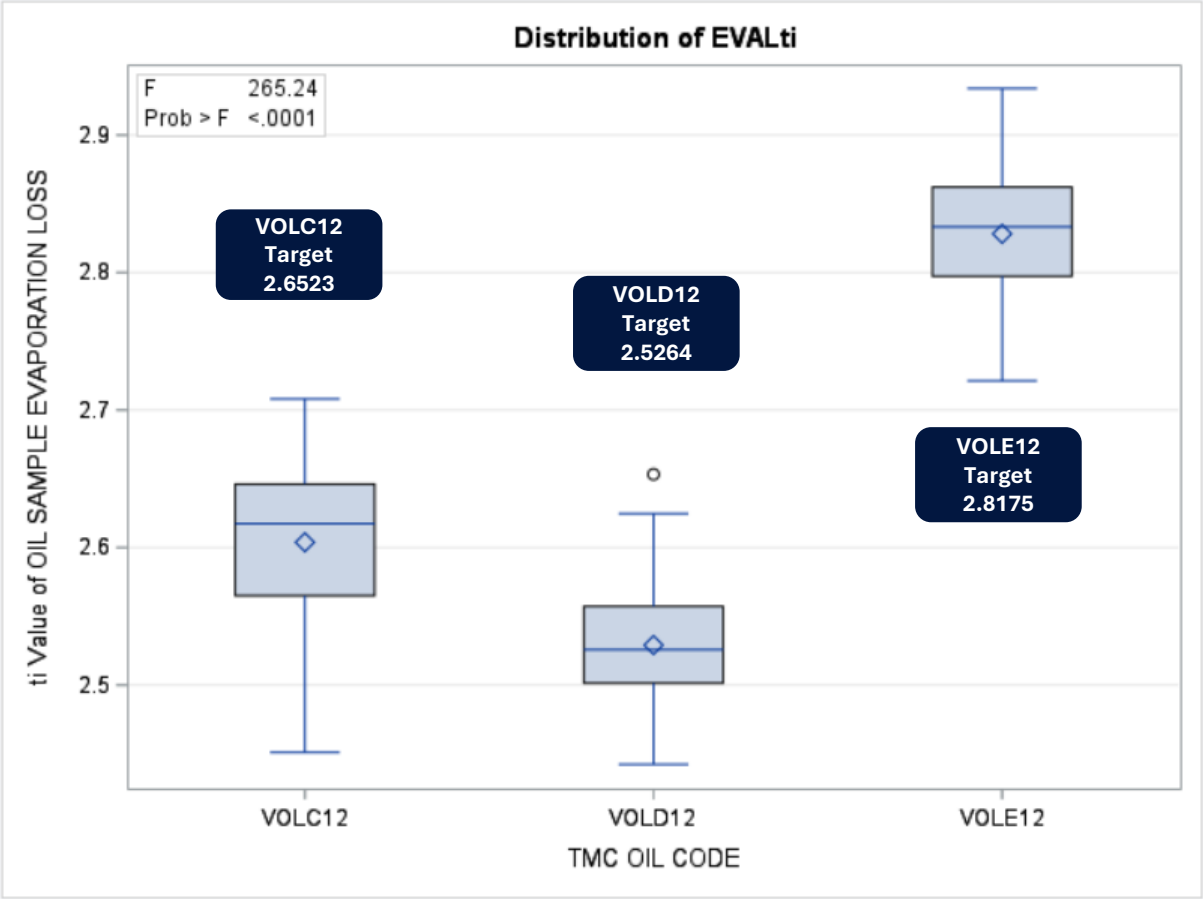
D5800: Evaporation Loss of Lubricating Oil by Noack Method: Industry Procedure D

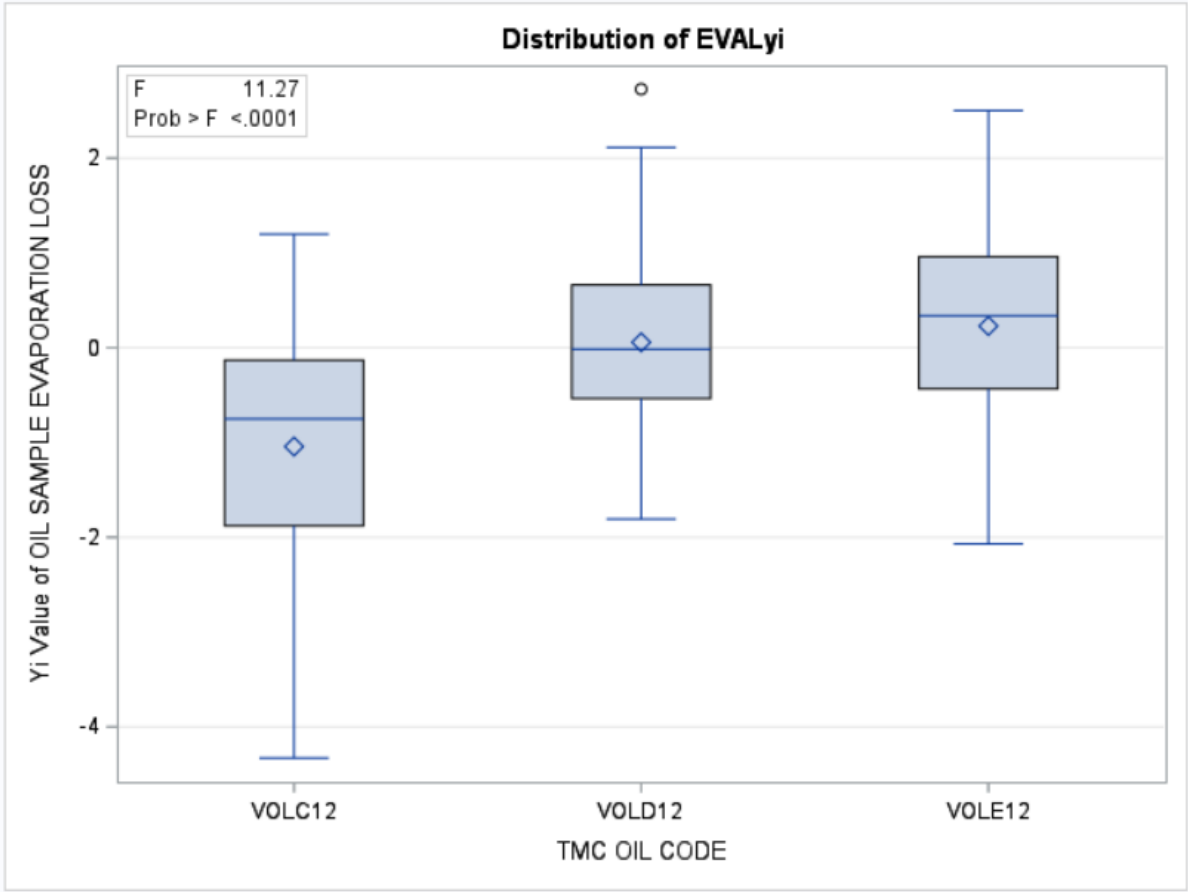
Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	82
Failed Calibration Test	OC	11
Total		**93**

Number of Labs Reporting Data: 7
Fail Rate of Operationally Valid Tests: 11.8% (last semester 4.49%)

April 1, 2026 – September 30, 2026

Procedure D: OCT2025 – MAR2026 Results



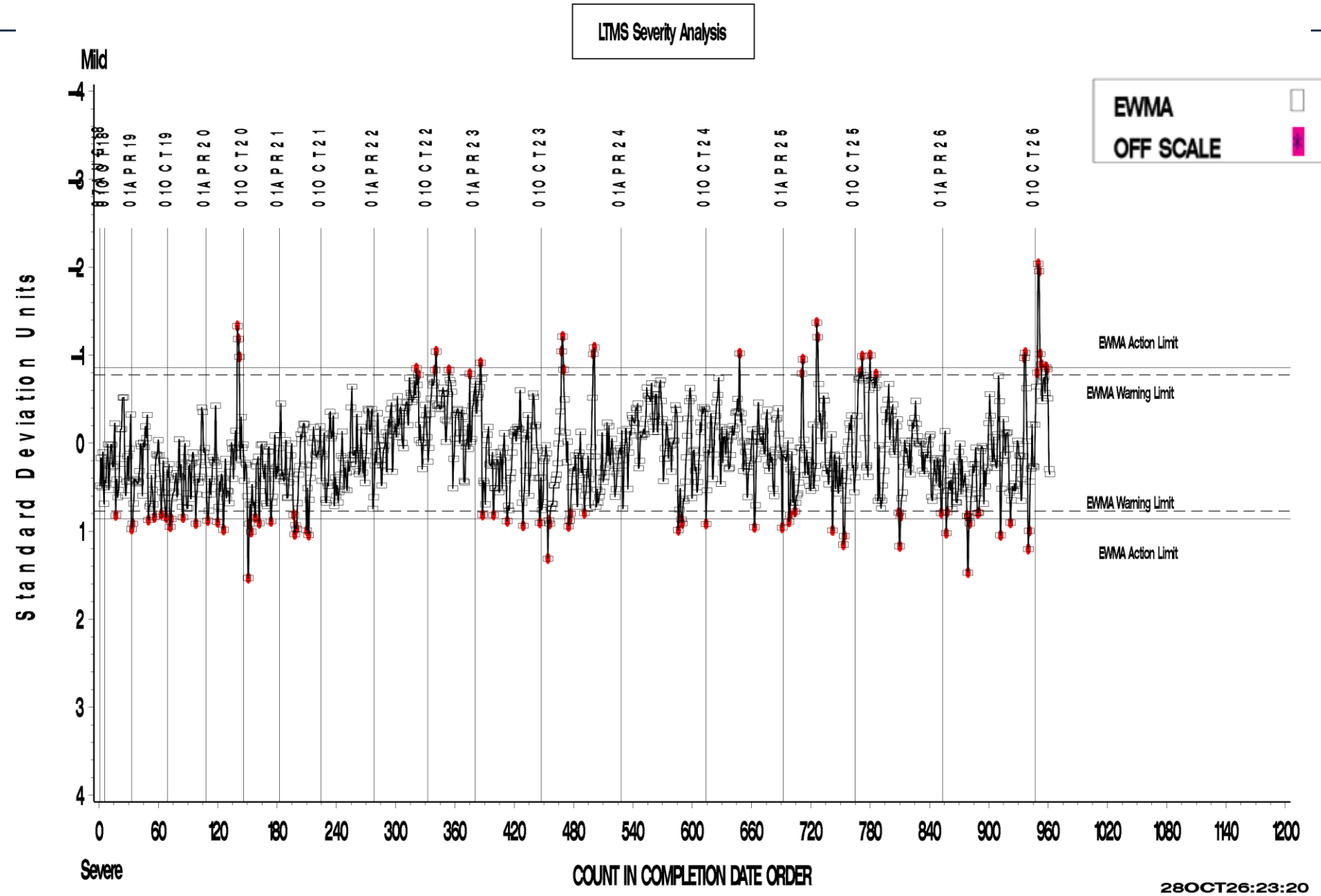


April 1, 2026 – September 30, 2026

D only

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VALID DATA
LTMS Severity Analysis (ProcD)
EVAPORATION LOSS, MASS%

TMC TEST MONITORING CENTER



D only

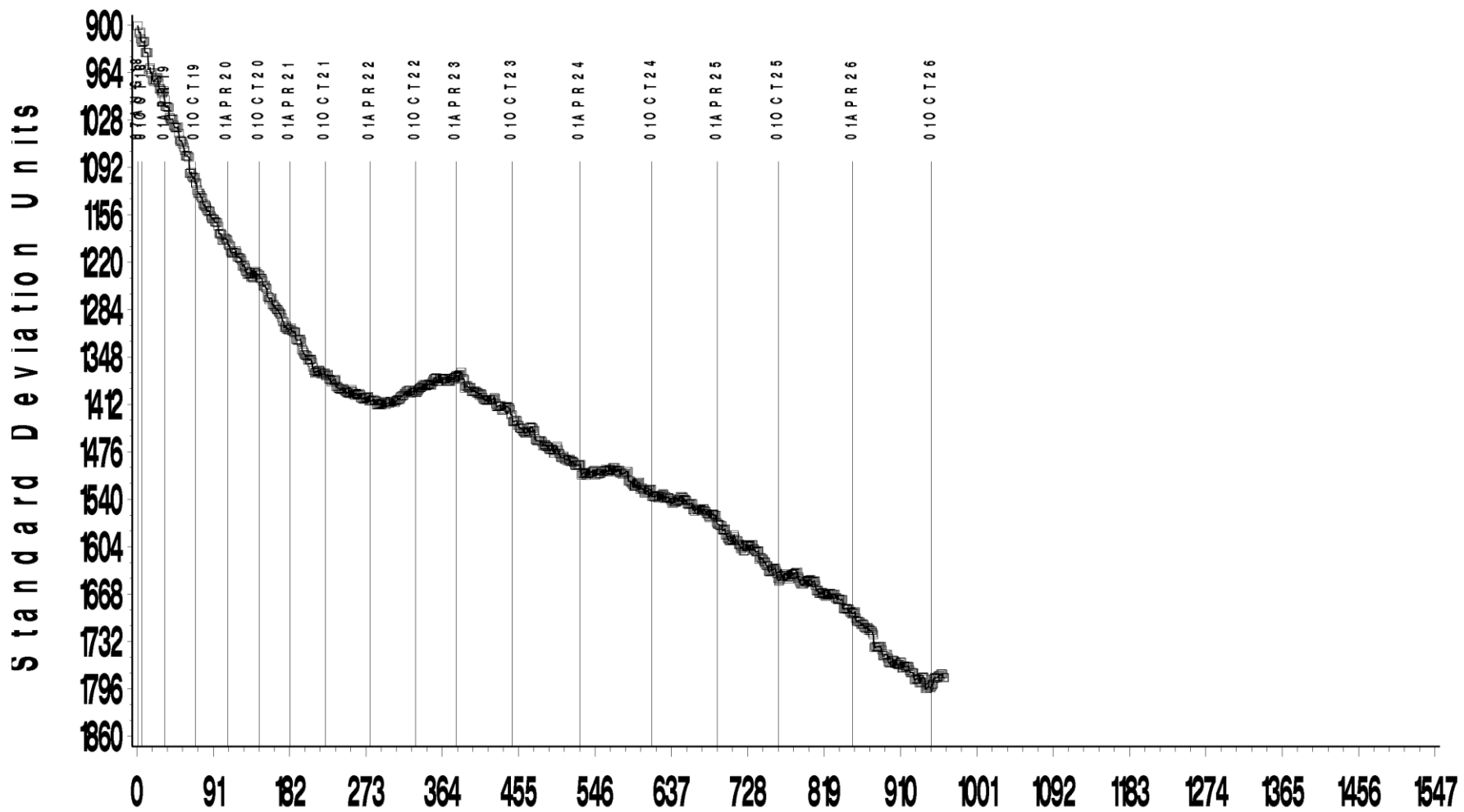
D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VAL

CUSUM Analysis (ProcD)

EVAPORATION LOSS, MASS%

TEST MONITORING CENTER

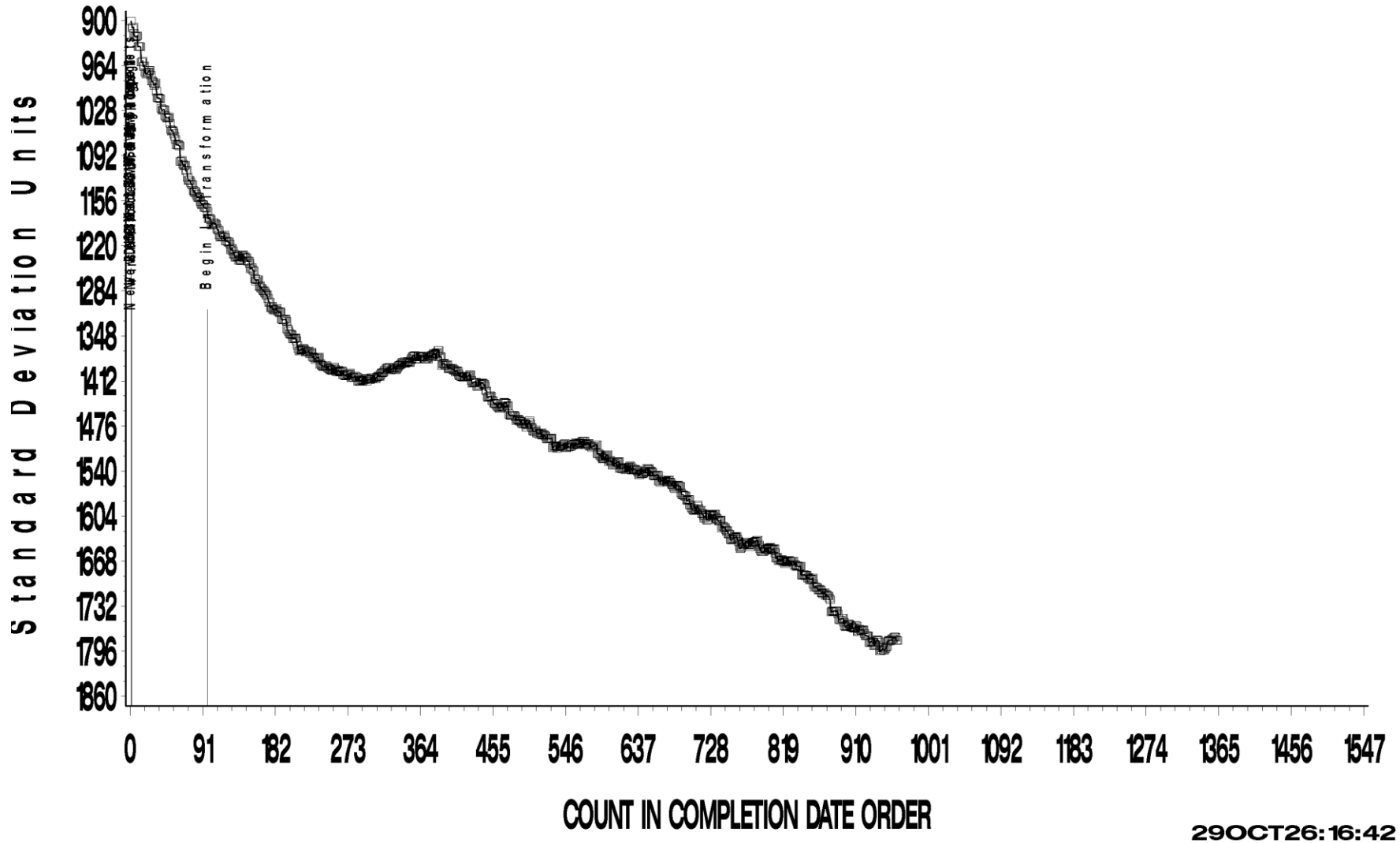
CUSUM Severity Analysis



D only

D5800 VOLATILITY BY NOACK INDUSTRY OPERATIONALLY VAL
CUSUM History (ProcD)
EVAPORATION LOSS, MASS%

CUSUM Severity Analysis



29OCT26:16:42

Reference Oil Inventory

D5800

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
VOLC12	2013	D5800	11.2	1.3	2.5 years
VOLD12	2013	D5800	9.3	1.4	2 years
VOLE12	2013	D5800	7.1	1.4	1.5 years
VOLD18	2018	D5800QC	380.7	42.3	5 years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.

April 1, 2026 – September 30, 2026

D5800: Evaporation Loss of Lubricating Oil by Noack Method: Semester Summary

Precision (Pooled s) remained similar to last semester.

Performance (Mean Δ/s) was moved away from target to +0.50 s versus +0.25 s last period.

- Procedure B rigs continue to trend severe (+1.12 s) while Procedure D rigs continue to trend mild (-0.25s).

All calibrated instruments are NS2 (Proc D) or NCK25G (Proc B).

TABLE of CONTENTS

D02.B0.07
TMC Monitored Tests

ASTM D 6082

High Temperature Foam

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6082	8 (+1)	11 (+2)

*Between 4/1/2026 and 9/30/2026

D6082: High Temperature Foam

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	20
Failed Calibration Test	OC	3
Acceptable Discrimination Test	AS	9
Failed Discrimination Test	OS	1
Operationally Invalid, Reported as Valid	RC, RS	0
Operationally Invalid, Reported by Lab	LC, LS	0
Informational Run (Valid)	NN	3
Aborted Tests	XC, XS	1
Total		**37**

Number of Labs Reporting Data: 8

Fail Rate of Operationally Valid Calibration Tests: 13.0% (last semester 15.8%)

April 1, 2026 – September 30, 2026

D6082: High Temperature Foam

Statistically Unacceptable Tests (OC, OS)	No. Of Tests
Foam Tendency Mild (OC)	2
Foam Tendency Mild (OS)	1
Foam Tendency Severe (OC)	1
Total	**4**

- FOUR statistically unacceptable calibration tests reported period.

April 1, 2026 – September 30, 2026

D6082: High Temperature Foam

Operationally Unacceptable Tests (RC, LC, LS, XC, XS)	No. Of Tests
LC (Lab Invalid Calibration Run)	0
XC (Lab Aborted Calibration Run)	1
RC (TMC Invalidated Calibration Run)	0
XS (Lab Aborted Discrimination Run)	0
LS (Lab Invalid Discrimination Run)	0
Total	**1**

- One operationally unacceptable result reported period.

April 1, 2026 – September 30, 2026

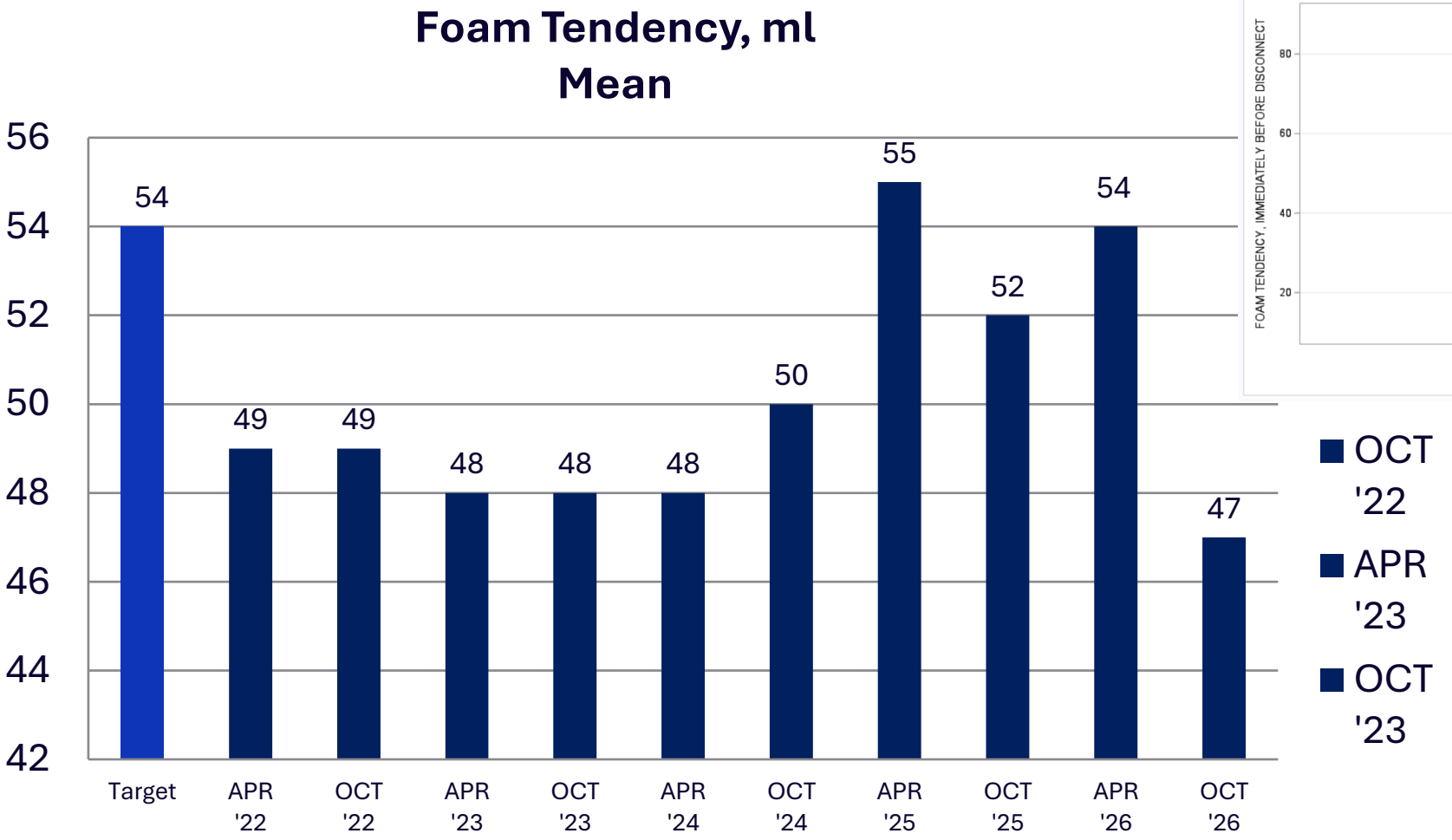
D6082: High Temperature Foam

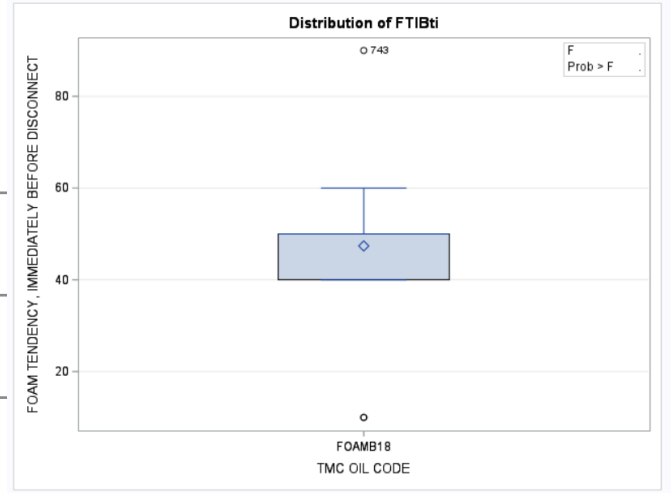
Informational Runs (MN, NN)	No. Of Tests
Non-blind Informational run on-target, valid (NN)	3
Non-blind Informational run out of range, valid (MN)	0
Total	**3**

- THREE informational runs were conducted this period.

April 1, 2026 – September 30, 2026

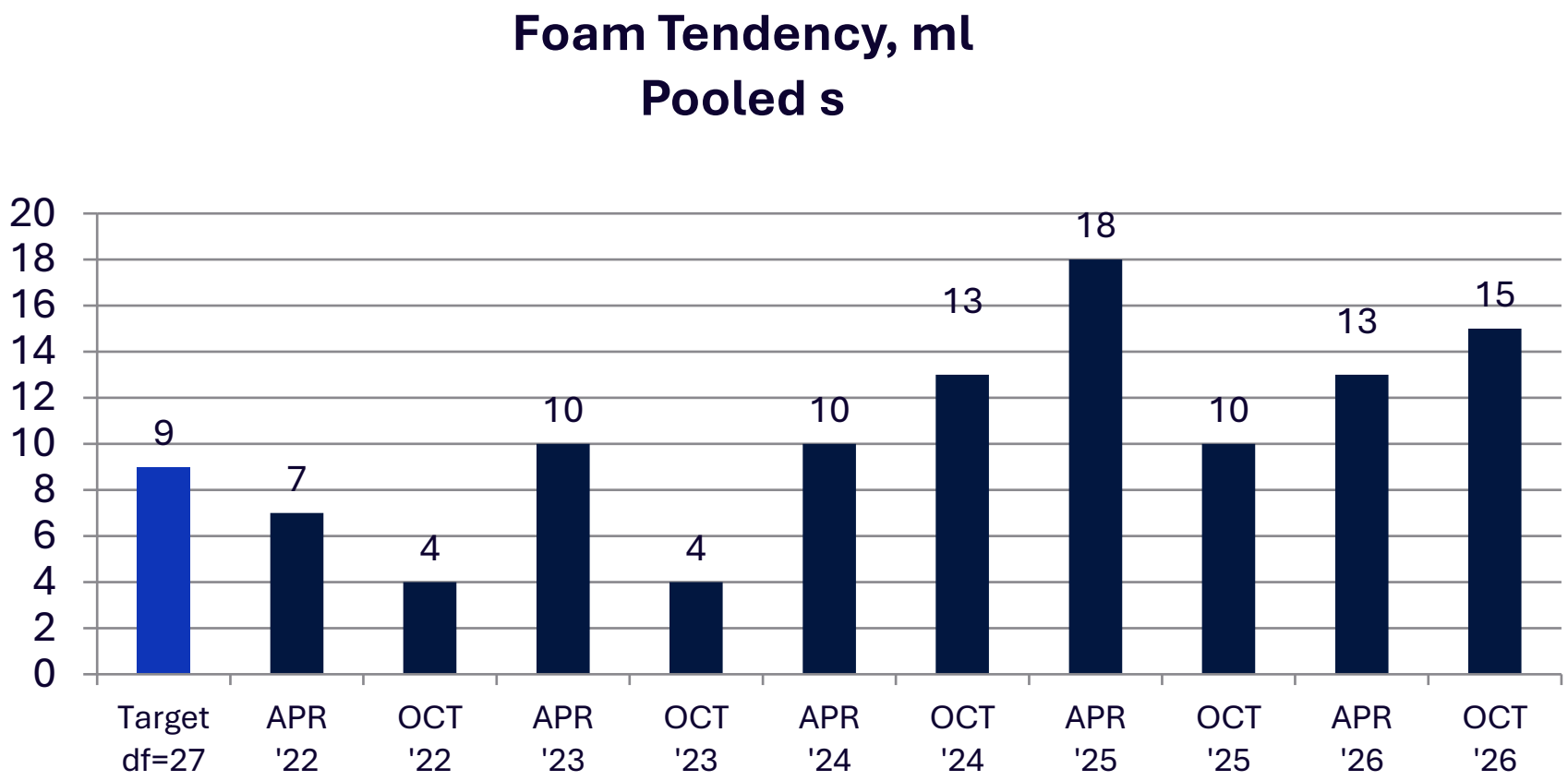
D6082 Performance by Oil





April 1, 2026 – September 30, 2026

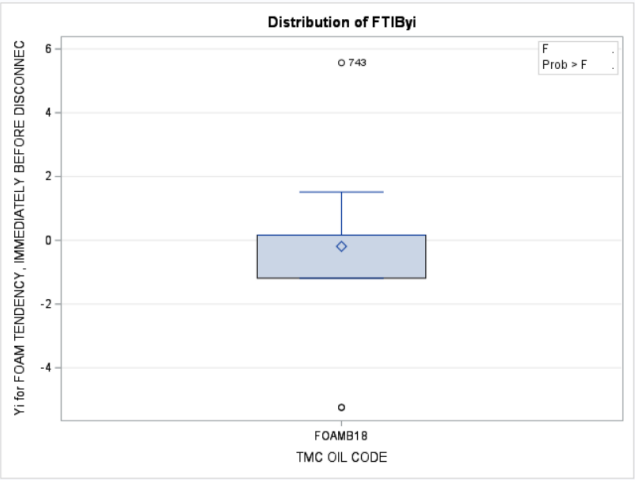
D6082: High Temperature Foam

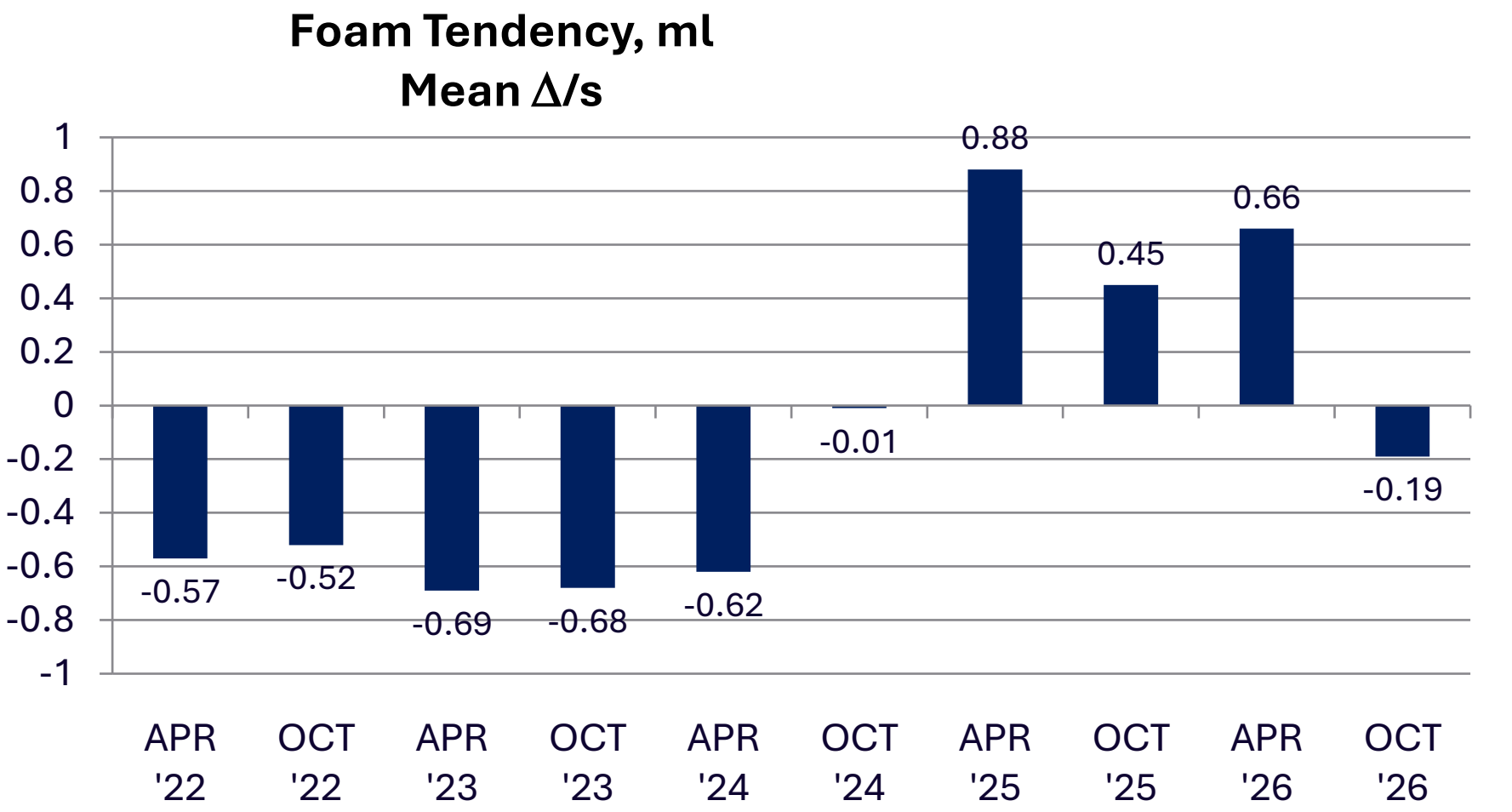


[1]Target precision updated to current reference oil FOAMB18

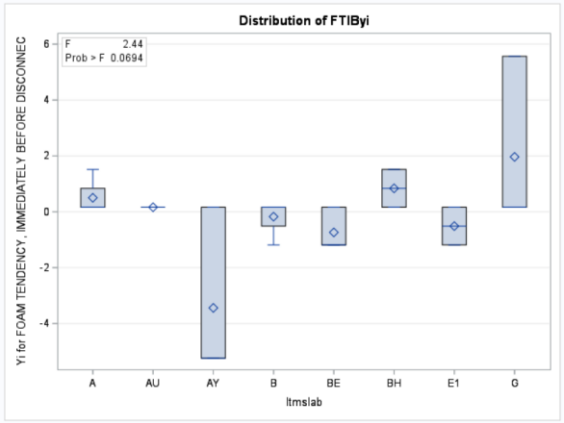
April 1, 2026 – September 30, 2026

D6082: High Temperature Foam



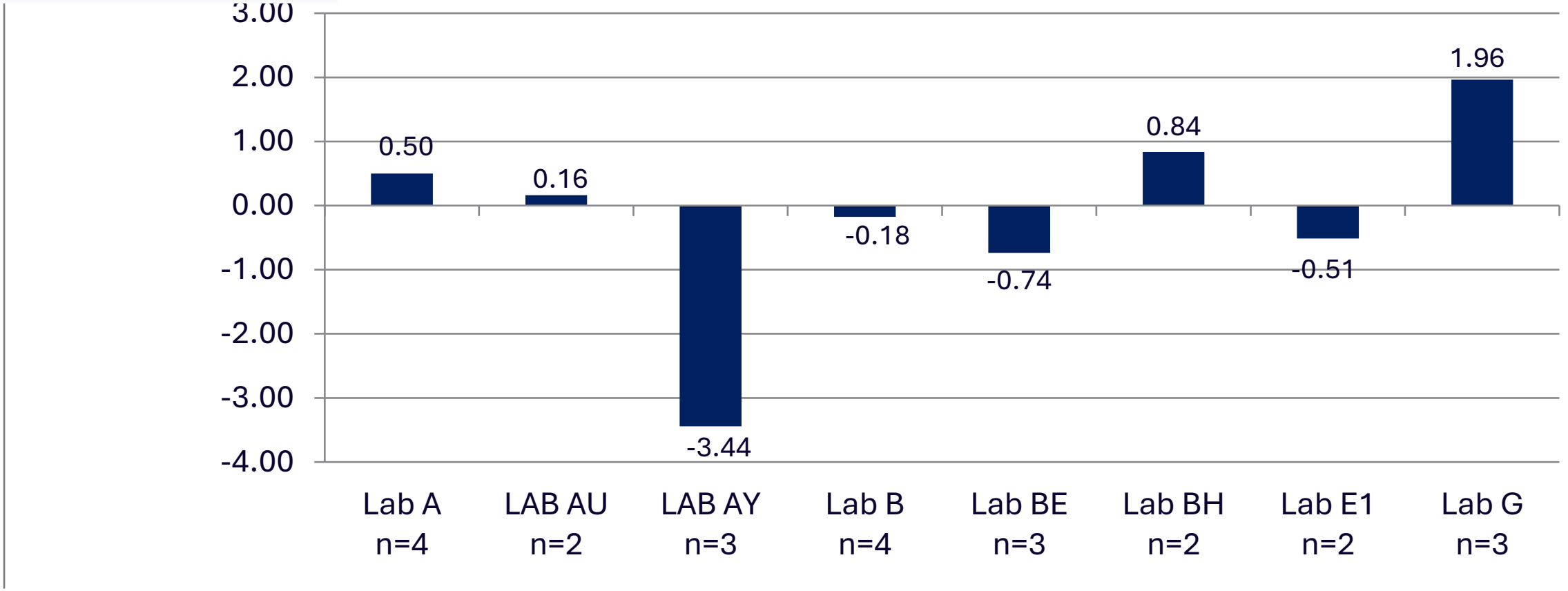


April 1, 2026 – September 30, 2026



D6082: High Temperature Foam

Current Period Severity Estimates by Lab
Foam Tendency, ml



April 1, 2026 – September 30, 2026

D6082: High Temperature Foam Status

- Foam Tendency Precision (Pooled s) has regressed further (to 15) this semester. Previous semester Precision was 13.
- Performance (Mean Δ/s) has reversed to a slightly mild position at -0.19 s.
- No non-zero occurrences of Foam Stability
- THREE calibration and ONE discrimination fails this semester.

April 1, 2026 – September 30, 2026

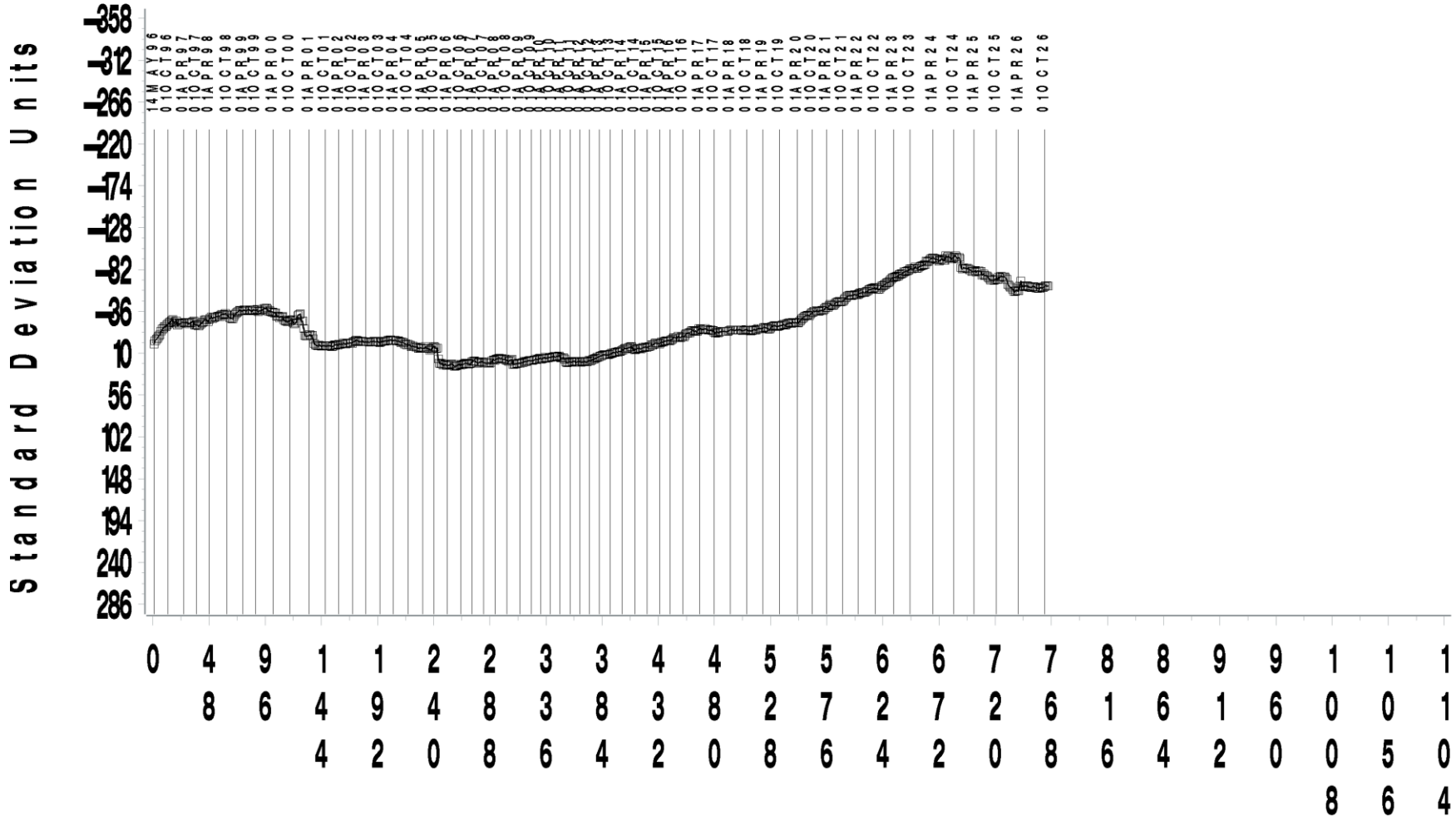
D6082 HIGH TEMPERATURE FOAM INDUSTRY OPERATIONALLY VALID DA

CUSUM Severity Analysis
FOAM TENDENCY

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



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D6082 HIGH TEMPERATURE FOAM INDUSTRY OPERATIONALLY VALID DA

CUSUM History
FOAM TENDENCY

TEST MONITORING CENTER

CUSUM Severity Analysis



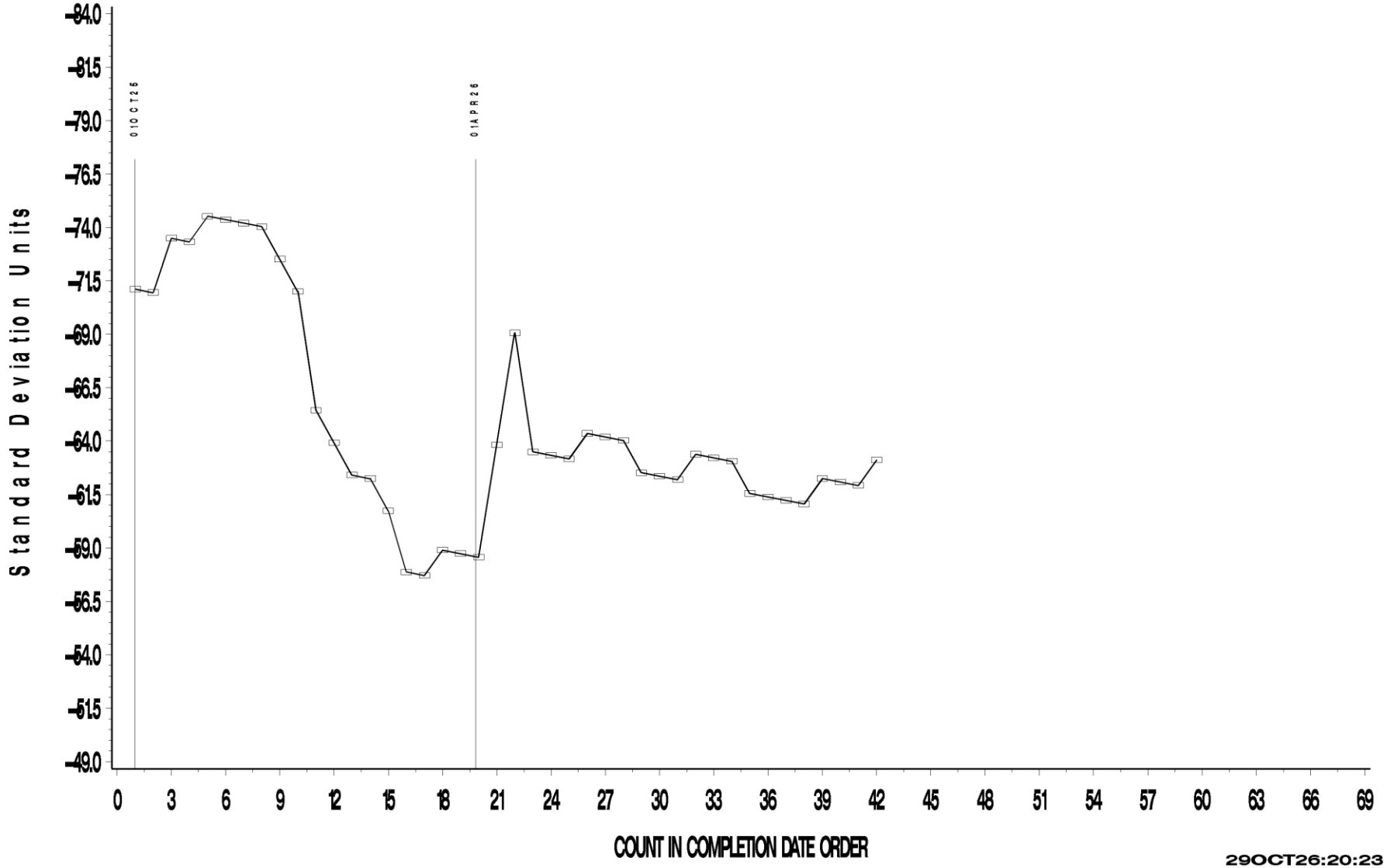
D6082 HIGH TEMPERATURE FOAM INDUSTRY OPERATIONALLY VALID DA

CUSUM Analysis (12m)

FOAM TENDENCY

TEST MONITORING CENTER

CUSUM Severity Analysis



Reference Oil Inventory

D6082

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
FOAMB18	2018	D6082	59.6	0.8	5+ years
66	2002	D6082	63.0	0.3	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] D874QC Samples (1L sizes) could quickly deplete Reference Oil 90 availability.

D02.B0.07
TMC Monitored Tests

ASTM D 6335

TEOST

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6335	9 (+3)	16 (+4)
*As of 9/30/2026		

D6335: Deposits by TEOST-33C

Test Status	Validity Code	No. Tests
Acceptable Calibration Tests	AC	32
Failed Calibration Tests[1]	OC	6
Operationally Invalid or Aborted by Lab	LC, XC	1
Informational Run (Test Result In Range)	NN	5
Informational Run (Test Result Out of Range)	MN	0
Total		**44**

1 - NINE Calibration Attempts on Rigs with no prior history not included in stats

Number of Labs Reporting Data: 9 (8 Labs Last Period)
Fail Rate of Operationally Valid Tests: 15.8% (30.3% Last Period)

April 1, 2026 – September 30, 2026

D6335: Deposits by TEOST-33C

Statistically Unacceptable Tests (OC)	No. Of Tests
Total Deposits Severe	4
Total Deposits Mild	2
Total	**6**
Operationally Invalid Tests (LC, XC)	**No. Of Tests**
XC: Lab Invalidated Run (Issues with Thermocouple)	1
Total	**1**

- RO reblend 75-2 approved for use with current RO 75-1 acceptance range.

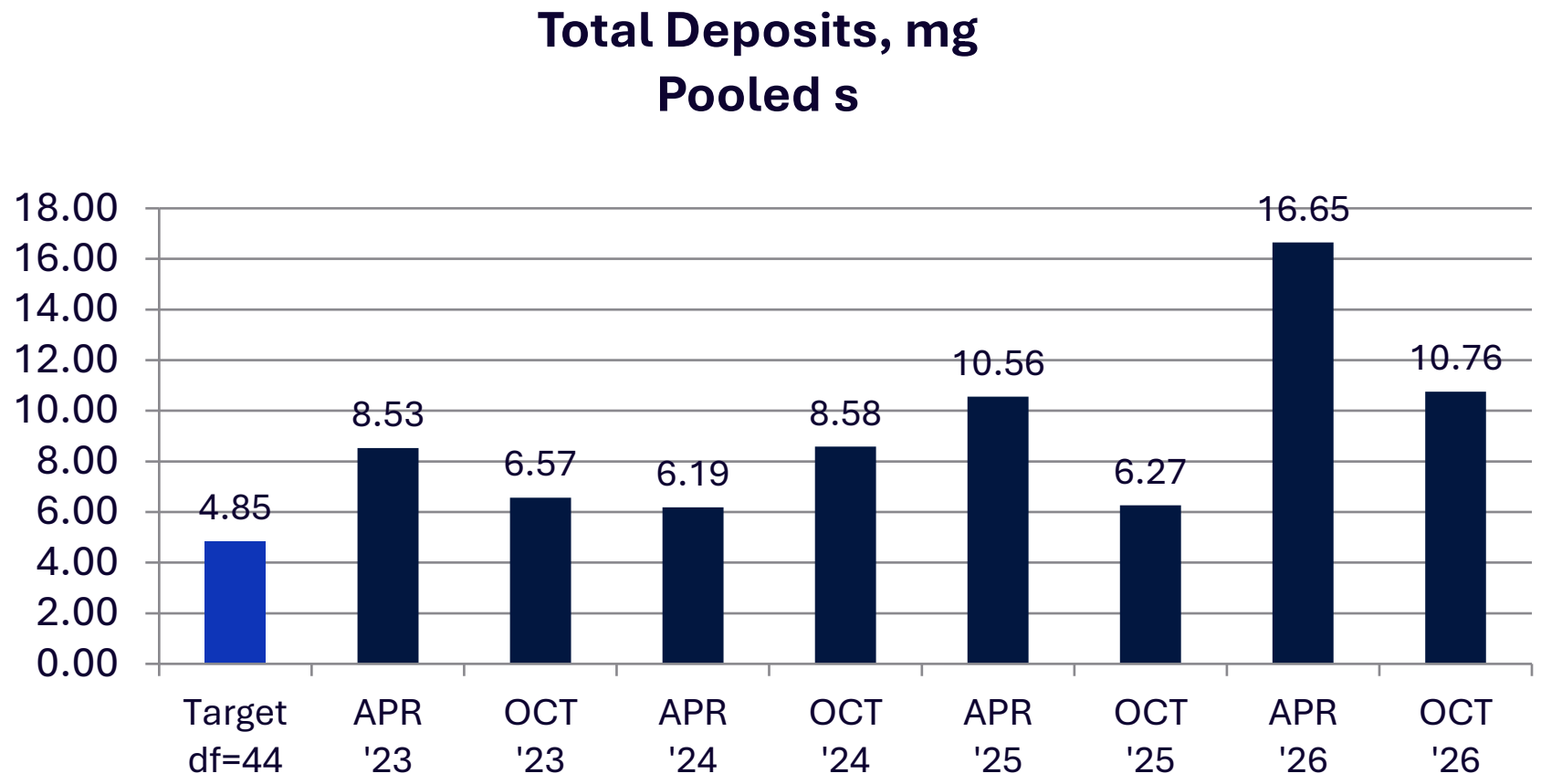
April 1, 2026 – September 30, 2026

D6335: Deposits by TEOST-33C

Informational Tests (NN, MN)	No. Of Tests
Test Result In Range (NN)	3
Test Result Outside of Range (MN)	0
Total	**3**

April 1, 2026 – September 30, 2026

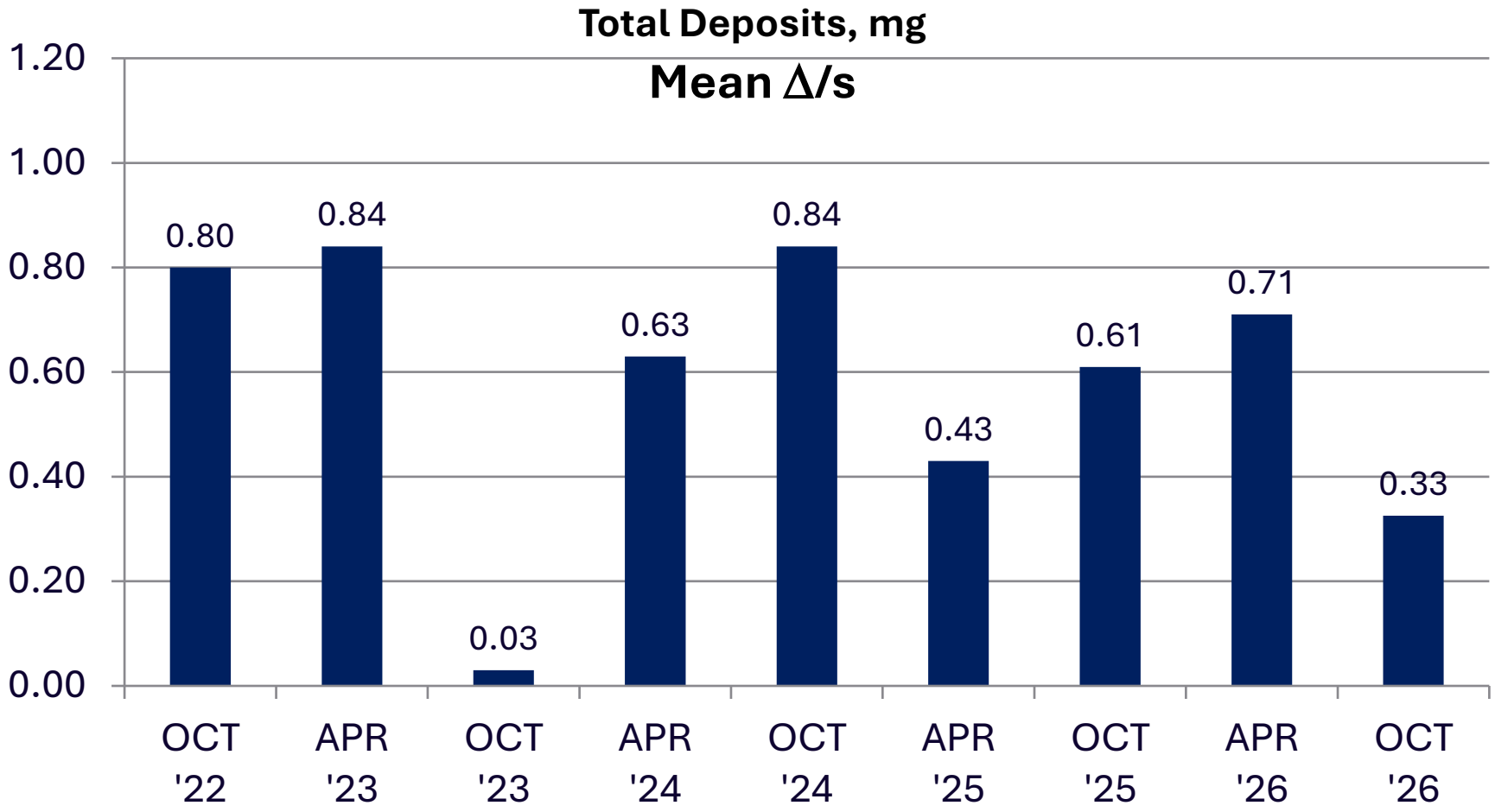
D6335 Precision Estimates



[1]Target precision updated to include only current oils 75-1 and 435-2

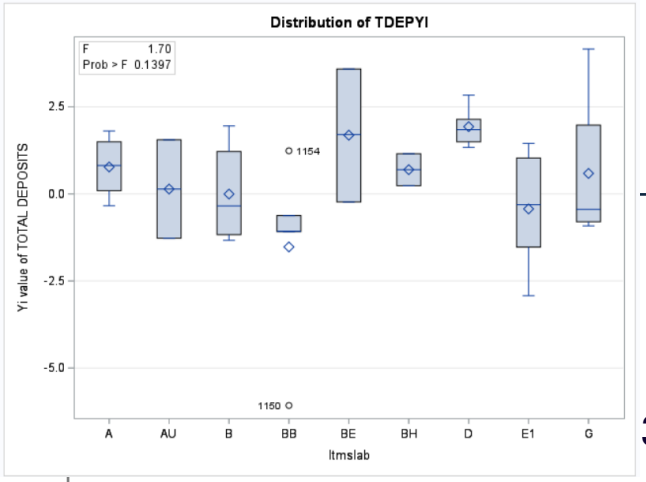
April 1, 2026 – September 30, 2026

D6335 Severity Estimates



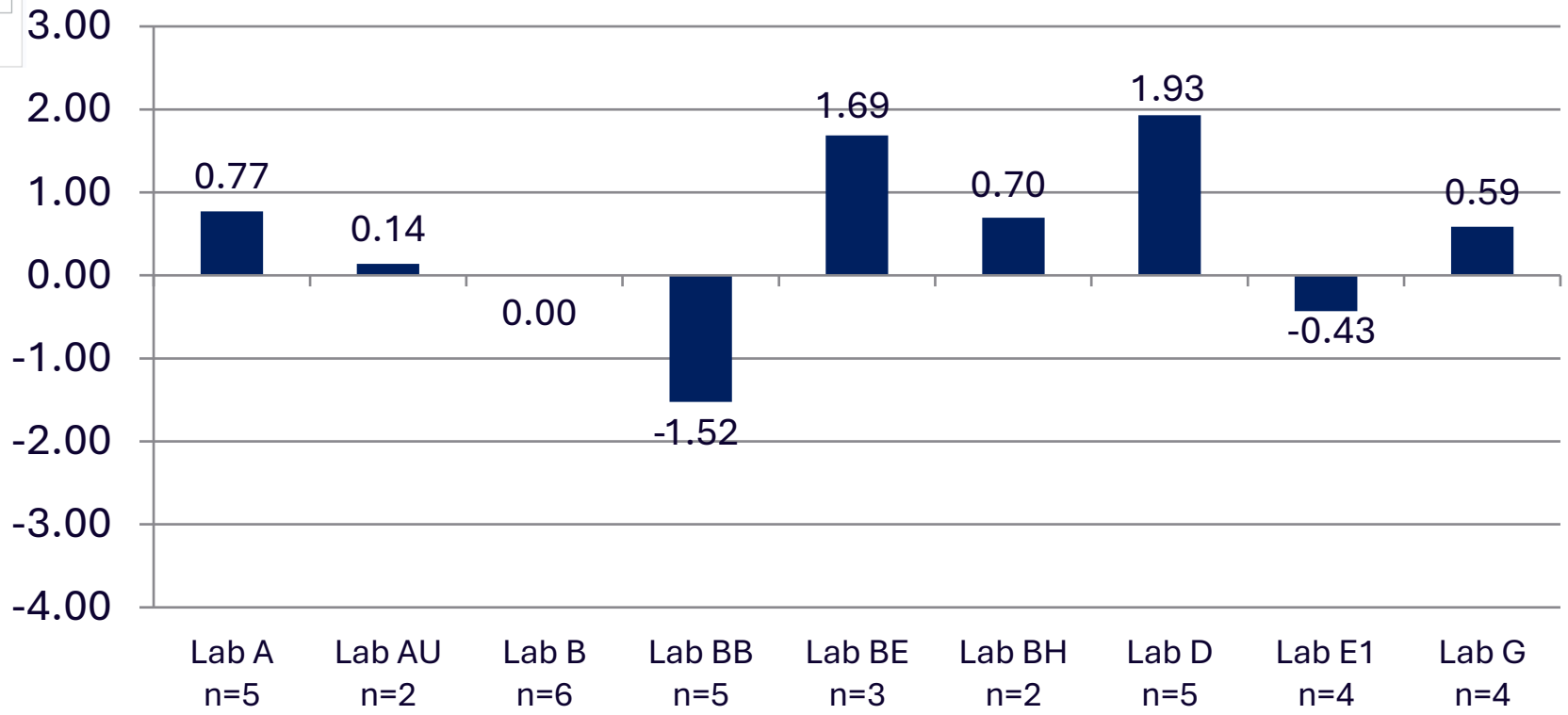
April 1, 2026 – September 30, 2026

D6335 Lab Severity Estimates



Total deposits, mg

Mean Δ/s



April 1, 2026 – September 30, 2026

D6335: Deposits by TEOST-33C Status

- Precision (Pooled s) moved toward target this semester (10.76s vs 16.65s).
- Performance (Mean Δ/s) improved this this period moving to 0.33 (0.71 last semester)
- Fail rate dropped significantly to 15.8% this semester, last semester fail rate was 30.3%.
- All tests this period report used Rod Batch N.
- Reblend RO 75-2 has replaced batch 75-1. Only one lab has RO 75-1 TESTKEYs in inventory.

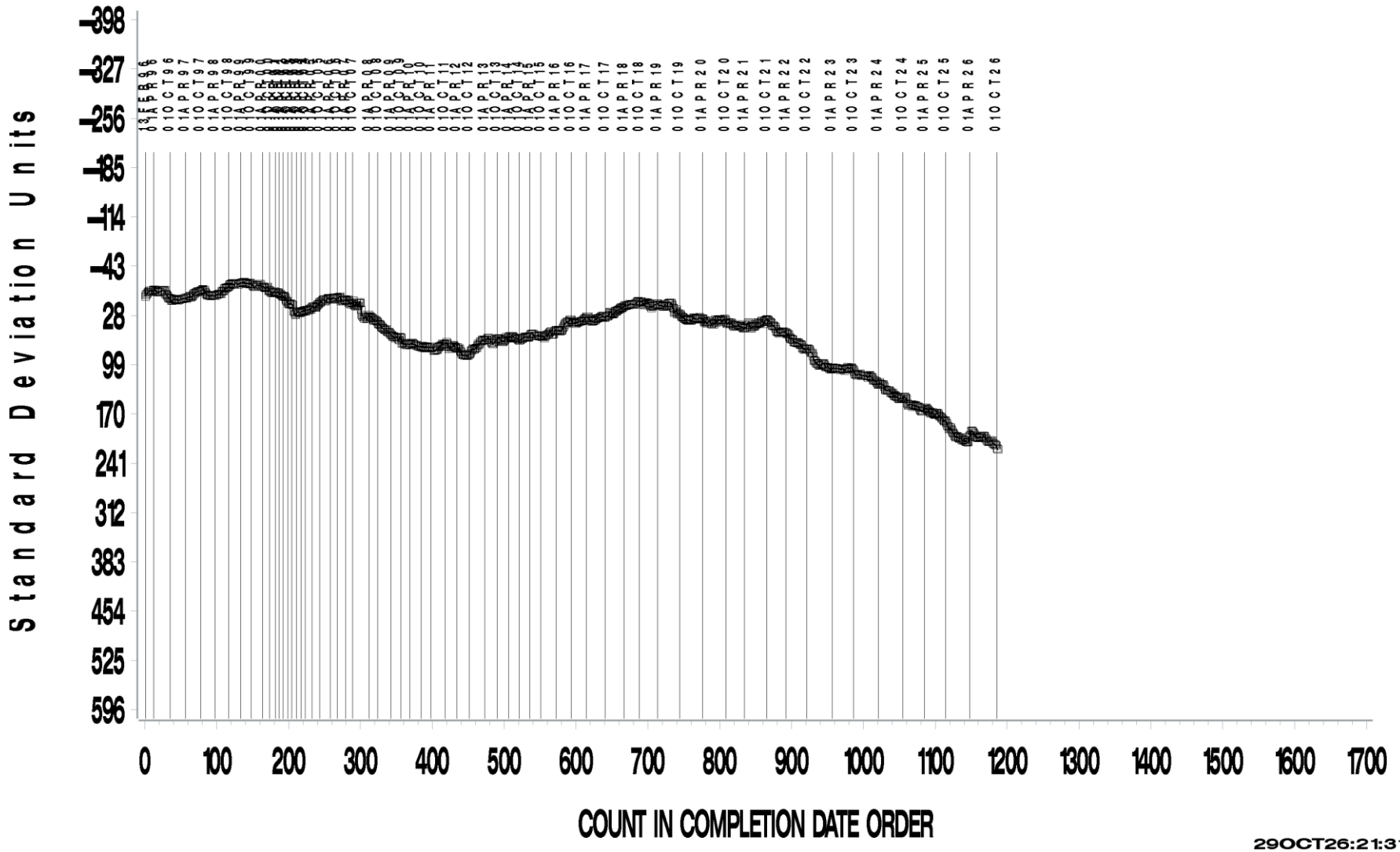
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TEOST –33C INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
TOTAL DEPOSITS MG

TMC TEST MONITORING CENTER

TMC

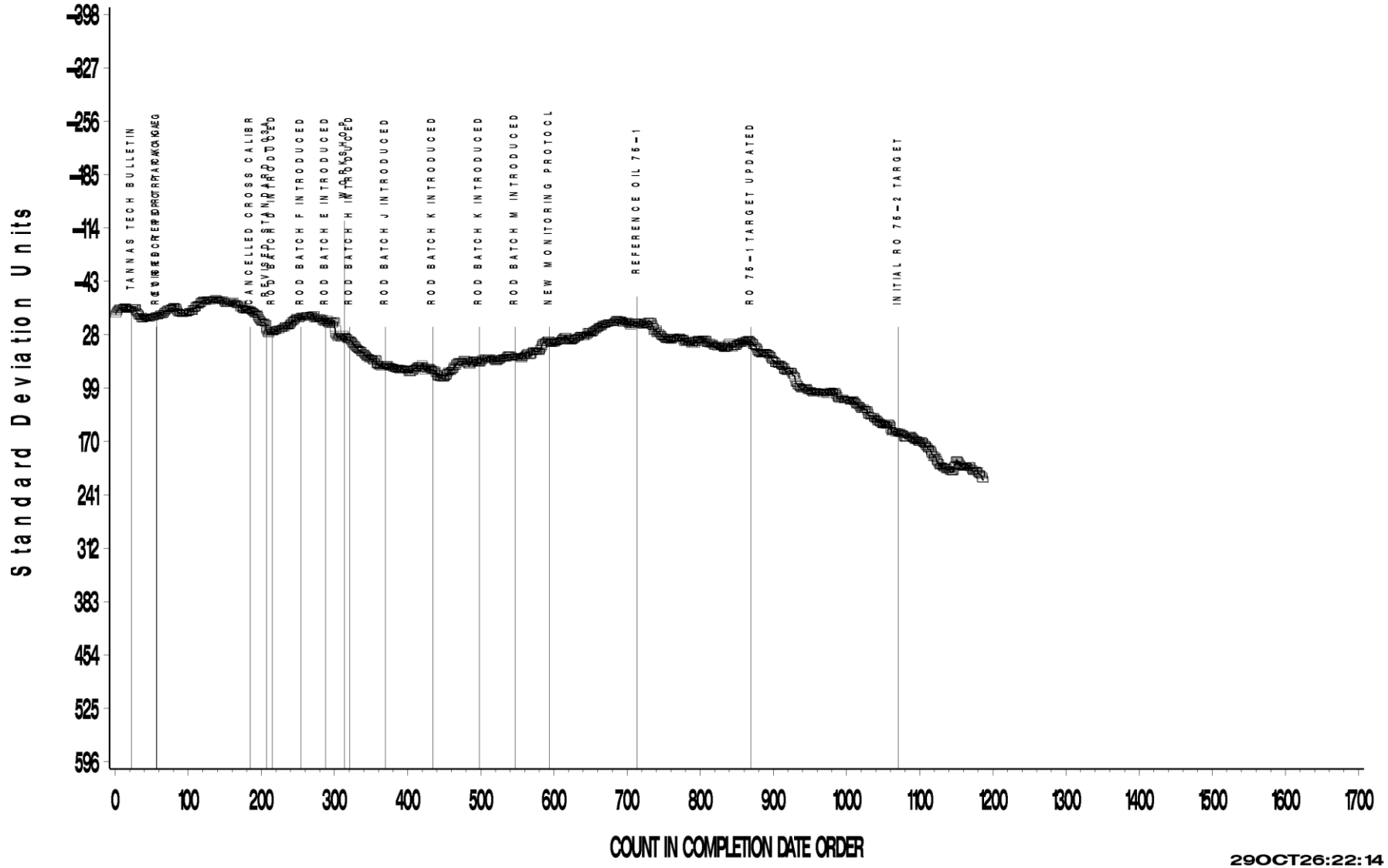
CUSUM Severity Analysis

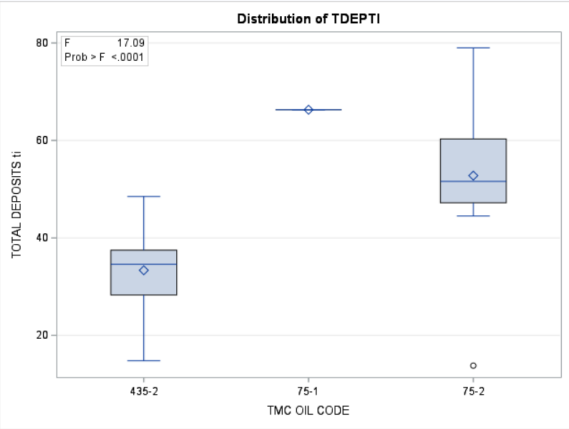


TEOST –33C INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity History
TOTAL DEPOSITS MG

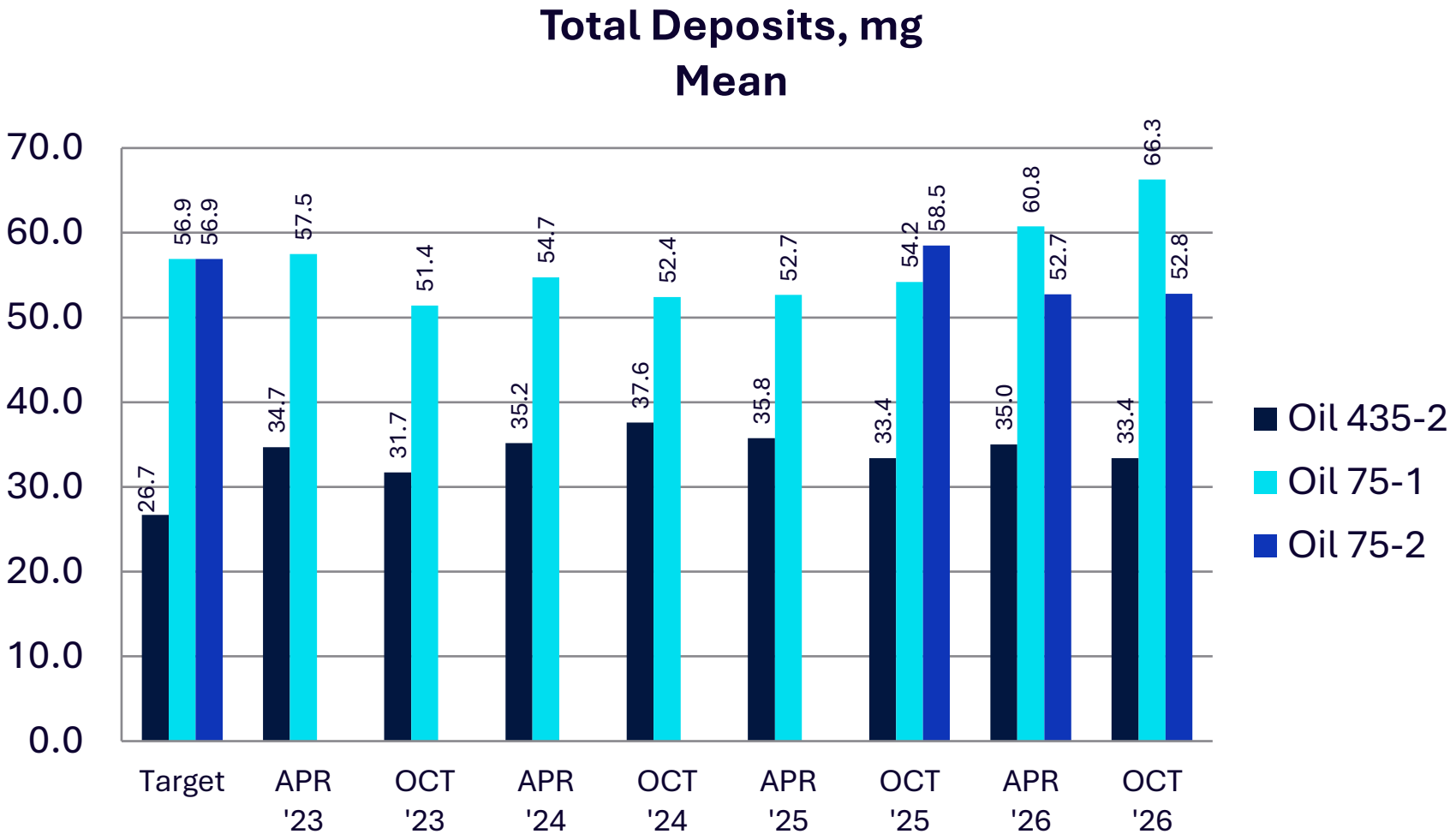
TEST MONITORING CENTER

CUSUM Severity Analysis



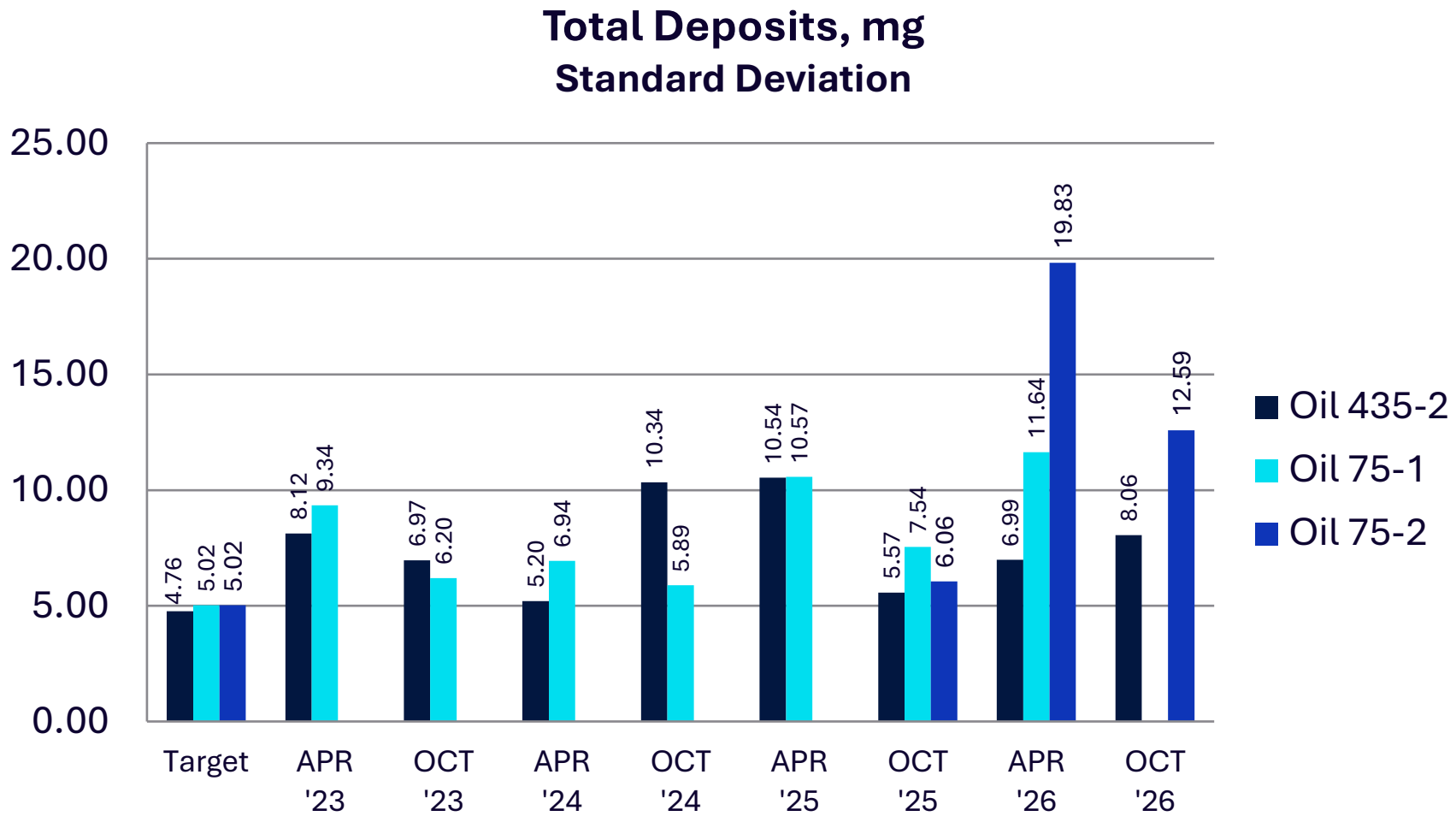


D6335 Performance by Oil



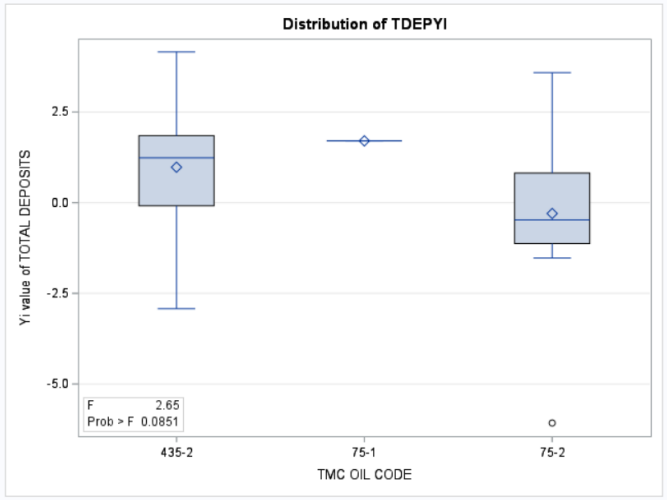
April 1, 2026 – September 30, 2026

D6335 Performance by Oil



April 1, 2026 – September 30, 2026

D6335 Performance by Oil



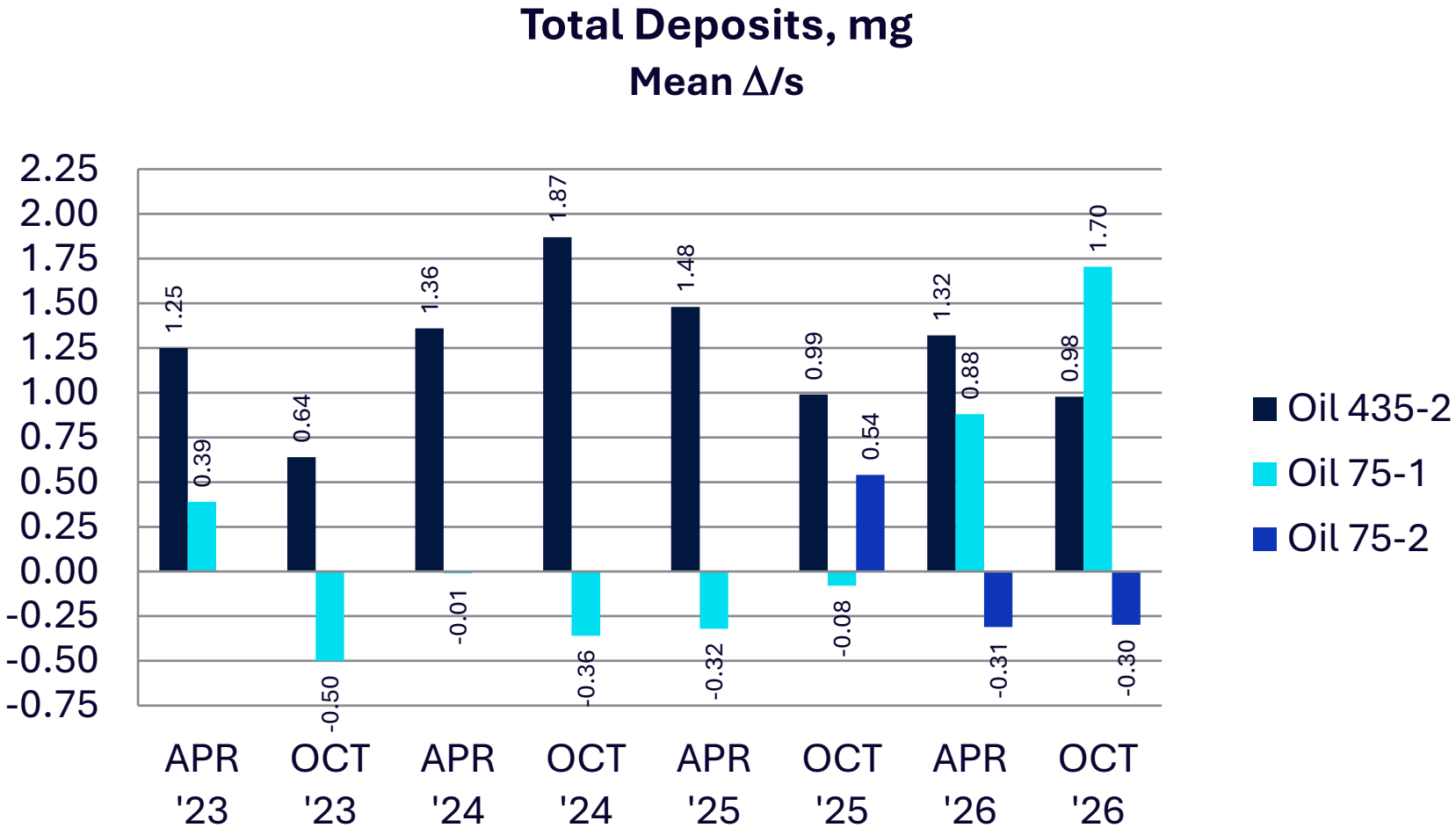


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Reference Oil Inventory

TEOST

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
75-2	2024	TEOST	3.9	0.5	2 years
435-2[B]	2010	TEOST	29.5	0.7	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] Multi-test oil; estimated aliquot reserved for bench testing.

April 1, 2026 – September 30, 2026

D02.B0.07
TMC Monitored Tests

ASTM D 6417

April 1, 2026 – September 30, 2026

D6417 Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6417	7 (+0)	10 (+0)

*Between 4/1/2026 and 9/30/2026

D6417: Estimation of Engine Oil Volatility by Capillary GC

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	22
Failed Calibration Test	OC	0
Total		**22**

Number of Labs Reporting Data: 7
Fail Rate of Operationally Valid Tests: 0% (last semester 5.3%)

April 1, 2026 – September 30, 2026

D6417: Estimation of Engine Oil Volatility by Capillary GC

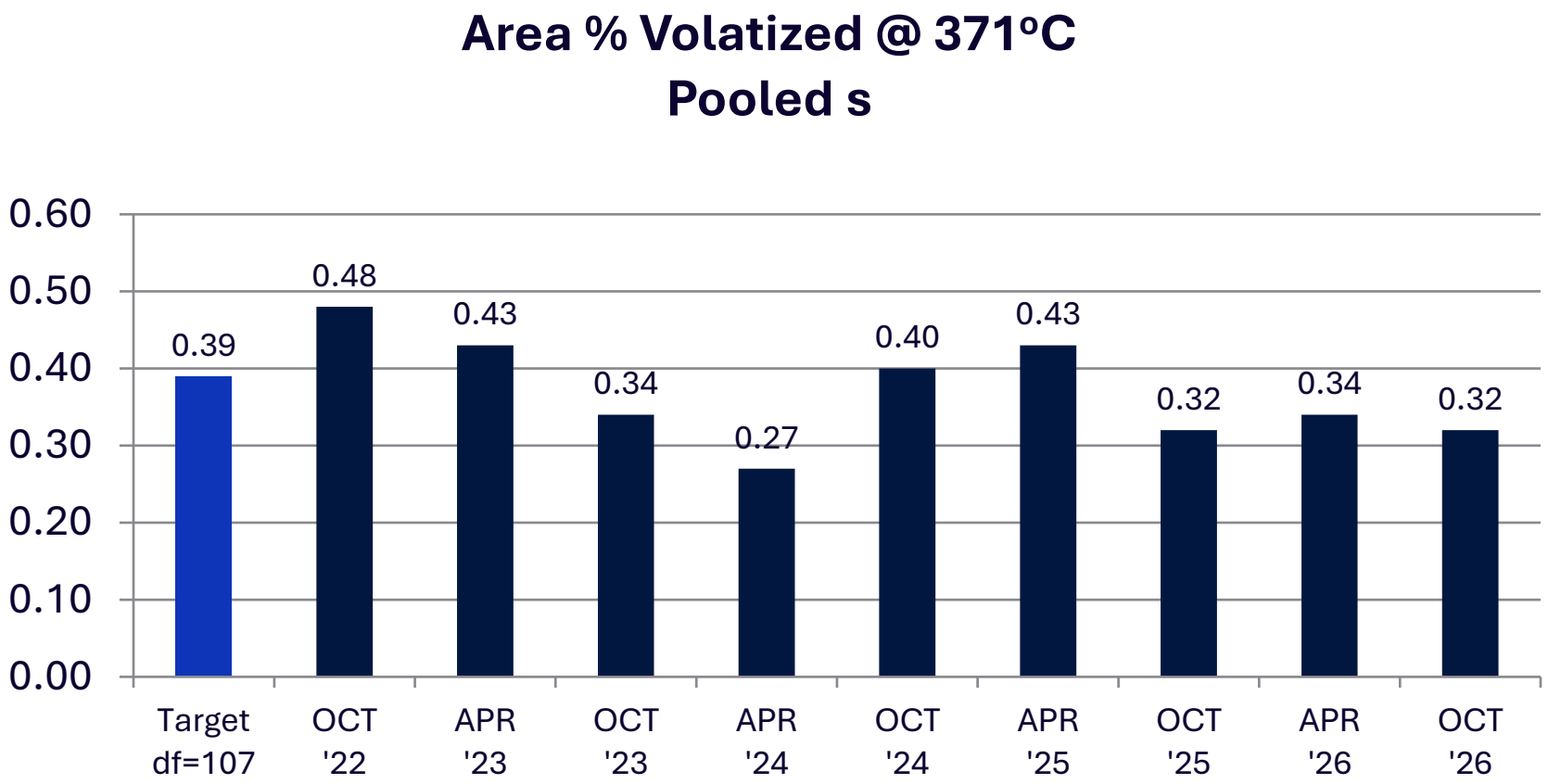
Statistically Unacceptable Tests (OC)	No. Of Tests
Volatility Loss Mild	0
Volatility Loss Severe	0

Operationally Invalid Tests (LC)	No. Of Tests
Lab Invalidated Tests	0

No Failing Calibration Tests and No Operationally Invalid this report period.

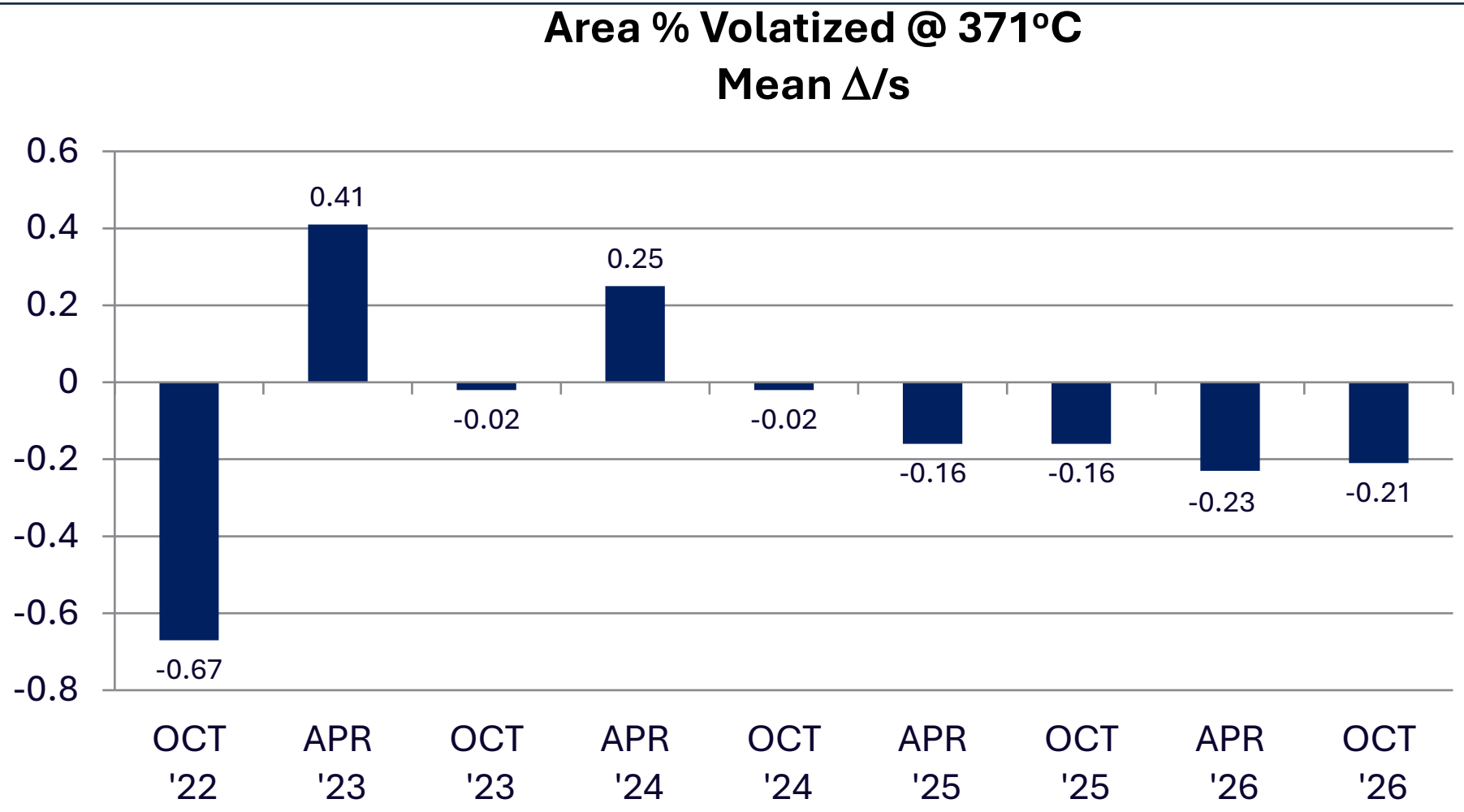
April 1, 2026 – September 30, 2026

D6417 Precision Estimates



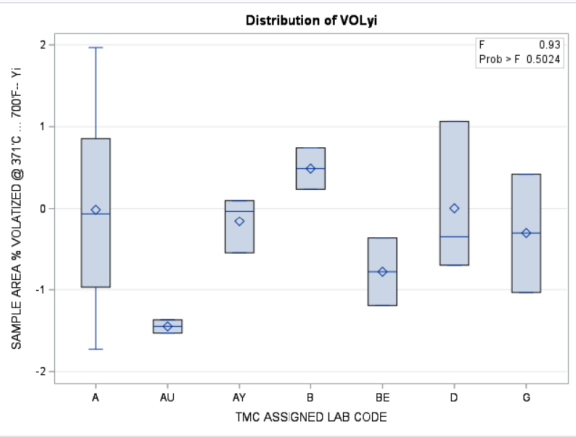
April 1, 2026 – September 30, 2026

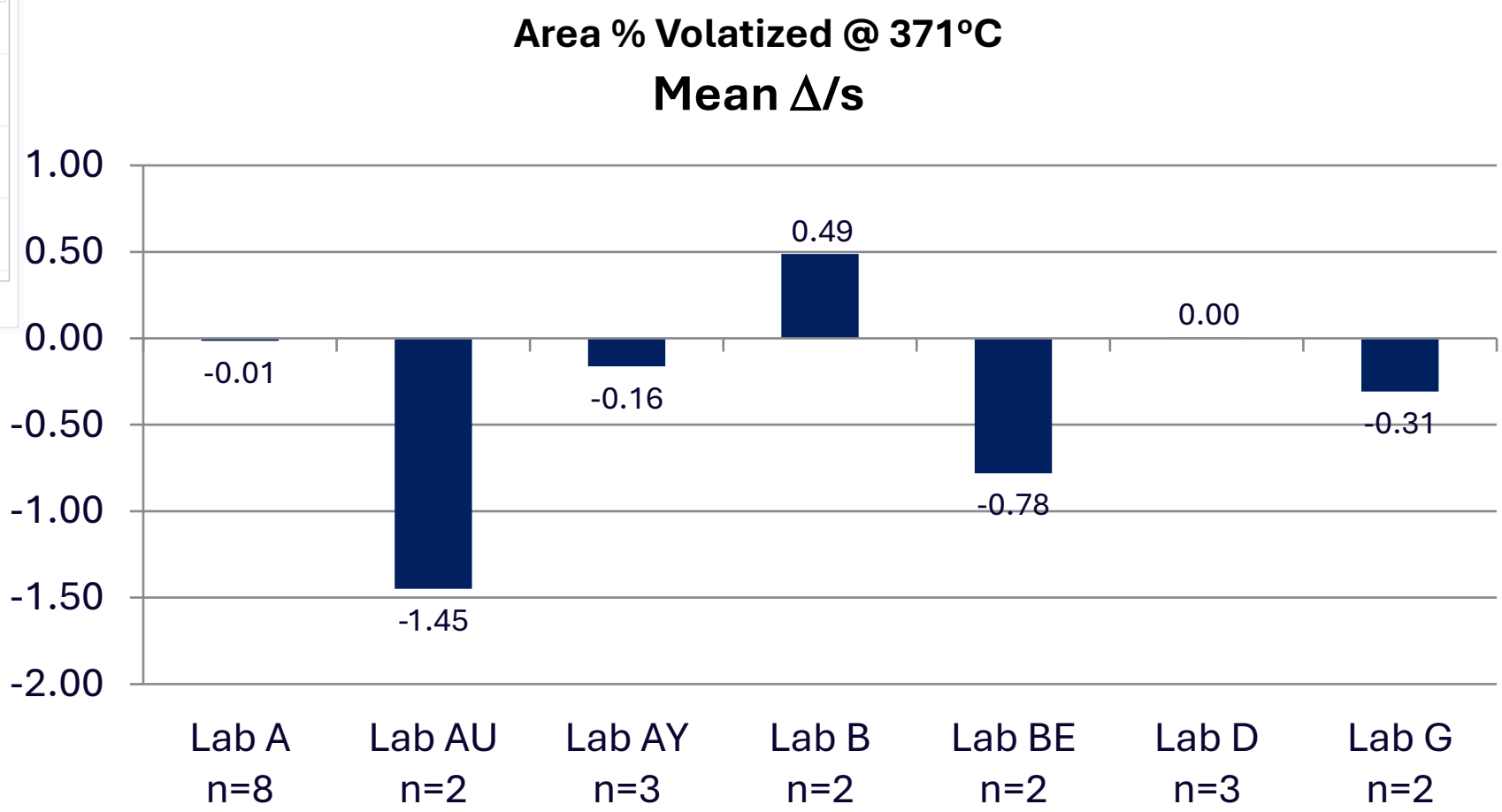
D6417 Severity Estimates



April 1, 2026 – September 30, 2026

D6417 Lab Severity Estimates

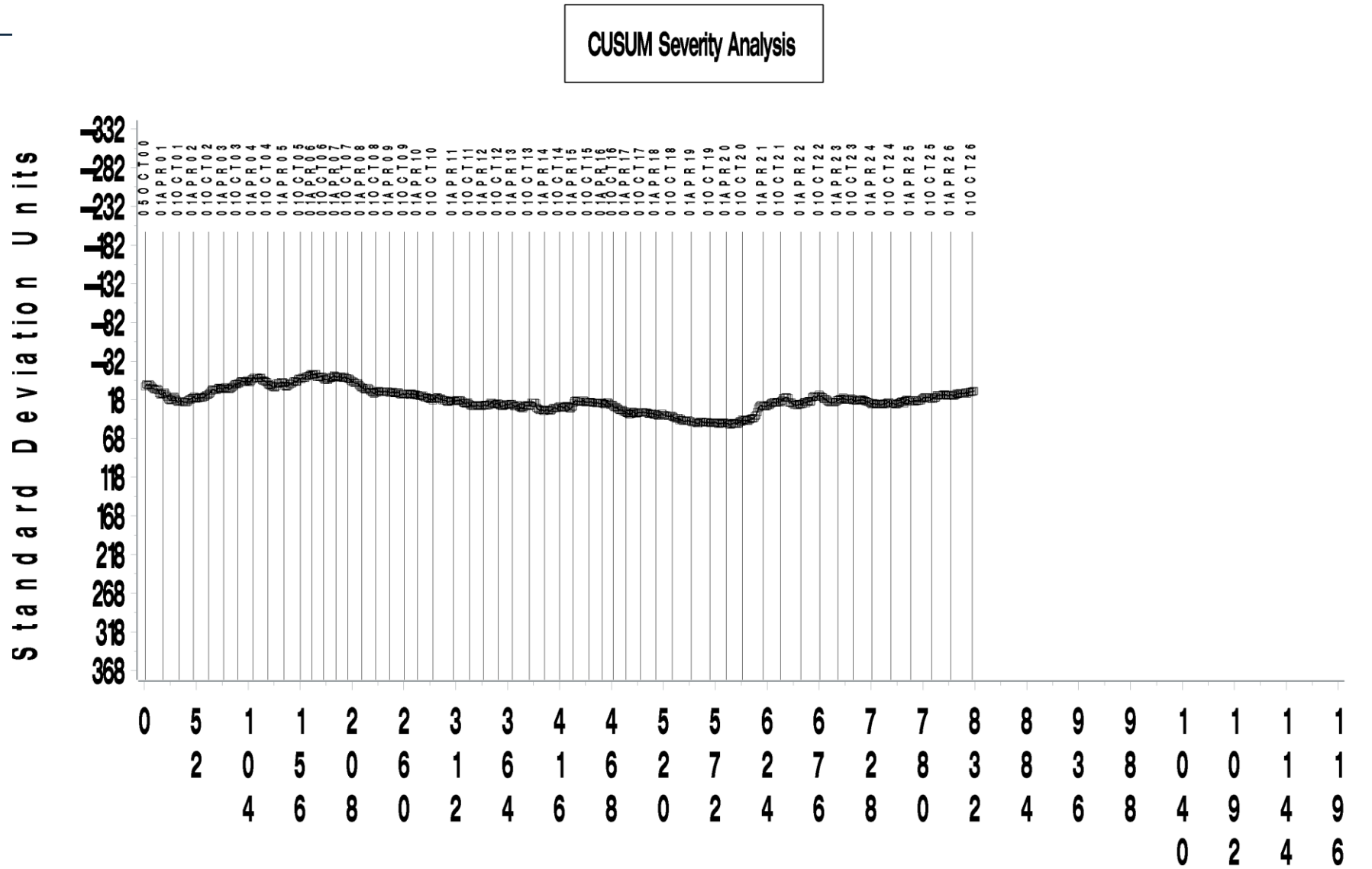




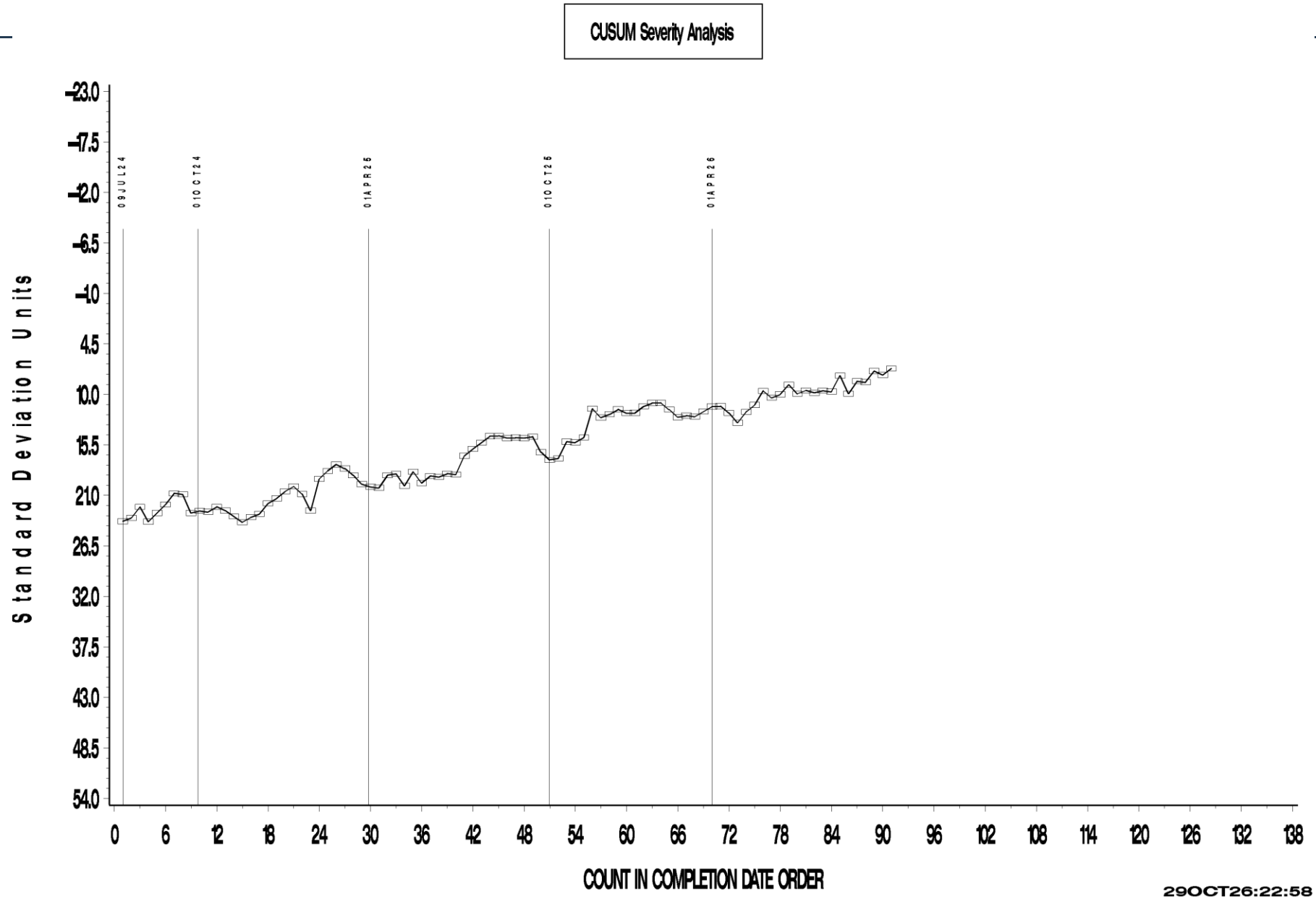
April 1, 2026 – September 30, 2026

D6417 VOLATILITY BY GC INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
SAMPLE AREA % VOLATIZED

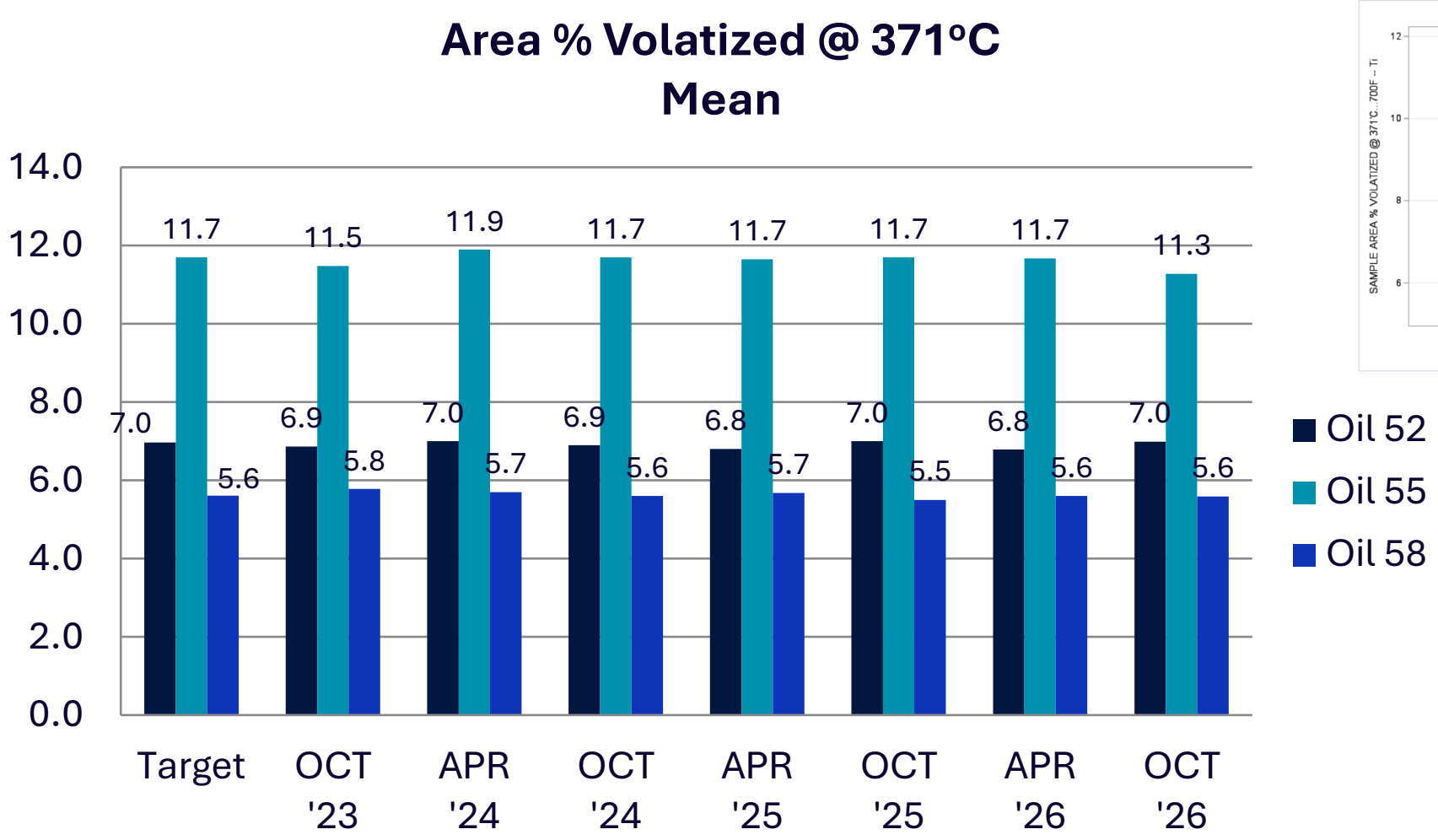
TMC TEST MONITORING CENTER

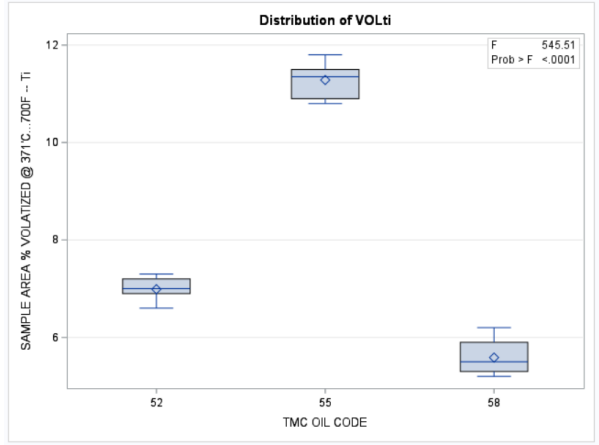


D6417 VOLATILITY BY GC INDUSTRY OPERATIONALLY VALID DATA
CUSUM (Last 90 Points)
SAMPLE AREA % VOLATIZED



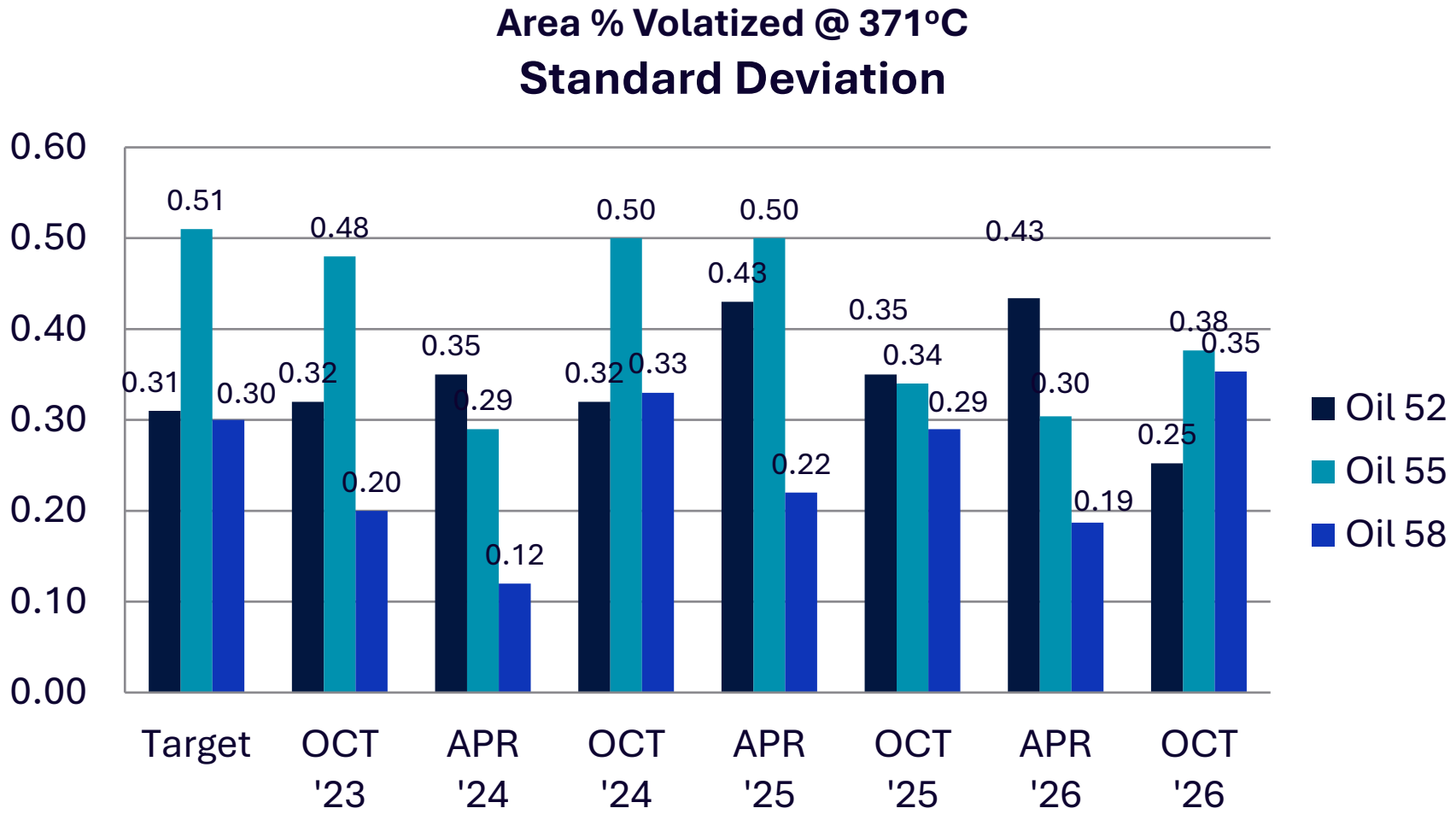
D6417 Performance by Oil





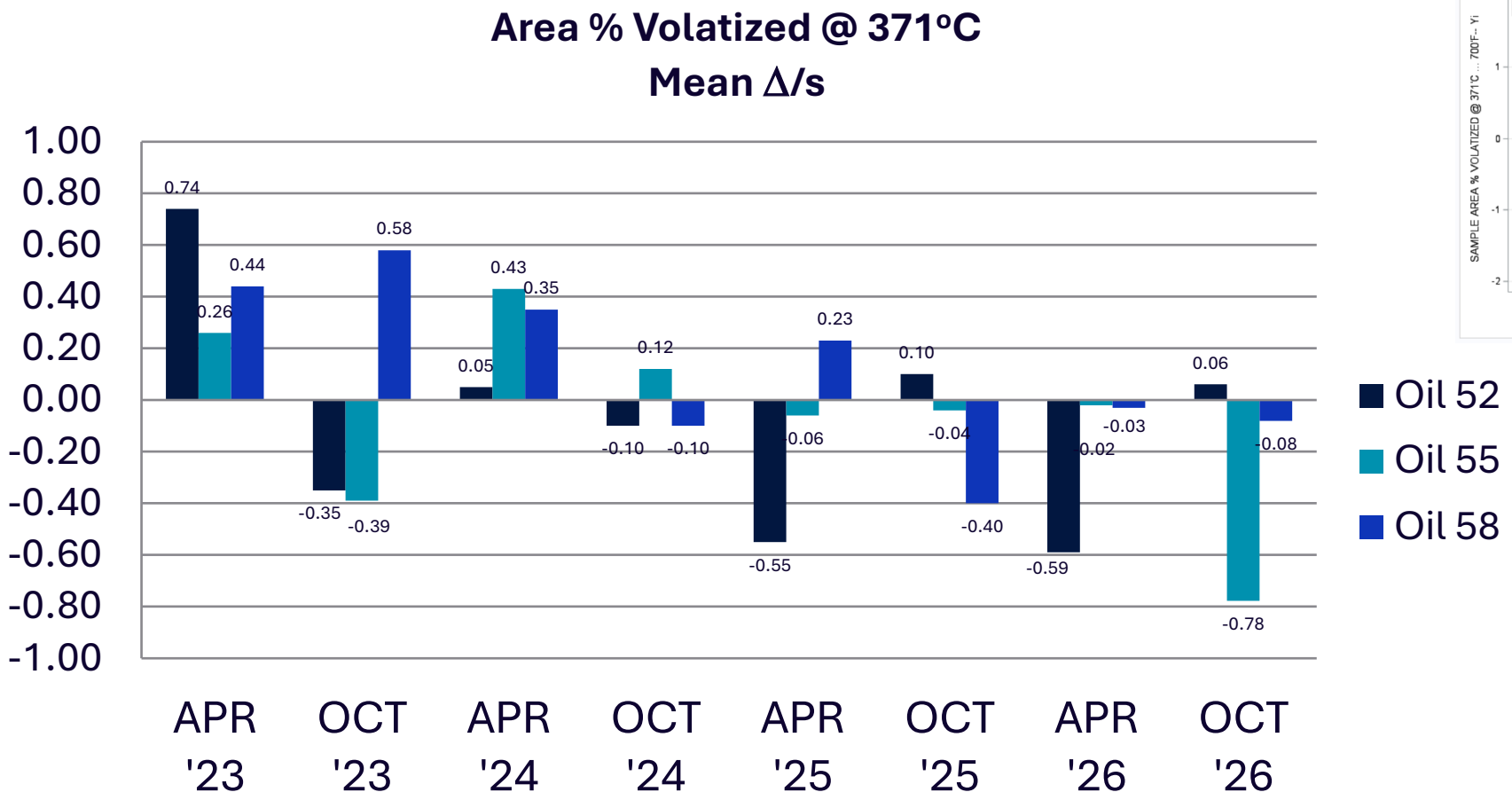
April 1, 2026 – September 30, 2026

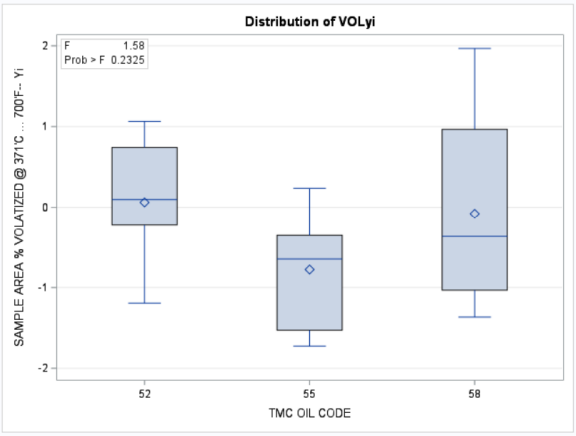
D6417 Performance by Oil



April 1, 2026 – September 30, 2026

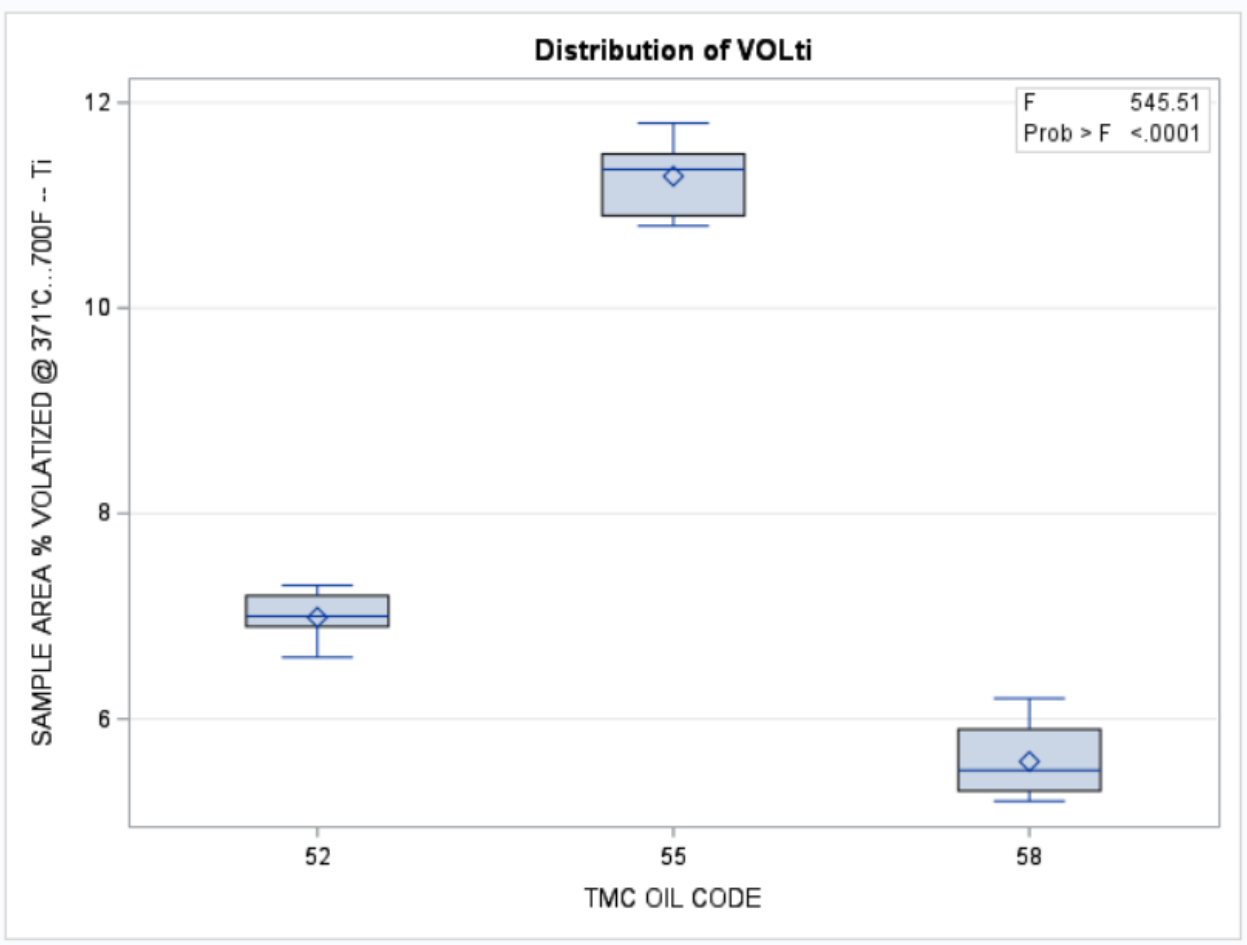
D6417 Performance by Oil

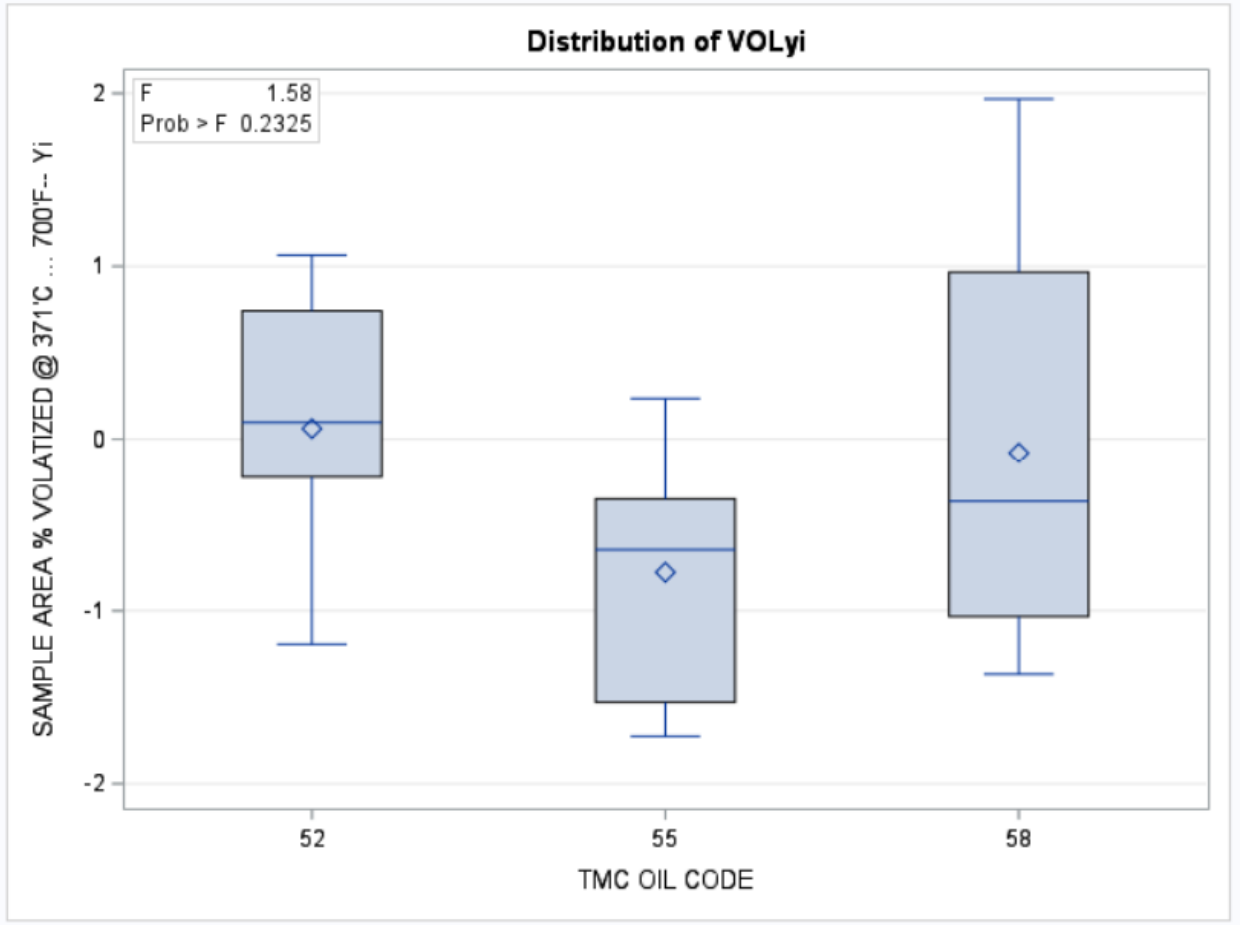




April 1, 2026 – September 30, 2026

D6417 Performance by Oil





April 1, 2026 – September 30, 2026

D6417: Estimation of Engine Oil Volatility by Capillary GC Status

- Precision (Pooled s) continues to be remarkably consistent and on target (again) this past semester.

- Performance (Mean Δ/s) is similar to last semester (-0.21 vs -0.23), however it is still near target.

- CUSUM severity continuing to be relatively flat this semester

Reference Oil Inventory

D6417

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
52[B]	1995	D6417	59.4	<0.1	5+ years
55	1995	D6417	65.9	<0.1	5+ years
58	1998	D6417, D6417QC	111.1	0.1	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] Reference Oil 58 is used in multiple Bench Test Areas.

Information Letters & Memos*

Test	Date	IL / Memo	Topic
D6417			

No information letters or technical updates were issued this semester.

*Available from TMC Website

April 1, 2026 – September 30, 2026

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D02.B0.07
TMC Monitored Tests

ASTM D 6557

Ball Rust Test (BRT)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6557	5 (+0)	5 (+0)
*As of 9/30/2026		

BRT Test Activity*

Test Status	Validity Code	Number of Tests
Acceptable Calibration Test	AC	139
Acceptable Industry Information Run	AG	1
Failed Calibration Test	OC	0
Operationally Invalid	LC, RC, LS, RS	2
Aborted Run	XC, XS	0
Informational (Shakedown) Run	MN, NN	4
Total		**146**

- FIVE labs reported data

April 1, 2026 – September 30, 2026

BRT Failed Tests

Failed Parameter (OC)	Number of Tests
Severe (low) Average Gray Value	0
Mild (high) Average Gray Value	0
Total	**0**

RO 82-1 No Calibration Assignments
RO 86 No Calibration Assignments
RO 87 No Calibration Assignments
RO 1006 No Failed Calibration Tests

April 1, 2026 – September 30, 2026

BRT Failed Tests (OC) by Lab

Failed Parameter	LTMS Lab					#
	A	B	D	G	L	
Severe Average Gray Value	0	0	0	0	0	0
Mild Average Gray Value	0	0	0	0	0	0
Total	0	0	0	0	0	0

April 1, 2026 – September 30, 2026

BRT Informational Tests

Informational Test Results (MN, NN)	Number of Tests
Test Result out of Range (MN)	1
Test Result in Range (NN)	3
Total	**4**

April 1, 2026 – September 30, 2026

BRT Lost Calibration Tests*

Cause of Lost Run (LC, RC, XC)	Number of Tests
Image Calibration Issue (LC)	1
Syringe Pump Issue (LC)	1
Total	**2**

*Invalid (LC, RC) and Aborted (XC) calibration tests

April 1, 2026 – September 30, 2026

BRT Lost Tests by Lab

Cause	LTMS Lab					#
	A	B	D	G	L	
Image Calibration Issue (LC)	0	0	1	0	0	1
Syringe Pump Issue (LC)	1	0	0	0	0	1
Total	**1**	**0**	**0**	**0**	**0**	**2**

April 1, 2026 – September 30, 2026

D6557: Ball Rust Test Status

- Calibration tests continue to be run only on Reference Oil 1006 (High Reference Oil).

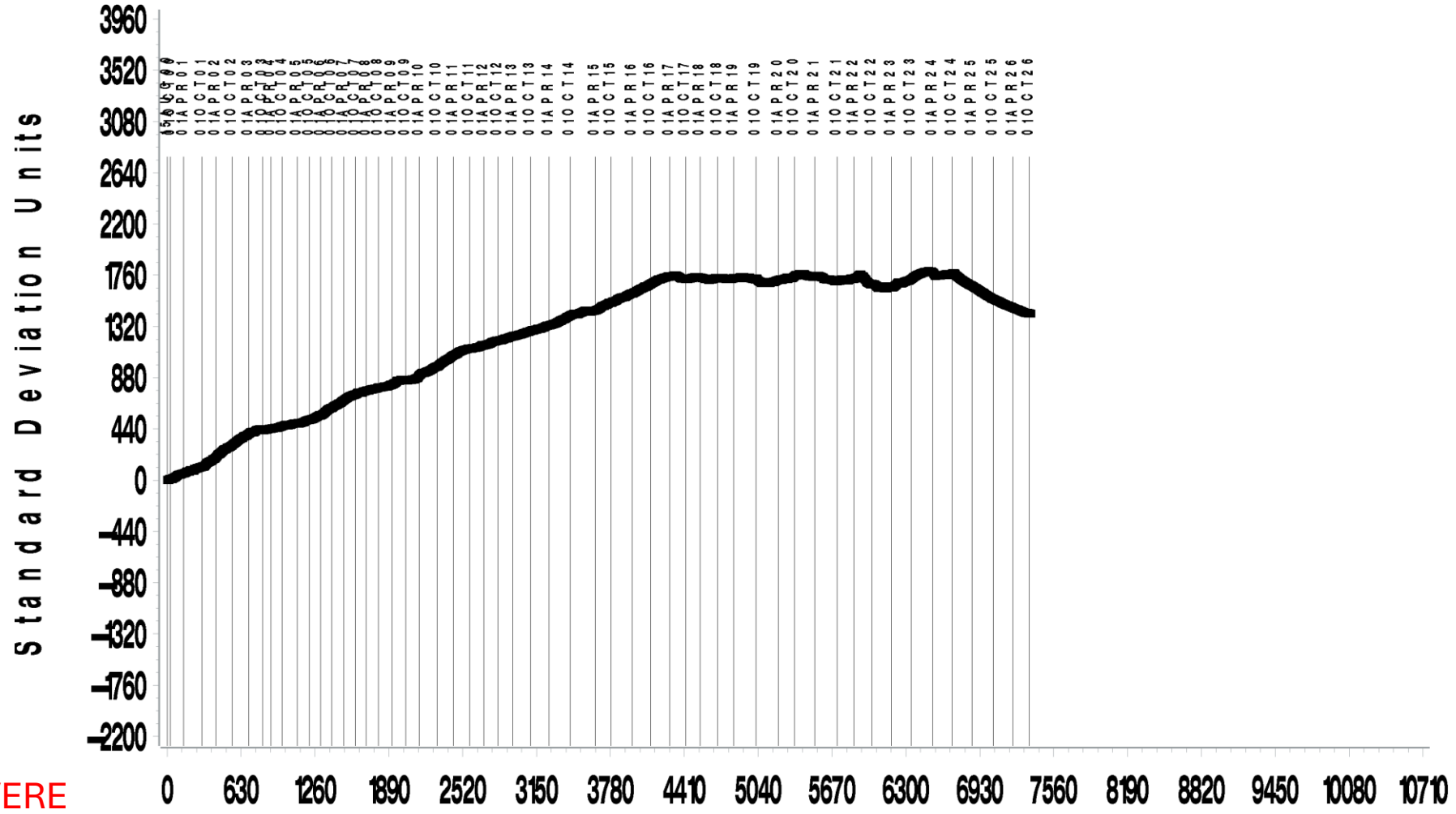
- A re-write of the test procedure to add Gen 3 analysis system has been completed and an Information Letter was issued.

- One lab noticed that test results in the lower AGV range was a bit different for the Gen 3 system versus older systems. Labs are currently conducting round-robin testing of the analysis system using previously tested hardware (with known AGV results) to determine how best to tune the new analysis system.

BALL RUST TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
REFERENCE AVERAGE GRAY VALUE

TEST MONITORING CENTER

MILD

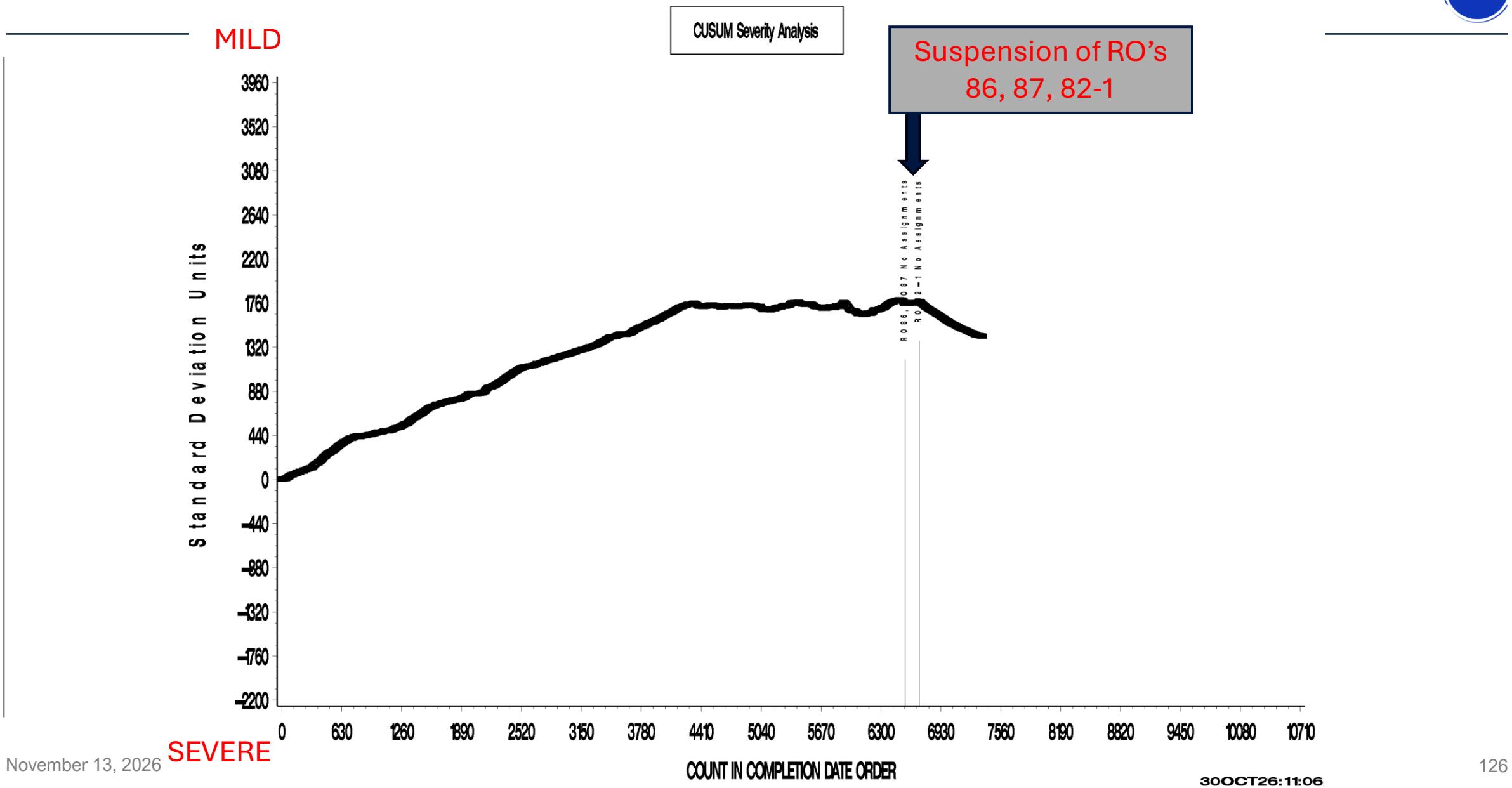


SEVERE

BALL RUST TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity History
REFERENCE AVERAGE GRAY VALUE

TMC TEST MONITORING CENTER

MILD



SEVERE

BALL RUST TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM History (Last 500)
REFERENCE AVERAGE GRAY VALUE

TMC TEST MONITORING CENTER

TMC

MILD

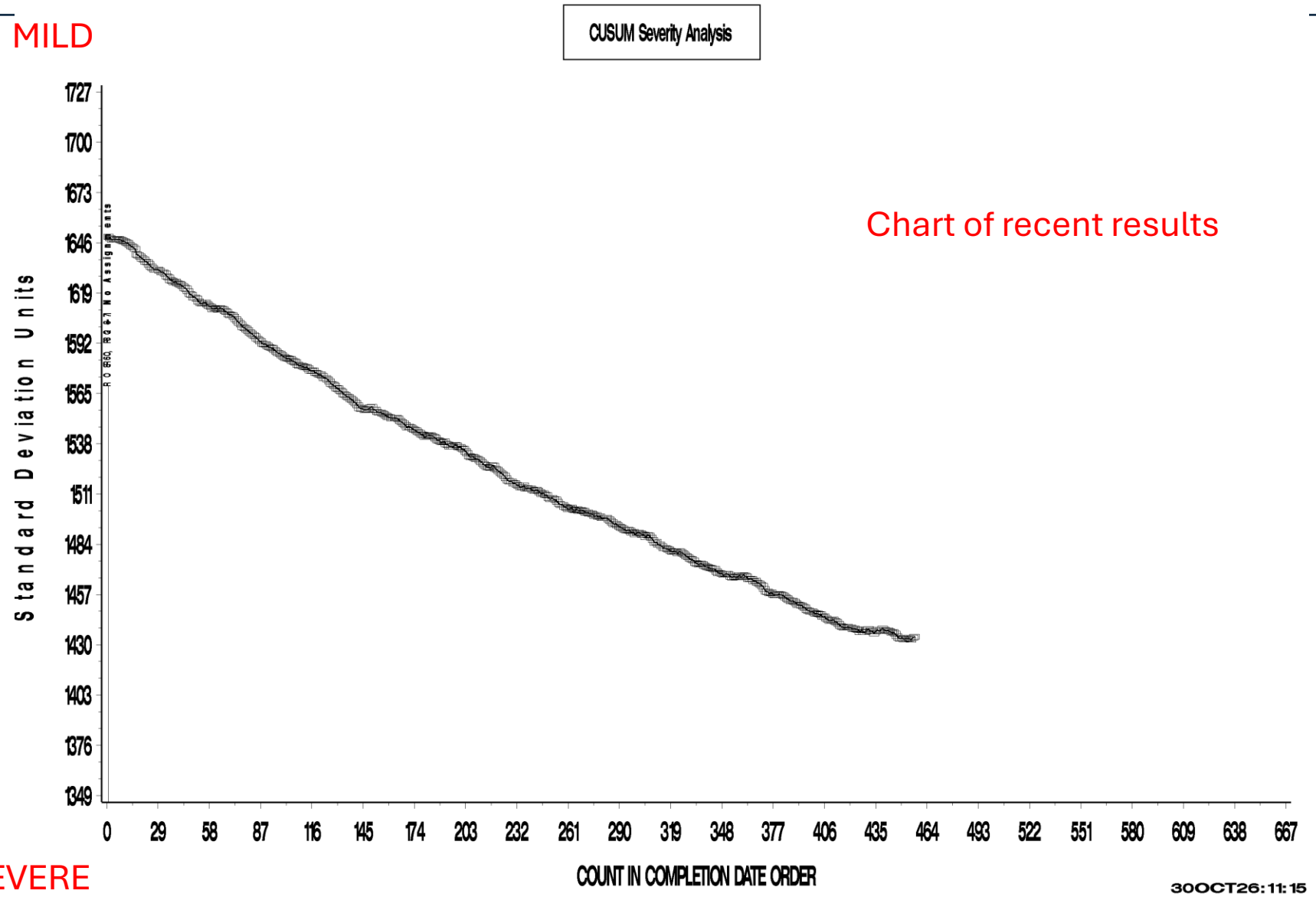
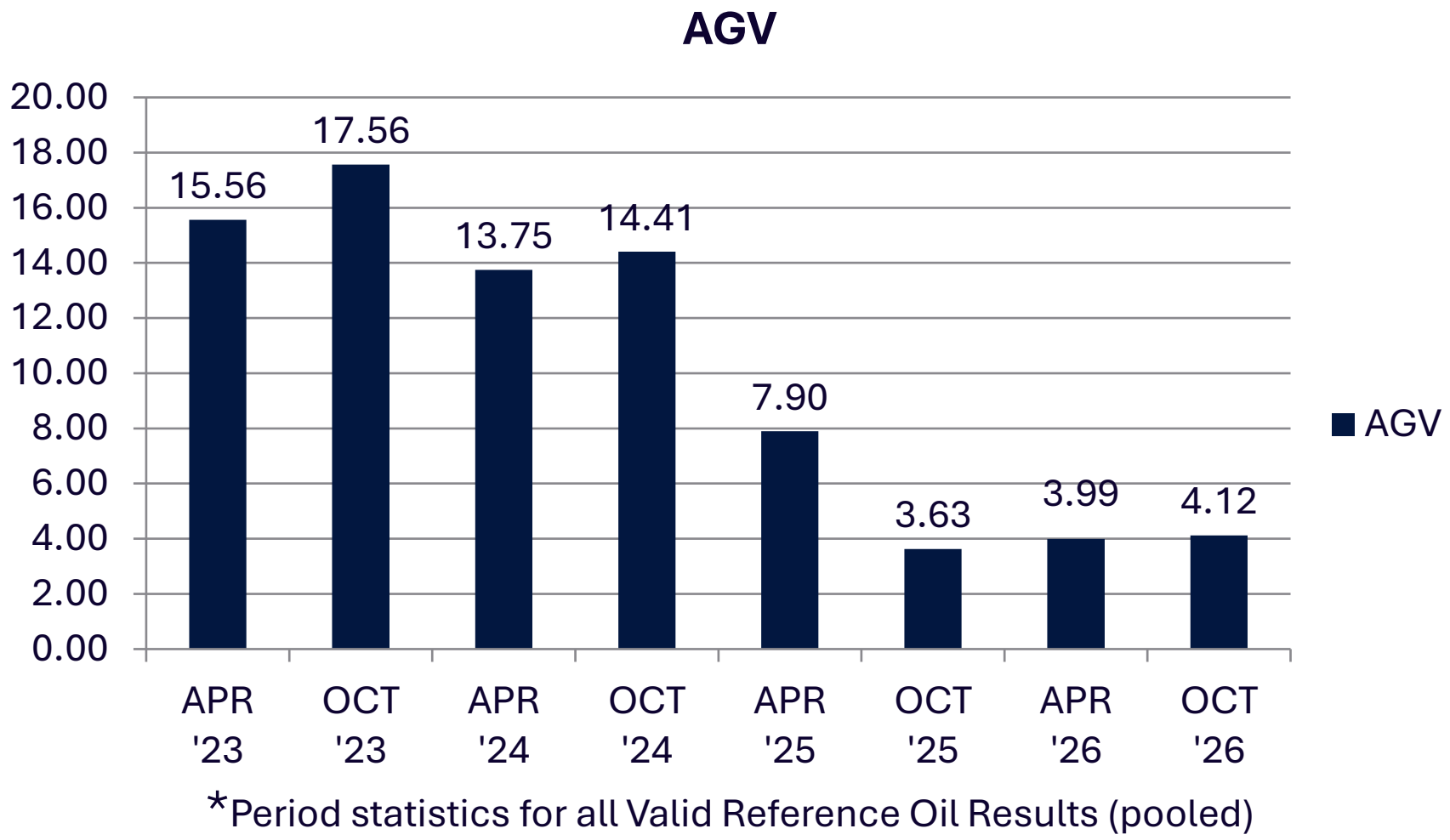


Chart of recent results

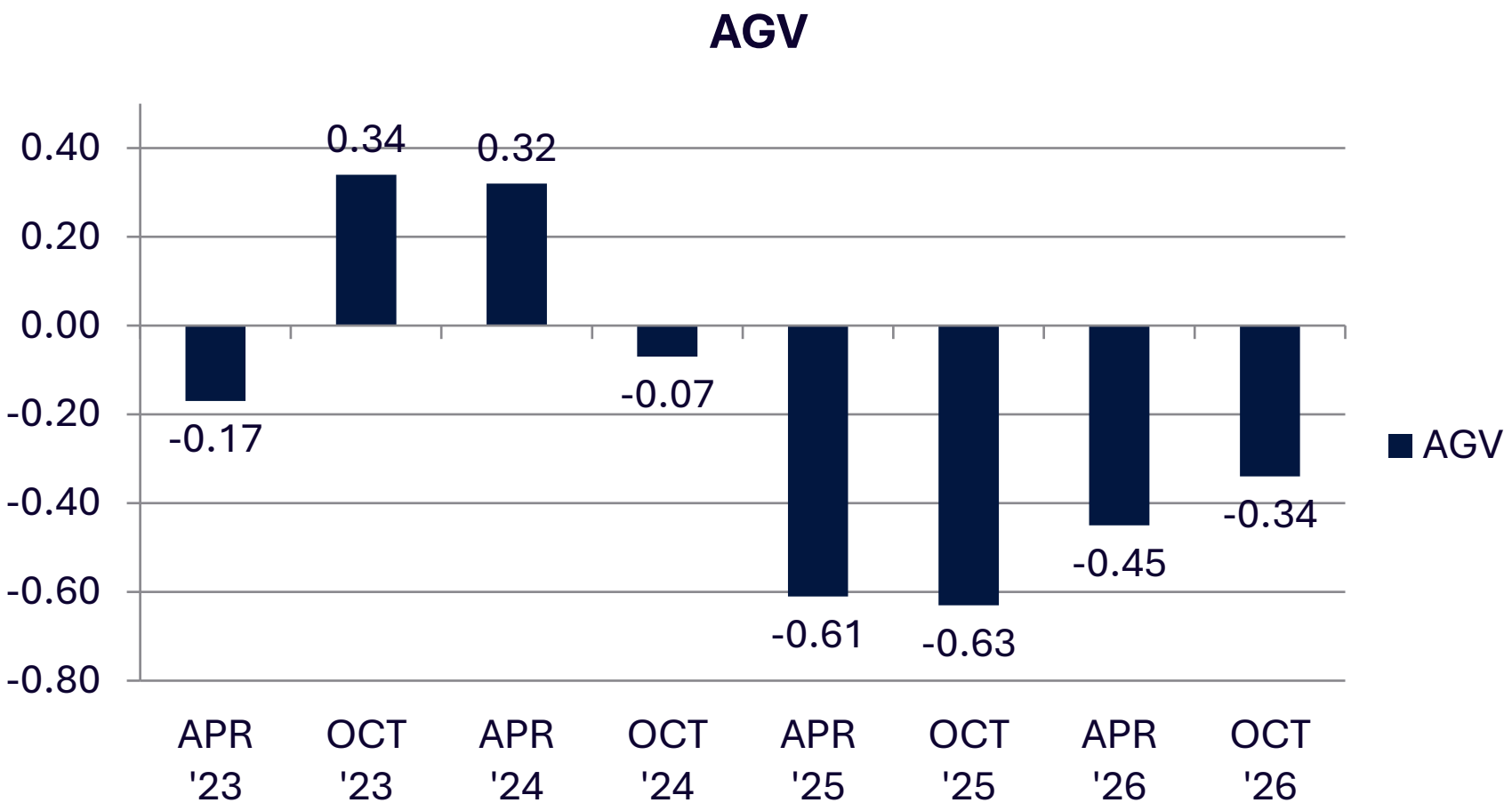
SEVERE

BRT Precision* (Pooled s) Estimates



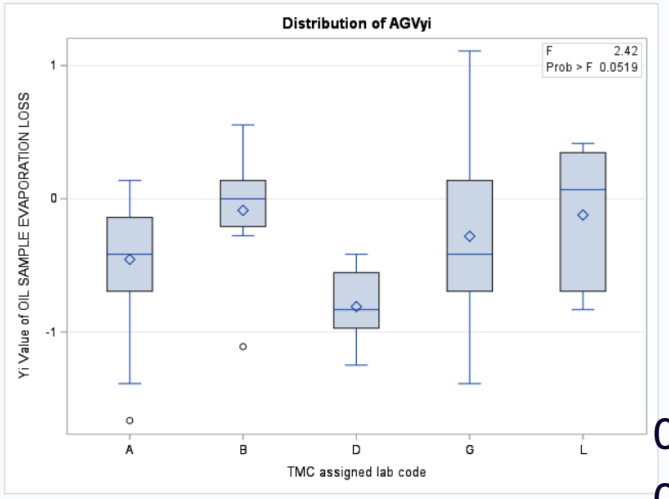
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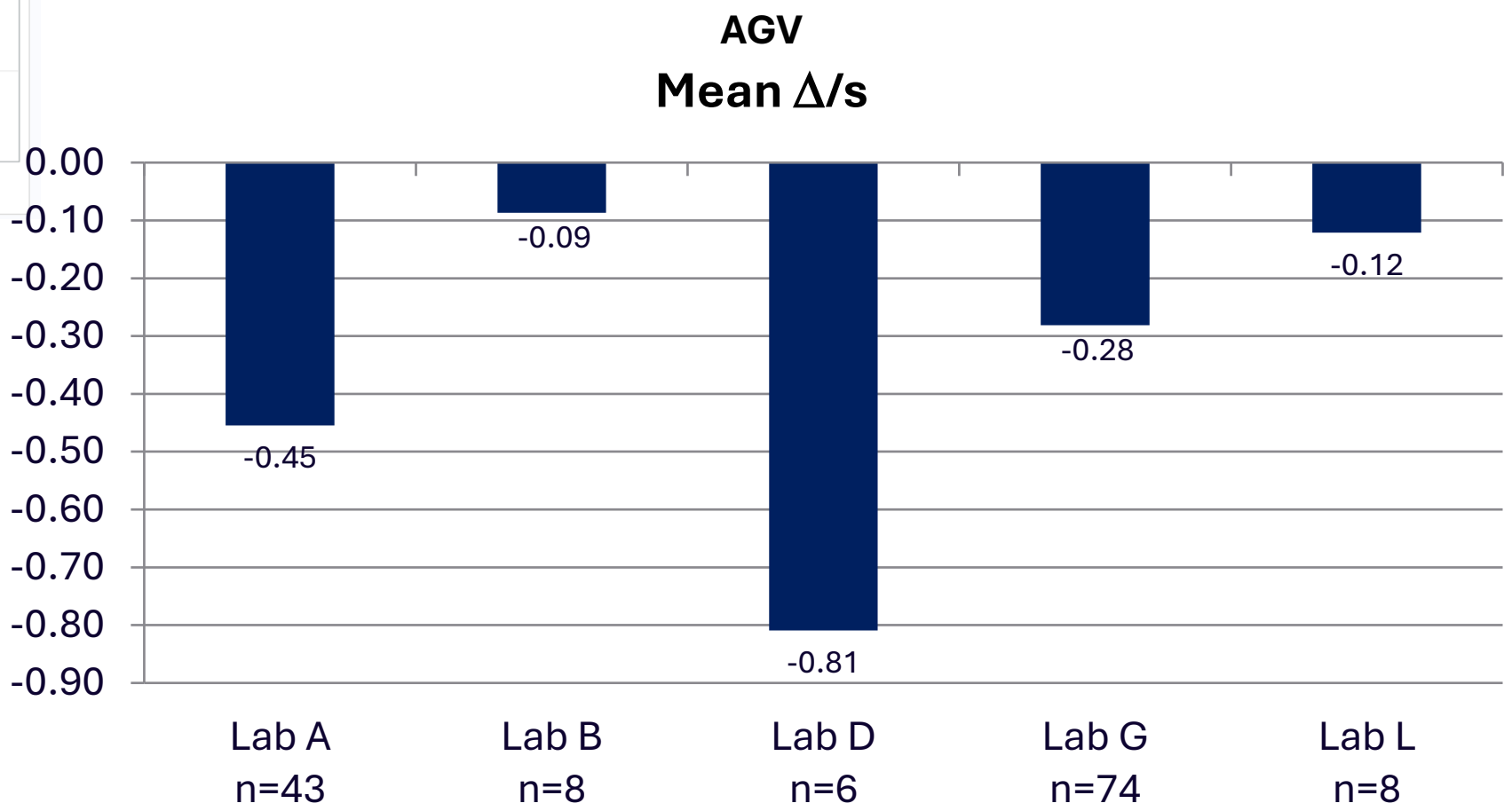
BRT Performance (Mean Δ/s) Estimates



April 1, 2026 – September 30, 2026

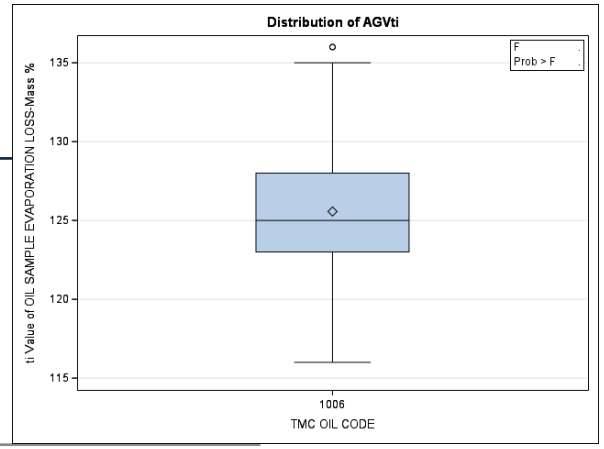
BRT Lab Severity Estimates

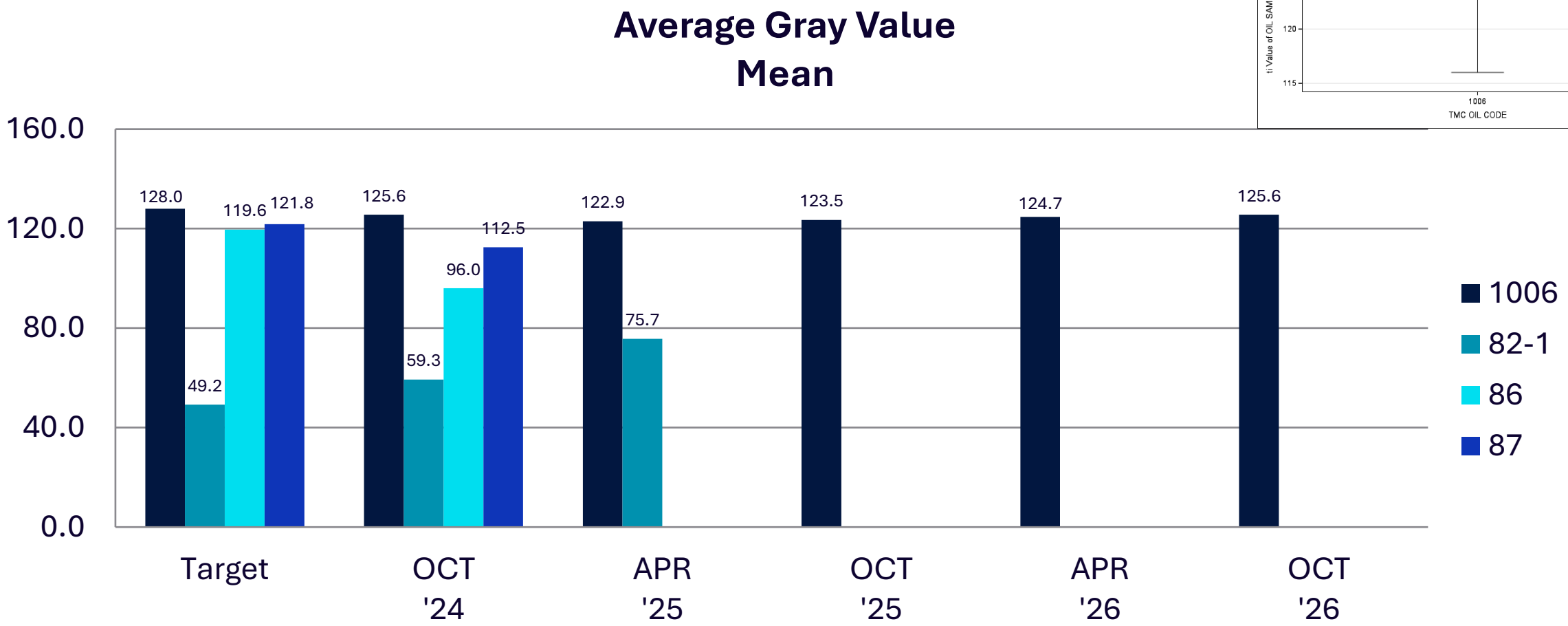




April 1, 2026 – September 30, 2026

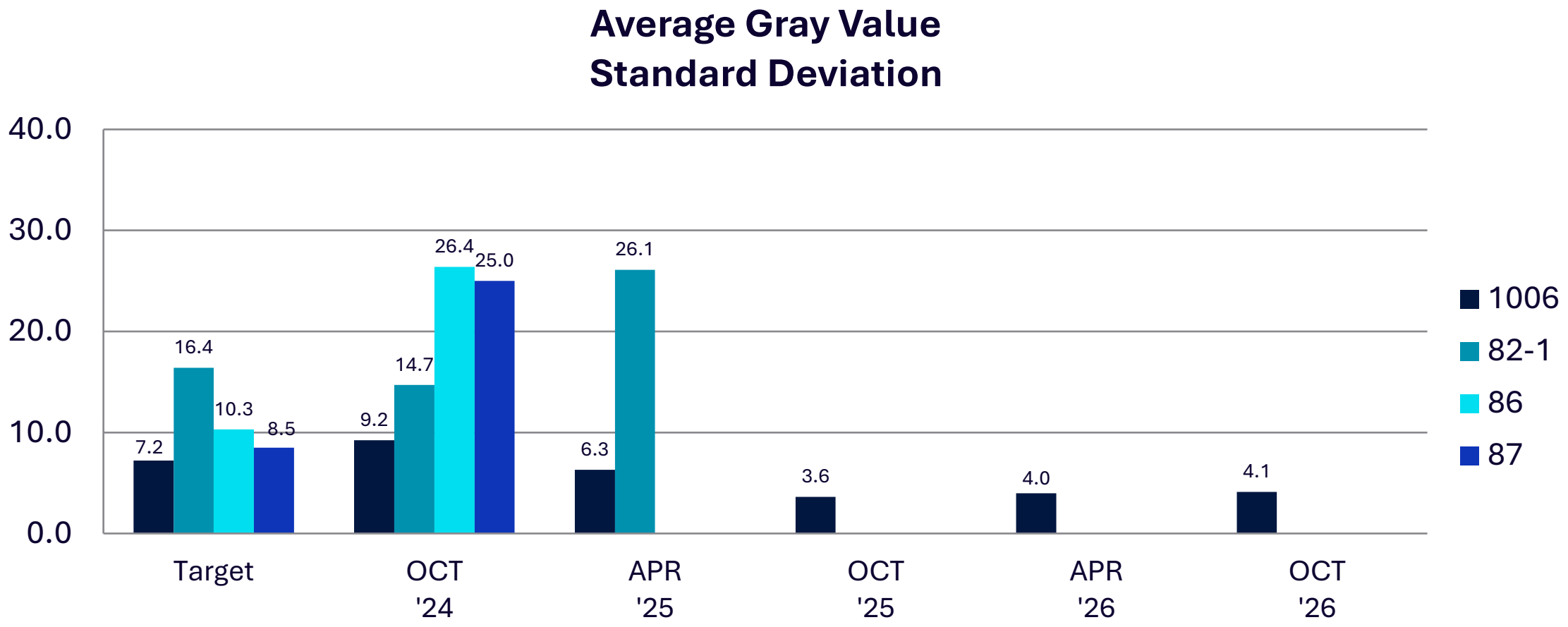
BRT Performance by OIL



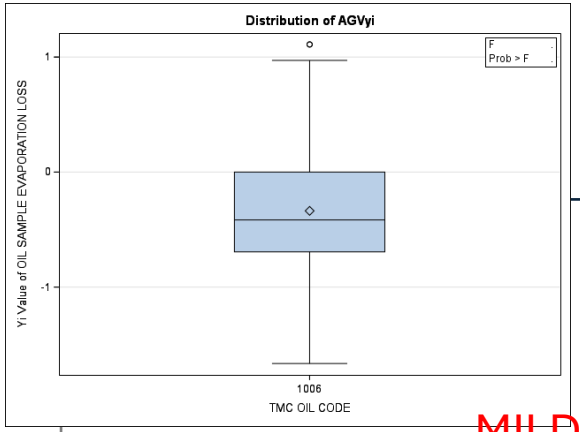


April 1, 2026 – September 30, 2026

BRT Performance by OIL

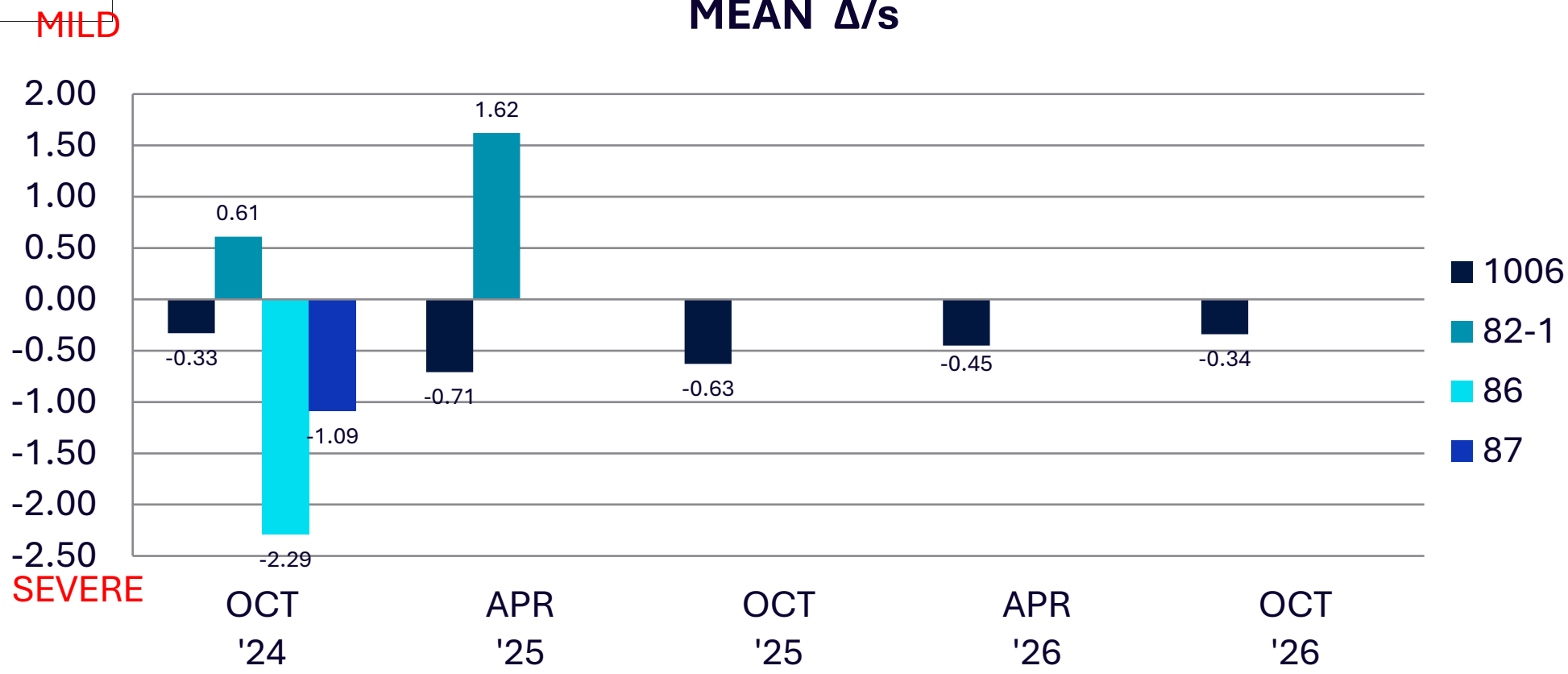


April 1, 2026 – September 30, 2026



BRT Performance by OIL

Average Gray Value
MEAN Δ/s



April 1, 2026 – September 30, 2026

Information Letters & Memos*

No information letters were issued this semester.

Test	Date	IL / Memo	Topic
BRT			

*Available from TMC Website

April 1, 2026 – September 30, 2026

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Reference Oil Inventory Estimated Life

Oil	TMC Inventory (gallons)	Quantity Shipped in last 6 months (gallons)	Estimated Life
1006	22.4	1.0	5+ years
82-1	**<0.5**	**0.0**	**Not Assigning**
82-2	9.7	0.0	5+ years
86	49.0	0.0	5+ years
87	92.9	0.0	5+ years

D02.B0.07
TMC Monitored Tests

ASTM D 6594

High Temperature Corrosion Bench Test (HTCBT)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report in parentheses)

Test	Labs	Stands
D6594	8 (-1)	24 (-1)
*As of 9/30/2026		

HTCBT Test Activity*

Test Status	Validity Code	Number of Tests
Acceptable Calibration Test	AC	197
Failed Calibration Test	OC	19
Acceptable Industry Information Run	AG	25
Unacceptable Industry Information Run	OG	3
Operationally Invalid, by lab	LC	2
Calibration Test Aborted	XC	5
Informational (Shakedown) Run in Range	NN	7
Informational (Shakedown) Run out of Range	MN	16
Total		**274**

Number of Labs Reporting Data: 8

Fail Rate of Operationally Valid Tests: 8.8%

April 1, 2026 – September 30, 2026

HTCBT Failed Tests

Failed Parameter (OC)	Number of Tests
Lead Concentration Severe	5
Lead Concentration Mild	3
Copper Concentration Severe	6
Copper Concentration Mild	3
Lead and Copper (SEVERE)	1
Lead and Copper (MILD)	1
Total	**19**

NOTE: Of the 19 failing tests
7 (37%) were on runs with 44-5 Reference Oil
12 (63%) were on runs with 1005-5 Reference Oil

April 1, 2026 – September 30, 2026

HTCBT Failed Tests by Lab

Failed Parameter (OC)	LTMS Lab										#
	A	L	G	I	V	BB	BC	B	P	BE	
Lead Concentration Severe	0	3	0	2	0	0	0	0	0	0	5
Lead Concentration Mild	2	0	0	1	0	0	0	0	0	0	3
Copper Concentration Severe	1	0	0	1	4	0	0	0	0	0	6
Copper Concentration Mild	0	0	3	0	0	0	0	0	0	0	3
Lead and Copper Concentrations (both) Severe	0	0	0	0	0	0	1	0	0	0	1
Lead and Copper Concentrations (both) Mild	0	0	0	0	0	0	0	0	0	1	1
Totals	**3**	**3**	**3**	**4**	**4**	**0**	**1**	**0**	**0**	**1**	**19**

April 1, 2026 – September 30, 2026

HTCBT Lost Tests*

Status (LC, XC, LN, XN)	Cause	#
Invalid Calibration (LC)	Lab invalidated due to Water Leak	1
Invalid Calibration (LC)	Lab invalidated due to Power Outage	1
Aborted Calibration (XC)	Test stopped because of Power Failure	1
Aborted Calibration (XC)	Test stopped because of Water Leak	1
Aborted Calibration (XC)	Test Stopped before Completion	3
Total		**7**

*Invalid or Aborted calibration tests

April 1, 2026 – September 30, 2026

HTCBT Lost Tests by Lab

Failed Parameter (LC, XC, LN, XN)	LTMS Lab										#
	A	L	G	I	V	BB	BC	B	P	BE	
Lab invalidated due to Water Leak (LC)	0	0	1	0	0	0	0	0	0	0	1
Lab invalidated due to Power Outage (LC)	0	0	1	0	0	0	0	0	0	0	1
Test stopped because of Power Failure (XC)	0	0	0	0	0	0	0	1	0	0	1
Test stopped because of Water Leak (XC)	0	0	1	0	0	0	0	0	0	0	1
Lab stopped test (XC)	1	0	0	0	2	0	0	0	0	0	3
Total	**1**	**0**	**3**	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**7**

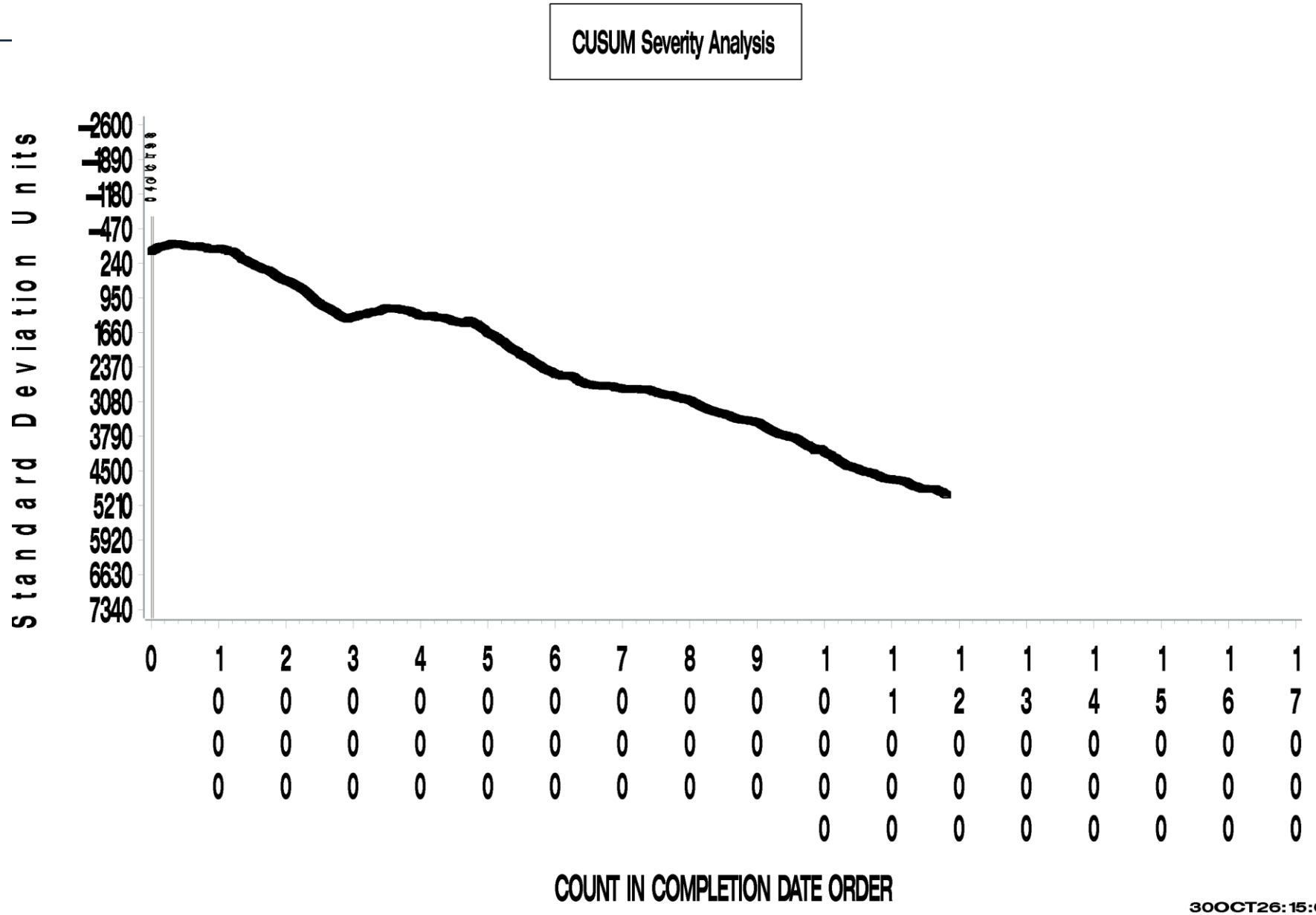
April 1, 2026 – September 30, 2026

HTCBT Test Status

- One fewer lab and one fewer stands was calibrated this semester.
- Labs now using Batch P coupons.
- Labs now using Reference Oil 44-5.
- For Copper: Precision regressed slightly to 0.51 s and Performance also regressed to 0.45.
- For Lead: Precision and Performance both improved this semester.

HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
COPPER CHANGE (ppm)

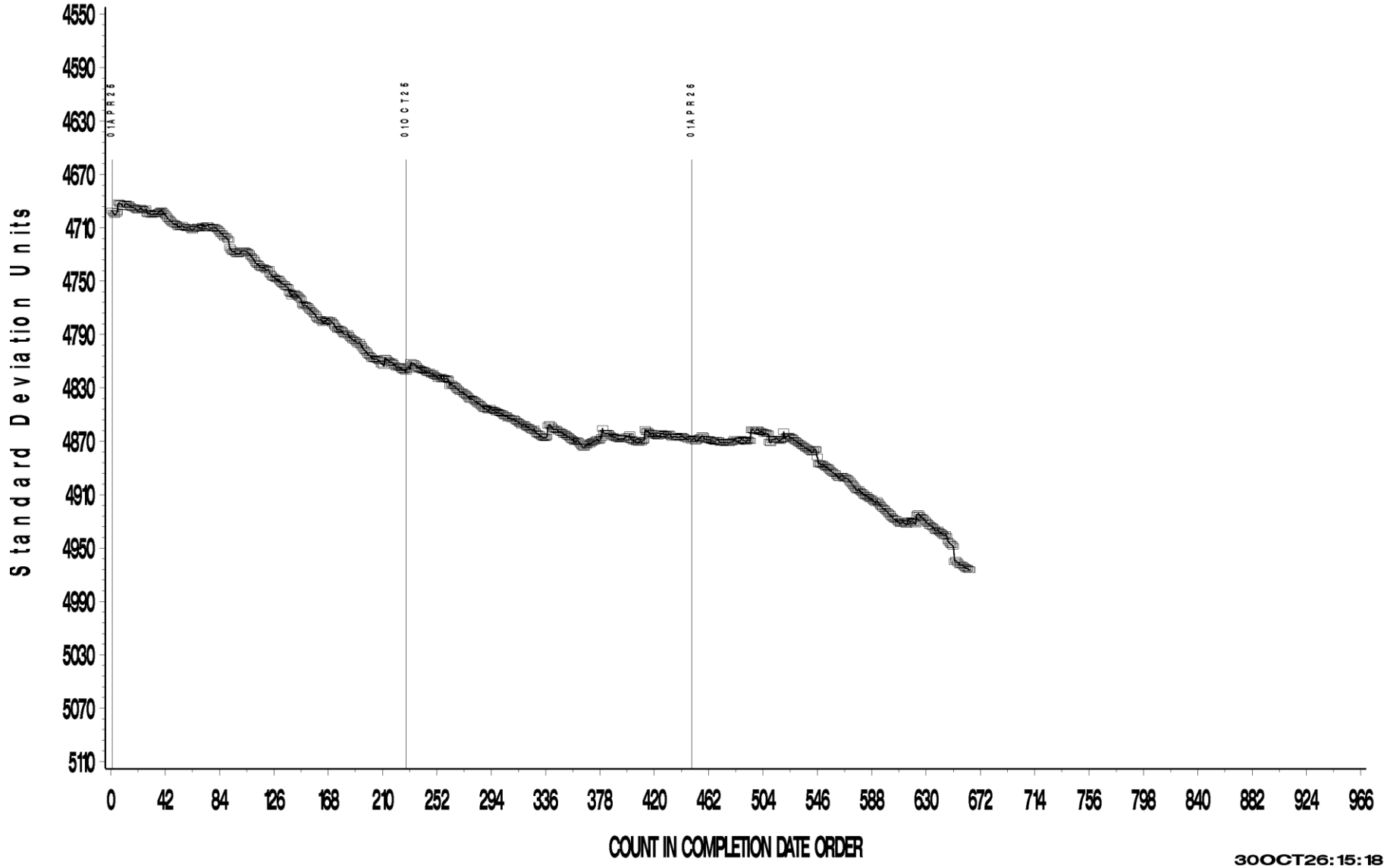
TMC TEST MONITORING CENTER



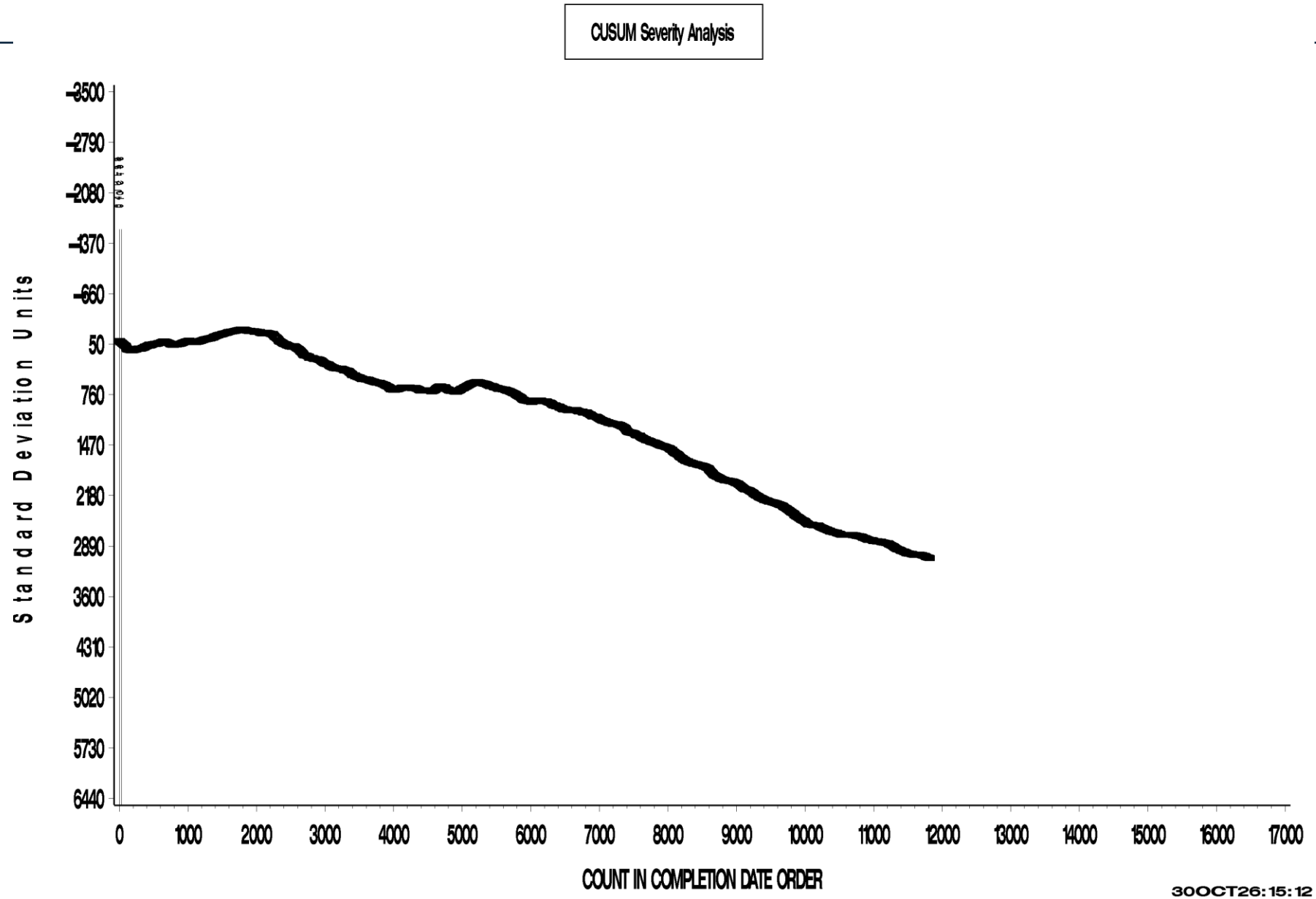
HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA
CUSUM History (Last 600)
COPPER CHANGE (ppm)

TEST MONITORING CENTER

Chart of recent results



HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA
CUSUM Severity Analysis
LEAD CHANGE (ppm)



HIGH TEMP CBT INDUSTRY OPERATIONALLY VALID DATA
CUSUM History (Last 600)
LEAD CHANGE (ppm)

TEST MONITORING CENTER

CUSUM Severity Analysis

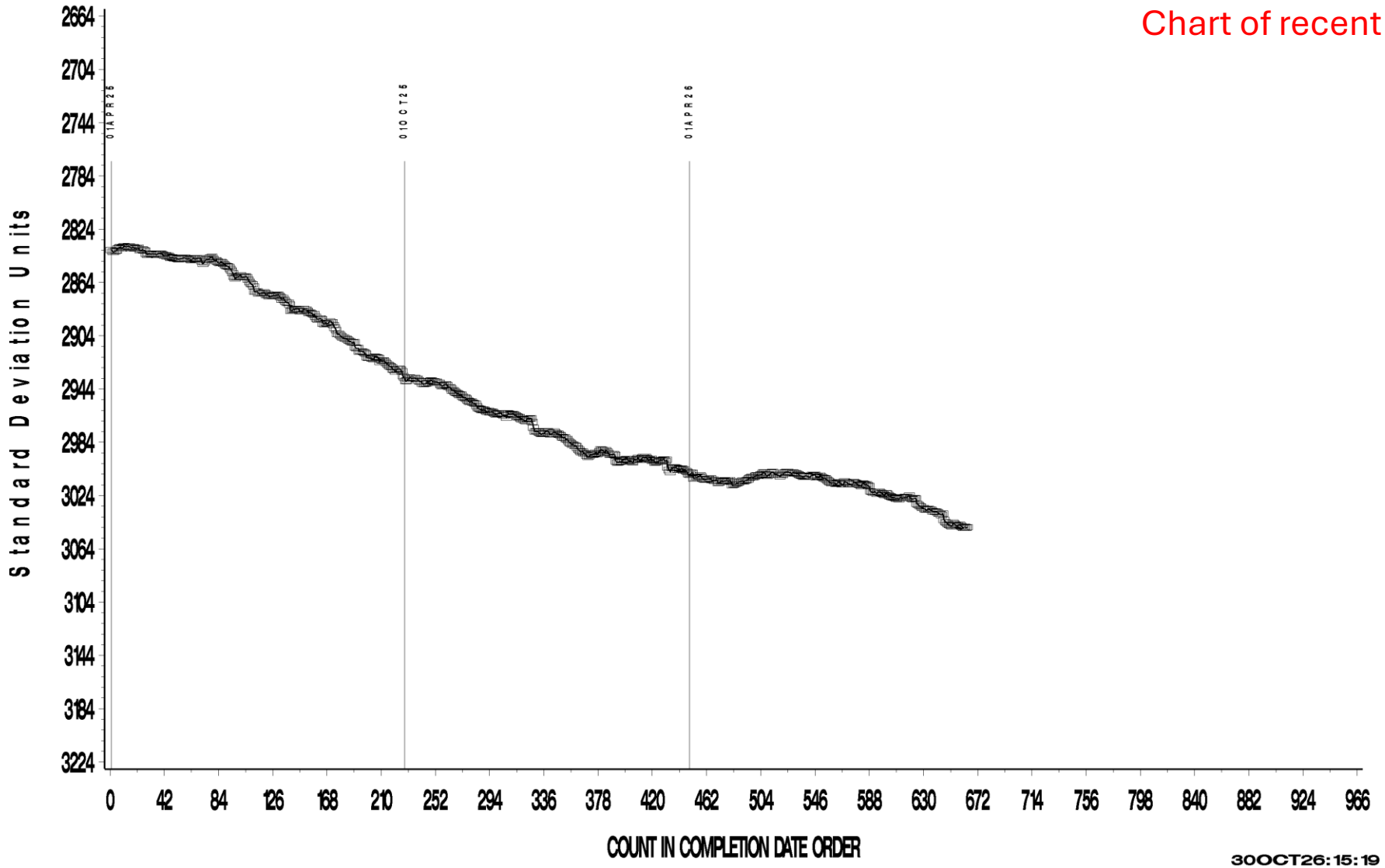
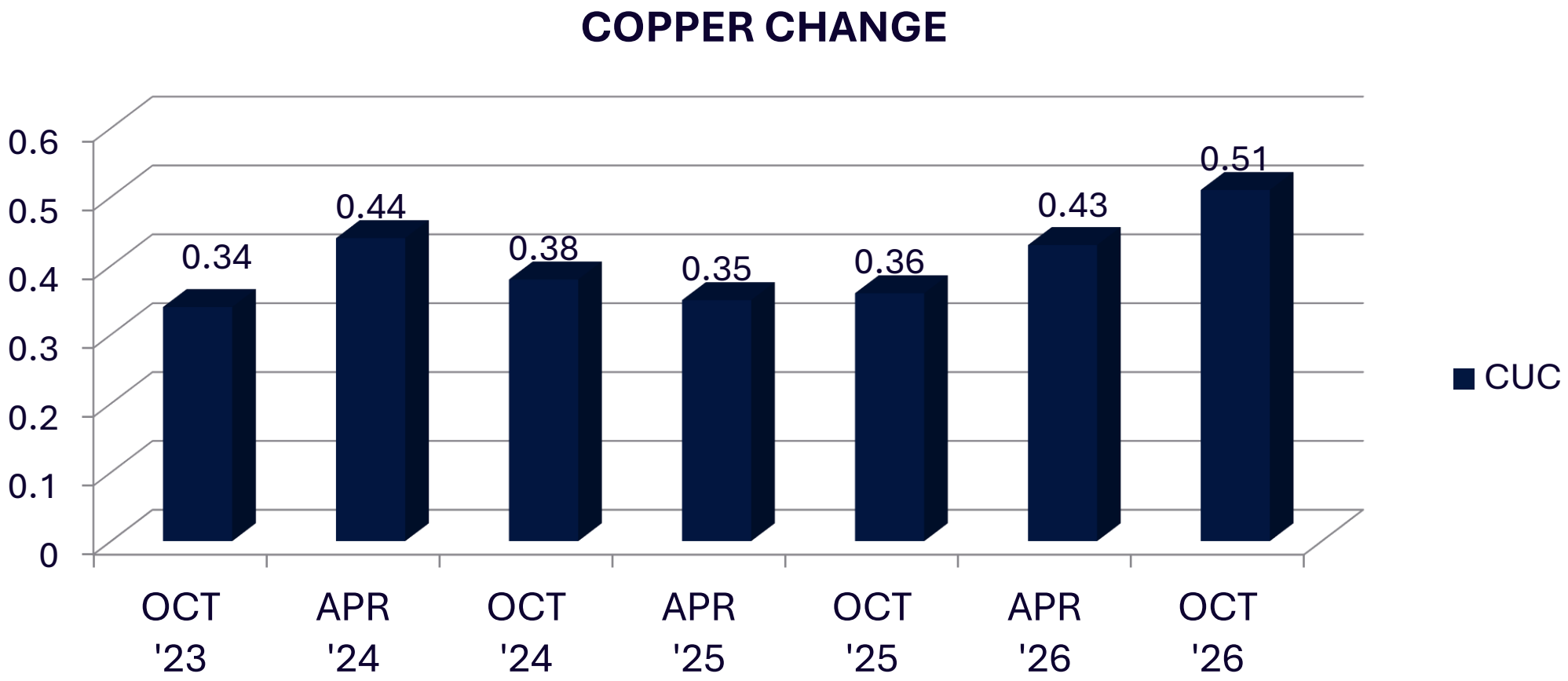


Chart of recent results

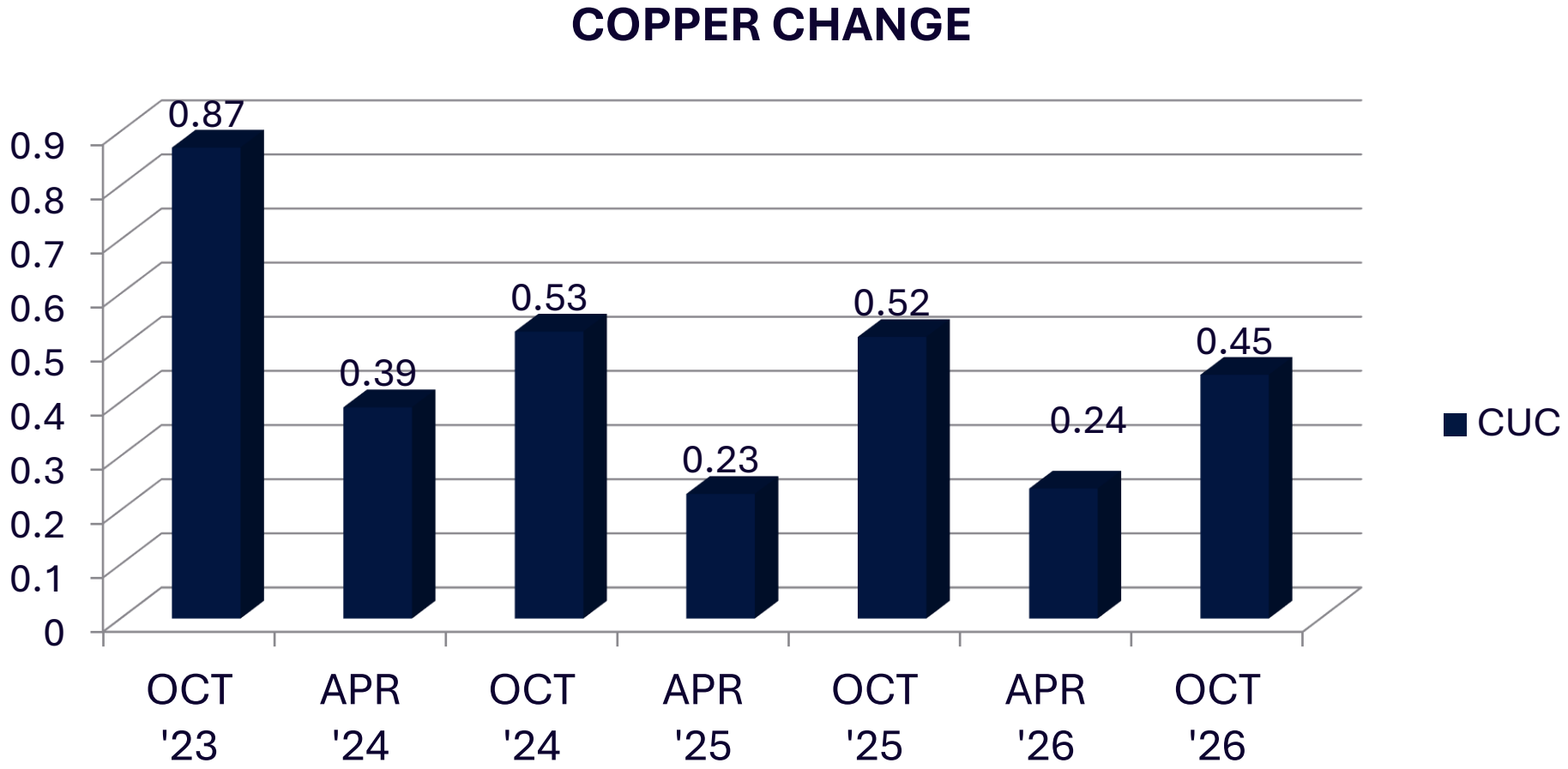
HTCBT Precision* (Pooled s) Estimates



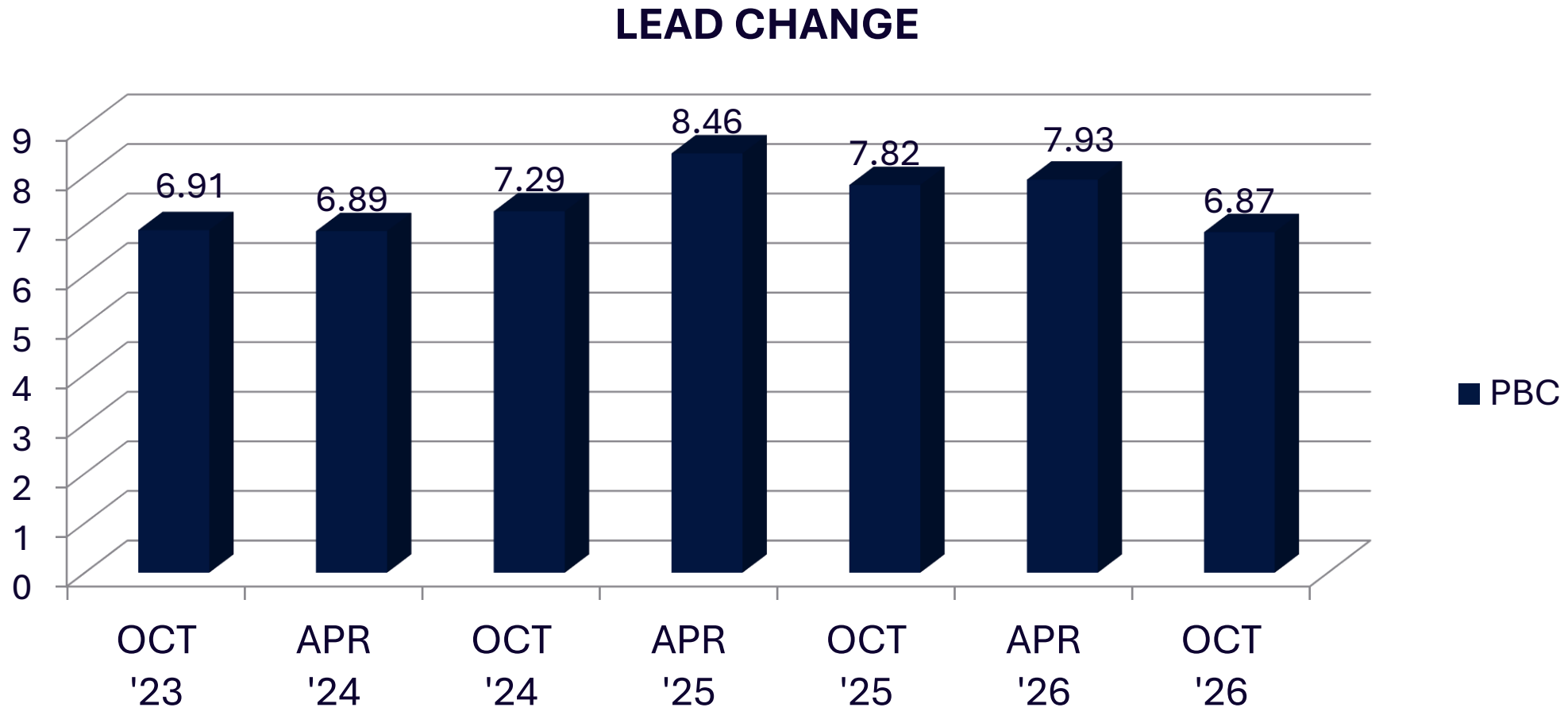
*Period statistics for all Valid Reference Oil Results (pooled)

April 1, 2026 – September 30, 2026

HTCBT Performance (mean Δ/s) Estimates



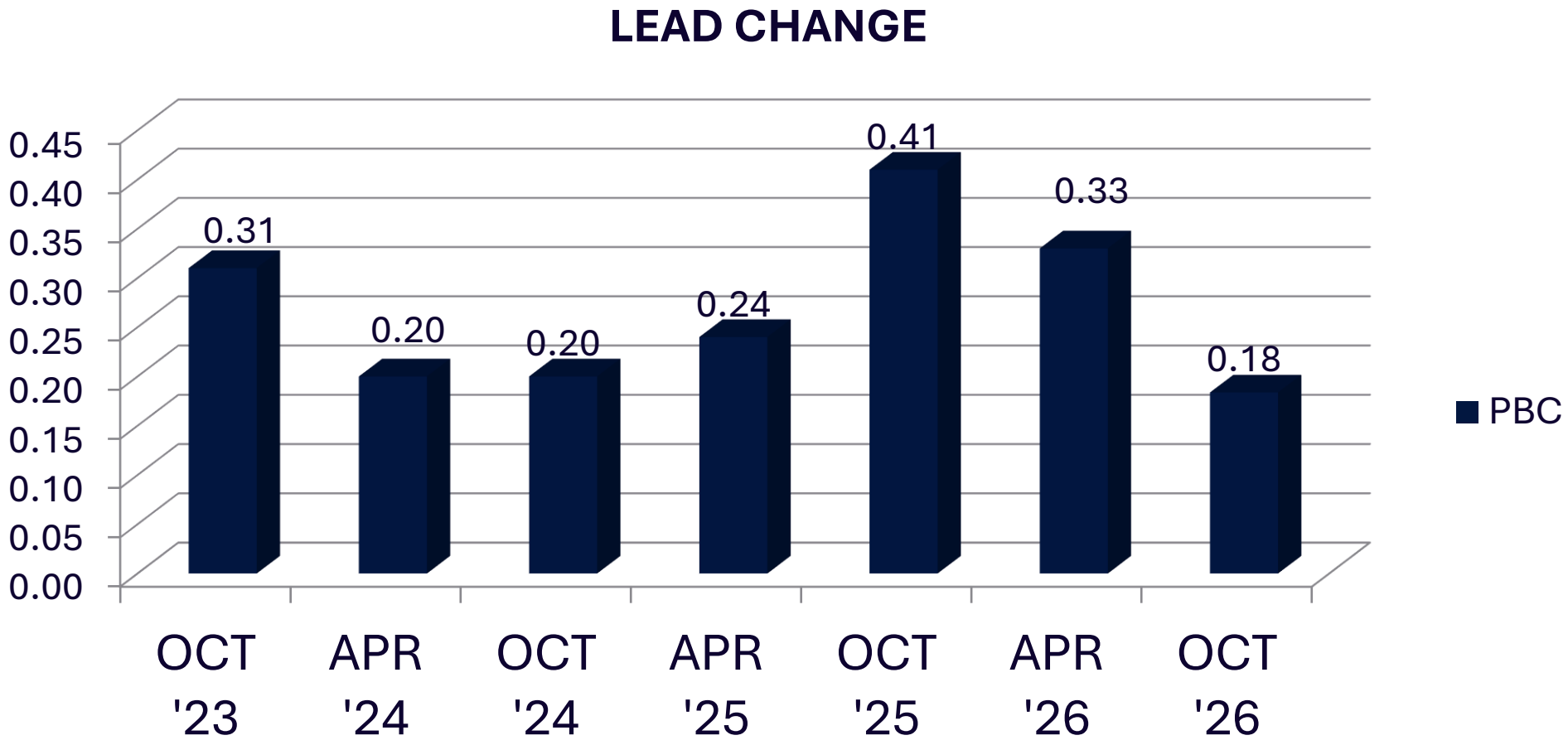
HTCBT Precision* (Pooled s) Estimates



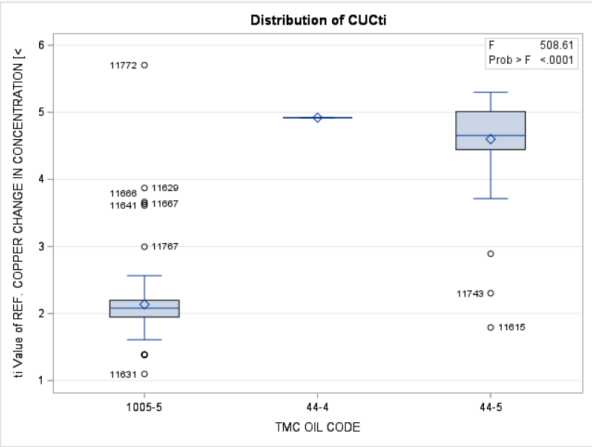
*Period statistics for all Valid Reference Oil Results (pooled)

April 1, 2026 – September 30, 2026

HTCBT Performance (mean Δ/s) Estimates

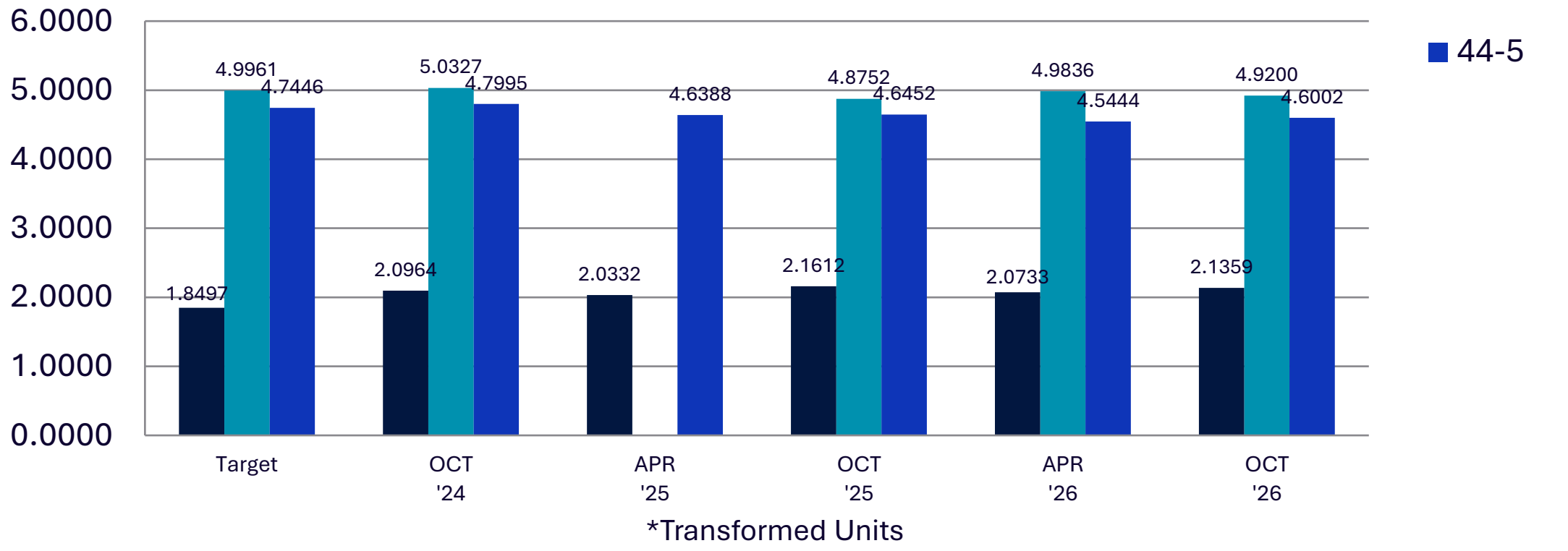


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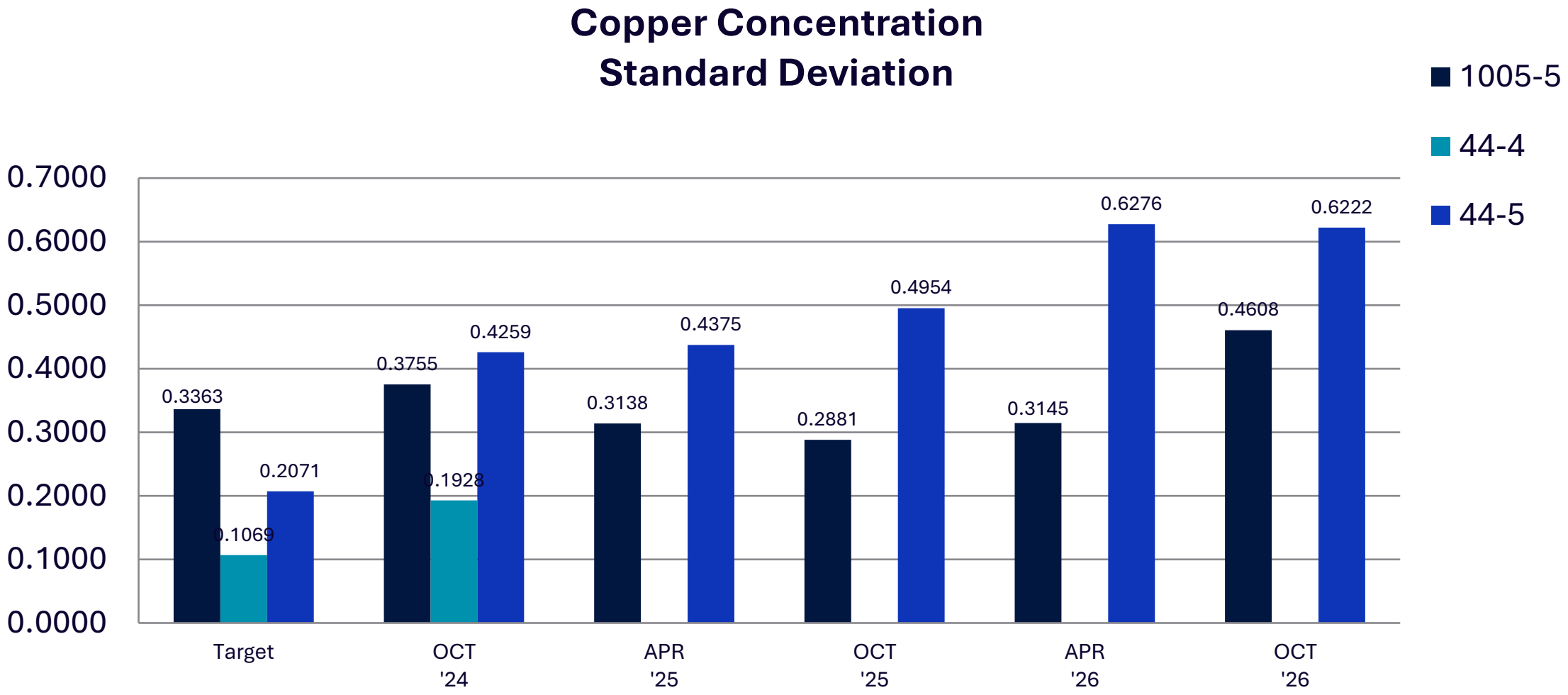
HTCBT Performance by OIL

Copper Concentration*
Mean



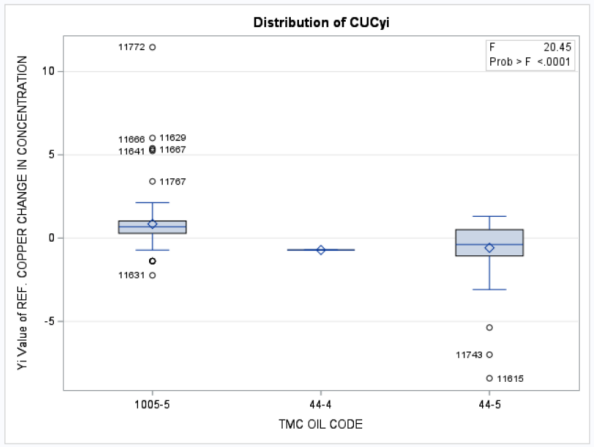
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HTCBT Performance by OIL

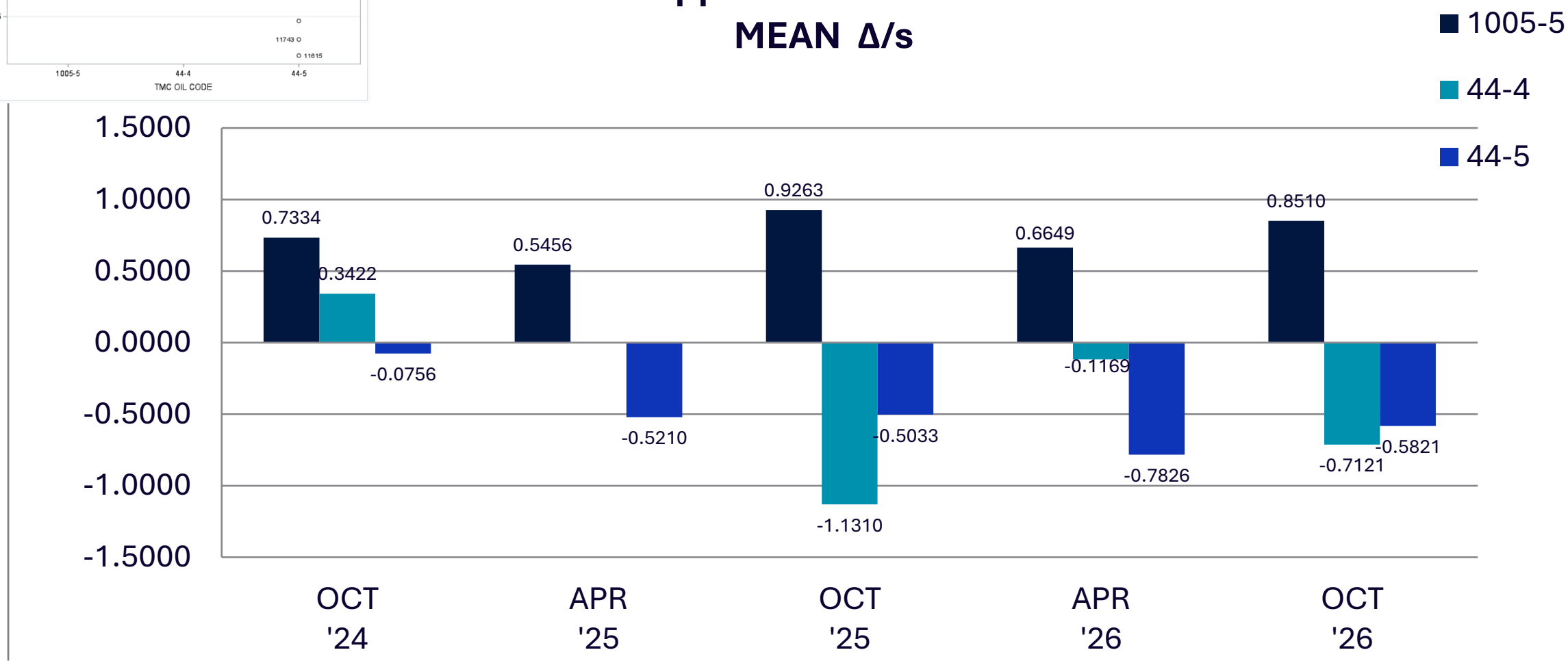


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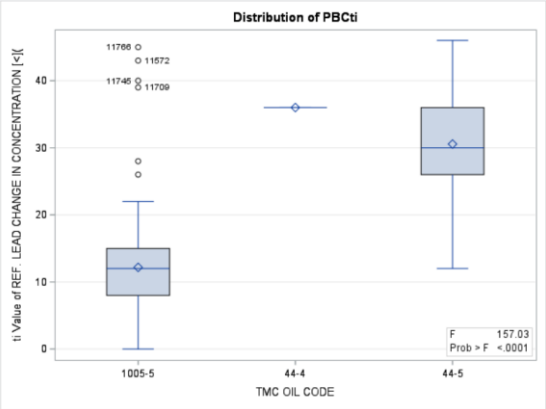
HTCBT Performance by OIL



Copper Concentration
MEAN Δ/s

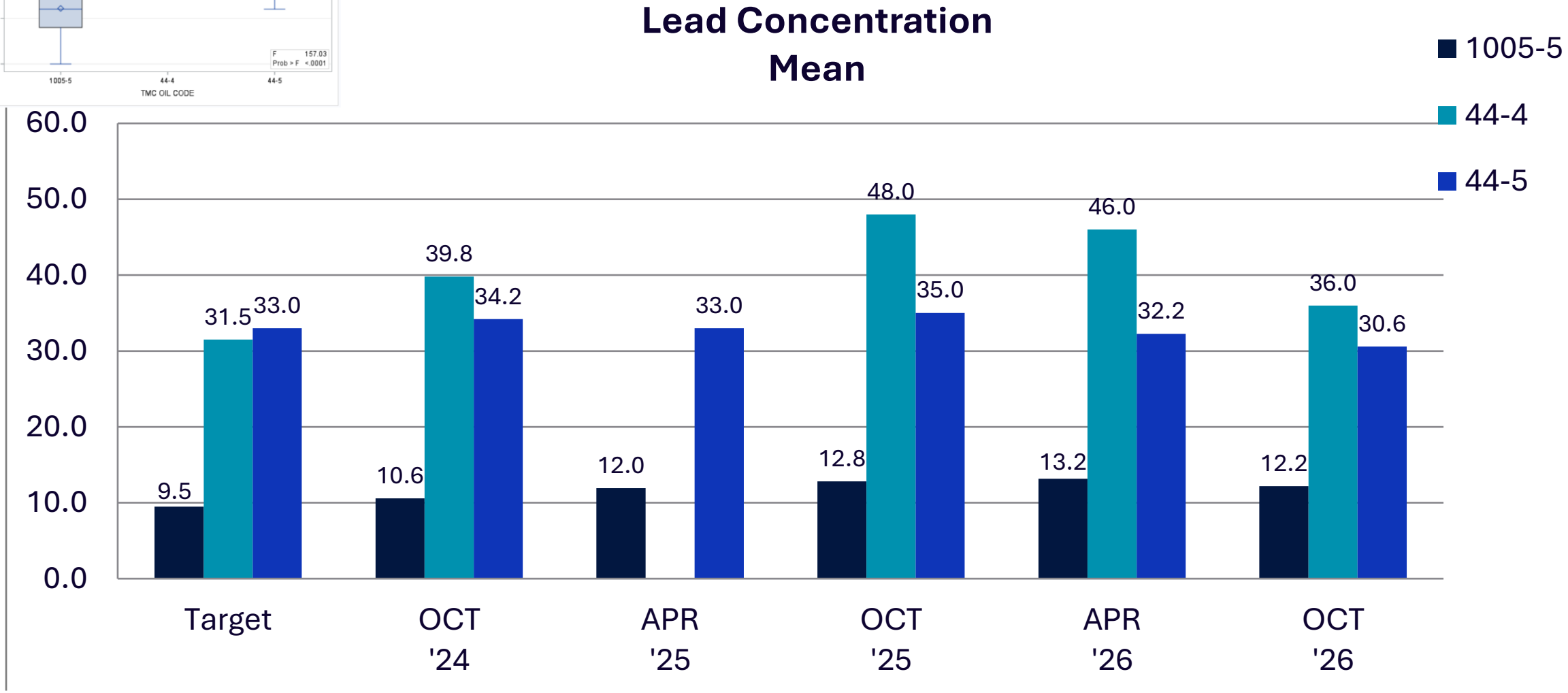


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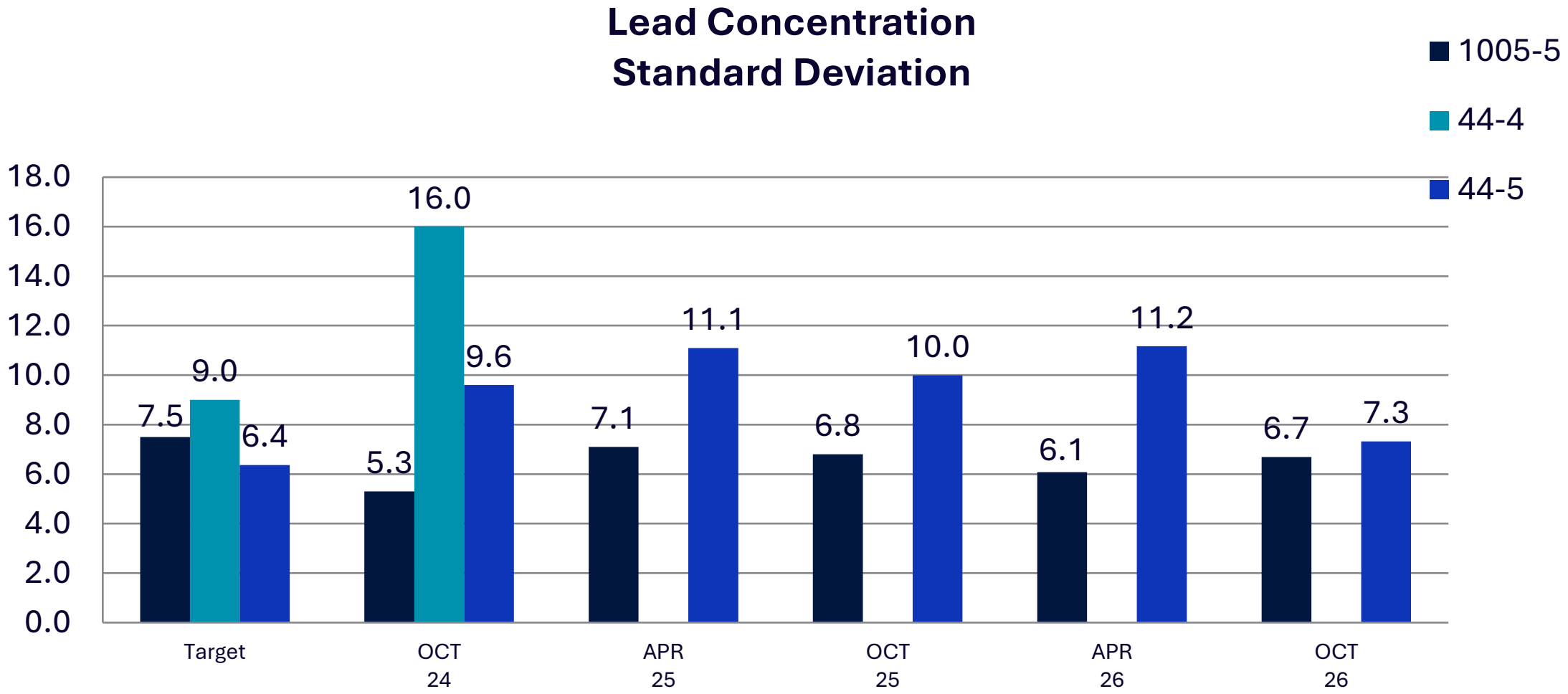
HTCBT Performance by OIL

Lead Concentration Mean

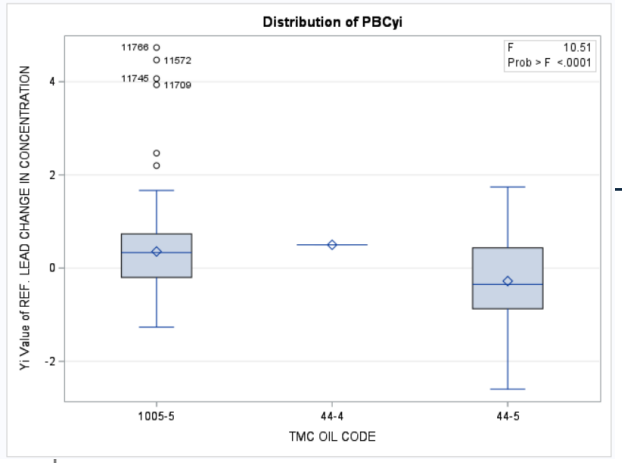


April 1, 2026 – September 30, 2026

HTCBT Performance by OIL

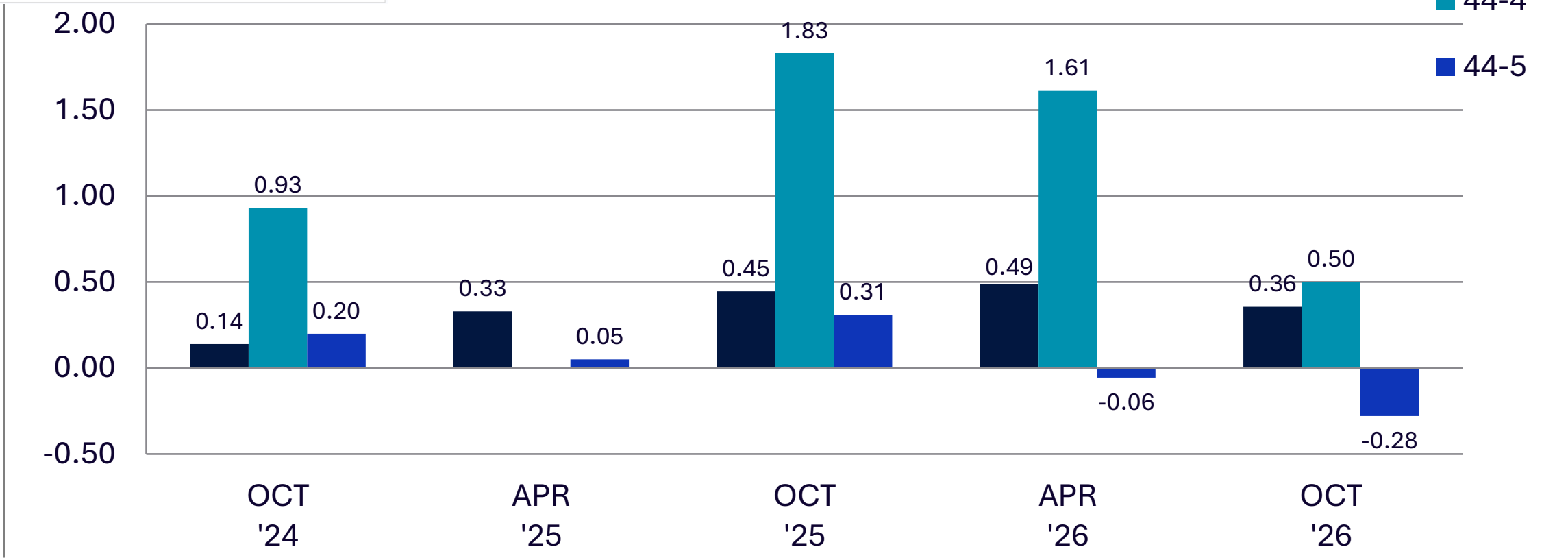


April 1, 2026 – September 30, 2026



HTCBT Performance by OIL

Lead Concentration
MEAN Δ/s



April 1, 2026 – September 30, 2026

Information Letters and Memos*

Test	Date	IL/Memo	Topic
HTCBT	20260926	M26-021	New Reference Oil Targets and Acceptance Bands

No new Information Letters and One Memo was issued this semester.

*Available from TMC Website

April 1, 2026 – September 30, 2026

Reference Oil Inventory Estimated Life

D6594

Oil	TMC Inventory (gallons)	Quantity Shipped in last 6 months (gallons)	Estimated Life
44-5	37.3	2.1	5+ year
1005-5	4.7 (Reserved drum – Additional oil available at the TMC)	5.6	5+ year

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D02.B0.07
TMC Monitored Tests

ASTM D 6794

Engine Oil Water Tolerance (EOWT)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6794	6 (+0)	N/A
*As of 9/30/2026		

- 7 labs reported data

EOWT Test Activity by Treat Rate

Test Status	Validity Code	Number of Tests by Water Treat Rate				Total
		0.6%	1.0%	2.0%	3.0%	
Acceptable Calibration Test	AC	28	28	27	28	**111**
Acceptable Industry Information Test	AG	15	15	15	15	**60**
Invalid Industry Information Test	LG	3	3	3	3	**12**
Failed Calibration Test[1]	OC	3	5	4	3	**15**
Acceptable Information Run	NN	2	4	5	6	**17**
Unacceptable Information Run	MN	5	4	4	2	**15**
Aborted/Invalid Informational Test	XN, LN	2	1	0	1	**4**
Total		**58**	**60**	**58**	**58**	**234**

[1] Calibration Fail Rate: 11.9% (last semester 5.4%)

April 1, 2026 – September 30, 2026

EOWT Test Activity by Reference Oil*

Test Status	Validity Code	Number of Tests by Reference Oil		Total
		77-3	79	
Acceptable Calibration Test	AC	56	55	**111**
Failed Calibration Test	OC	2	13	**15**
Acceptable Informational Test	NN	7	10	**17**
Unacceptable Informational Test	MN	8	7	**15**
Invalid Calibration Test	LC, RC	0	0	**0**
Aborted Calibration Test	XC	0	0	**0**
Aborted/Invalid Informational Test	XN, LN	1	3	**4**
Total		**74**	**88**	**162**

* Industry Information Runs with Reference Oil 88 are not included in this table

April 1, 2026 – September 30, 2026

EOWT Failed Tests

Failed Parameter (OC)	Number of Tests				Total
	0.6%	1.0%	2.0%	3.0%	
Severe Change in Flowrate	3	4	4	3	**14**
Mild Change in Flowrate	0	1	0	0	**1**
Total	**3**	**5**	**4**	**3**	**15**

April 1, 2026 – September 30, 2026

EOWT Failed Tests by Lab

Failed Parameter (OC)	LTMS Lab							#
	A	B	BE	G	I	L	V	
Severe Change in Flowrate	0	0	0	0	3	0	11	**14**
Mild Change in Flowrate	0	0	0	0	0	1	0	**1**
Total	**0**	**0**	**0**	**0**	**3**	**1**	**11**	**15**

April 1, 2026 – September 30, 2026

EOWT Lost Calibration Tests*

Cause	Number of Tests				#
	0.6%	1.0%	2.0%	3.0%	
INCORRECT WATER LEVEL (RC)	0	0	0	0	**0**
INCORRECT OIL USED (LC)	0	0	0	0	**0**
Total	**0**	**0**	**0**	**0**	**0**

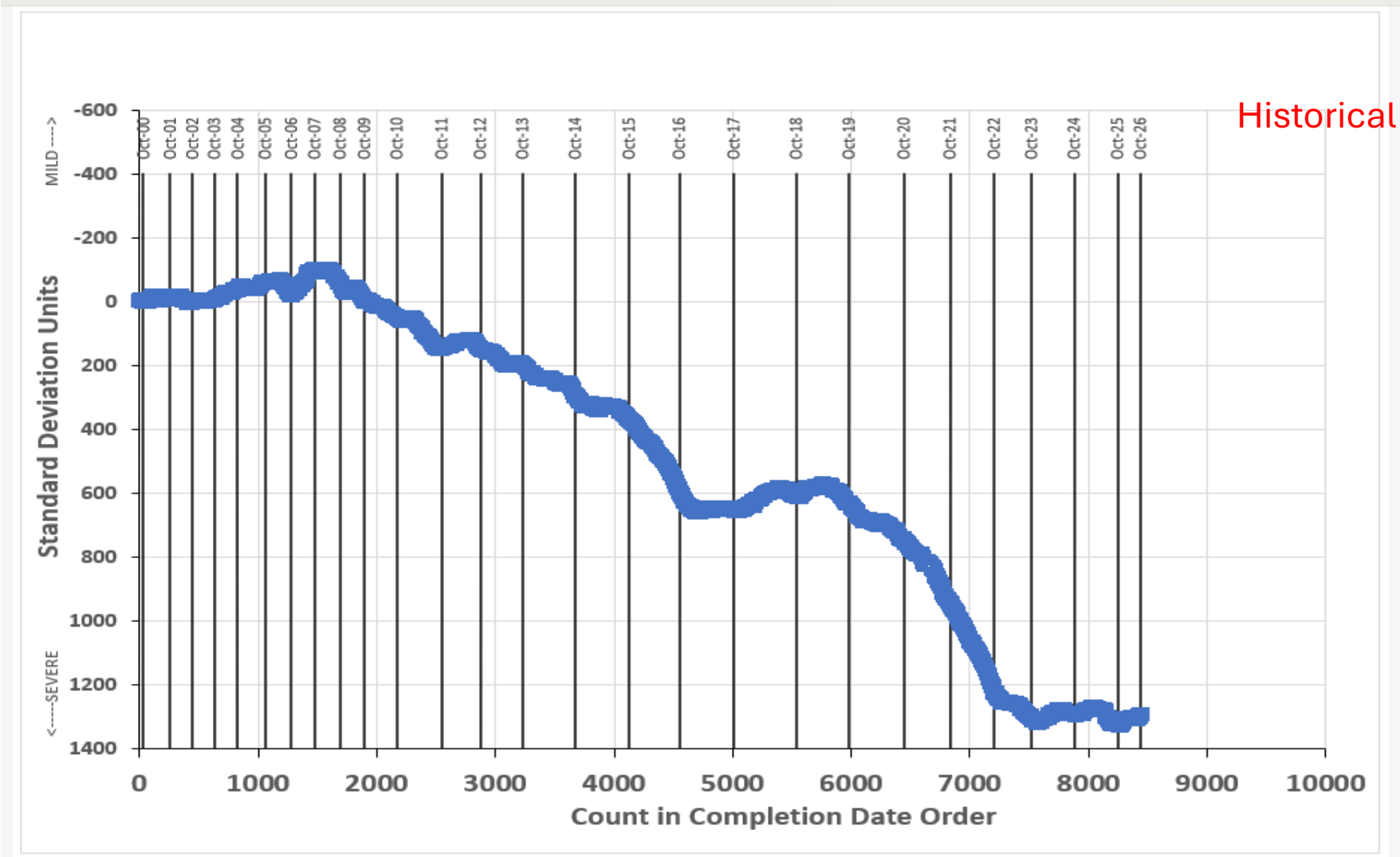
*Invalid (LC,RC) and Aborted (XC) calibration tests

April 1, 2026 – September 30, 2026

EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 0.6% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis



Historical Chart

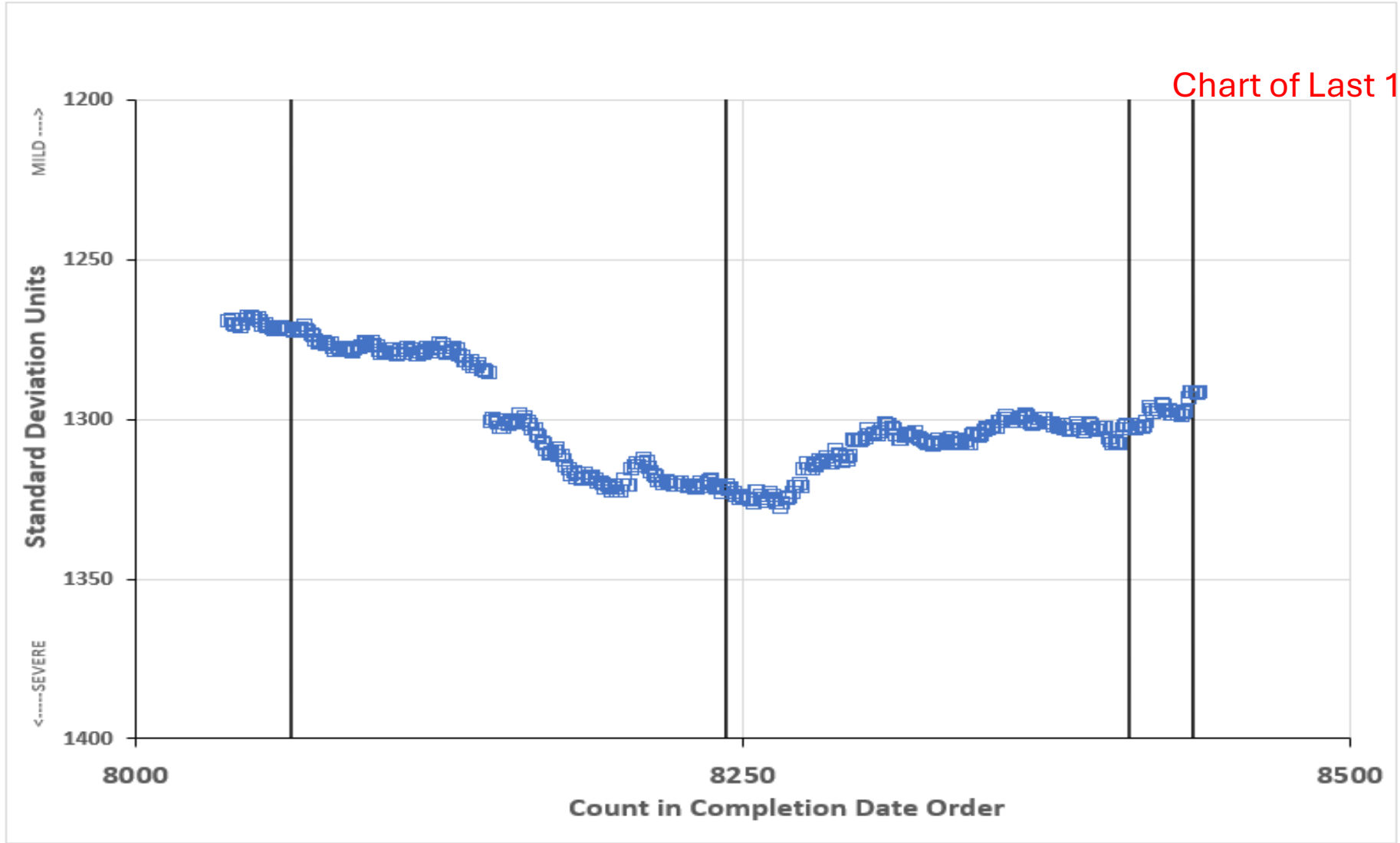
EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 0.6% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis

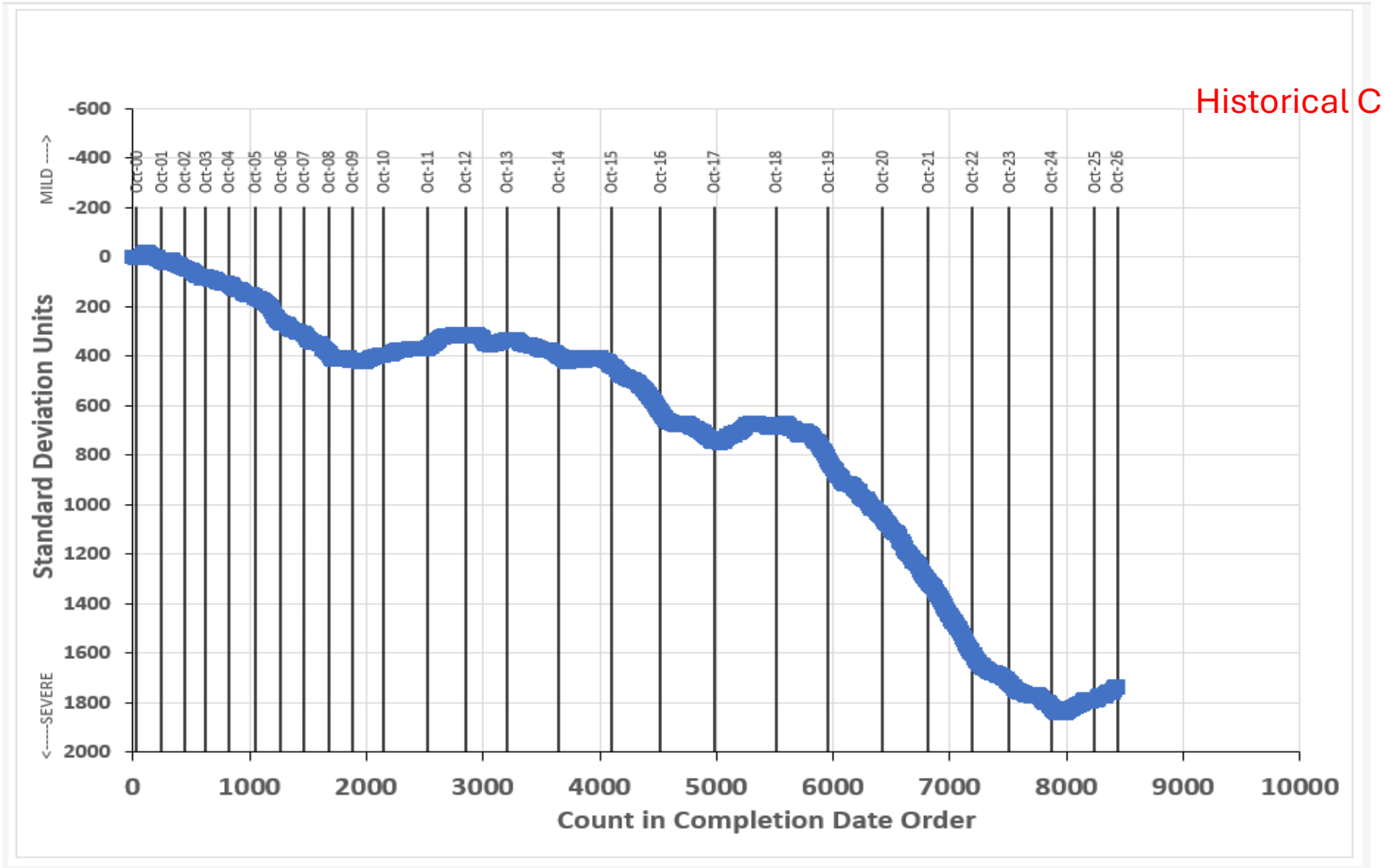
Chart of Last 18 months



EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 1.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis



Historical Chart

EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 1.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis

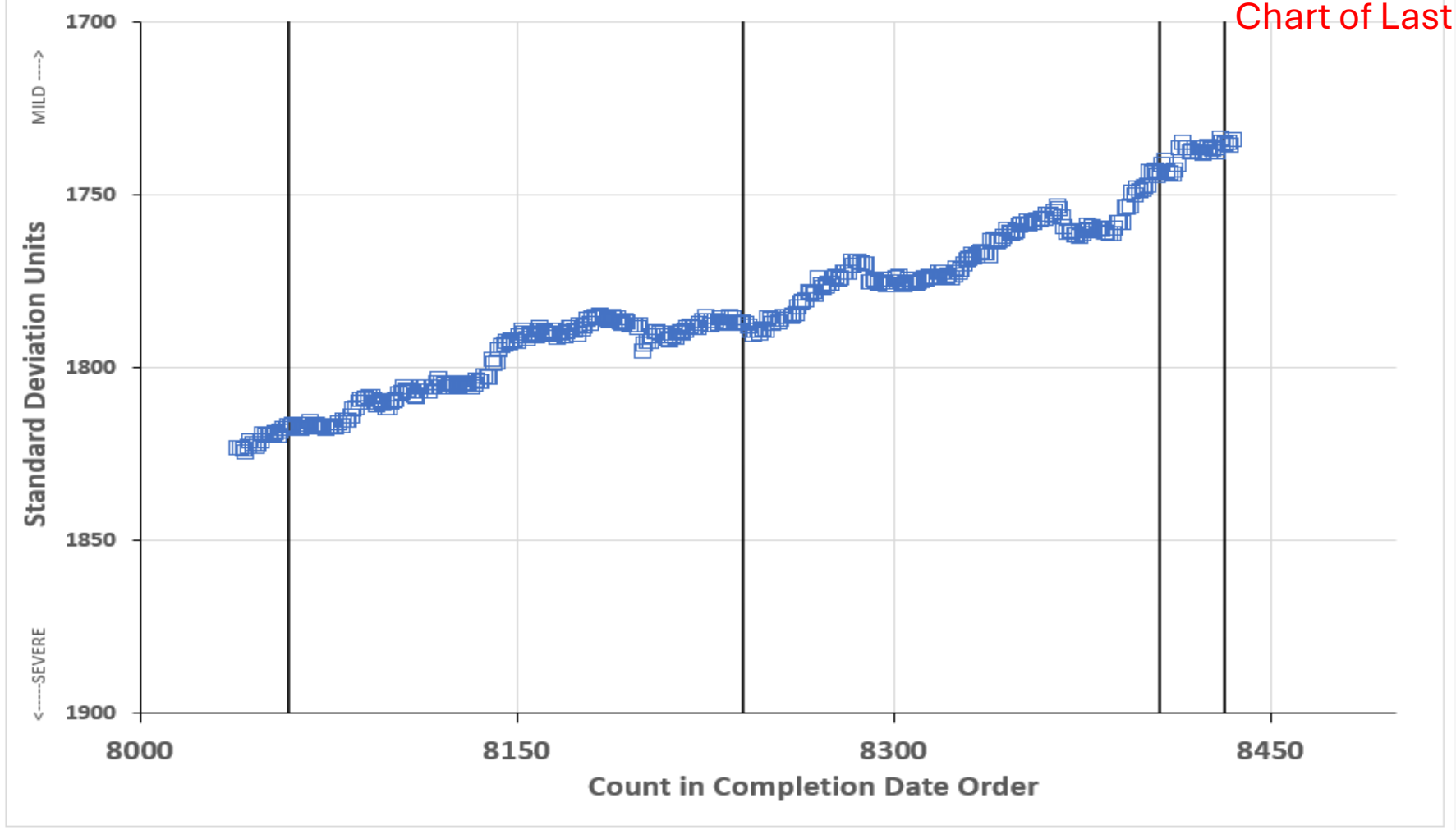
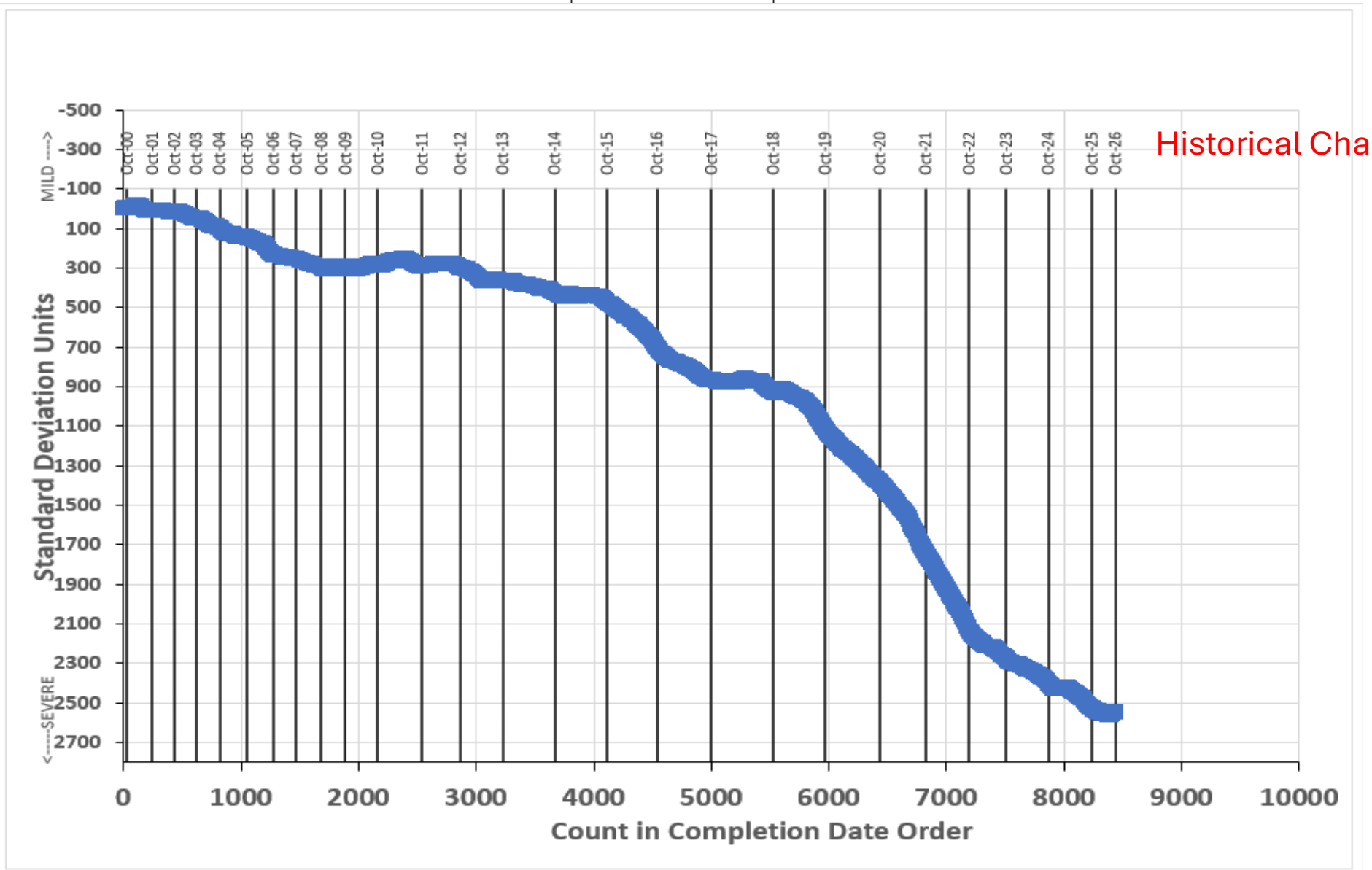


Chart of Last 18 months

EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 2.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER



Historical Chart

EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 2.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis

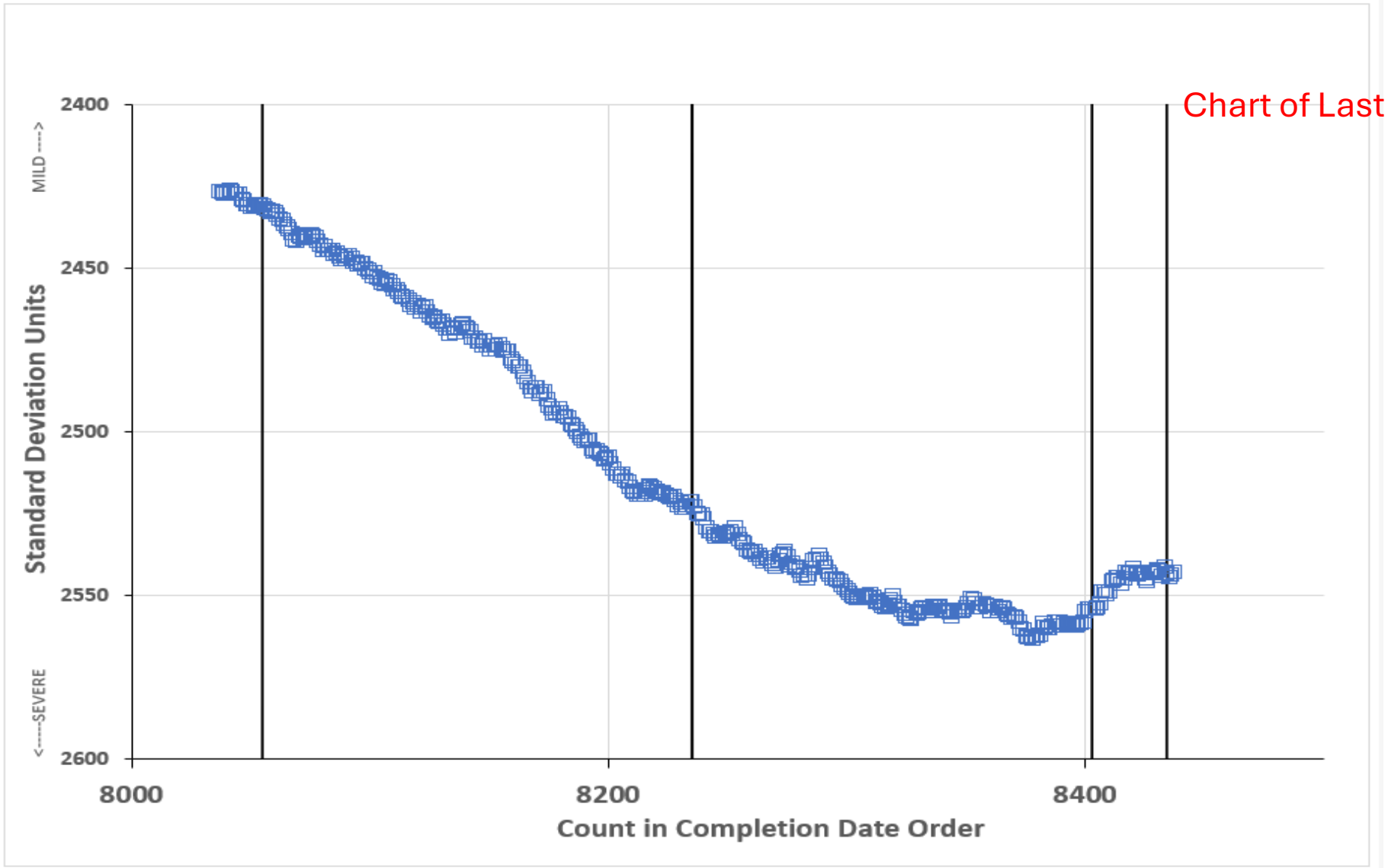
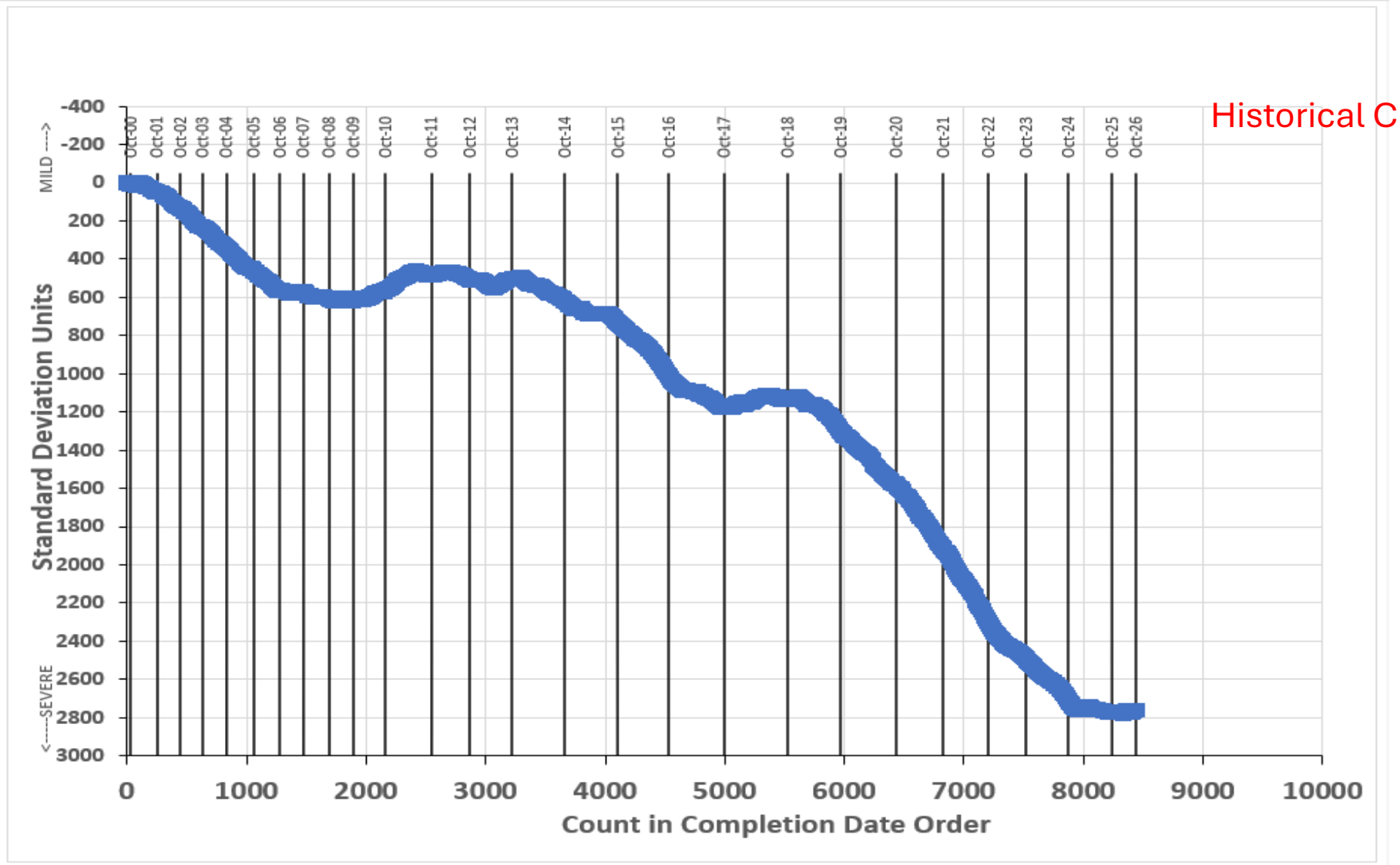


Chart of Last 18 months

EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 3.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis



EOWT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS 3.0% WATER
20 —25 ML CHANGE IN FLOWRATE AVG.

TEST MONITORING CENTER

CUSUM Severity Analysis

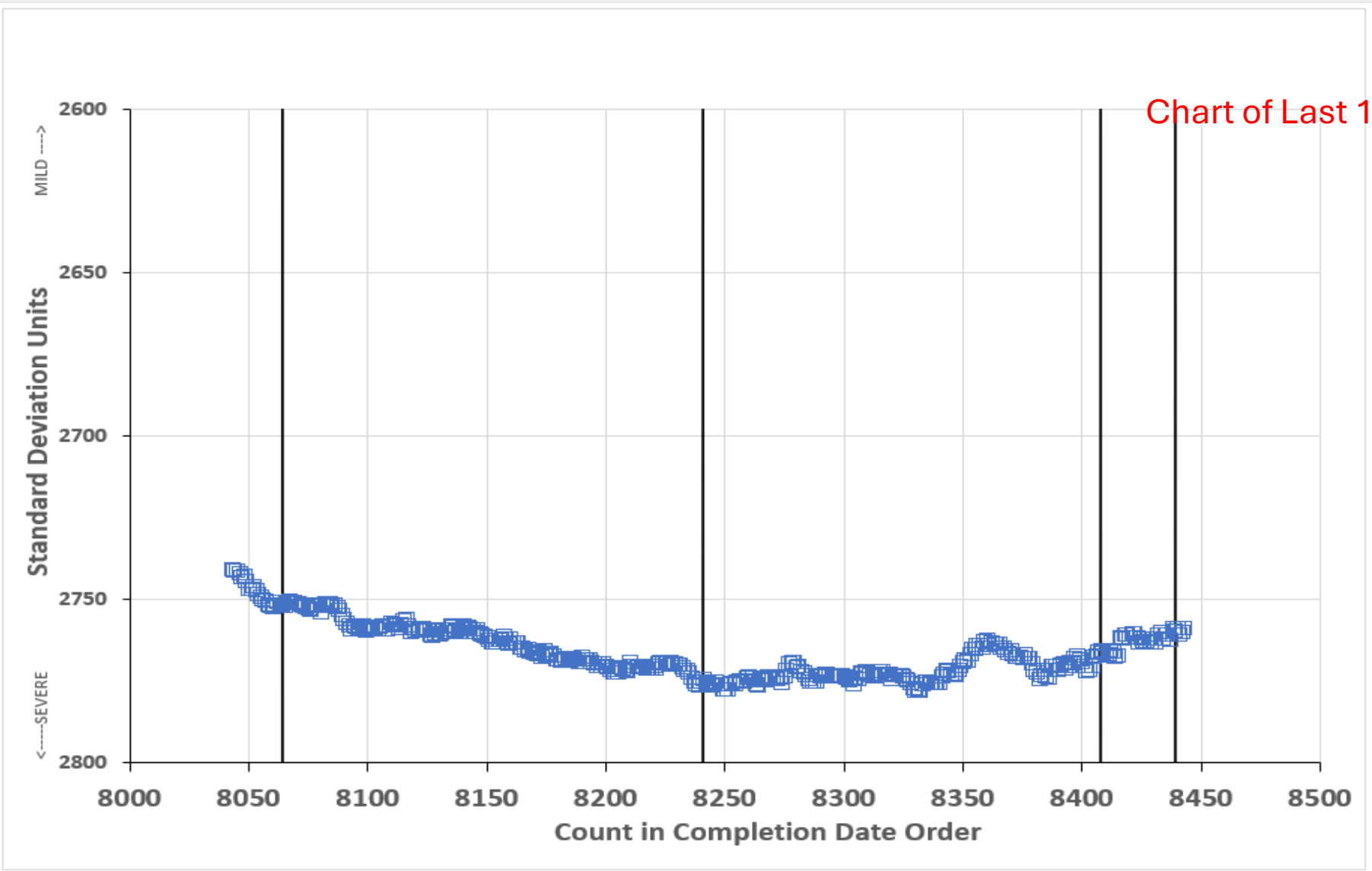
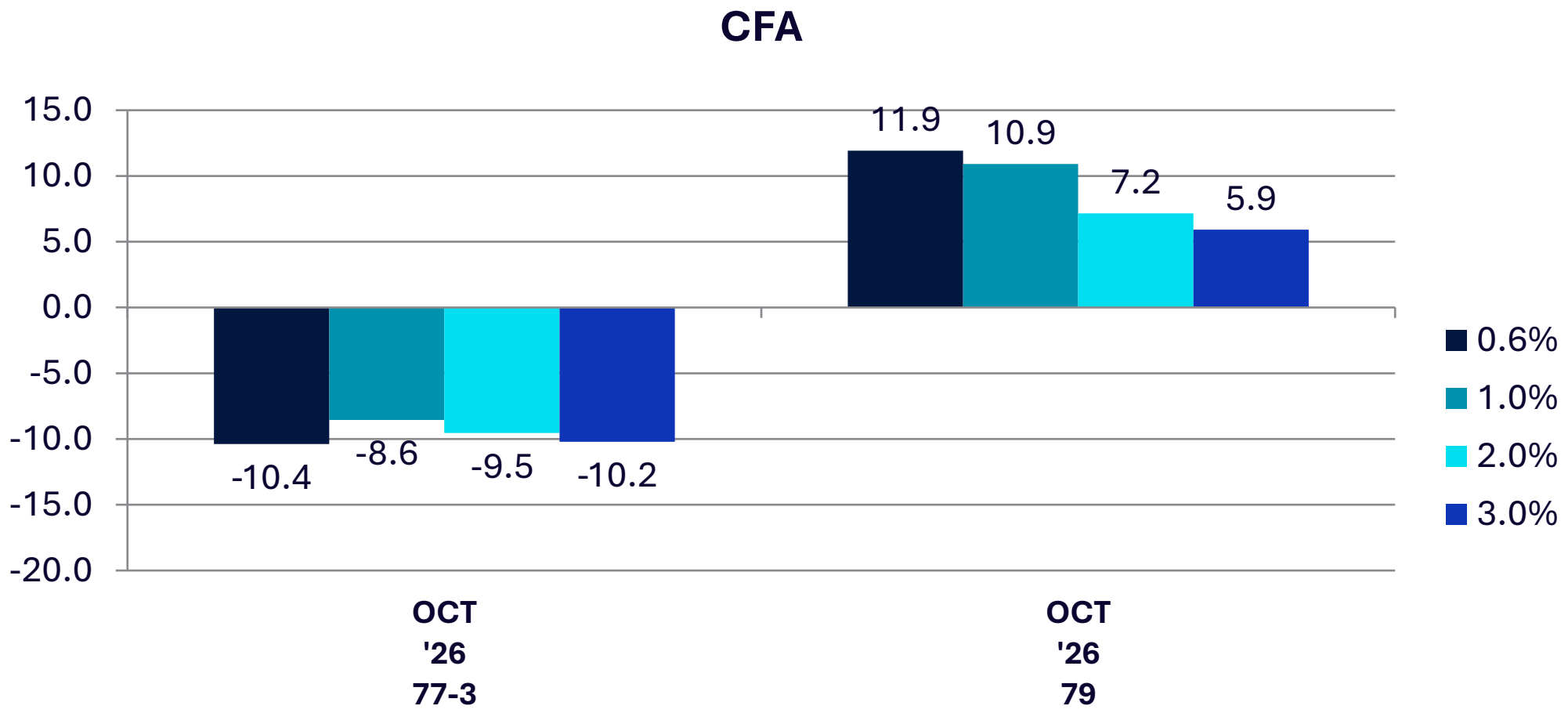
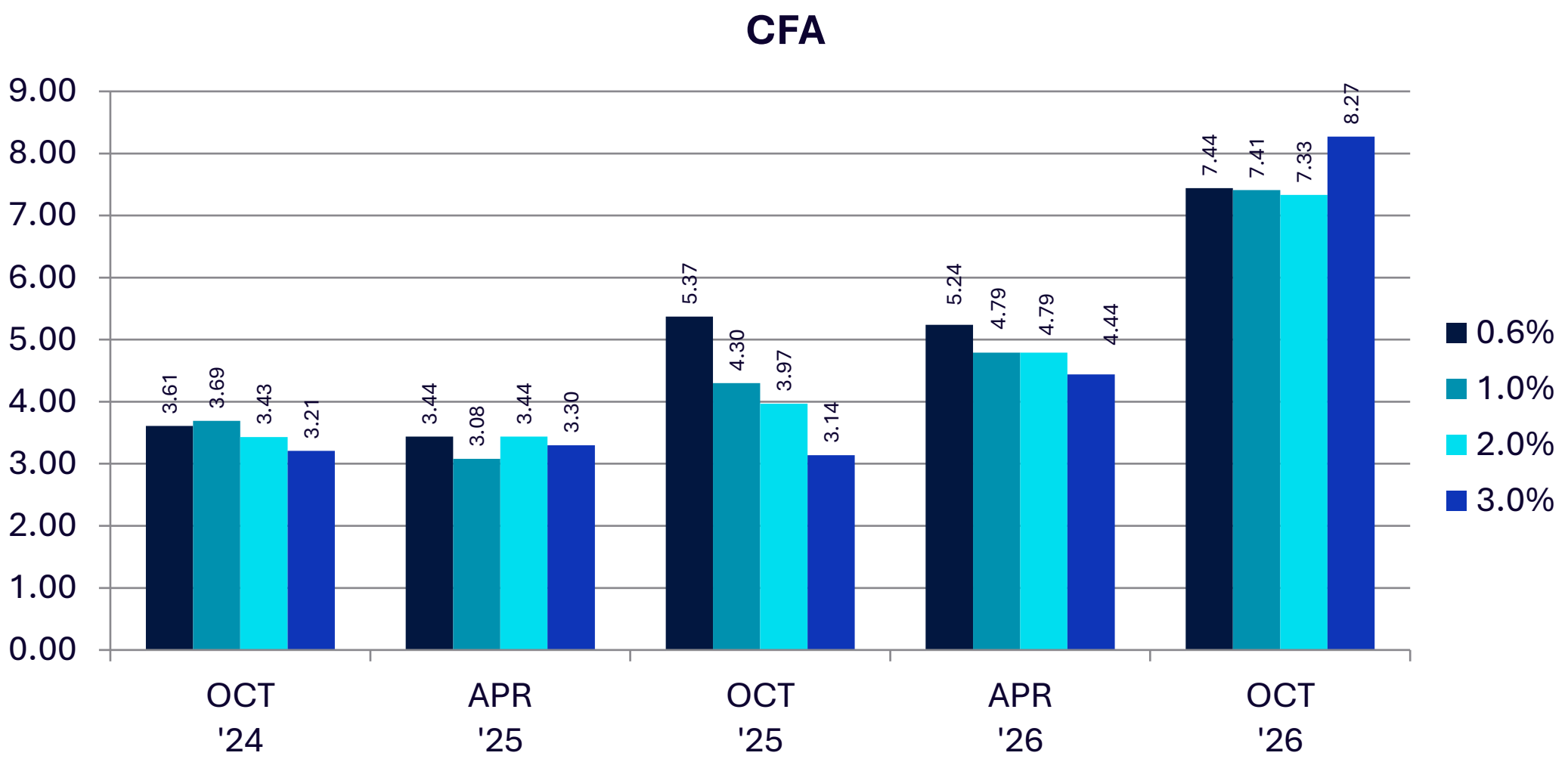


Chart of Last 18 months

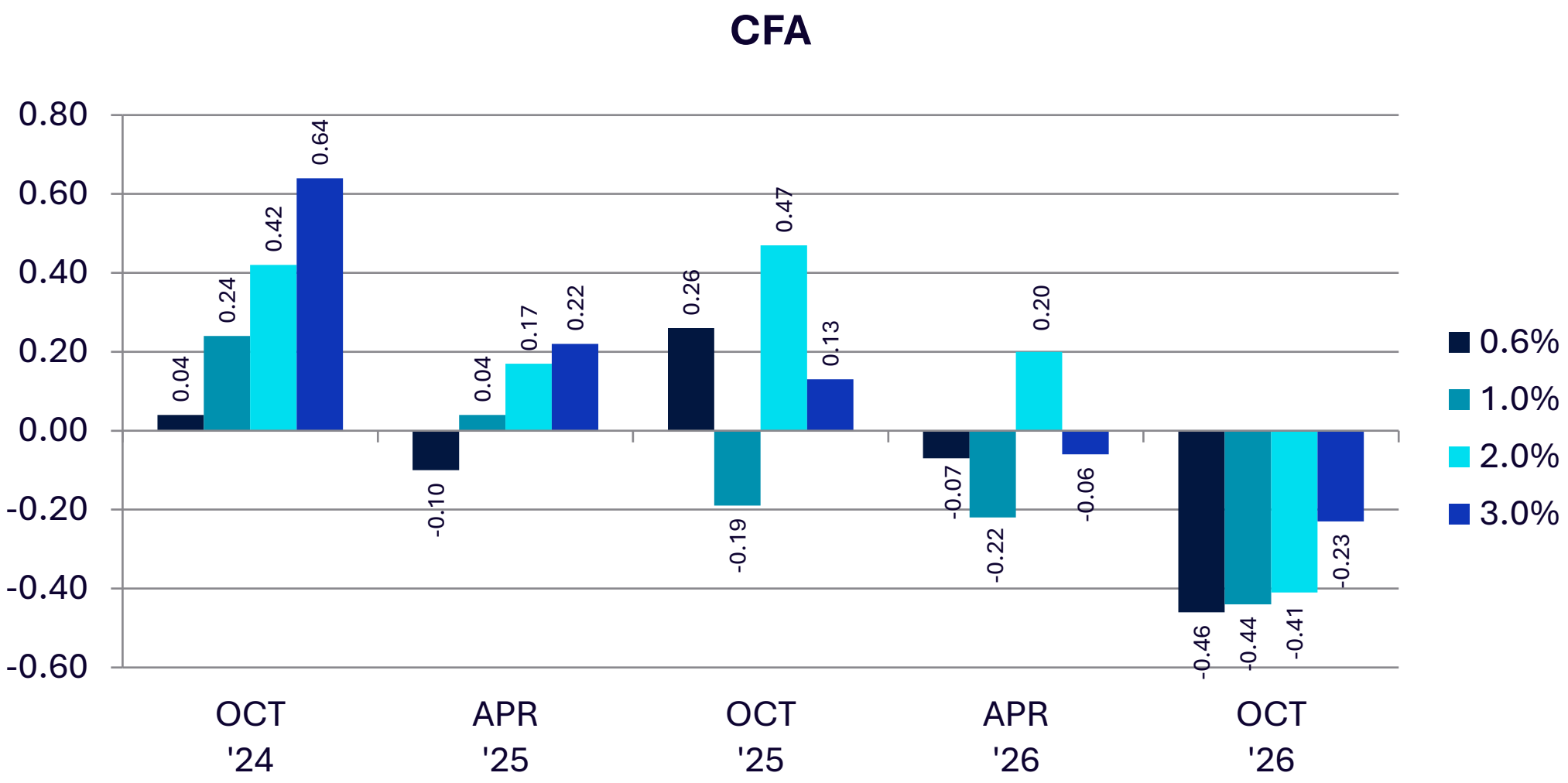
EOWT MEAN CFA's (%) by Reference Oil



EOWT Precision (Pooled s) Estimates

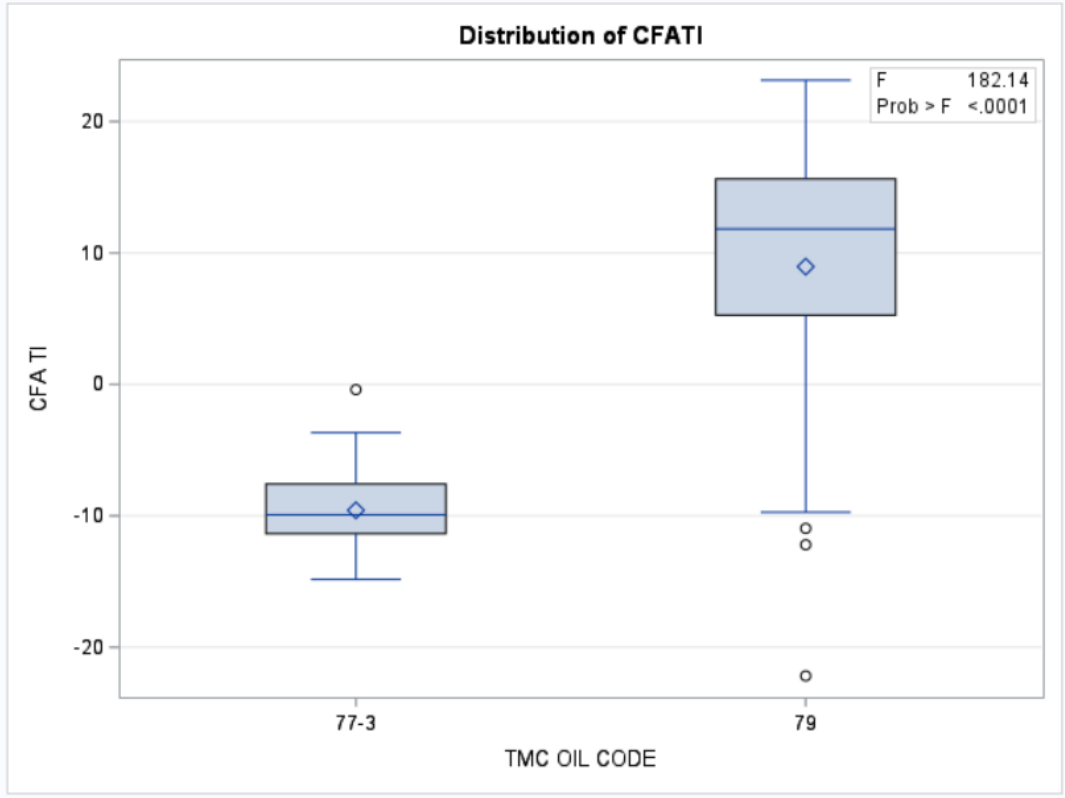


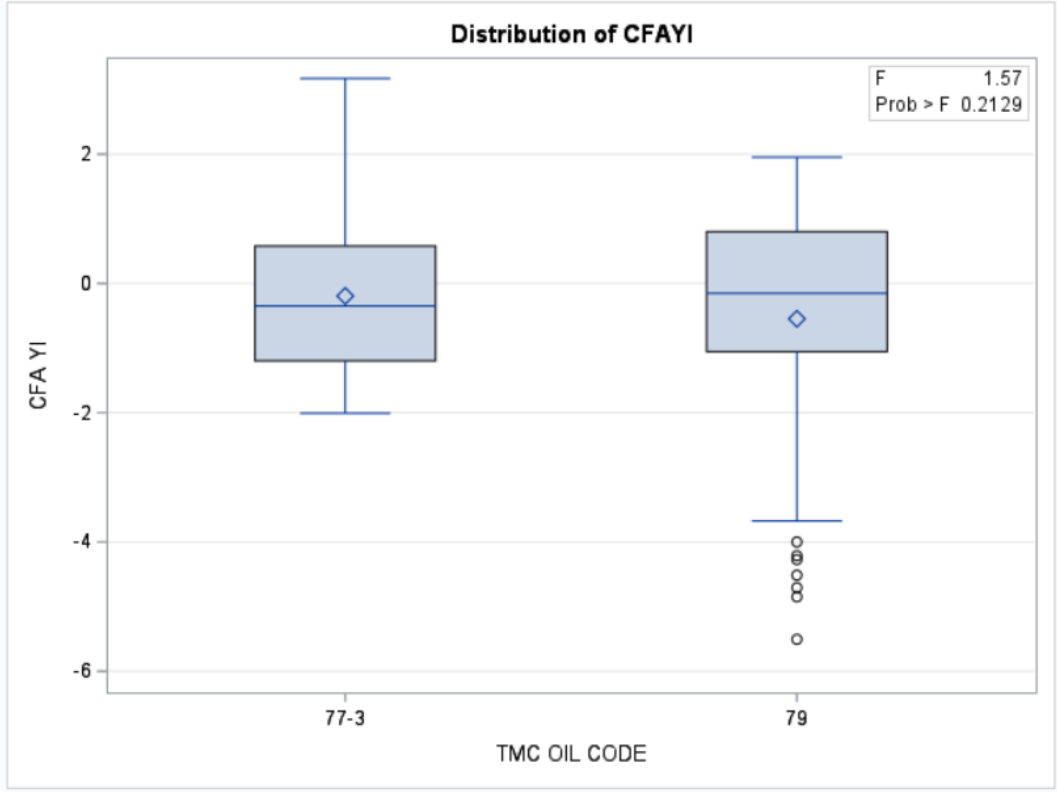
EOWT Performance (Mean Δ/s) Estimates



April 1, 2026 – September 30, 2026

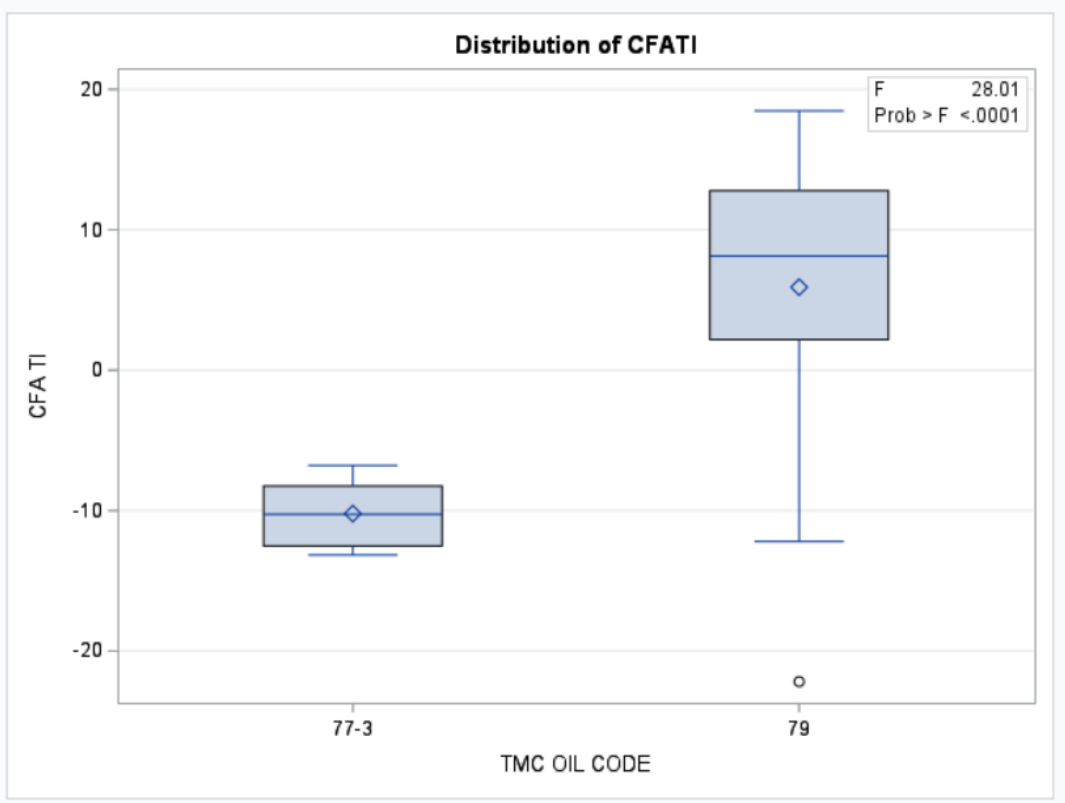
EOWT Results by Reference Oil: All Water Levels

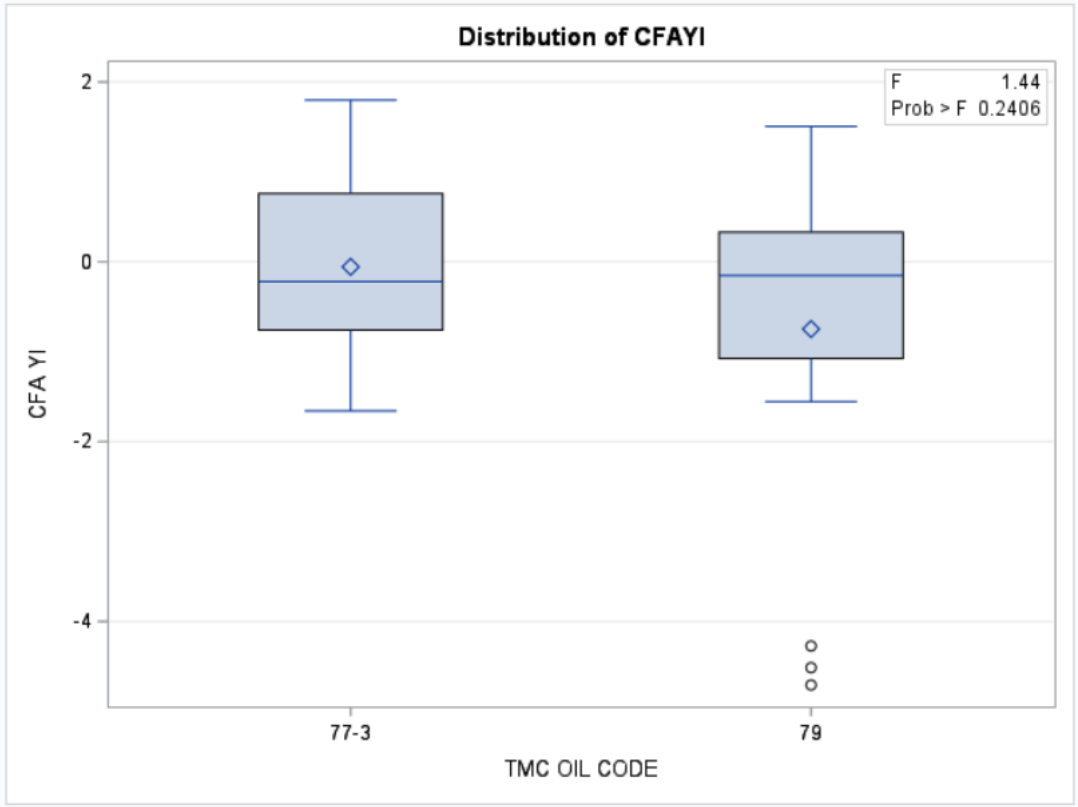




April 1, 2026 – September 30, 2026

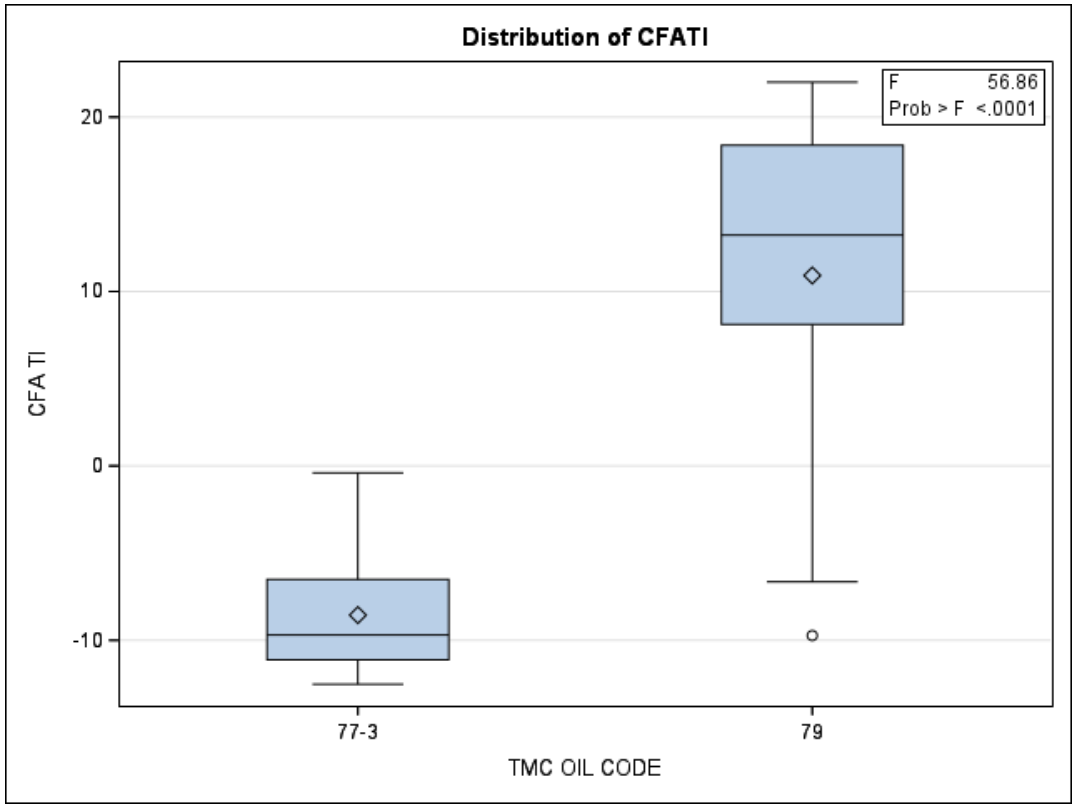
EOWT 0.6% Results by Reference Oil

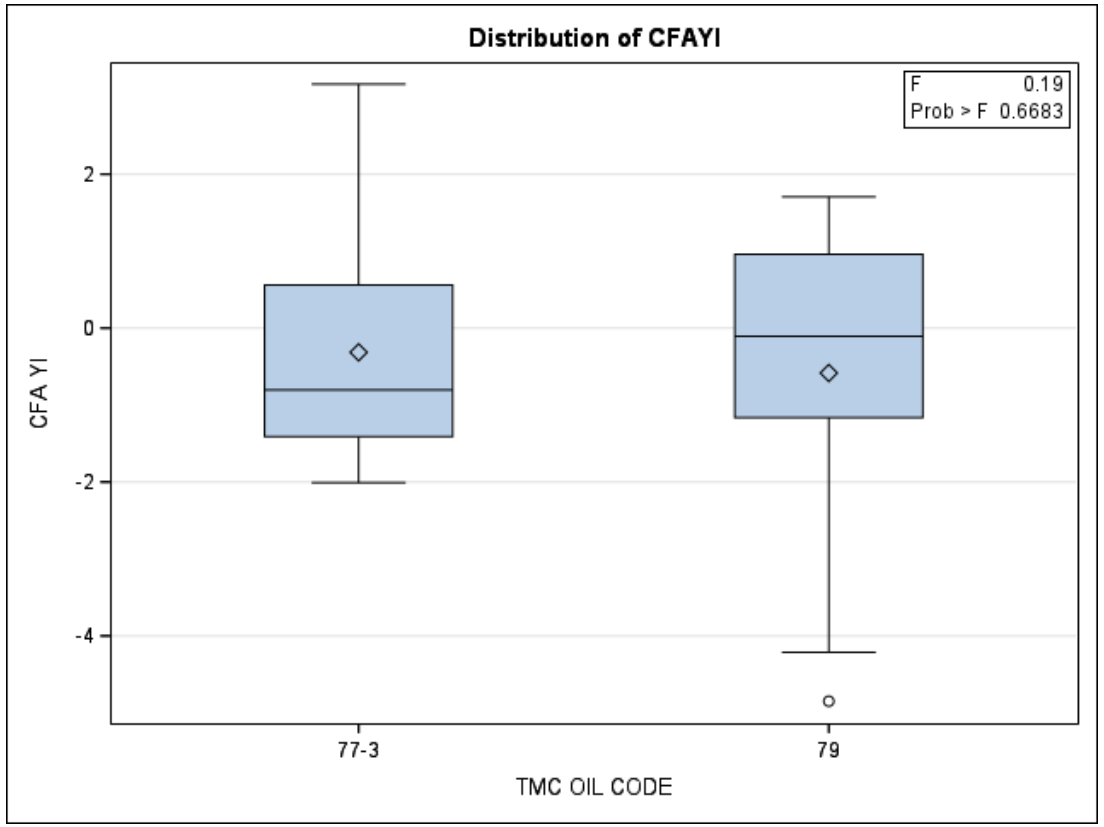




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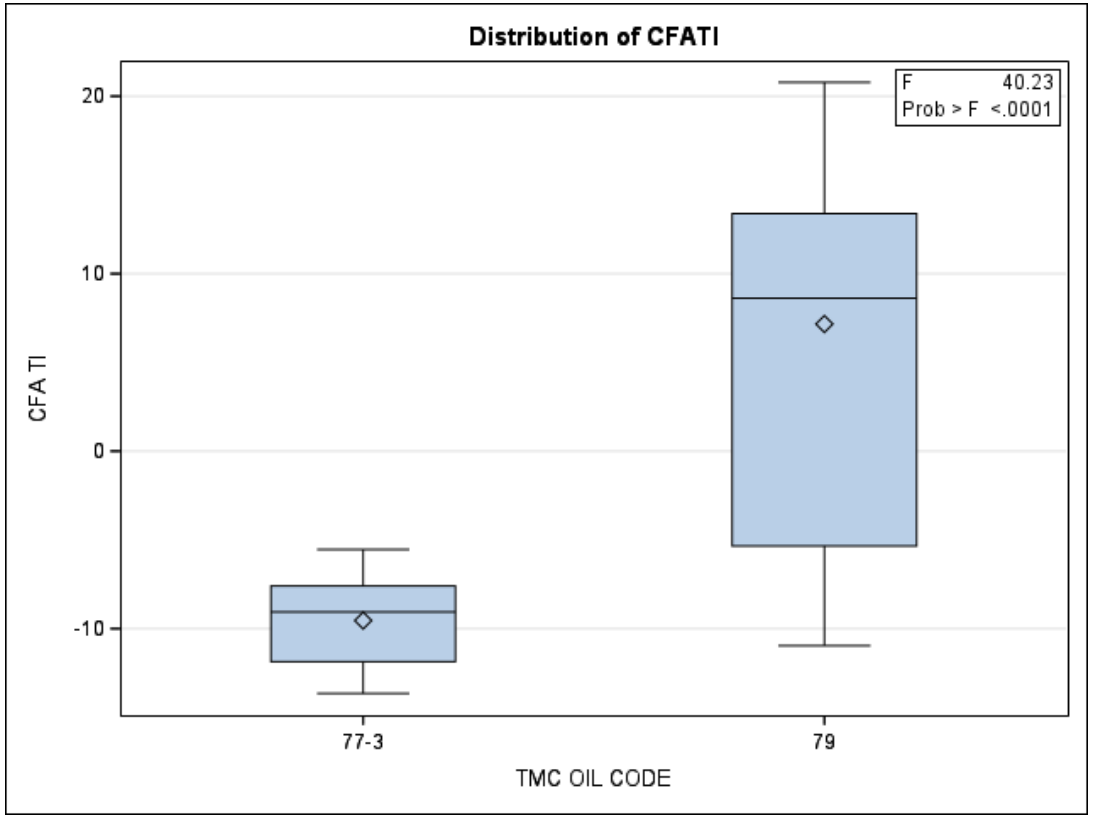
EOWT 1.0% Results by Reference Oil

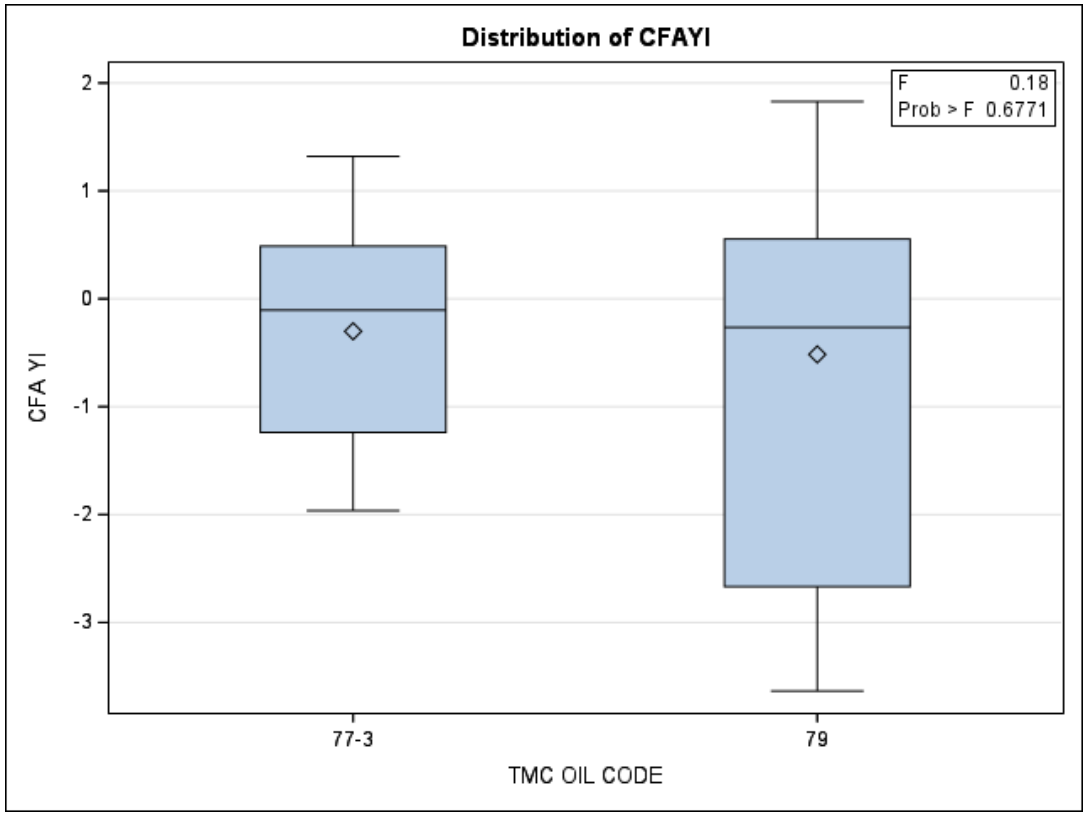




April 1, 2026 – September 30, 2026

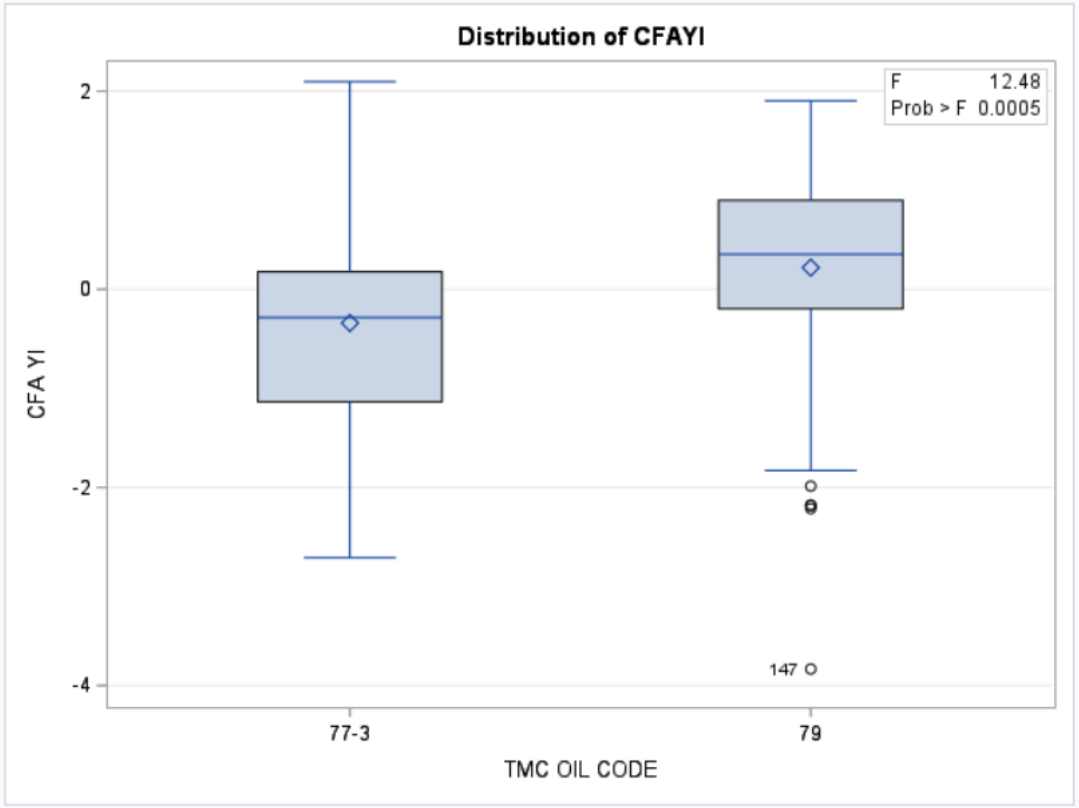
EOWT 2.0% Results by Reference Oil

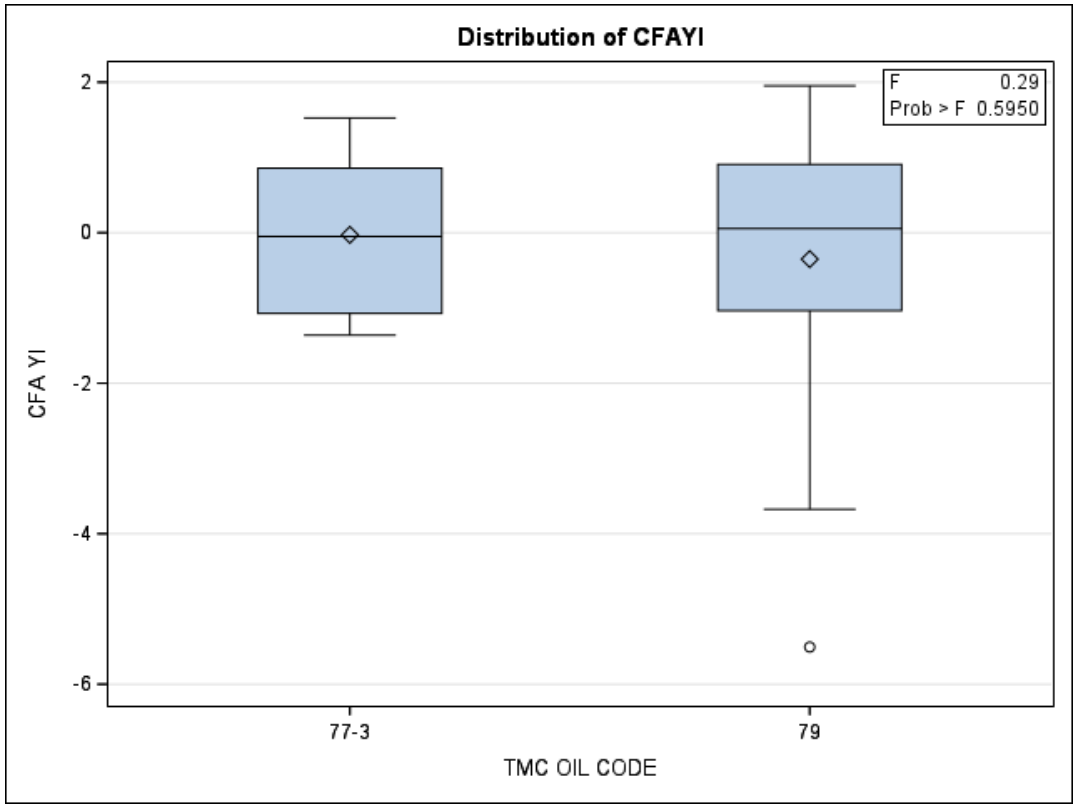




April 1, 2026 – September 30, 2026

EOWT 3.0% Results by Reference Oil





April 1, 2026 – September 30, 2026

Information Letters*

Test	Date	IL	Topic
EOWT	20260617	IL 26-2	Clarifications of recent revisions to the new calibration requirements

One information letter was issued this semester.

*Available from TMC Website

April 1, 2026 – September 30, 2026

EOWT Test Status

- The number of calibrated labs remained the same this semester. There were many “shakedown” runs and failing calibration attempts which is evident in the high number of MN, NN and OC test results logged by TMC this semester.

- Number of Calibration runs reduced significantly due to change in calibration requirements. This change will significantly extend the life of the two reference oils (79 and 77-3).

- Replacement candidate for RO79 was tested in a round robin run at several labs, but the data did not support the use of the candidate in EOWT.

- Reference Oil 79 was dropped from EOFT and is now exclusively used in EOWT.

Reference Oil Inventory Estimated Life

EOWT

Oil	TMC Inventory (gallons)	TEST	Gallons Shipped Past 6 Months	Estimated Life[1]
77-3	310	EOWT	2.4	5+ years
79	9.4	EOWT	2.4	5+ years

[1]Based upon new monthly calibration requirements for EOWT.

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D02.B0.07
TMC Monitored Tests

ASTM D 6795

Engine Oil Filterability Test (EOFT)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D6795	6 (+0)	N/A
*As of 9/30/2026		

- 7 labs reported data

EOFT Test Activity*

Test Status	Validity Code	Number of Tests by Reference Oil		Total
		79	88	
Acceptable Calibration Test	AC	25	6	**31**
Acceptable Industry Informational Test	AG	0	17	**17**
Failed Calibration Test	OC	1	1	**2**
Acceptable Informational Test	NN	0	0	**0**
Unacceptable Informational Test	MN	0	0	**0**
Invalid Calibration Test	LC, RC	0	0	**0**
Aborted Calibration Test	XC	0	0	**0**
Aborted/Invalid Informational Test	XN, LN	0	0	**0**
Total		**26**	**24**	**50**

- EOFT Calibration Fail Rate 6.1% (last semester 2.3%)
  - 6 labs reported data this semester

April 1, 2026 – September 30, 2026

EOFT Failed Tests

Failed Parameter	Number of Tests
Change in Flow Average (CIFA) Severe	0
Change in Flow Average (CIFA) Mild	2
Total	**2**

April 1, 2026 – September 30, 2026

EOFT Failed Tests by Lab

Failed Parameter	LTMS Lab							#
	A	B	BE	G	I	L	V	
Change in Flow Average (CIFA) Severe	0	N/A	0	0	0	0	0	**0**
Change in Flow Average (CIFA) Mild	1	N/A	0	0	0	1	0	**2**
Totals	**1**	**N/A**	**0**	**0**	**0**	**1**	**0**	**2**

April 1, 2026 – September 30, 2026

EOFT Lost Tests*

Status	Cause	No. of Tests
Invalid (L,R)		0
Aborted (X)		0
Total		**0**

There were no Invalid or Aborted calibration tests this semester.

*Invalid and aborted calibration tests

EOFT Information/Shakedown Tests

Informational / Non-blind Results	Number of Tests
Informational / Non-blind Test Result In-Range (NN)	0
Informational / Non-blind Test Result Severe (MN)	0
Informational / Non-blind Test Result Mild (MN)	0
Total	**0**

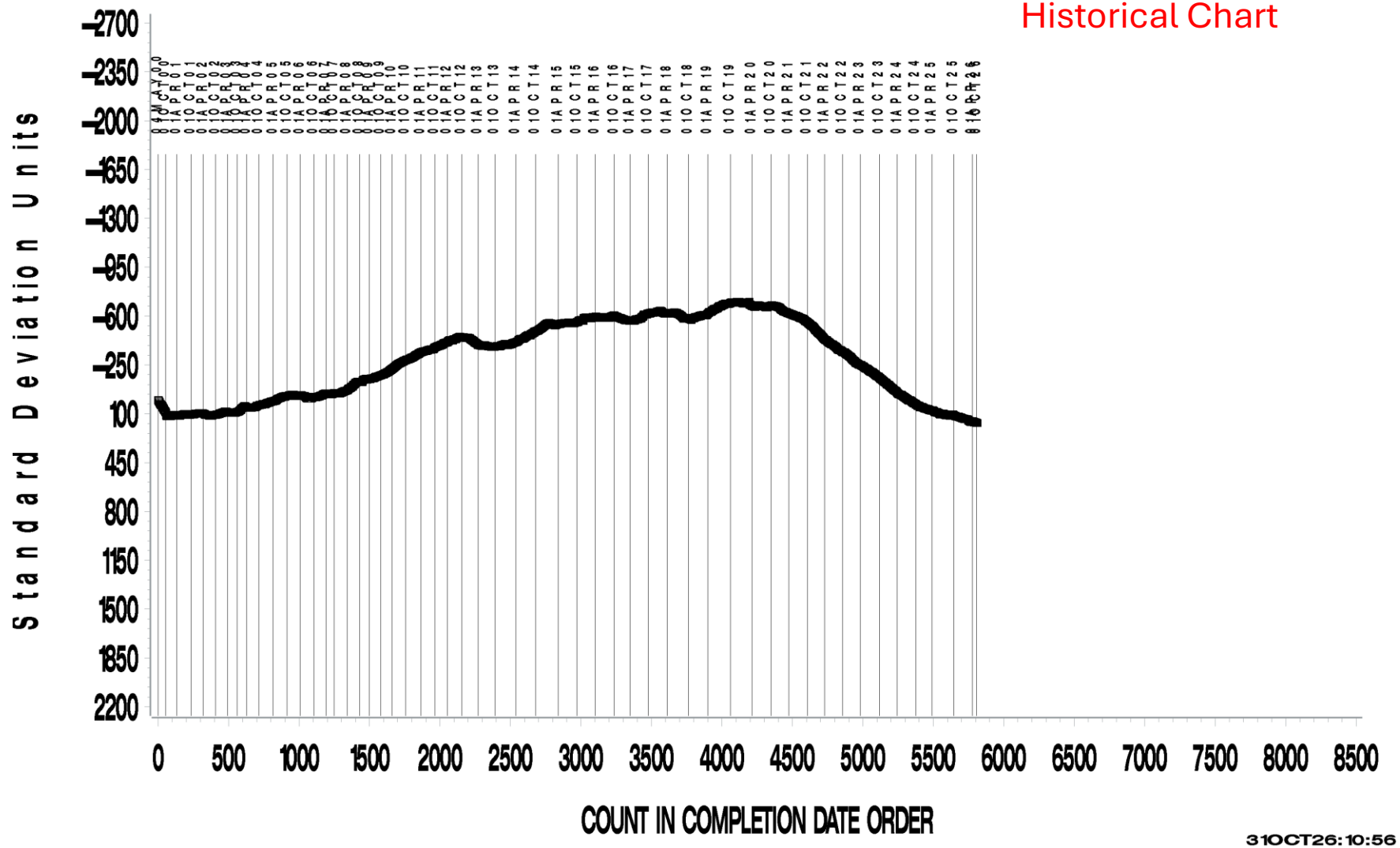
April 1, 2026 – September 30, 2026

EOFT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
20 —25 ML CHANGE IN FLOWRATE AVERAGE (%)

TEST MONITORING CENTER

CUSUM Severity Analysis

Historical Chart



EOFT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
20 —25 ML CHANGE IN FLOWRATE AVERAGE (%)

TEST MONITORING CENTER

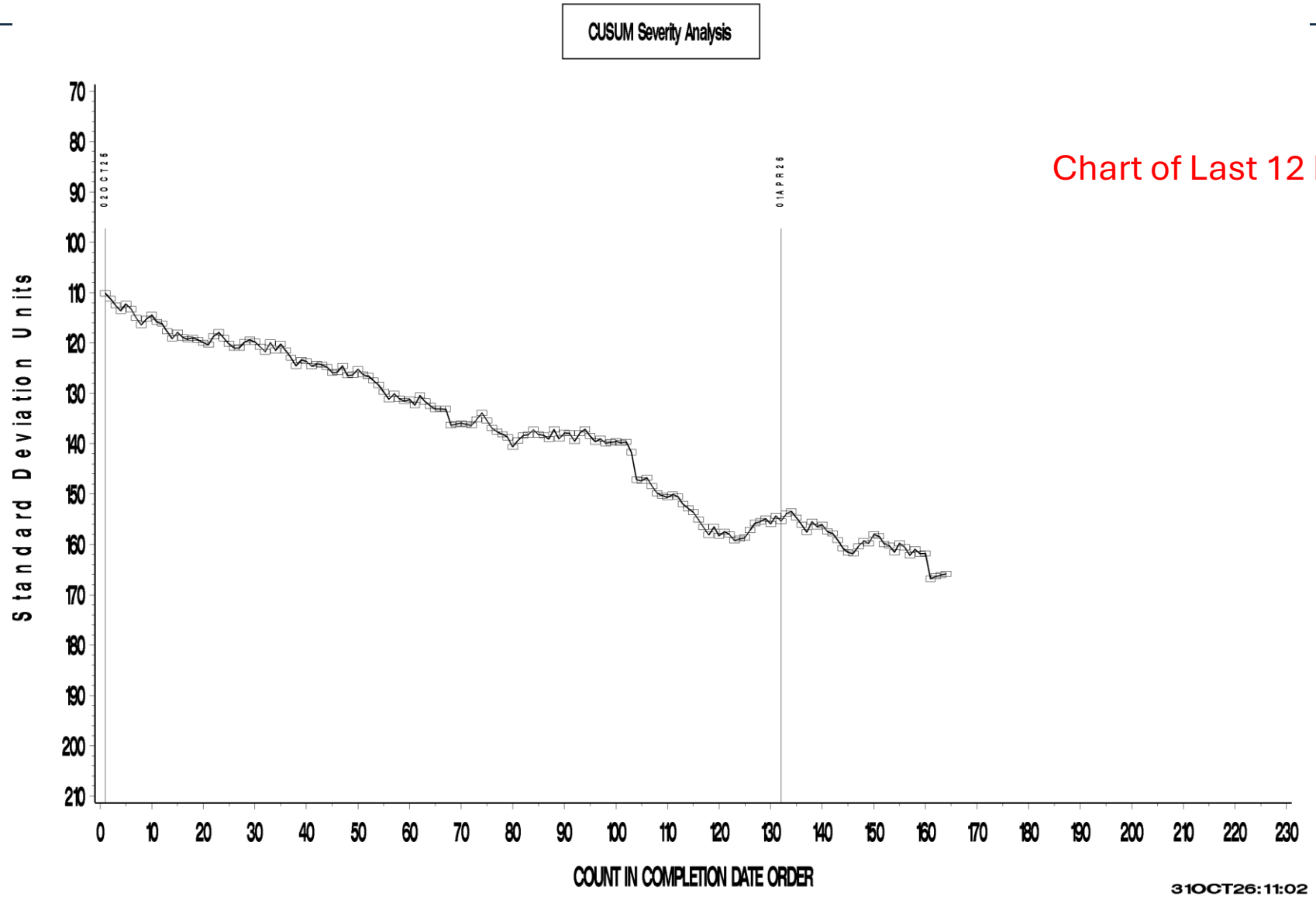
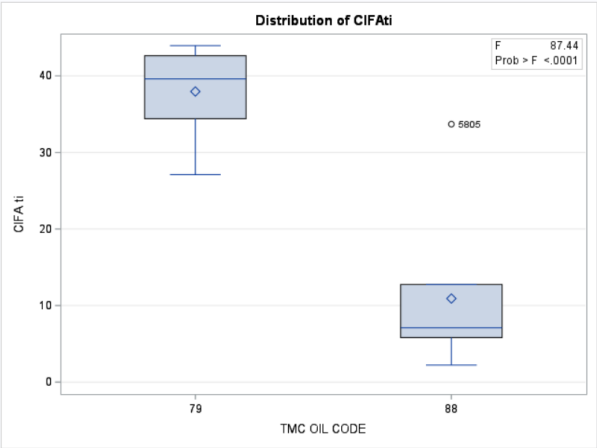
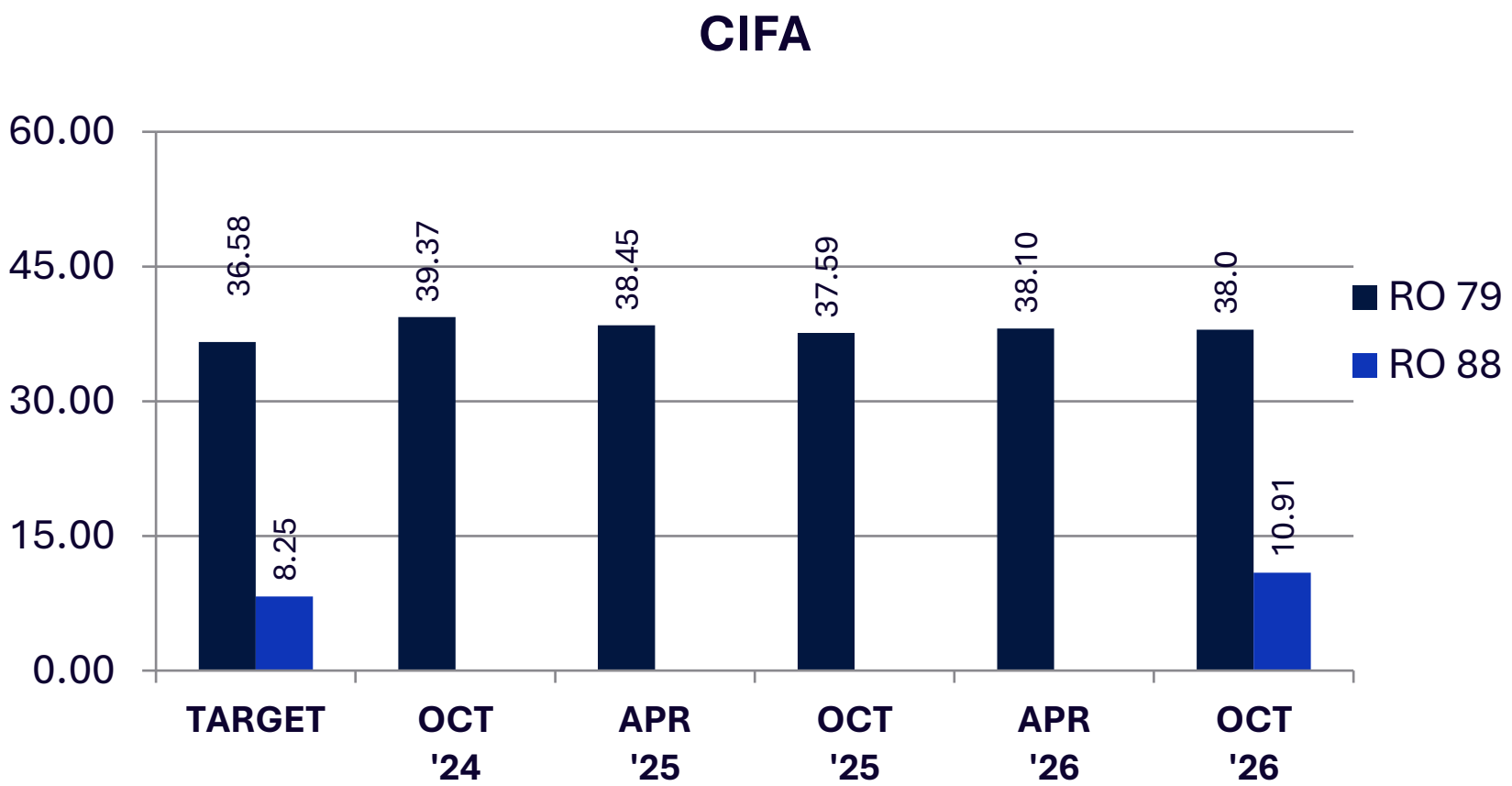


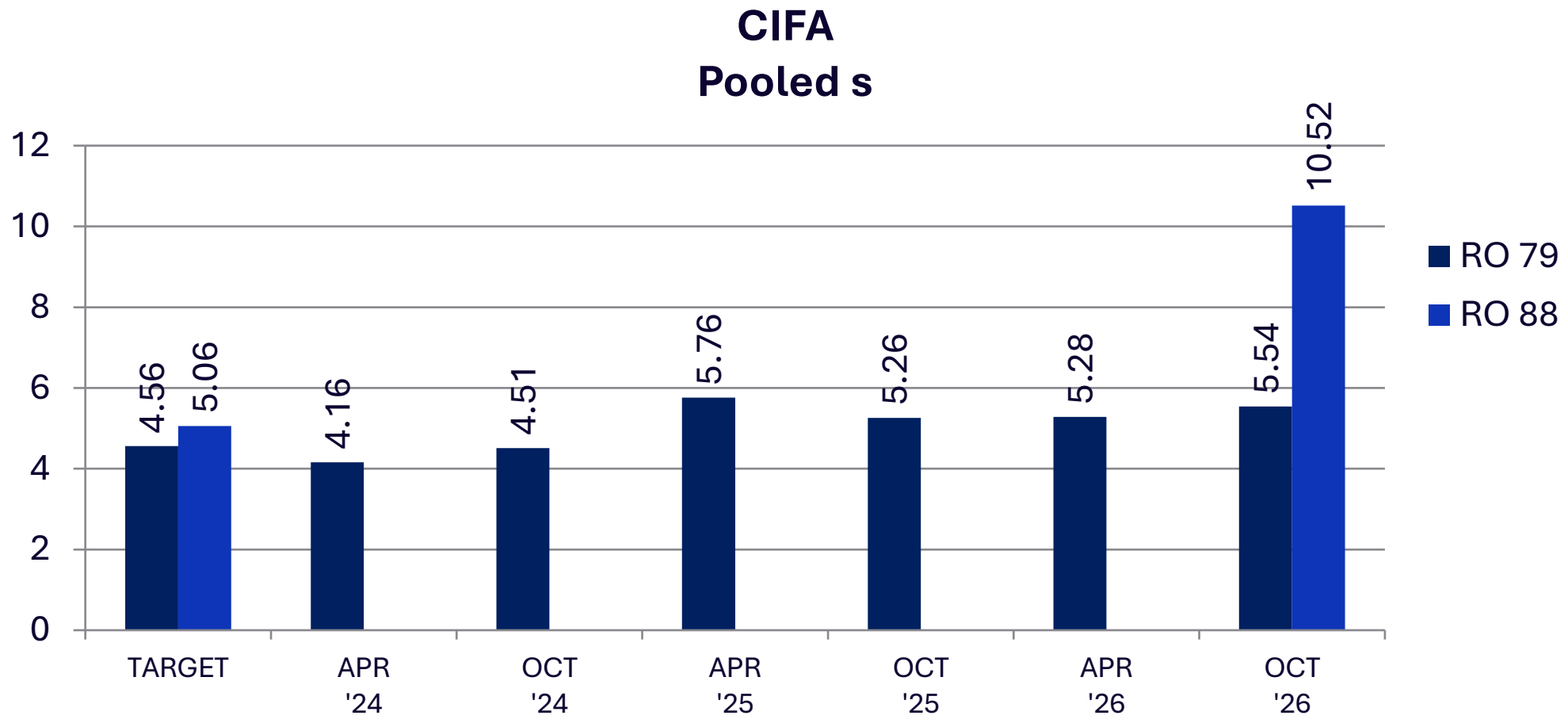
Chart of Last 12 Months

EOFT MEAN CIFA's (%)



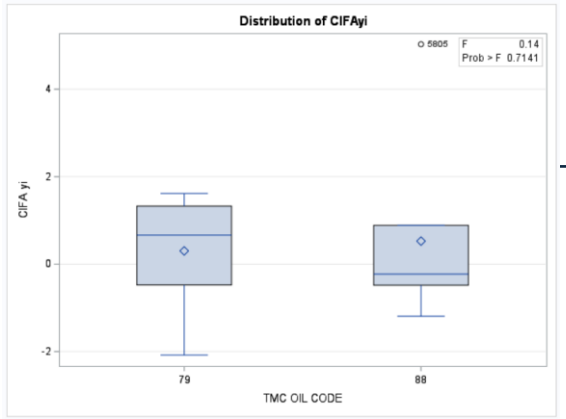


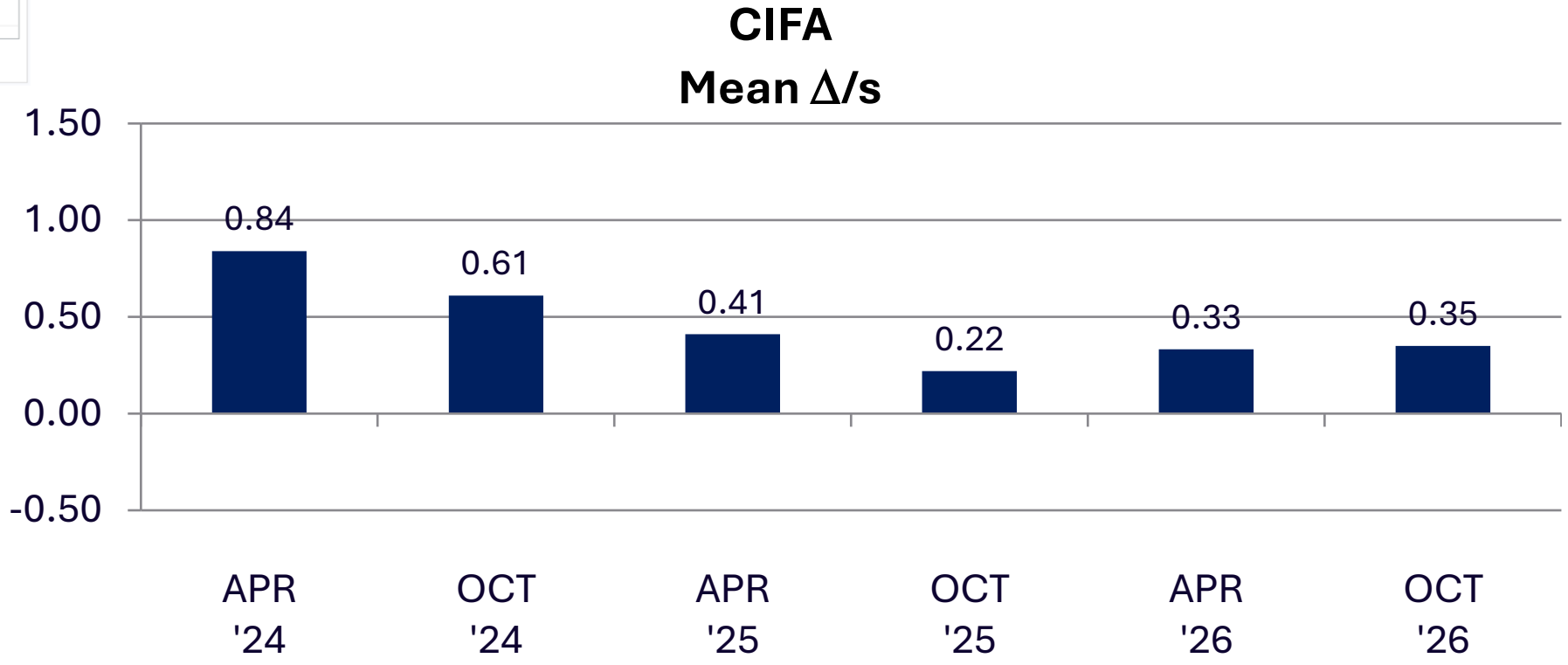
EOFT Precision Estimates



April 1, 2026 – September 30, 2026

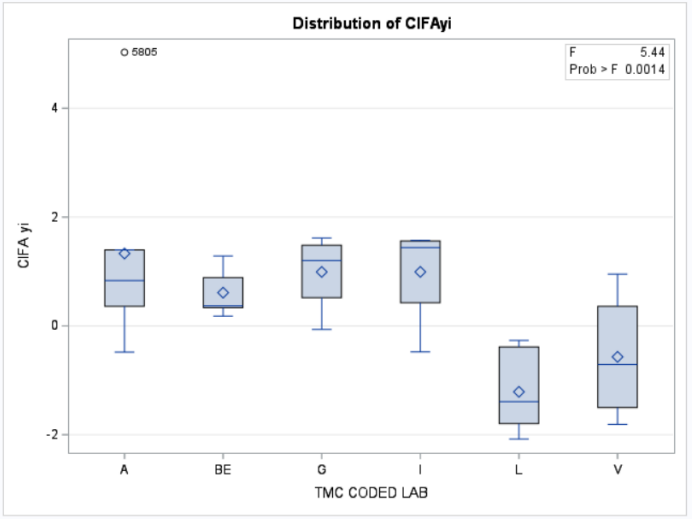
EOFT Severity Estimates

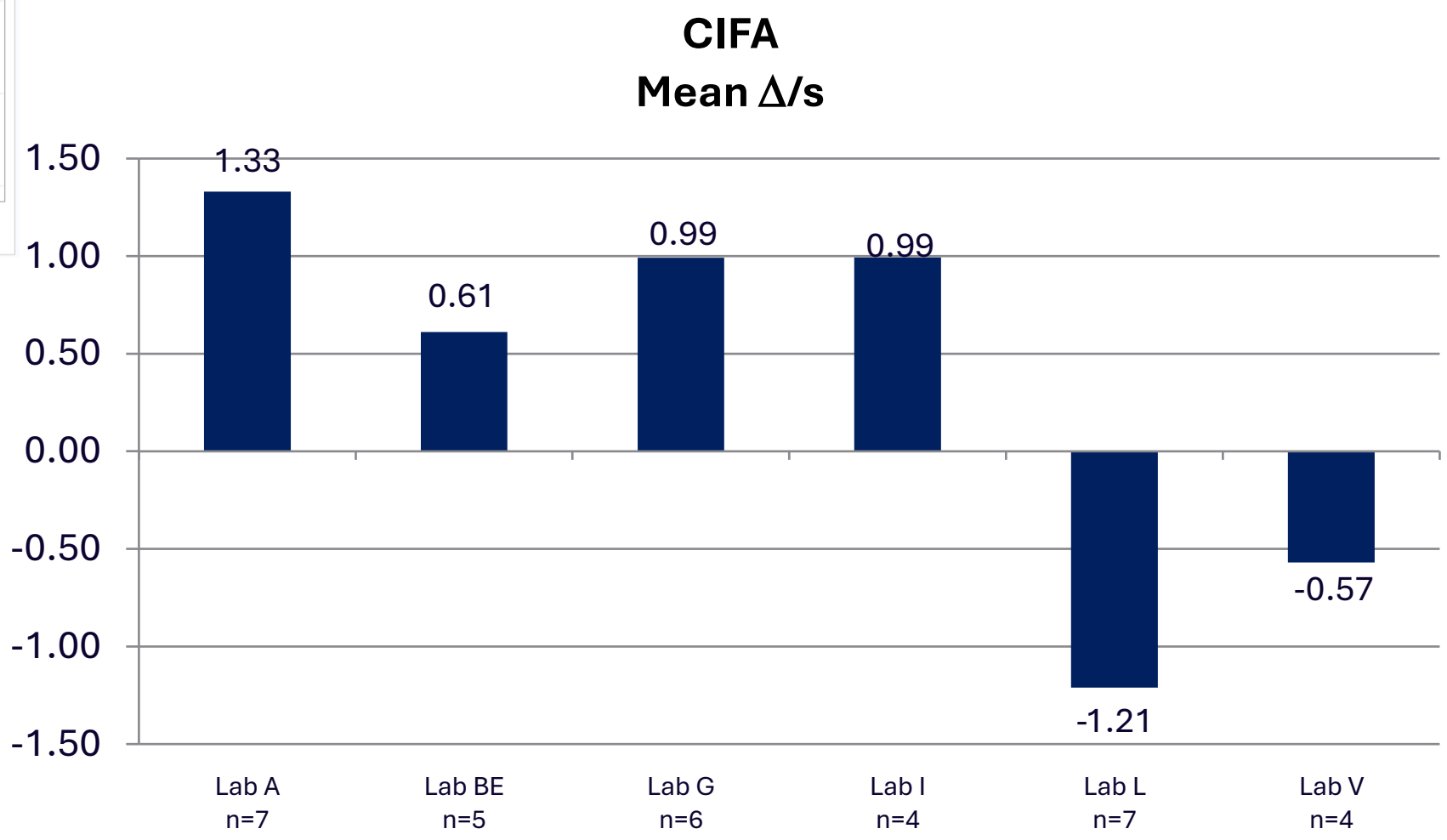




April 1, 2026 – September 30, 2026

EOFT Lab Severity Estimates





April 1, 2026 – September 30, 2026

Information Letters*

One information letter was issued this semester.

Test	Date	IL	Topic
EOFT	20260617	IL 26-2	Clarifications of recent revisions to the new calibration requirements

*Available from TMC Website

EOFT Test Status

- Reference Oil 88 has replaced Reference Oil 79 in the EOFT test.
- Surveillance Panel modified the calibration requirements from one per each candidate “batch” to one calibration test per 30 days.
- The change in calibration requirements will significantly extend the life of Reference Oil 88.

Reference Oil Inventory Estimated Life

EOFT

Oil	TMC Inventory (gallons)	TEST	Gallons Shipped Past 6 Months	Estimated Life[1]
88	93	EOWT	17[2]	5+ years

[1]Based upon new monthly calibration requirements for EOFT.
[2]Large volume reflects initial samples for Round Robin testing.

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D02.B0.07
TMC Monitored Tests

ASTM D 7097

Medium High Temperature TEOST (MTEOS)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D7097	12 (+2)	36 (+3)
*As of 9/30/2026		

D7097: Deposits by MTEOS

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	69
Failed Calibration Test	OC	14
Operationally Invalidated by Lab	LC	0
Operationally Invalidated by TMC	RC	0
Operationally Invalid (Aborted)	XC, XN	6
Acceptable Informational Run	NN	1
Unacceptable Informational Run	MN	4
Total		**95**

Number of Labs Reporting Data: 12
Fail Rate of Operationally Valid Tests: 16.9% (8.7% last period)

April 1, 2026 – September 30, 2026

D7097: Deposits by MTEOS

Statistically Unacceptable Tests (OC)	No. Of Tests
Total Deposits Severe	11
Total Deposits Mild	3
Total	**14**

SEVEN Labs had failing results.
NINE Severe fails on RO 434-3
FIVE fails on RO 432 (2 SEVERE; 3 MILD).

April 1, 2026 – September 30, 2026

D7097: Deposits by MTEOS
Summary of Invalid Tests

Operationally Invalid Tests (LC, RC, XC)		Validity Code	No. Of Tests
Aborted by Lab	Gas line disconnected	XC	1
Aborted by Lab	Sample Leak or Spilled	XC	3
Aborted by Lab	Test oil prepped when test rod unavailable	XC	1
Aborted by Lab	Shakedown. Test not set-up correctly	XN	1
Total			**6**

April 1, 2026 – September 30, 2026

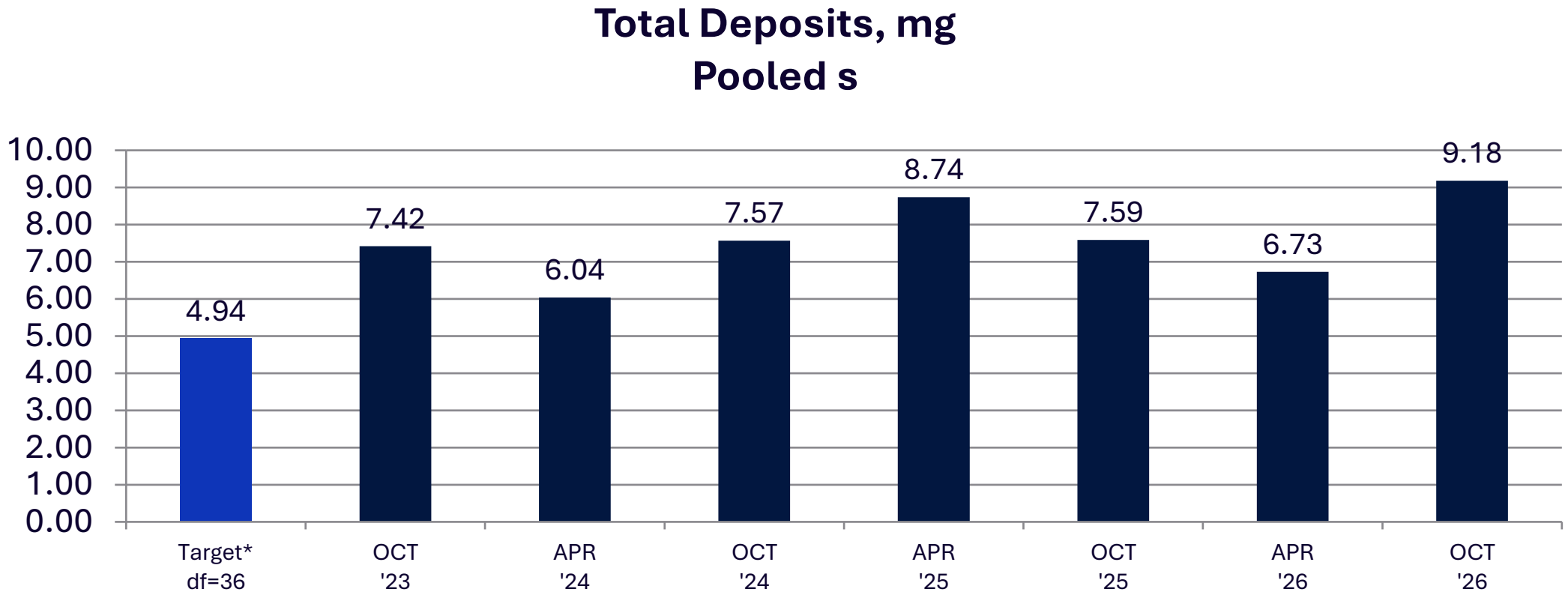
D7097: Deposits by MTEOS

Summary of Informational Tests

Informational / Non-blind Tests (NN, MN)	Validity Code	No. Of Tests
Informational run, Deposits in Range	NN	1
Informational run, Deposits not in Range (Severe)	MN	4
Informational run, Deposits not in Range (Mild)	MN	0
Total		**5**

April 1, 2026 – September 30, 2026

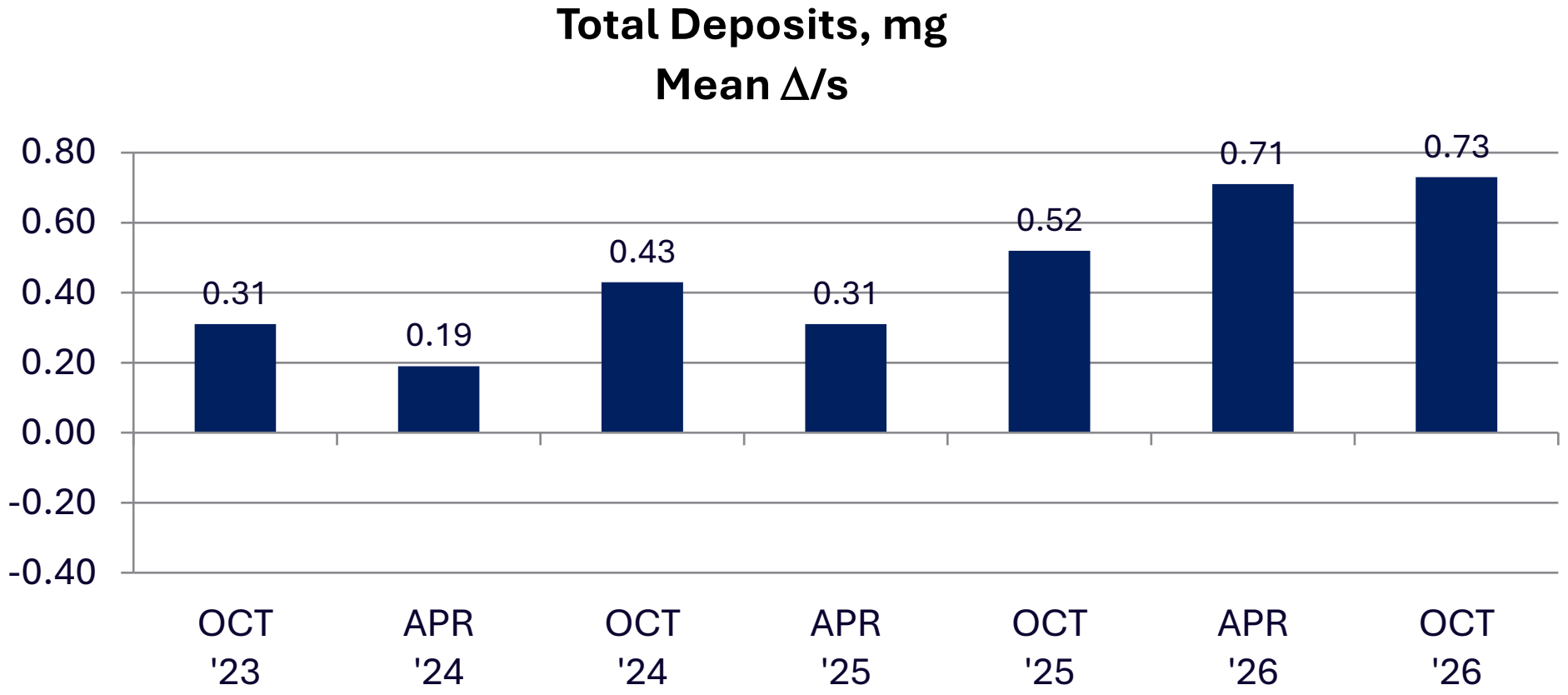
D7097 Precision Estimates



*Target precision updated to reference oils 432 and 434-3 preliminary

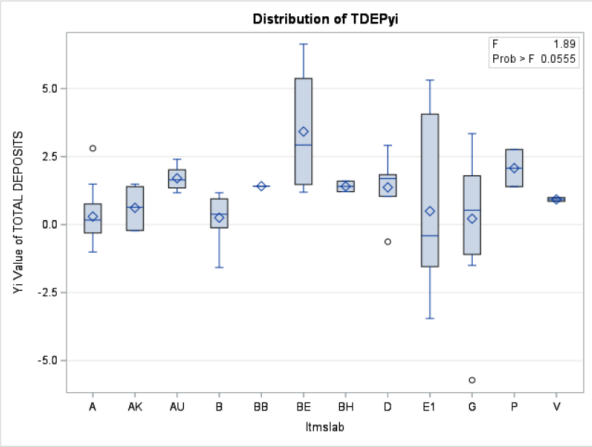
April 1, 2026 – September 30, 2026

D7097 Severity Estimates

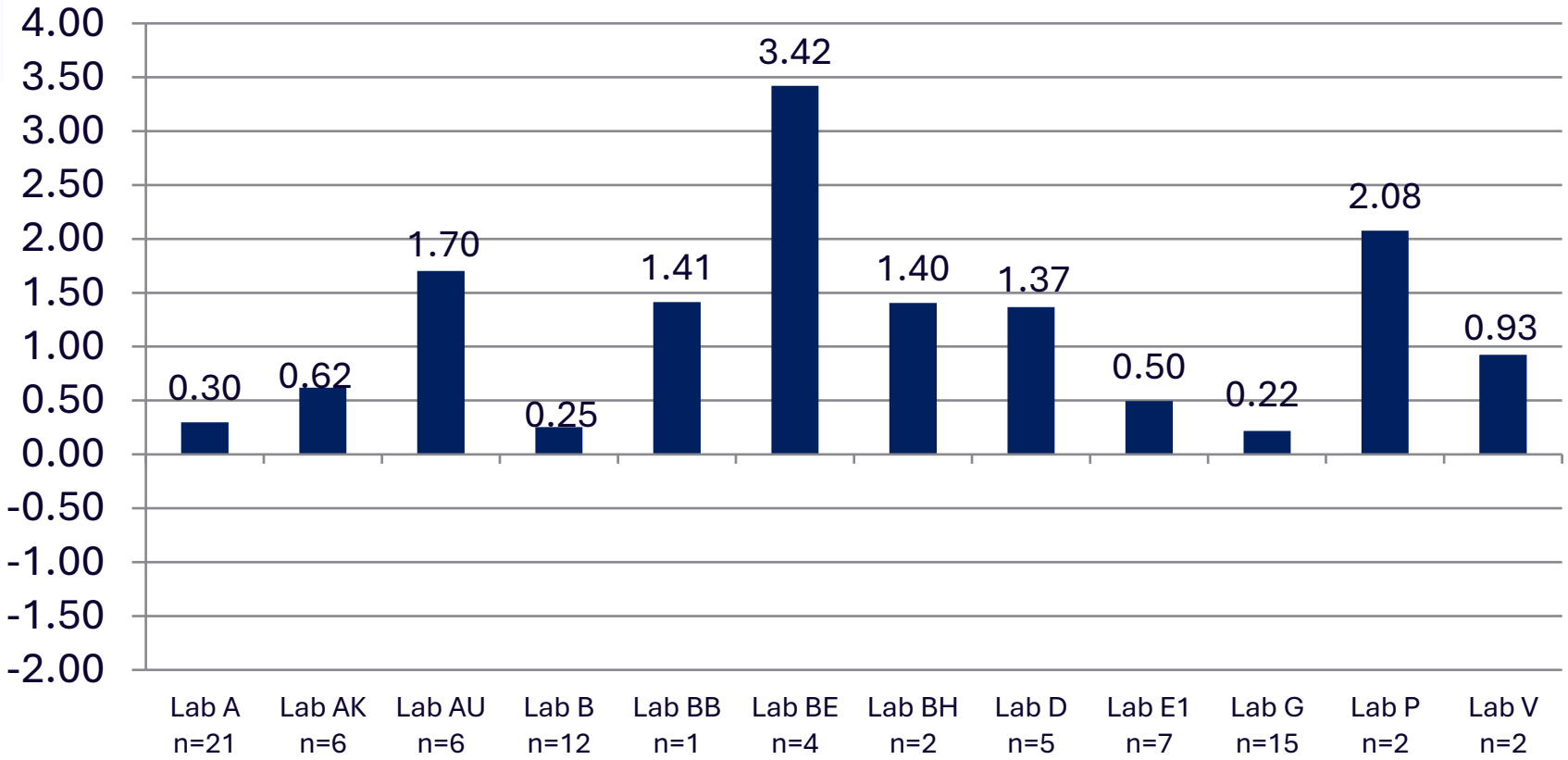


April 1, 2026 – September 30, 2026

D7097 Lab Severity Estimates



Total Deposits, mg
Mean Δ/s



April 1, 2026 – September 30, 2026

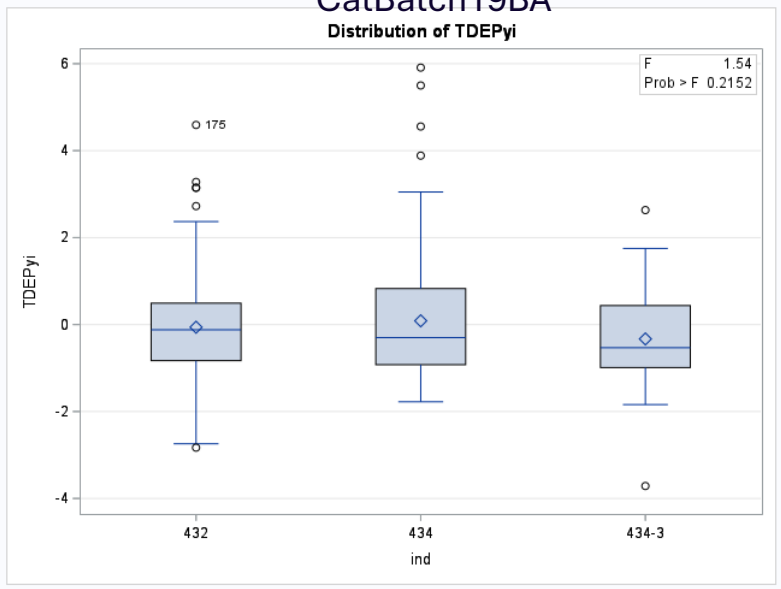
D7097: Deposits by MTEOS

- Precision (Pooled s) has regressed to 9.18s this reporting period (last period 6.73s).
- Performance (Mean Δ/s) has remained steady at 0.73s (0.71s previous semester).
- All operationally valid tests this period report using Rod Batch N.
- All operationally valid calibration tests this period report using Catalyst Batch 23AB.
  - No runs used Catalyst Batch 19BA this semester
  - No runs used Catalyst Batch 20AB this semester

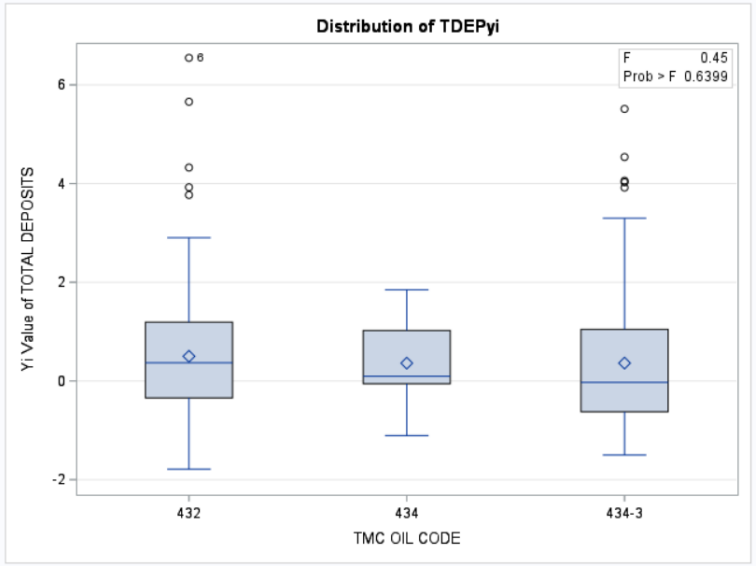
D7097: Deposits by MHT TEOST

- No new runs on catalyst batch 19BA this semester
  - Total Runs and Yi statistic for batch 19BA remain at n=349, Yi = -0.02.
- No new runs on catalyst batch 20AB this semester
  - Total Runs and Yi statistic for batch 20AB remain at n=326), Yi = 0.43.
- Catalyst batch 23AB now has 349 runs. Performance (Yi) now at 0.55s.
  - Yi = OCT2026 (0.55); APR2026 (0.48); OCT2025 (0.44); APR2025 (0.44); OCT 2024 (0.53); APR2024 (1.39)

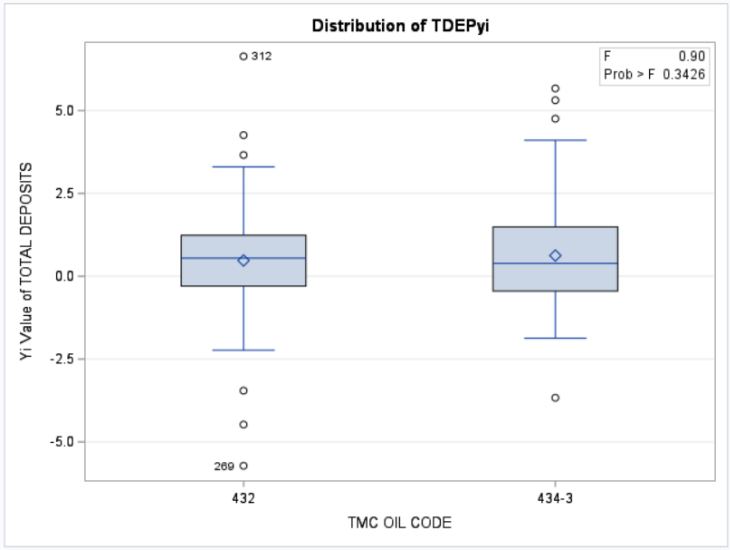
CatBatch19BA



CatB5atch20AB



CatBatch23AB

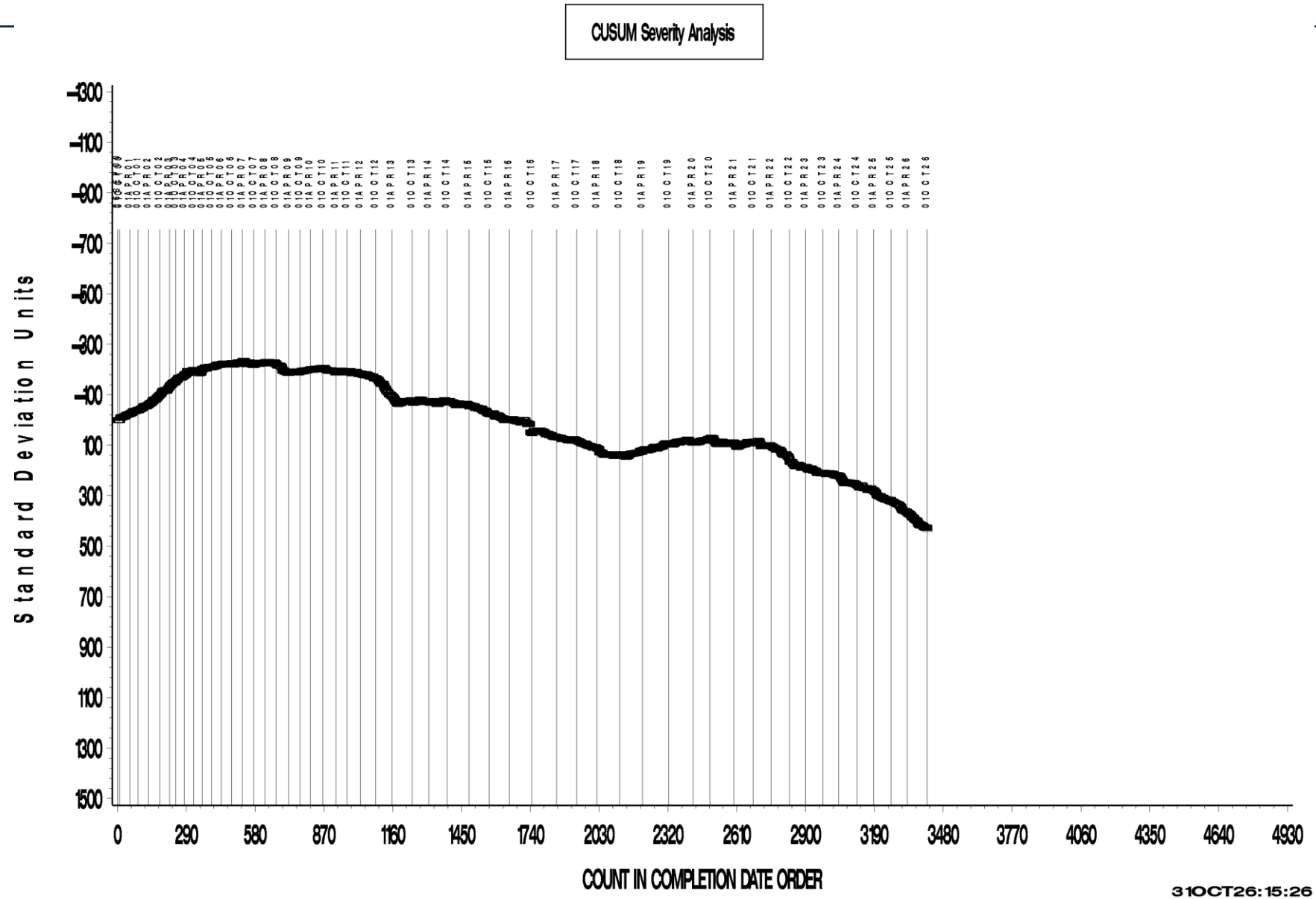


April 1, 2026 – September 30, 2026

MHT –4 TEOST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
TOTAL DEPOSITS MG

TMC TEST MONITORING CENTER

TMC



MHT –4 TEOST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
TOTAL DEPOSITS MG

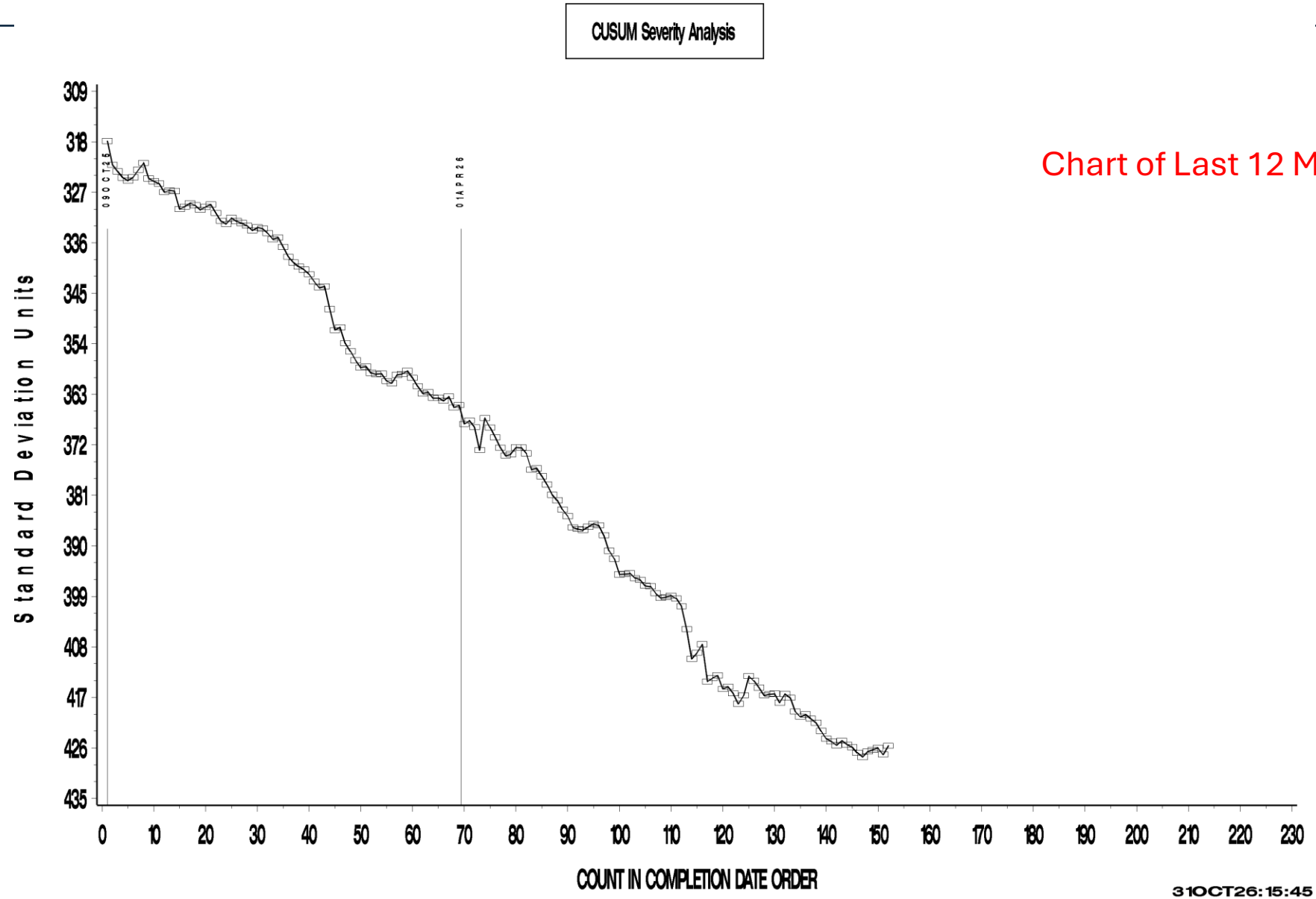
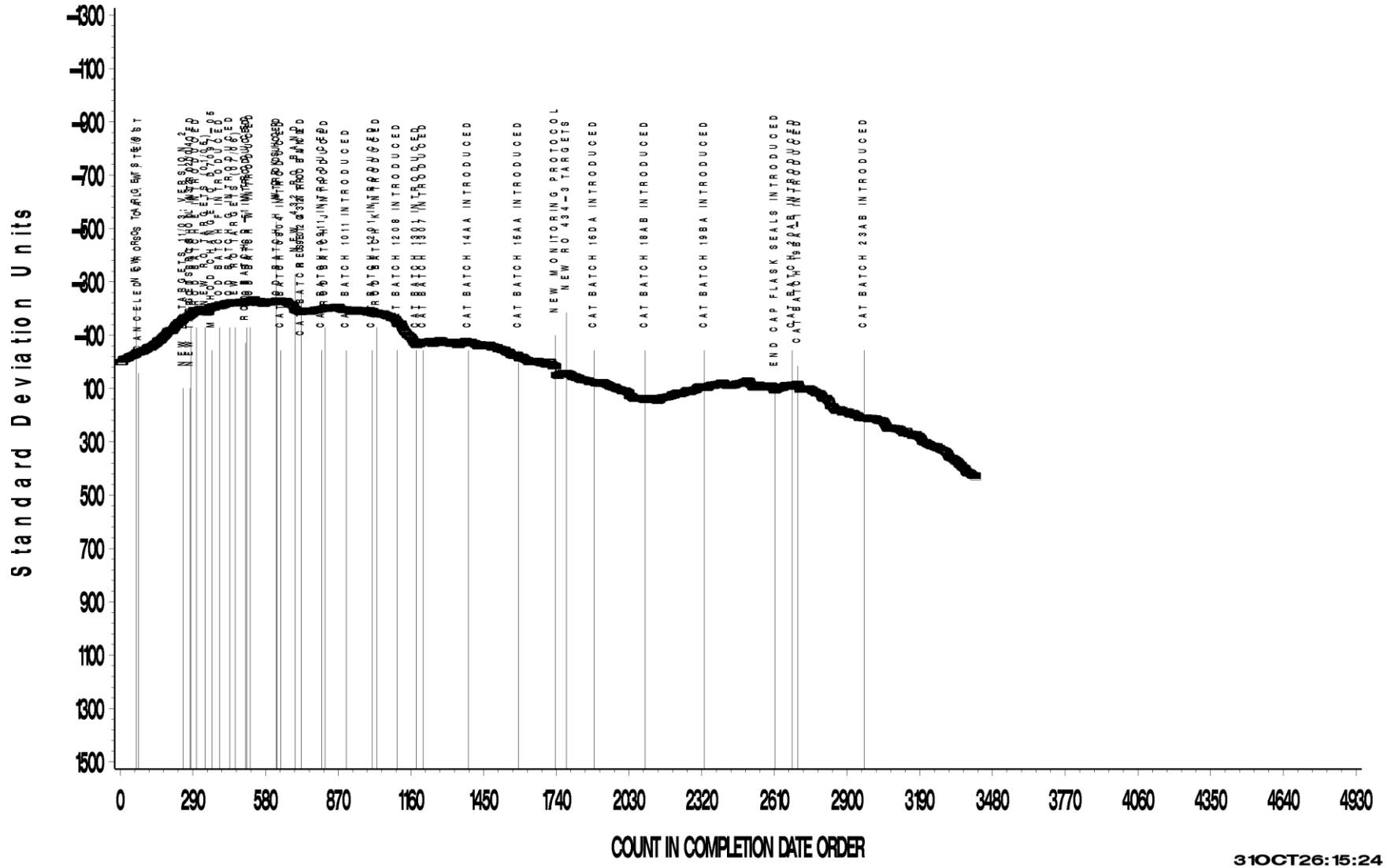


Chart of Last 12 Months

MHT—4 TEOST INDUSTRY OPERATIONALLY VALID DATA
SEVERITY ANALYSIS
TOTAL DEPOSITS MG

TEST MONITORING CENTER

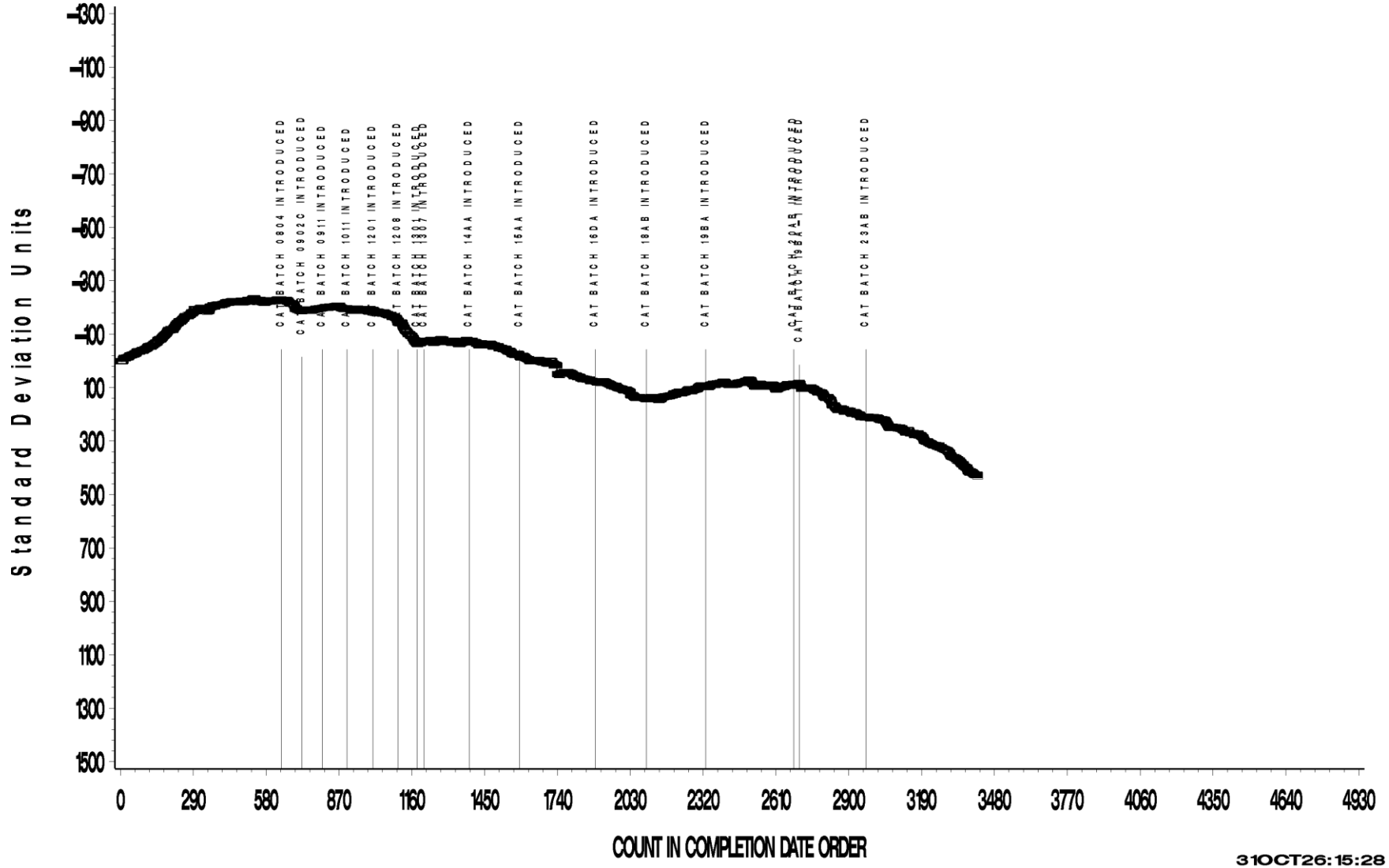
CUSUM Severity Analysis



MHT –4 TEOST INDUSTRY OPERATIONALLY VALID DATA
CATALYST BATCH ANALYSIS
TOTAL DEPOSITS MG

TMC TEST MONITORING CENTER

CUSUM Severity Analysis

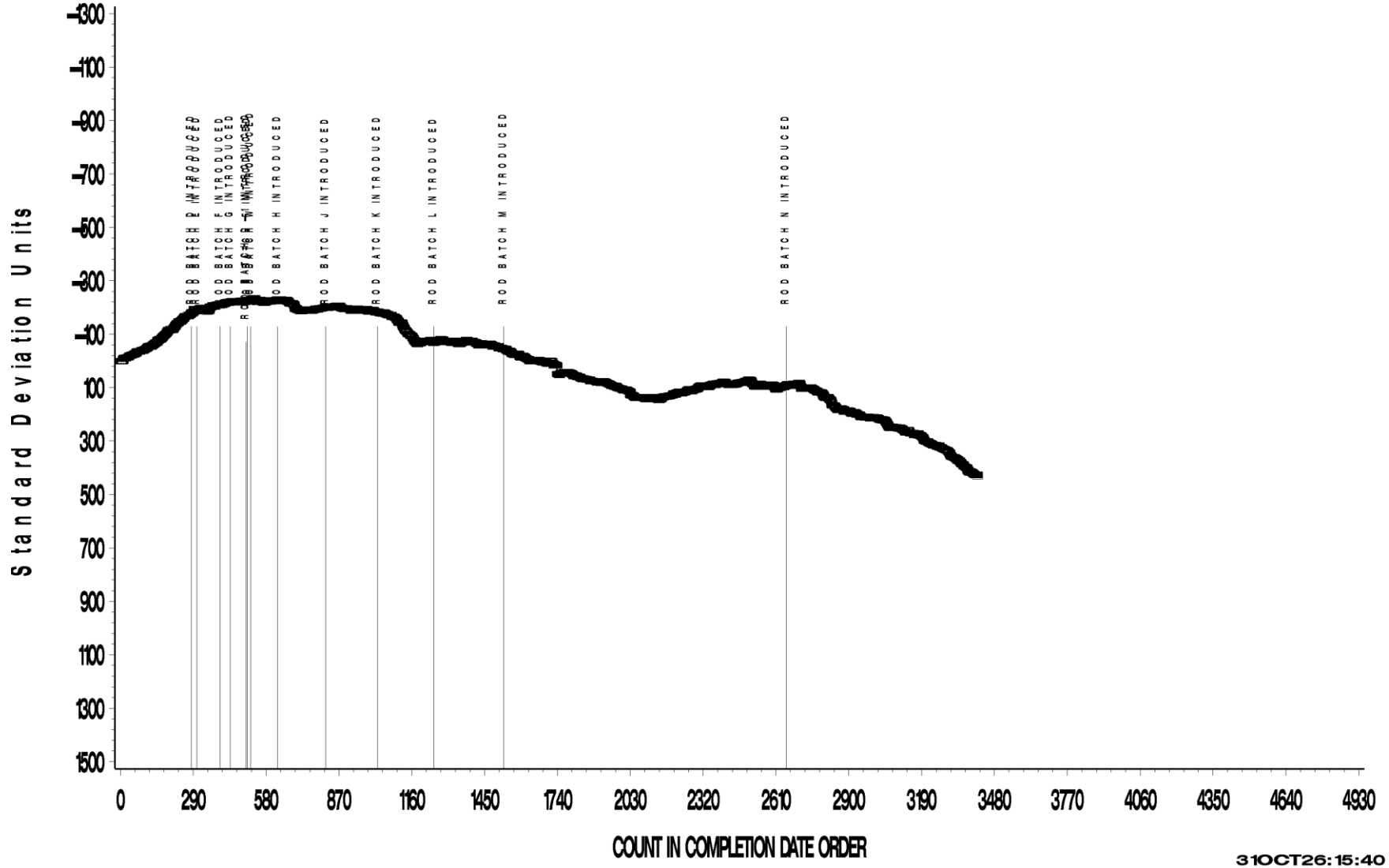


MHT –4 TEOST INDUSTRY OPERATIONALLY VALID DATA
ROD BATCH ANALYSIS
TOTAL DEPOSITS MG

TMC TEST MONITORING CENTER

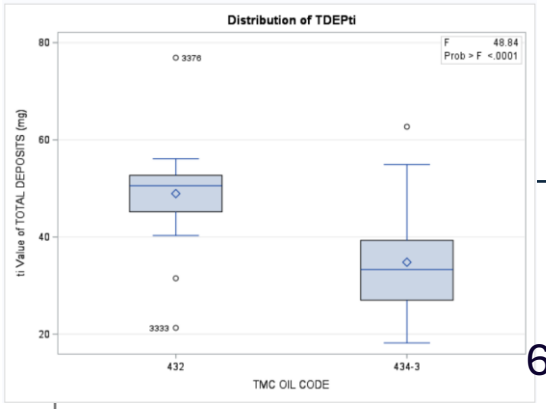
TMC

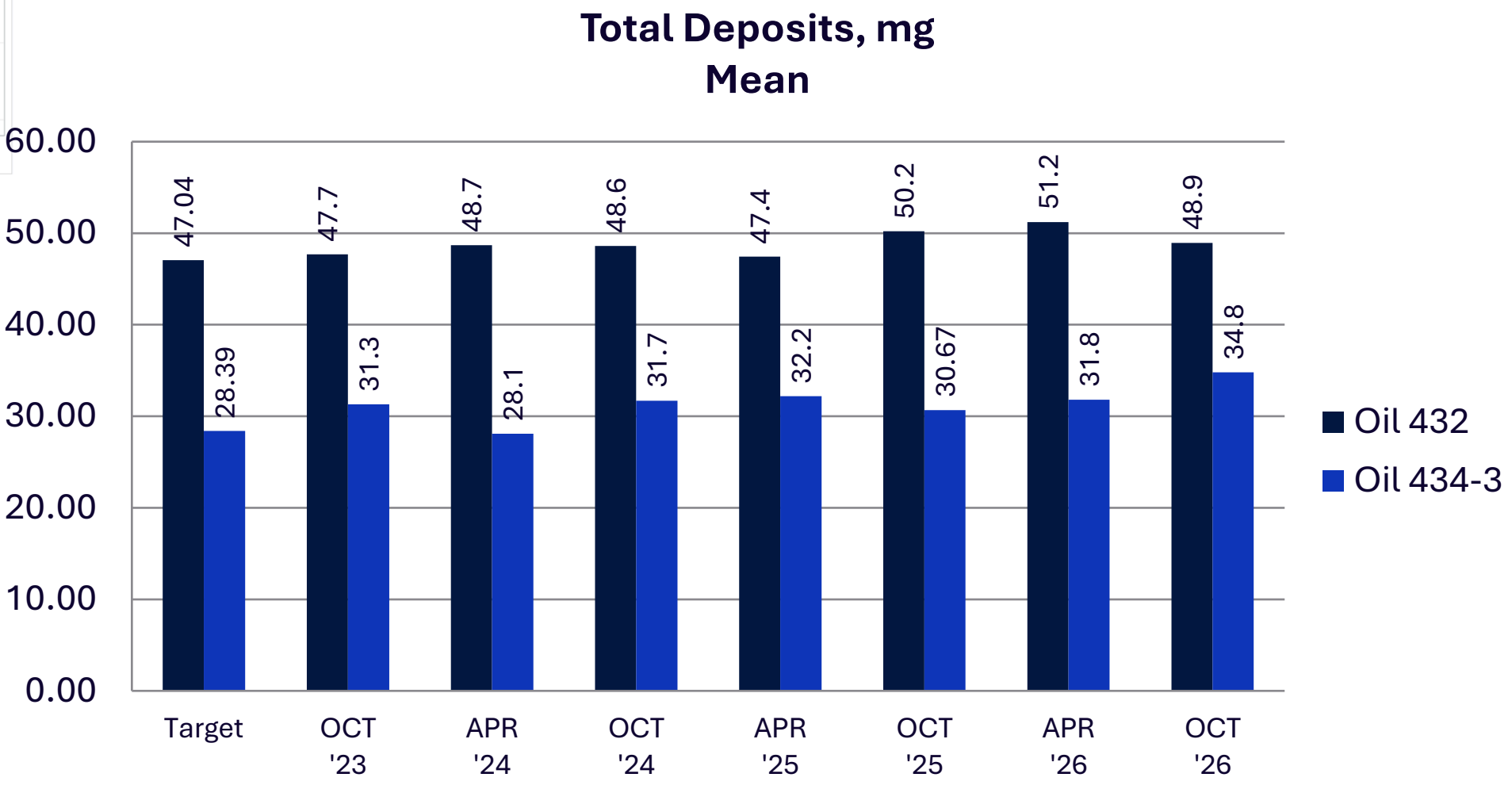
CUSUM Severity Analysis



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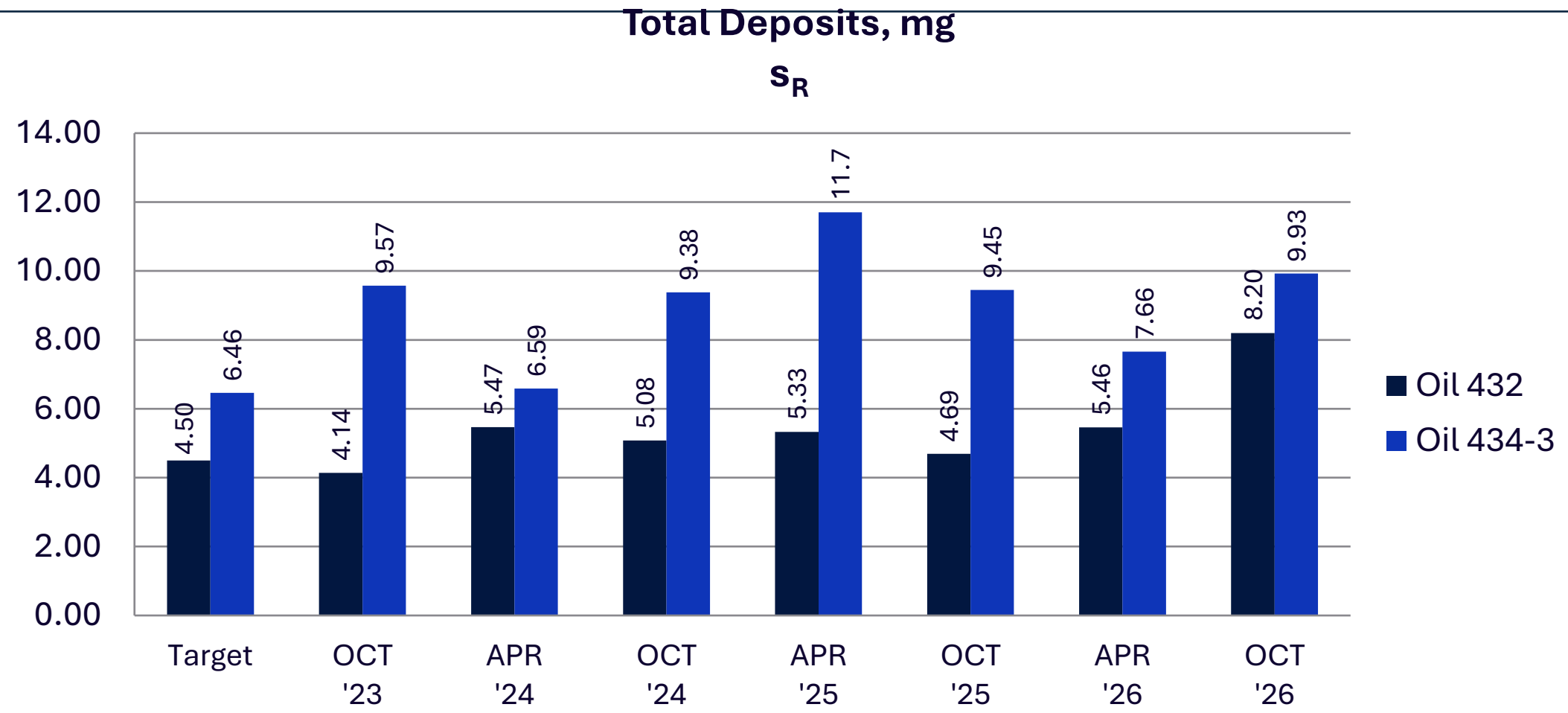
D7097 Performance by Oil



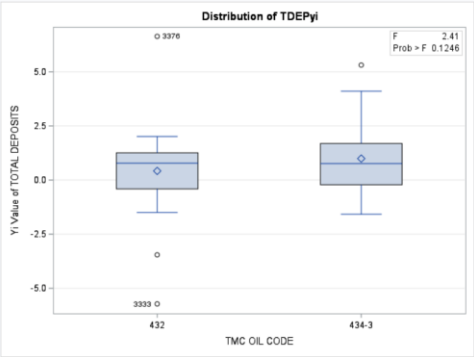


April 1, 2026 – September 30, 2026

D7097: Deposits by MHT TEOST



April 1, 2026 – September 30, 2026



D7097: Deposits by MHT TEOST

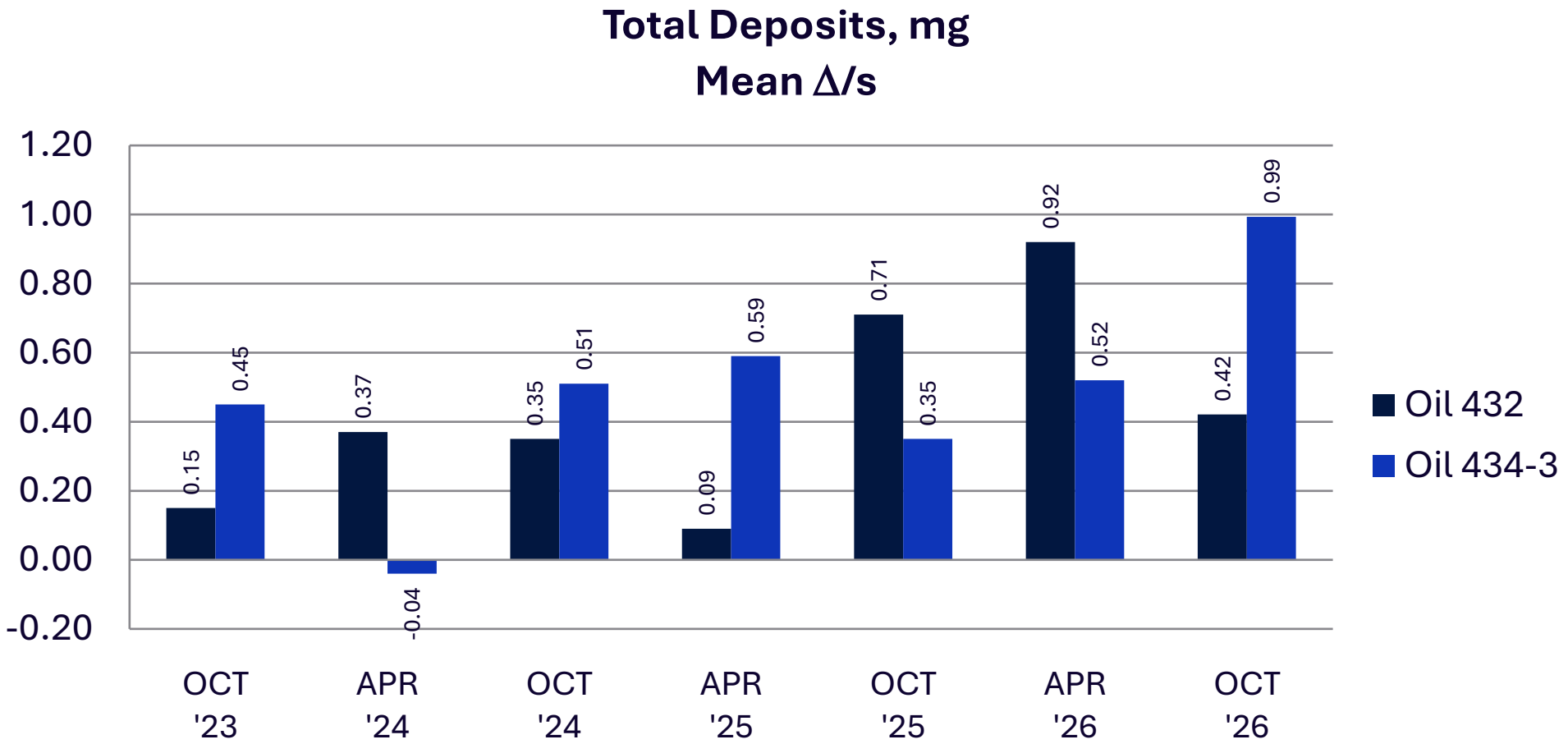


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Reference Oil Inventory

MTEOS

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
432	1998	MTEOS	100.4	0.3	5+ years
434-3[B]	2017	MTEOS	59.6	3.2	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] Multi-test oil; estimated supply of drum reserved for bench testing – other drums available.

April 1, 2026 – September 30, 2026

D02.B0.07
TMC Monitored Tests

ASTM D 7216

Engine Oil Elastomer Compatibility (EOEC/LDEOC)

April 1, 2026 – September 30, 2026

ASTM Reference Testing Semi-Annual Report D7216 EOEC

April 1, 2026 – September 30, 2026

ASTM D 7216

Engine Oil Elastomer Compatibility

EOEC (Heavy-Duty)	
OHT PART NUMBER	BATCH CODE*
OHTEOEC-NBR-A	35
OHTEOEC-ACM-B	35
OHTEOEC-FKM-A	32
OHTEOEC-MAC-A	27
OHTLDEOC-VMQ1-A	44
OHTLDEOC-HNBR-A	2
OHTEOEC-FKM2-A	2

* As of 20260930

Calibrated Labs and Stands[1]
(change since last Semi-Annual report)

Test	Labs	Stands
D7216 EOEC	8[2] (-1)	N/A

[1] As of 9/30/2026

2 Not all elastomer types were run at each lab

EOEC Test Activity

Test Status		FKM[1]	NBR	ACM	VMQ	MAC	HNBR	Total
LABS BATHS		8 38	8 20	8 39	8 37	7 40	5 13	8[2] 187
Acceptable Calibration Test	AC	77	83	80	69	71	39	**419**
Failed Calibration Test	OC	3	2	6	0	9	6	**26**
Operationally Invalid, by lab	LC	1	1	1	0	0	2	**5**
Operationally Invalid, by TMC	RC	1	0	0	0	1	0	**2**
Aborted	XC	0	0	1	0	0	0	**1**
Acceptable Informational Run	NN	0	0	0	0	0	0	**0**
Unacceptable Informational Run	MN	0	0	0	0	0	0	**0**
Total		**82**	**86**	**88**	**69**	**81**	**47**	**453**

1 – Includes FKM and FKM2 data
2 – Not all labs run all six elastomer types

April 1, 2026 – September 30, 2026

EOEC Failed Calibration Tests

Cause	Elastomer	No. of Tests
HARDNESS (MILD)	NBR, 4MAC, 2HNBR	7
HARDNESS (SEVERE)	ACM, 4MAC	5
ELONGATION (MILD)	2FKM	2
ELONGATION (SEVERE)		0
VOLUME CHANGE (MILD)	FKM, ACM, HNBR	3
VOLUME CHANGE (SEVERE)	NBR, 4ACM, 3HNBR	8
TENSILE STRENGTH (SEVERE)		0
TENSILE STRENGTH (SEVERE)		0
HARD (SEVERE), VOLUME (MILD)	MAC	1
Total		**26**

April 1, 2026 – September 30, 2026

EOEC Lost Tests*

Validity	Cause	No. of Tests
LC	Lost Test Samples, Lost Data (Invalid)	4
LC	Incorrect Bath Temperature (Invalid)	1
RC	Test Specimen Count (TMC Invalidated)	2
XC	Loss of Power (Aborted)	0
XC	No data recorded (Aborted)	1
Total		**8**

*Invalid (LC,RC) and Aborted (XC) calibration tests

April 1, 2026 – September 30, 2026

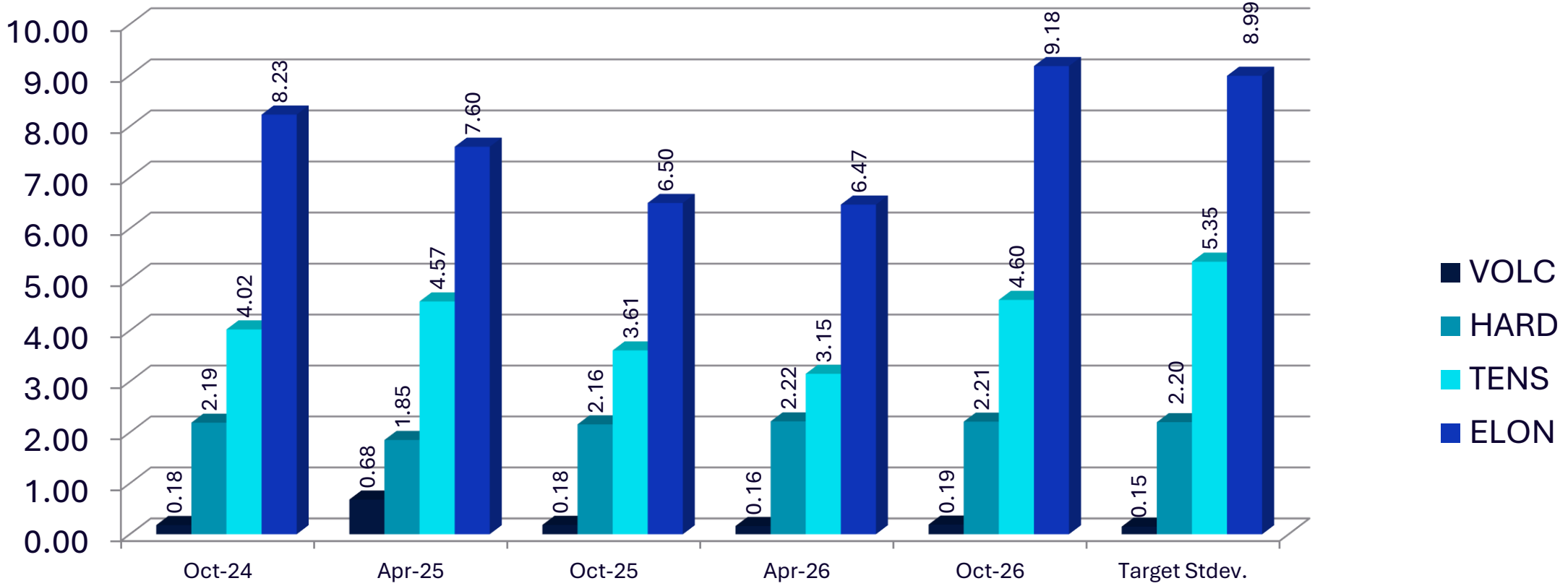
EOEC Test Severity

Fluoroelastomer (FKM)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.2306	Slightly Severe
Points Hardness Change	-0.7488	Severe
Tensile Strength Change	0.4646	Mild
Elongation Change	0.0607	On Target

April 1, 2026 – September 30, 2026

EOEC Precision (Pooled s) Estimates: Fluoroelastomer



April 1, 2026 – September 30, 2026

EOEC Precision Estimates by Lab: FKM

Test Parameter	Statistic	LTMS Lab								
		A	B	BB	G	I	K	L	P	V
	n=	**28**	**10**	**1**	**23**	**7**	**0**	**5**	**2**	**4**
Volume	Mean	0.44	0.48	0.43	0.48	0.48		0.42	0.16	0.47
	Pooled s	0.14	0.18		0.22	0.27		0.09	0.48	0.24
	Mean /s	-0.40	0.05	-0.07	-0.18	0.30		-0.51	-1.78	0.10
Hardness	Mean	6.36	7.00	5.00	4.70	9.71		5.20	6.00	11.0
	Pooled s	1.52	1.56		1.29	1.11		1.10	0.00	2.00
	Mean /s	-0.55	-0.41	-1.38	-1.85	0.76		-1.39	-0.66	1.64
Tensile Strength	Mean	-70.4	-71.3	-76.9	-63.3	-66.4		-68.7	-65.8	-71.9
	Pooled s	3.52	1.09		3.96	1.52		2.19	0.71	0.59
	Mean /s	-0.19	-0.19	-1.04	1.61	0.90		0.21	0.95	-0.23
Elongation	Mean	-65.5	-64.7	-71.5	-60.0	-57.5		-64.2	-58.9	-74.0
	Pooled s	3.89	3.13		14.9	3.00		1.05	1.70	1.53
	Mean /s	-0.24	-0.47	-1.45	0.90	0.11		0.13	1.19	-1.71

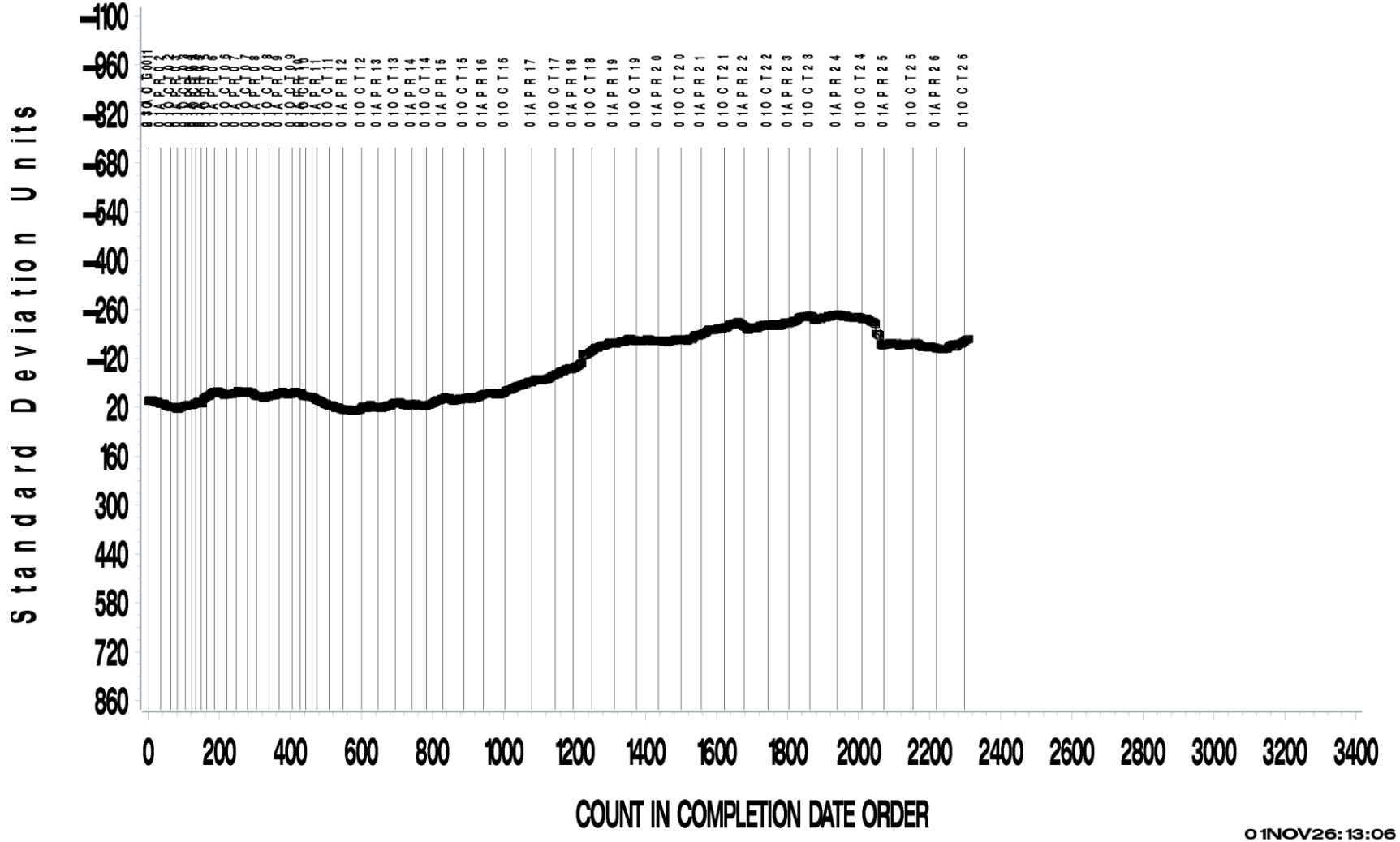
April 1, 2026 – September 30, 2026

EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REF FLUOROELAST VOL CHANGE AVG

TMC TEST MONITORING CENTER

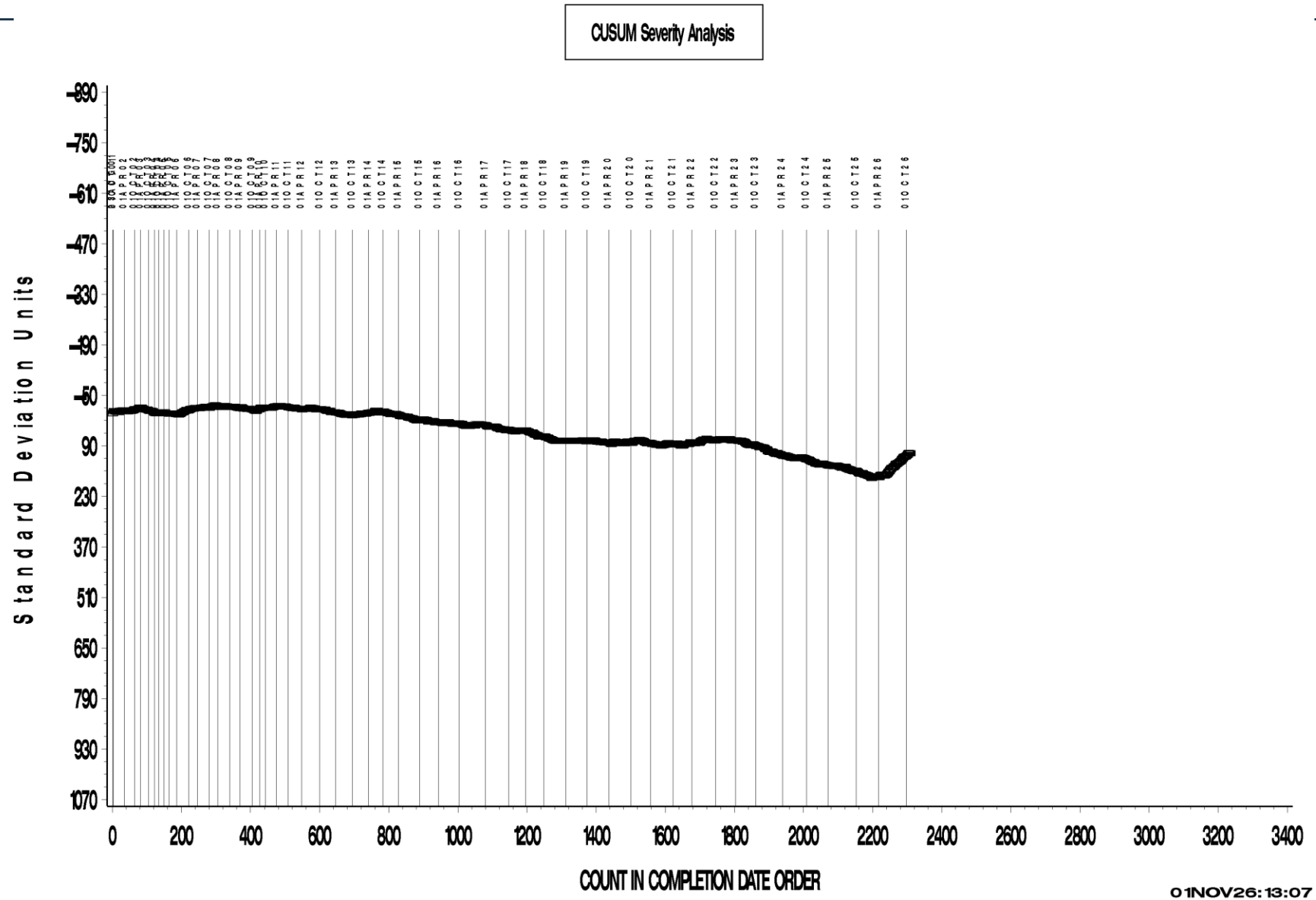
TMC

CUSUM Severity Analysis



EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REF FLUOROELAST HARDNESS AVG

TMC TEST MONITORING CENTER

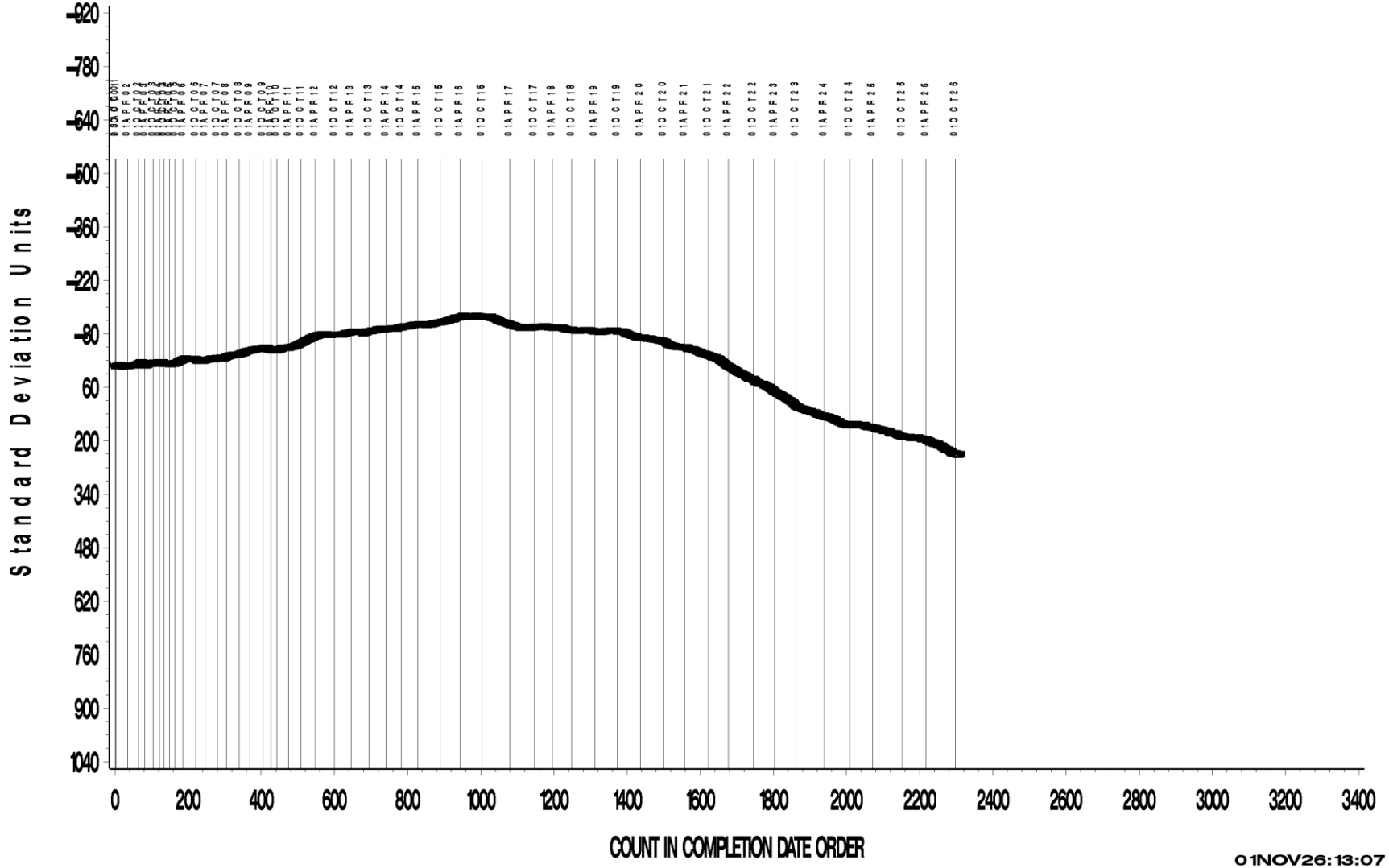


EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REF FLUOROELAST TENSILE STR AVG

TMC TEST MONITORING CENTER

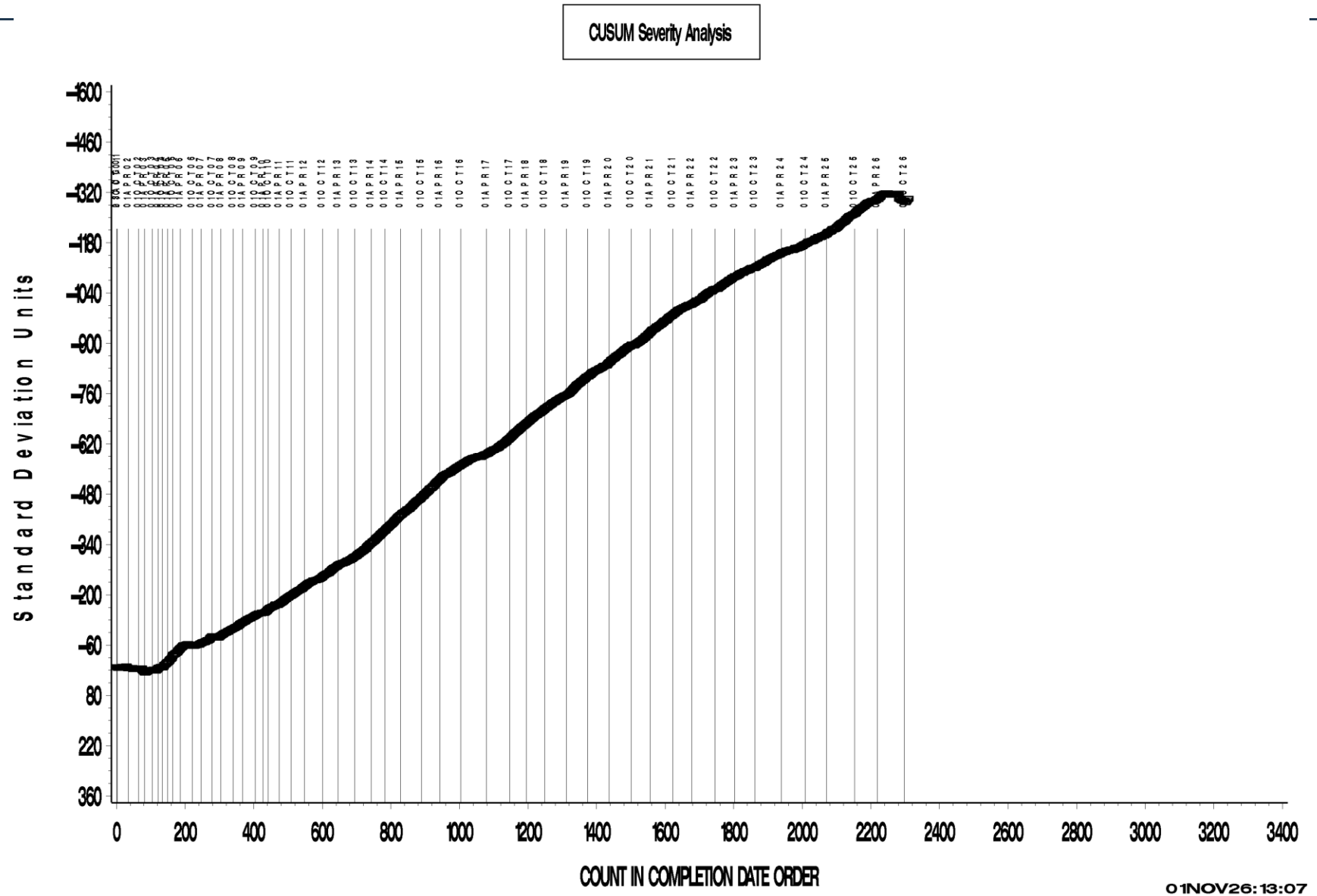
TMC

CUSUM Severity Analysis



EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REF FLUOROELAST ELONGATION AVG

TEST MONITORING CENTER



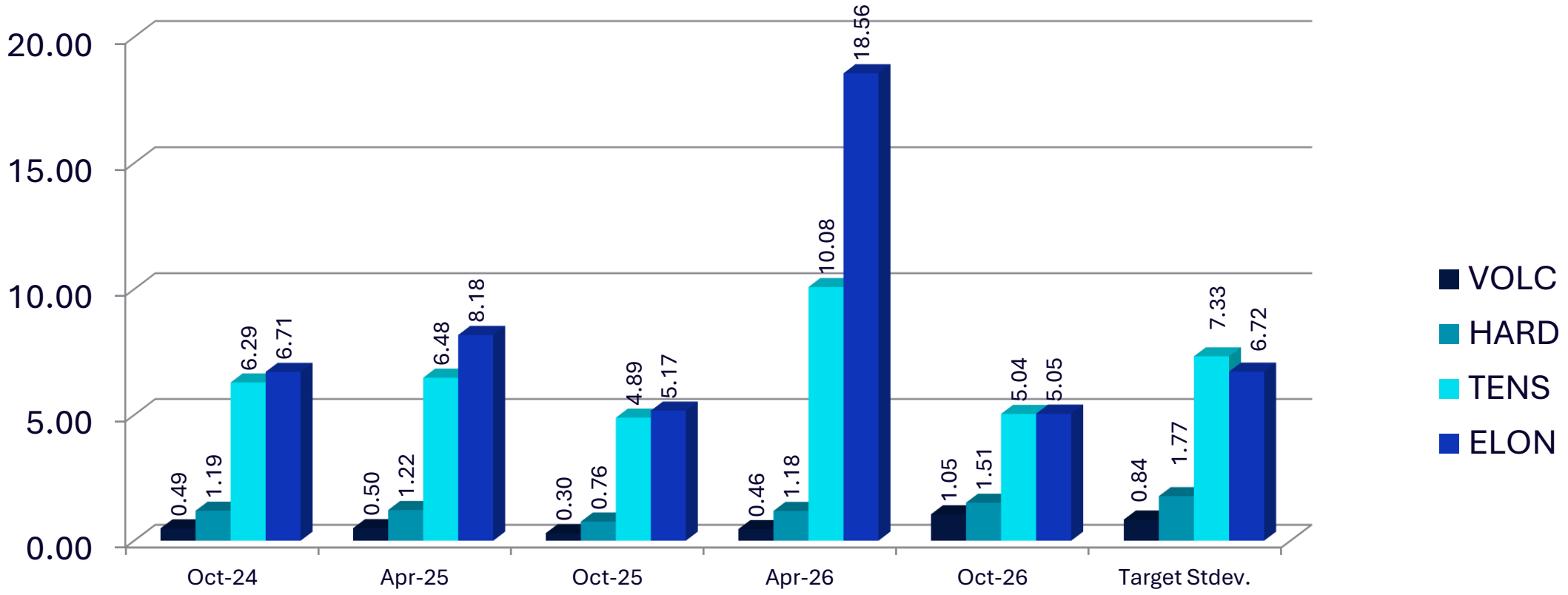
EOEC Test Severity

Nitrile (NBR)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.5804	Mild
Points Hardness Change	1.1662	Severe
Tensile Strength Change	-1.5601	Mild
Elongation Change	-0.3975	Severe

April 1, 2026 – September 30, 2026

EOEC Precision Estimates - Nitrile



April 1, 2026 – September 30, 2026

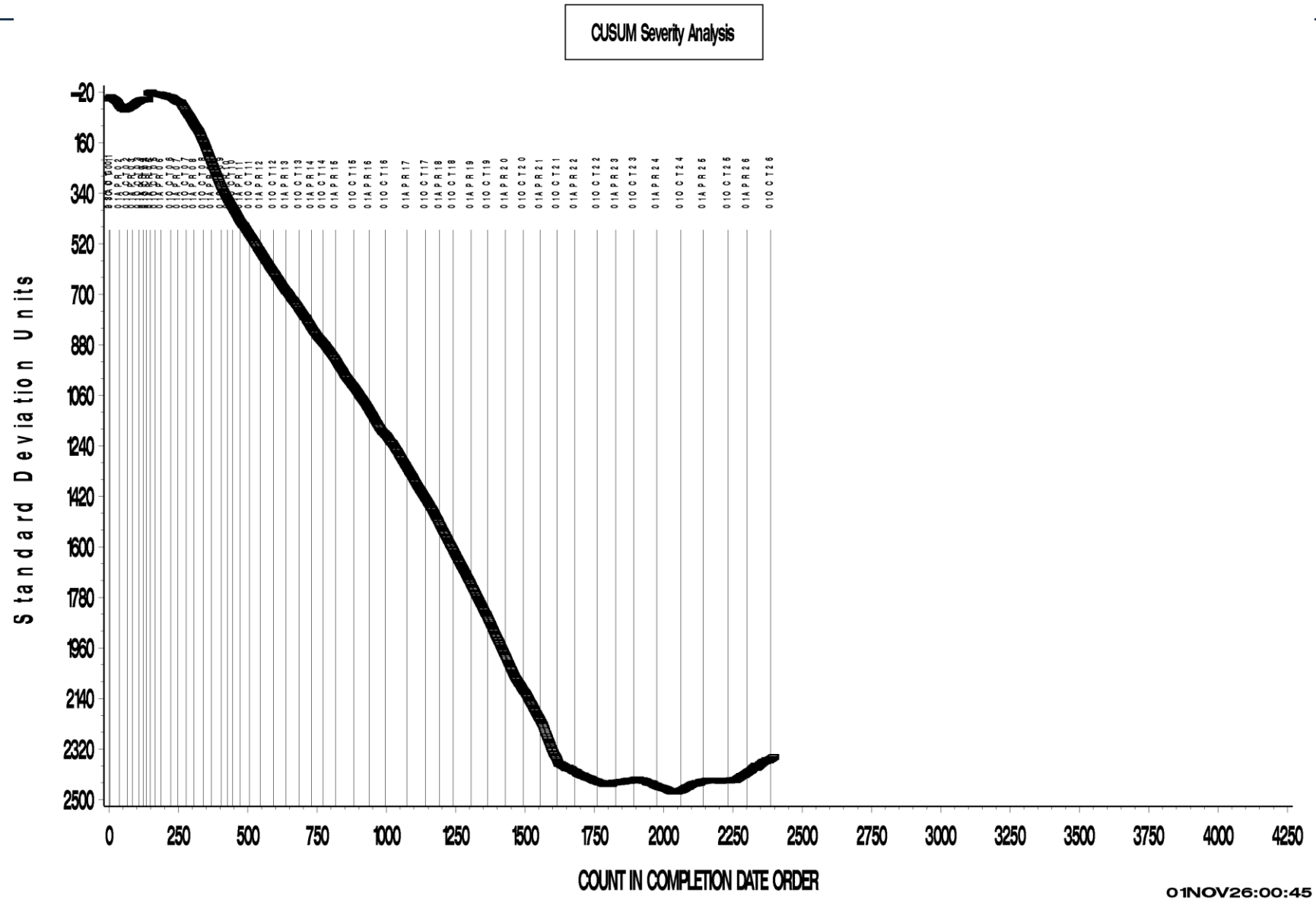
EOEC Precision Estimates by Lab: NBR

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	29	8	1	20	11	6	4	6
Volume	Mean	1.20	1.35	1.66	1.38	1.13	1.08	1.13	1.34
	Pooled s	0.41	0.37		2.07	0.61	0.17	0.14	0.45
	Mean /s	-0.64	-0.46	-0.10	-0.42	-0.72	-0.78	-0.72	-0.47
Hardness	Mean	4.03	3.88	1.00	3.00	5.55	3.33	4.50	3.83
	Pooled s	0.87	0.35		2.15	1.13	1.21	0.58	0.75
	Mean /s	1.25	1.16	-0.47	0.66	2.10	0.85	1.51	1.13
Tensile Strength	Mean	-6.61	-9.40	4.10	-13.2	-8.09	-5.13	-3.75	-6.33
	Pooled s	4.17	2.50		4.43	4.10	0.90	2.98	5.11
	Mean /s	-1.28	-1.66	0.18	-2.18	-1.49	-1.08	-0.89	-1.25
Elongation	Mean	-37.3	-37.6	-34.9	-34.2	-38.7	-35.4	-32.1	-37.1
	Pooled s	4.14	2.72		7.34	4.62	1.49	3.40	3.42
	Mean /s	-0.53	-0.59	-0.18	-0.08	-0.74	-0.26	0.23	-0.50

April 1, 2026 – September 30, 2026

EOEC — NITRILE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE NITRILE VOLUME CHANGE CORRECTED AVERAGE

TMC TEST MONITORING CENTER

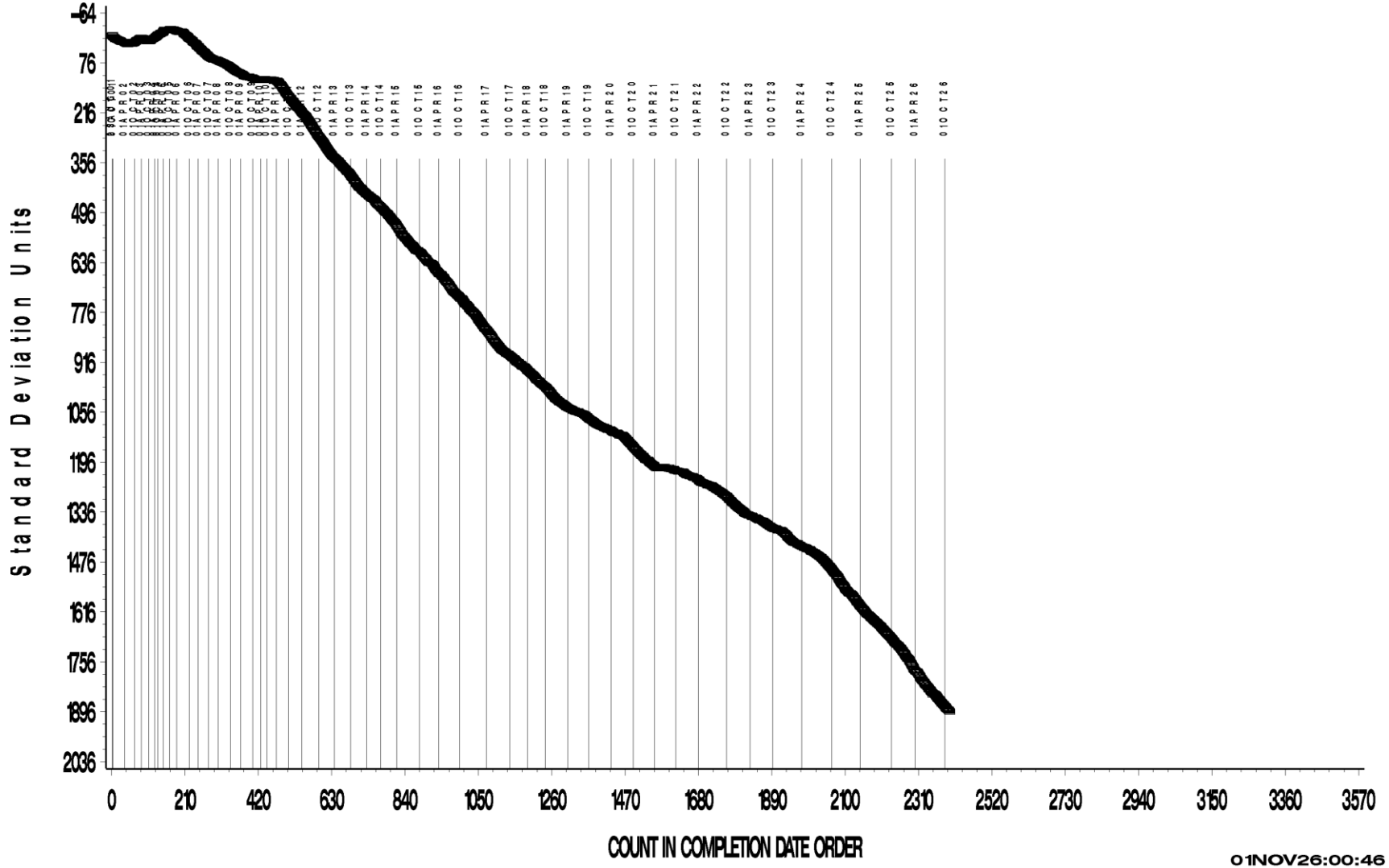


EOEC —NITRILE INDUSTRY OPERATIONALLY VALID DATA
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REFERENCE NITRILE PTS HARD CHANGE CORRECTED AVG

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CUSUM Severity Analysis

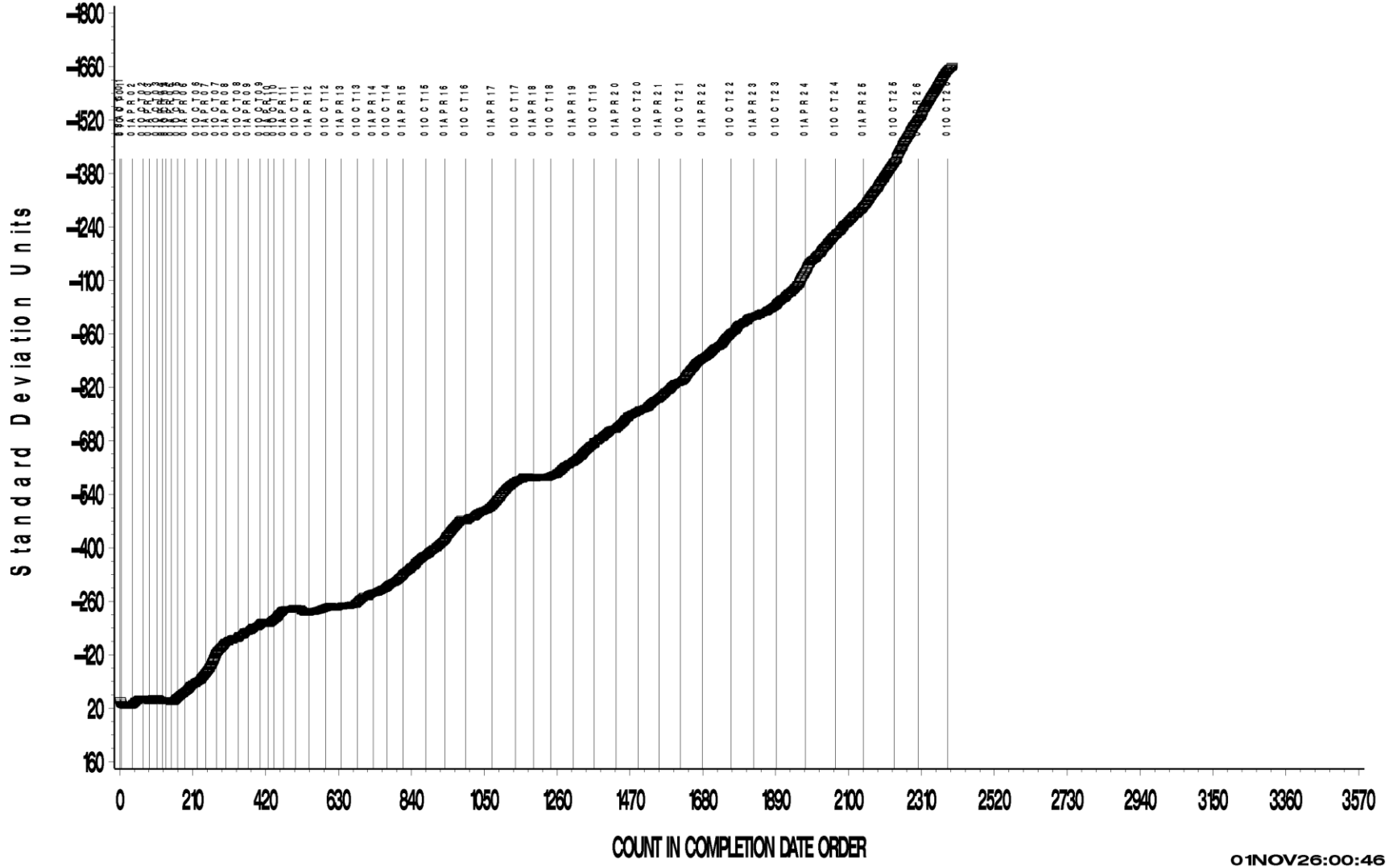


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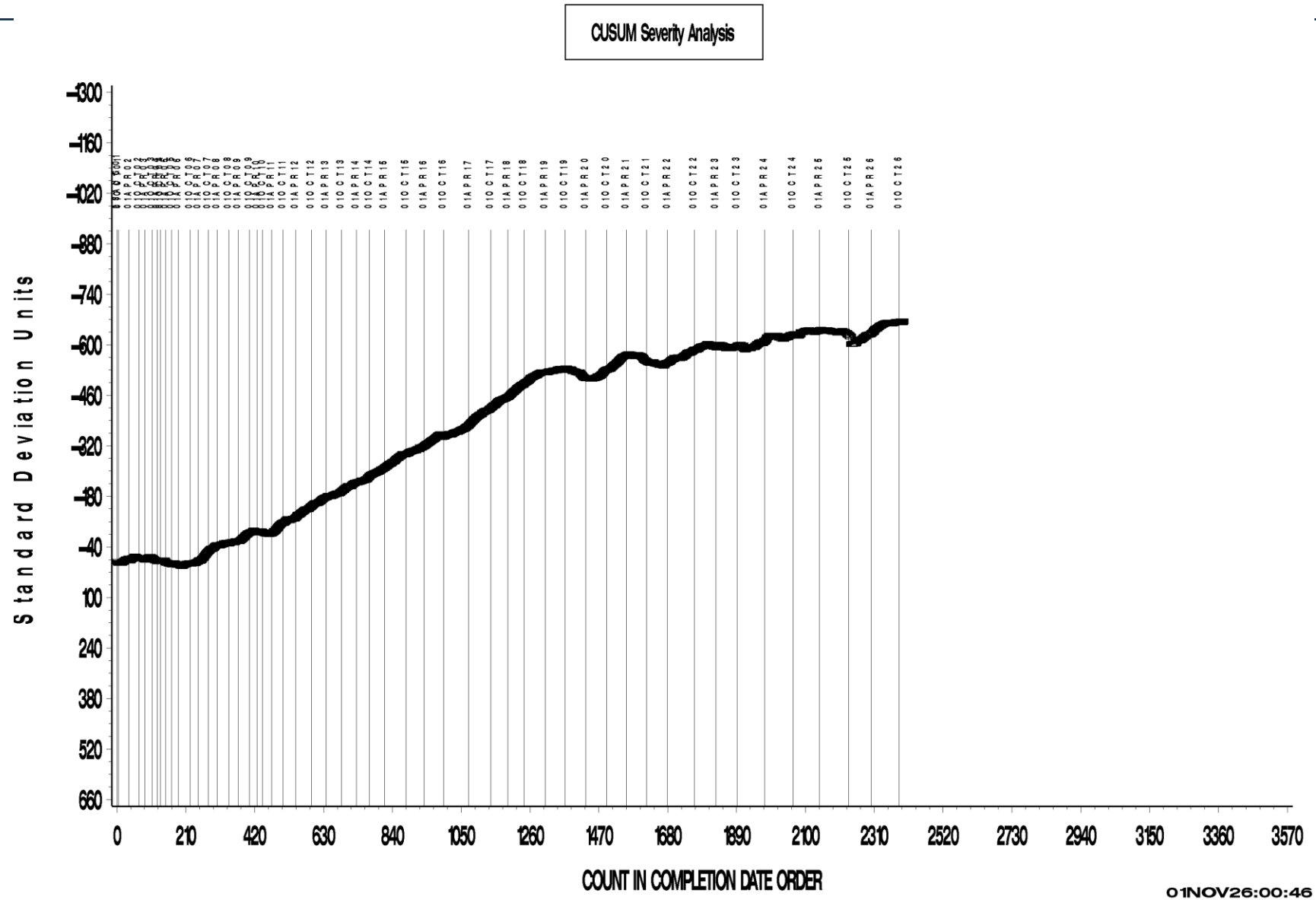
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CUSUM Severity Analysis



EOEC —NITRILE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REF NITRILE ELONGATION CHANGE CORRECTED AVERAGE

TMC TEST MONITORING CENTER



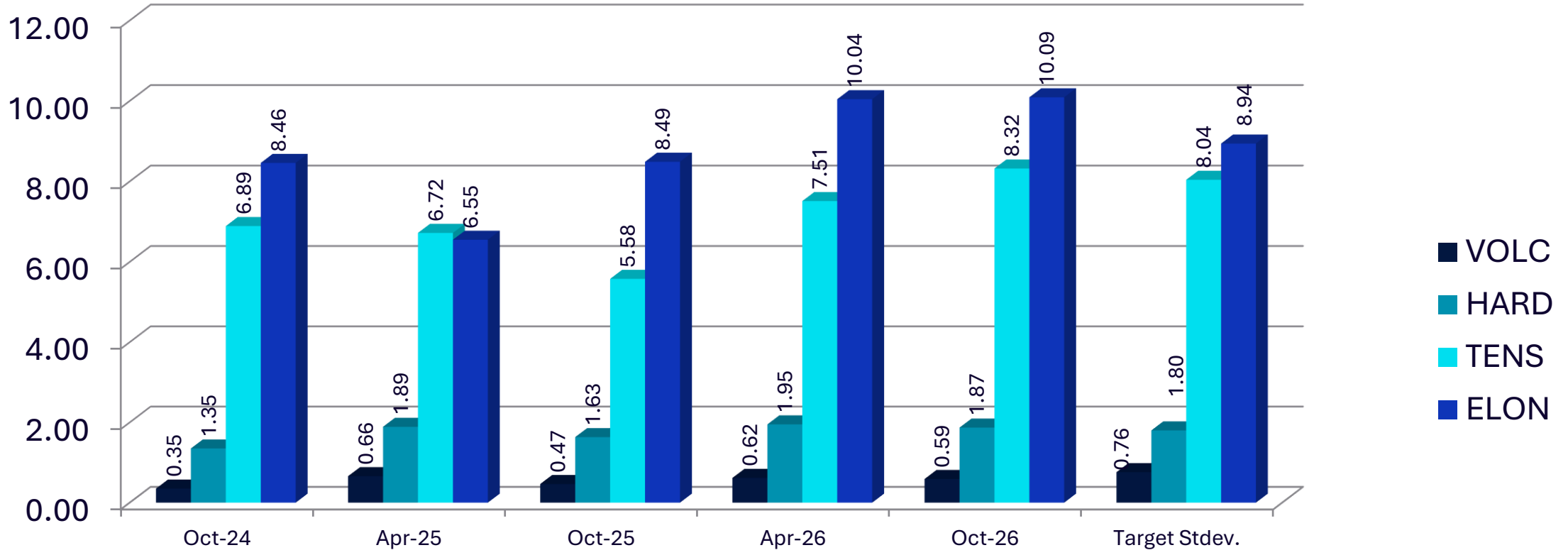
EOEC Test Severity

Polyacrylate (ACM)

Parameter	Period Mean Δ/s	Status
Volume Change	1.0395	Severe
Points Hardness Change	-0.8342	Mild
Tensile Strength Change	0.0531	On Target
Elongation Change	0.5559	Severe

April 1, 2026 – September 30, 2026

EOEC Precision Estimates - Polyacrylate



April 1, 2026 – September 30, 2026

EOEC Precision Estimates by Lab: ACM

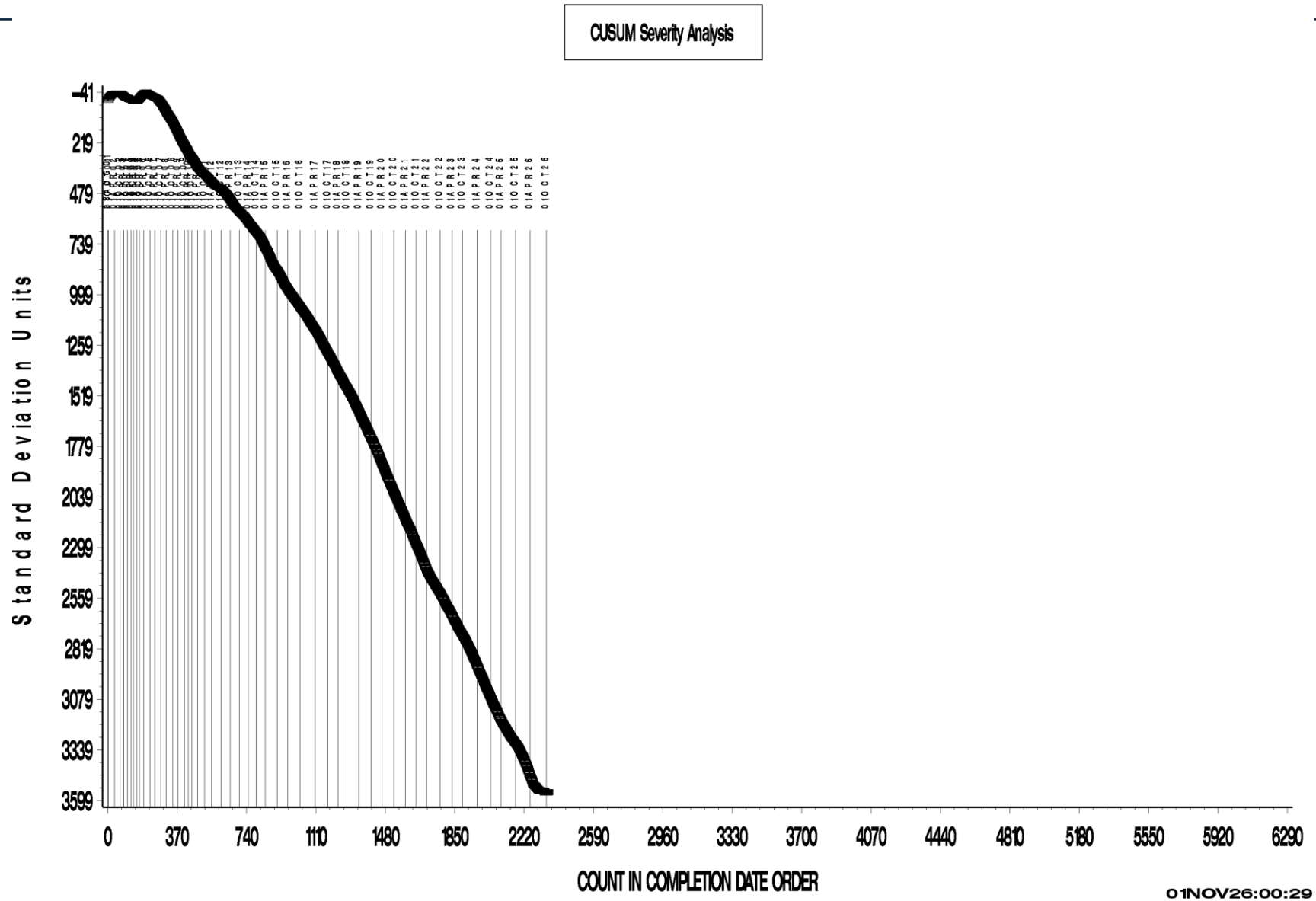
Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	**35**	**11**	**1**	**22**	**7**	**4**	**1**	**5**
Volume	Mean	1.95	2.32	0.90	1.91	2.04	1.88	2.42	1.58
	Pooled s	0.53	0.41		0.69	0.44	0.70		0.61
	Mean /s	0.94	1.82	0.92	0.89	1.38	0.57	1.74	0.44
Hardness	Mean	-1.80	-2.27	-1.00	-1.14	-0.57	-0.25	1.00	-2.40
	Pooled s	1.66	1.68		2.34	1.72	0.96		1.14
	Mean /s	-0.99	-1.26	-0.55	-0.65	-0.31	-0.13	0.56	-1.33
Tensile Strength	Mean	0.77	7.58	-0.80	-5.68	5.93	3.15	10.1	3.76
	Pooled s	6.82	5.66		9.95	3.39	2.82		3.38
	Mean /s	0.05	0.90	-0.14	-0.75	0.69	0.35	1.21	0.42
Elongation	Mean	-15.1	-13.0	-20.0	-22.9	-25.0	-18.2	-2.40	-13.6
	Pooled s	7.45	11.2		12.3	6.76	1.96		8.52
	Mean /s	0.83	1.07	0.29	-0.03	-0.27	0.50	2.26	1.00

April 1, 2026 – September 30, 2026

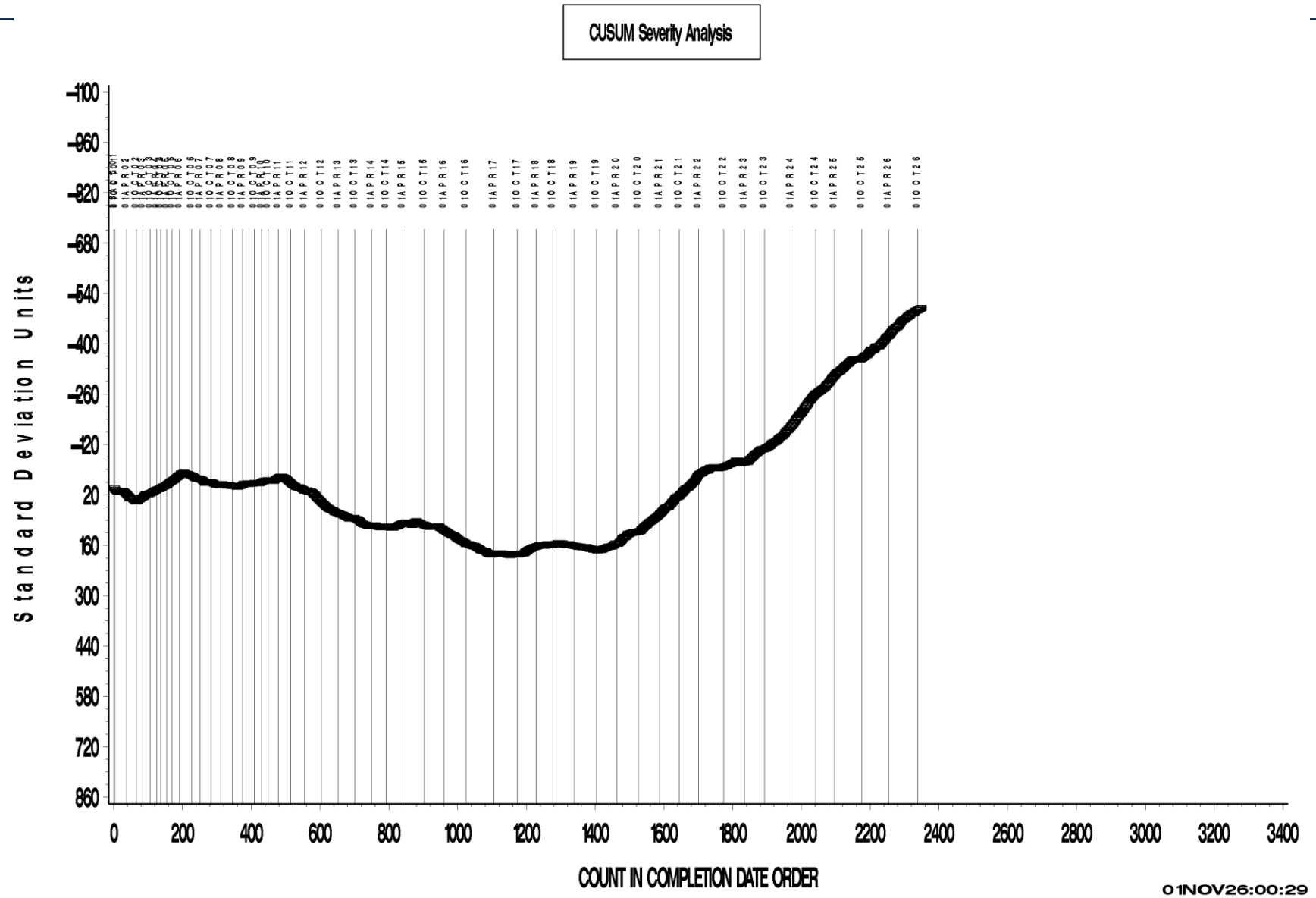
EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
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FINAL REFERENCE POLYACRYLATE VOLUME CHANGE AVERAGE

TMC TEST MONITORING CENTER

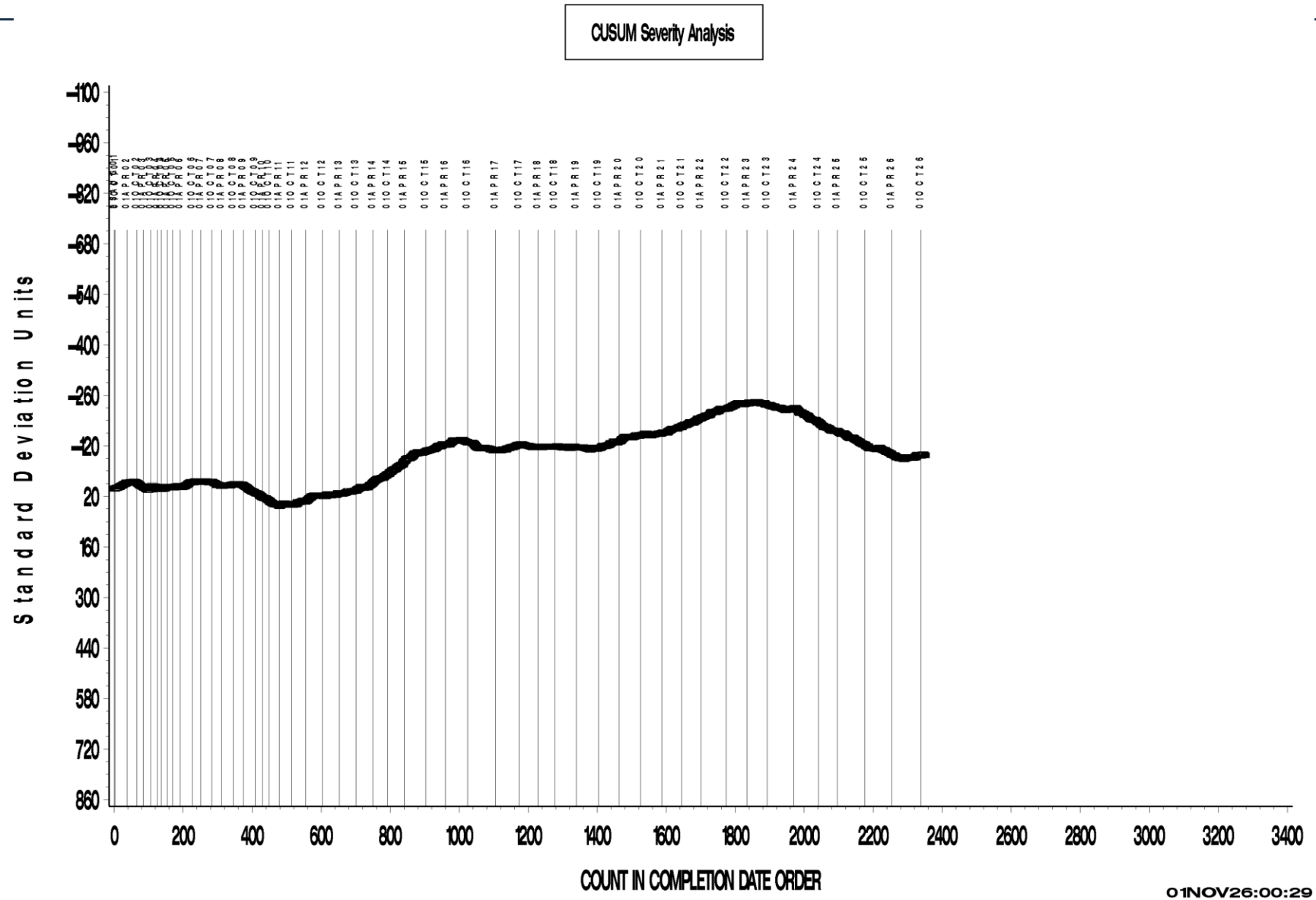
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EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE POLYACRYLATE HARDNESS AVERAGE



EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE POLYACRYLATE TENSILE STR AVERAGE

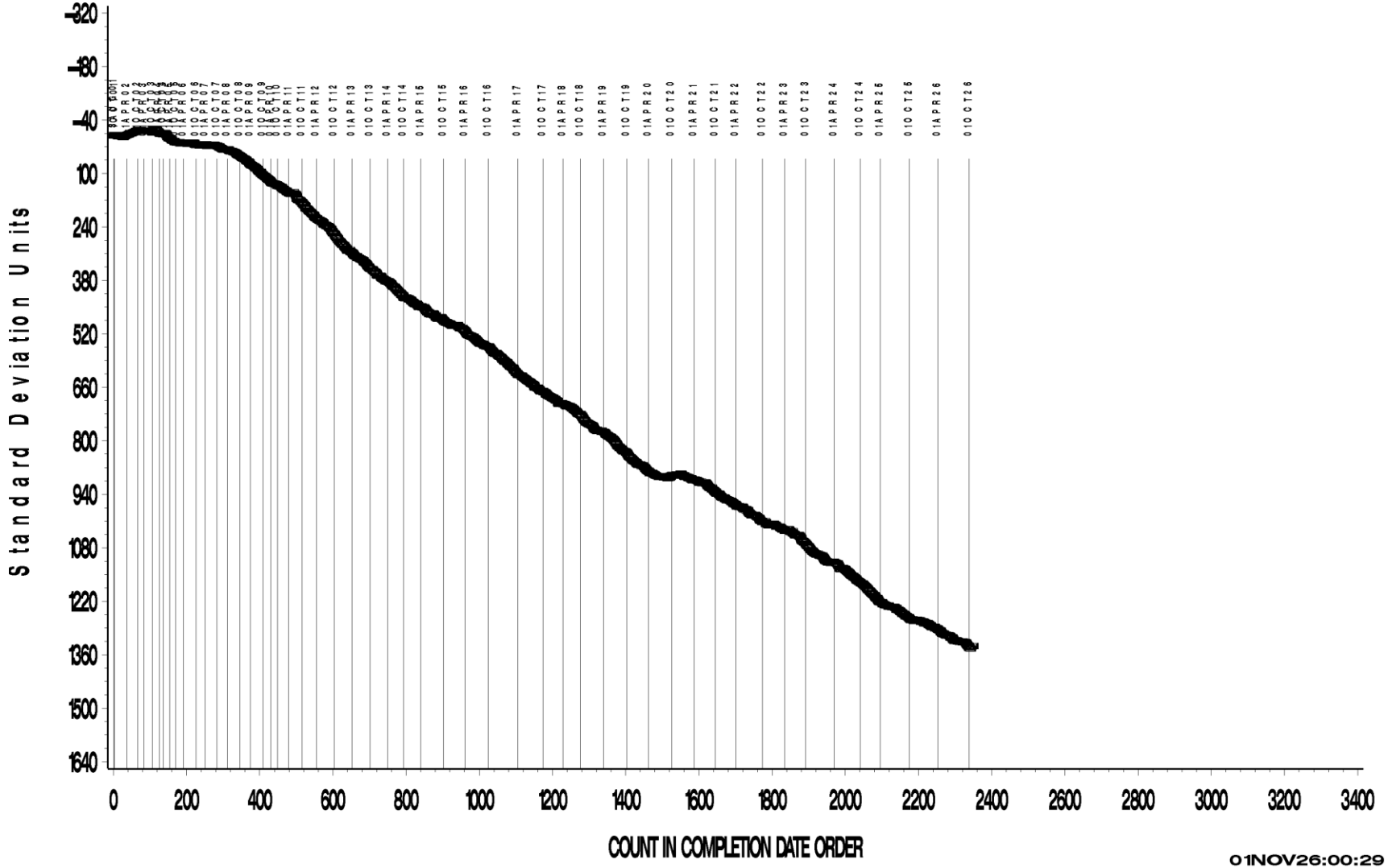


EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE POLYACRYLATE ELONGATION AVERAGE

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TMC

CUSUM Severity Analysis



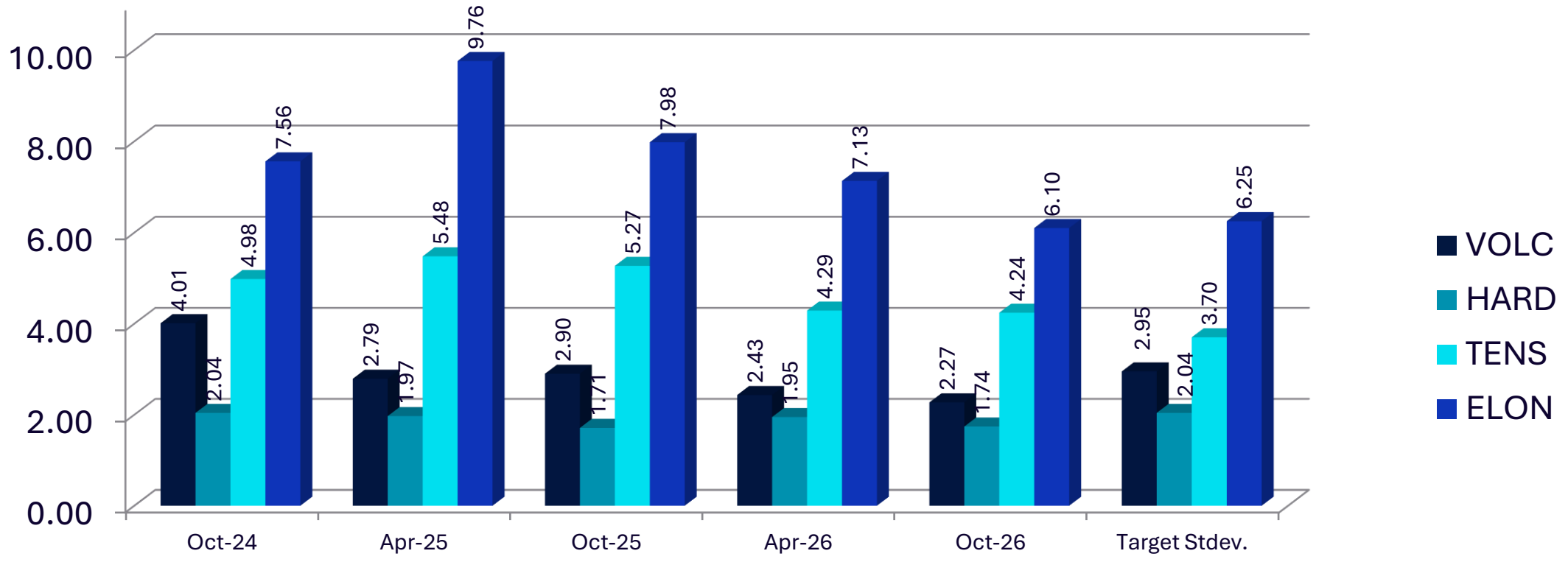
EOEC Test Severity

Silicone (VMQ)

Parameter	Period Mean Δ/s	Status
Volume Change	1.009	Severe
Points Hardness Change	-0.4268	Mild
Tensile Strength Change	0.0879	On Target
Elongation Change	0.0505	On Target

April 1, 2026 – September 30, 2026

EOEC Precision Estimates - Silicone



April 1, 2026 – September 30, 2026

EOEC Precision Estimates by Lab: VMQ

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	26	6	1	18	6	6	1	5
Volume	Mean	35.1	35.2	29.0	37.5	31.8	33.0	34.0	34.8
	Pooled s	0.69	0.42		2.26	0.97	1.26		0.65
	Mean /s	0.99	1.02	-1.06	1.82	-0.13	0.28	0.64	0.88
Hardness	Mean	-23.1	-22.5	-21.0	-23.4	-21.7	-18.3	-23.0	-23.2
	Pooled s	0.84	2.07		0.98	1.37	0.52		1.10
	Mean /s	-0.68	-0.40	0.33	-0.84	0.01	1.64	-0.65	-0.75
Tensile Strength	Mean	-34.9	-32.7	-38.8	-32.3	-34.4	-30.1	-37.2	-32.0
	Pooled s	4.16	4.01		4.93	2.55	2.20		2.62
	Mean /s	-0.30	0.29	-1.36	0.40	-0.18	0.99	-0.93	0.48
Elongation	Mean	-27.6	-24.4	-35.7	-19.4	-23.7	-23.1	-24.8	-27.0
	Pooled s	2.83	6.06		7.87	4.20	2.52		4.40
	Mean /s	-0.45	0.07	-1.74	0.87	0.18	0.27	0.00	-0.35

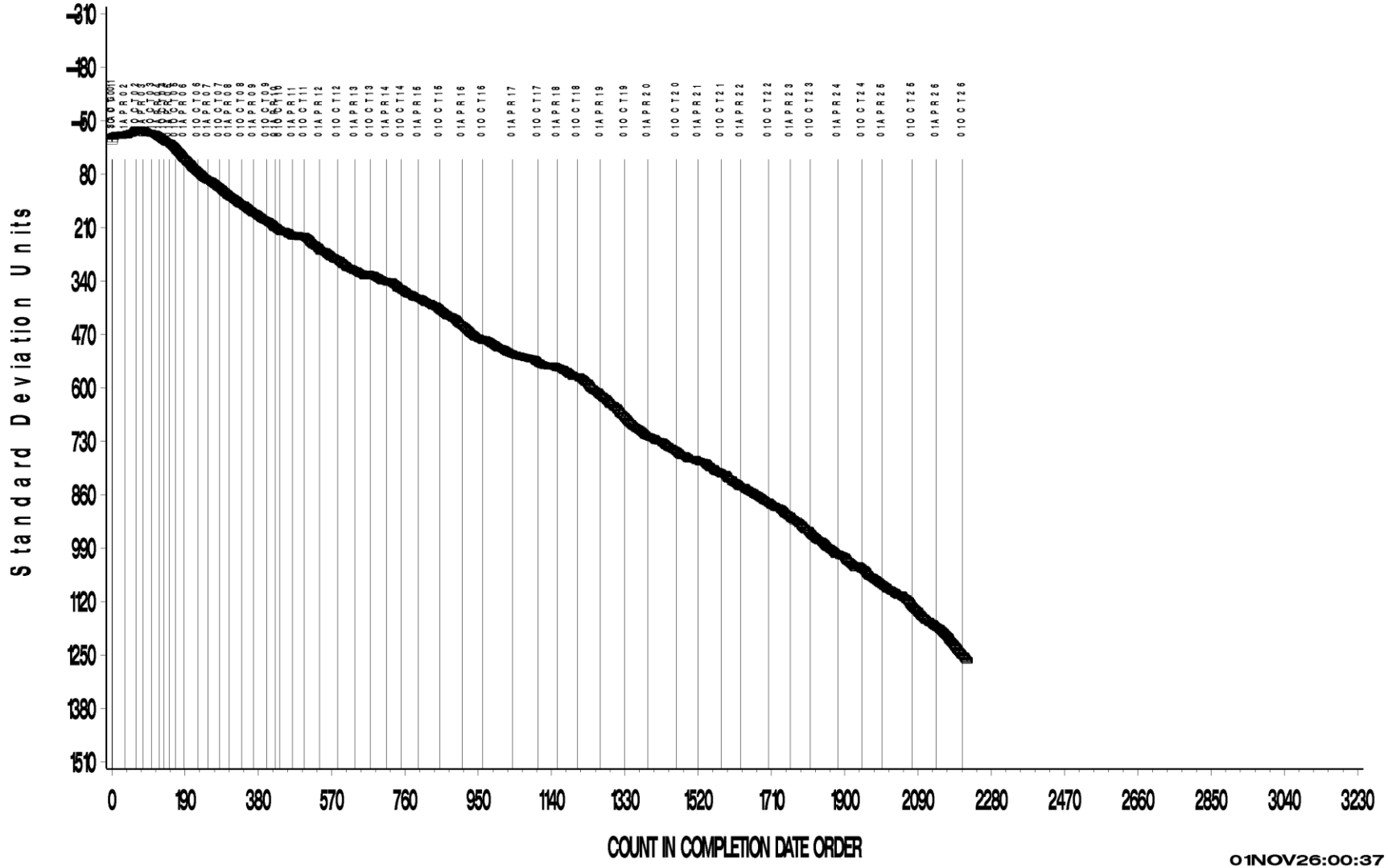
April 1, 2026 – September 30, 2026

EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE SILICONE VOLUME CHANGE AVERAGE

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TMC

CUSUM Severity Analysis



EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE SILICONE HARDNESS AVERAGE

TMC TEST MONITORING CENTER

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CUSUM Severity Analysis

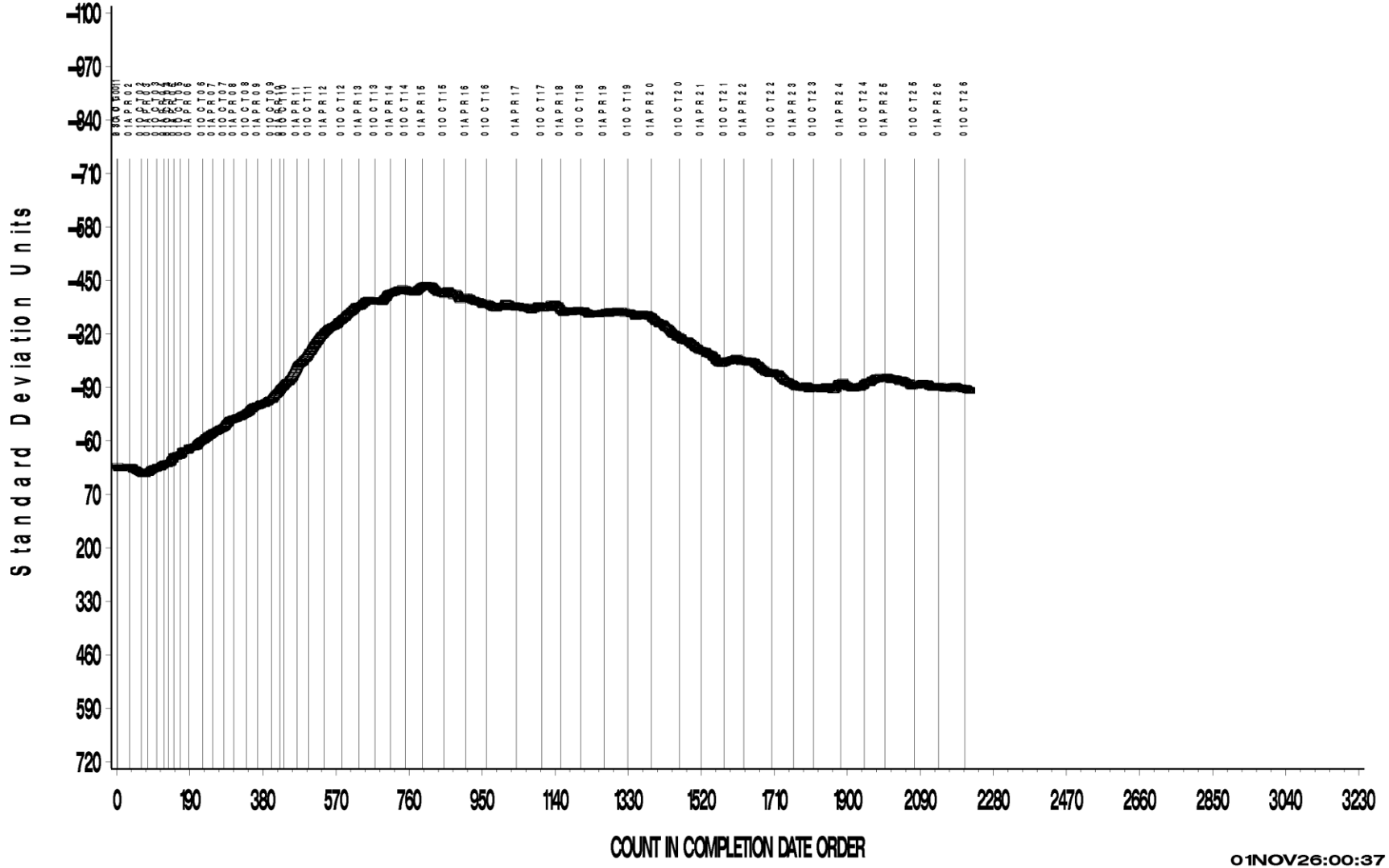


EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
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FINAL REFERENCE SILICONE TENSILE STR AVERAGE

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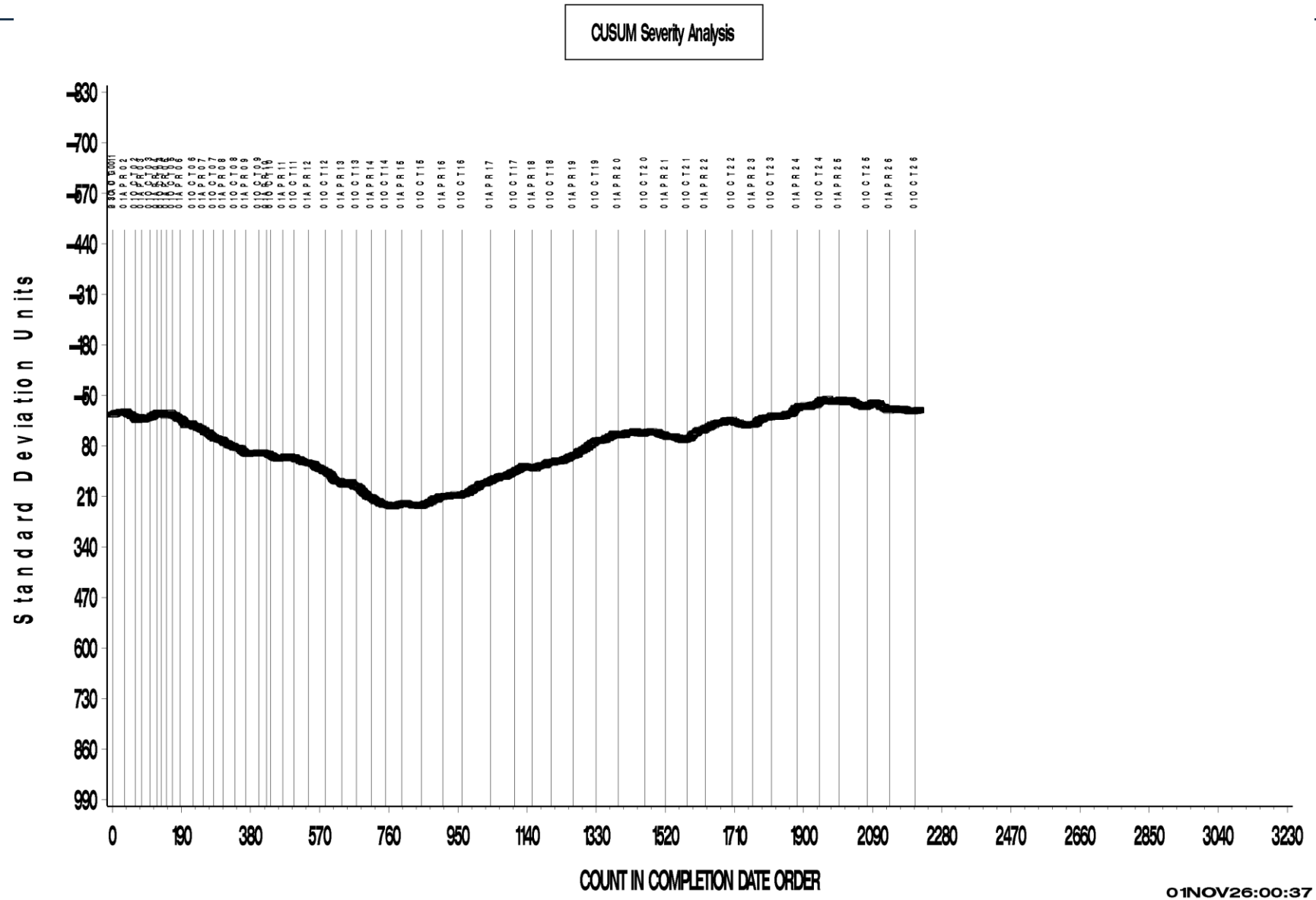
CUSUM Severity Analysis



EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
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FINAL REFERENCE SILICONE ELONGATION AVERAGE

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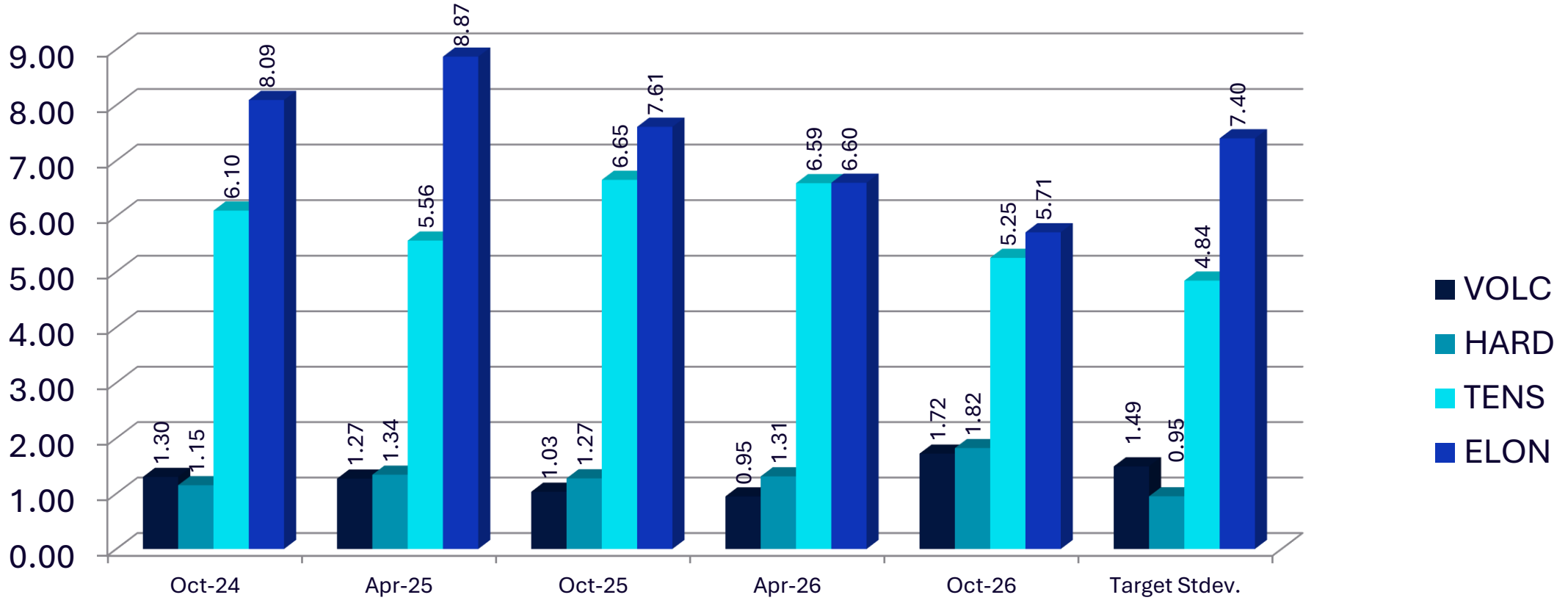
EOEC Test Severity

Ethylene Acrylate “VAMAC” (MAC)

Parameter	Period Mean Δ/s	Status
Volume Change	0.3712	Slightly Severe
Points Hardness Change	-1.2974	Very Mild
Tensile Strength Change	-0.5930	Mild
Elongation Change	-0.4673	Mild

April 1, 2026 – September 30, 2026

EOEC Precision Estimates – MAC (VAMAC G)



April 1, 2026 – September 30, 2026

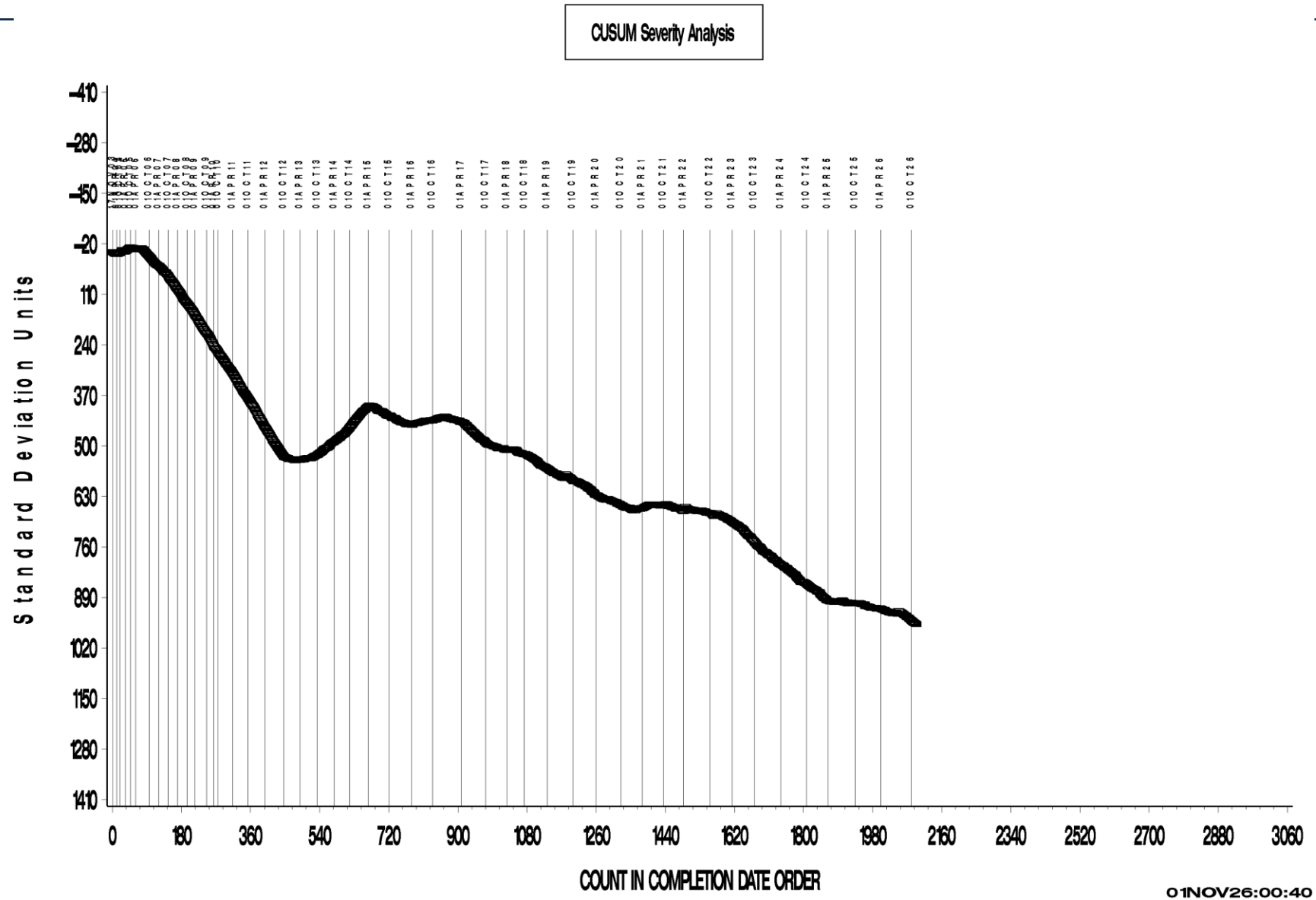
EOEC Precision Estimates by Lab: MAC

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	35	9	0	19	8	4	1	4
Volume	Mean	19.1	19.0		19.2	19.6	18.6	19.0	18.2
	Pooled s	0.63	0.61		3.39	0.70	0.47		0.25
	Mean /s	0.38	0.32		0.44	0.68	0.02	0.32	-0.19
Hardness	Mean	-9.60	-9.22		-7.42	-7.75	-7.25	-8.00	-9.50
	Pooled s	1.14	0.67		2.63	1.04	0.50		0.58
	Mean /s	-2.23	-1.83		0.06	-0.28	0.24	-0.55	-2.13
Tensile Strength	Mean	-18.1	-19.6		-20.7	-15.9	-15.4	-13.8	-13.2
	Pooled s	5.41	2.32		5.51	4.16	5.97		3.41
	Mean /s	-0.57	-0.88		-1.10	-0.11	-0.02	0.32	0.45
Elongation	Mean	-37.7	-36.8		-42.5	-40.0	-34.0	-41.0	-31.1
	Pooled s	3.35	5.18		7.99	3.09	2.70		5.04
	Mean /s	-0.38	-0.25		-1.02	-0.54	0.13	-0.81	0.52

April 1, 2026 – September 30, 2026

EOEC — ETHYLENEACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE VAMAC G VOLUME CORRECTED AVERAGE

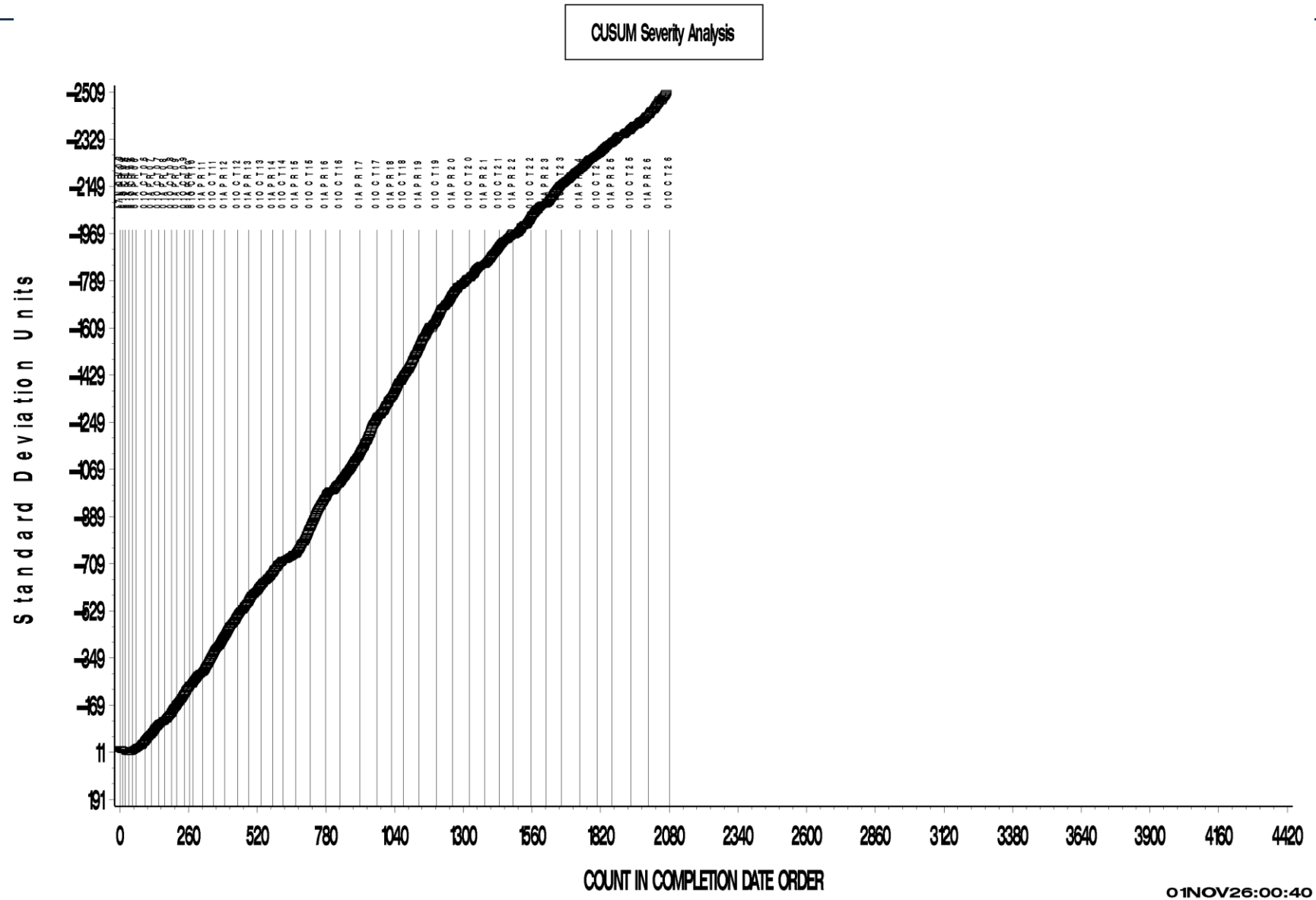
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EOEC — ETHYLENEACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
FINAL REFERENCE FLUOROELASTOMER HARDNESS AVERAGE

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TMC

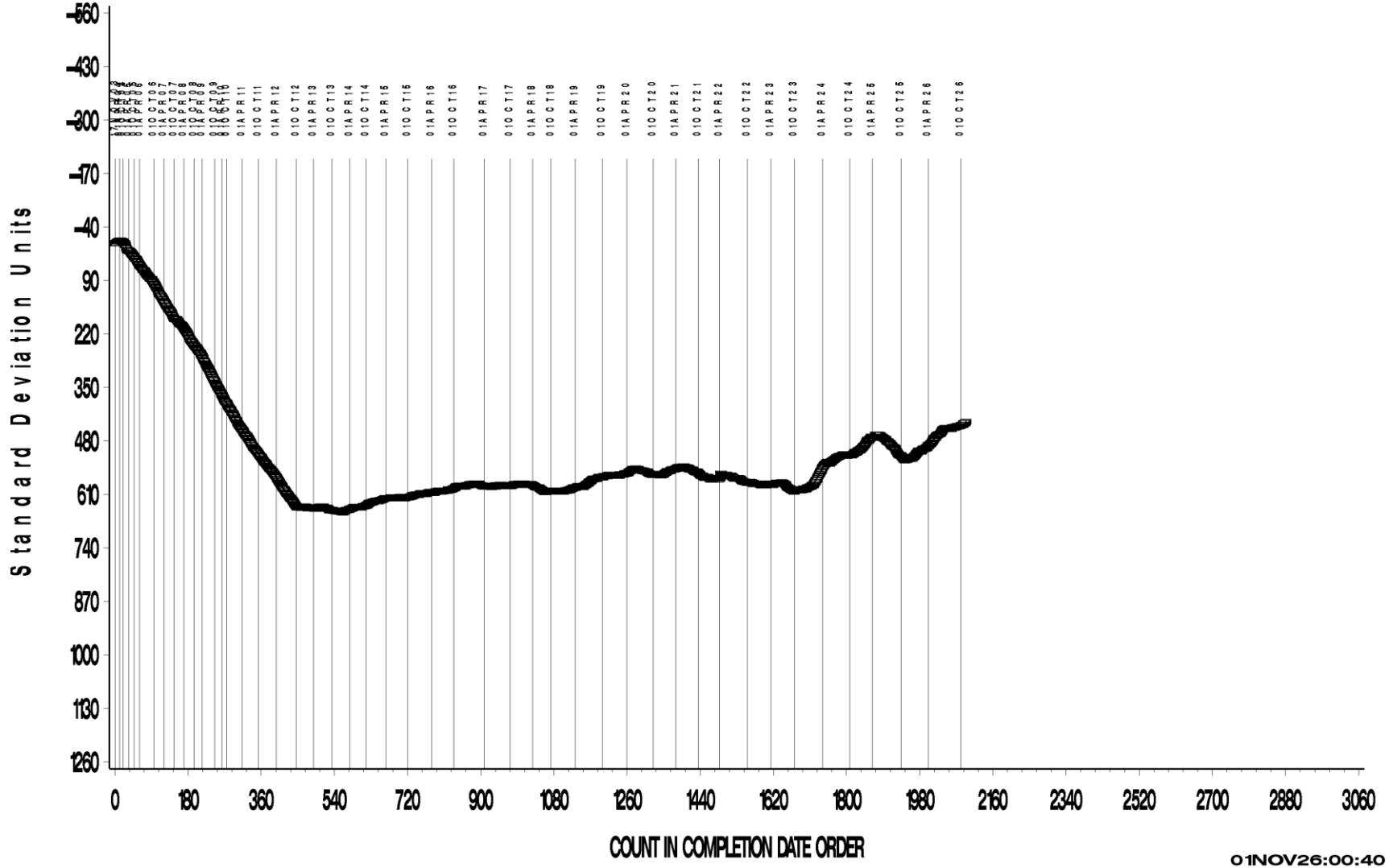


EOEC — ETHYLENEACRYLATE INDUSTRY OPERATIONALLY VALID DATA
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FINAL REFERENCE VAMAC G TENSILE STR AVERAGE

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CUSUM Severity Analysis

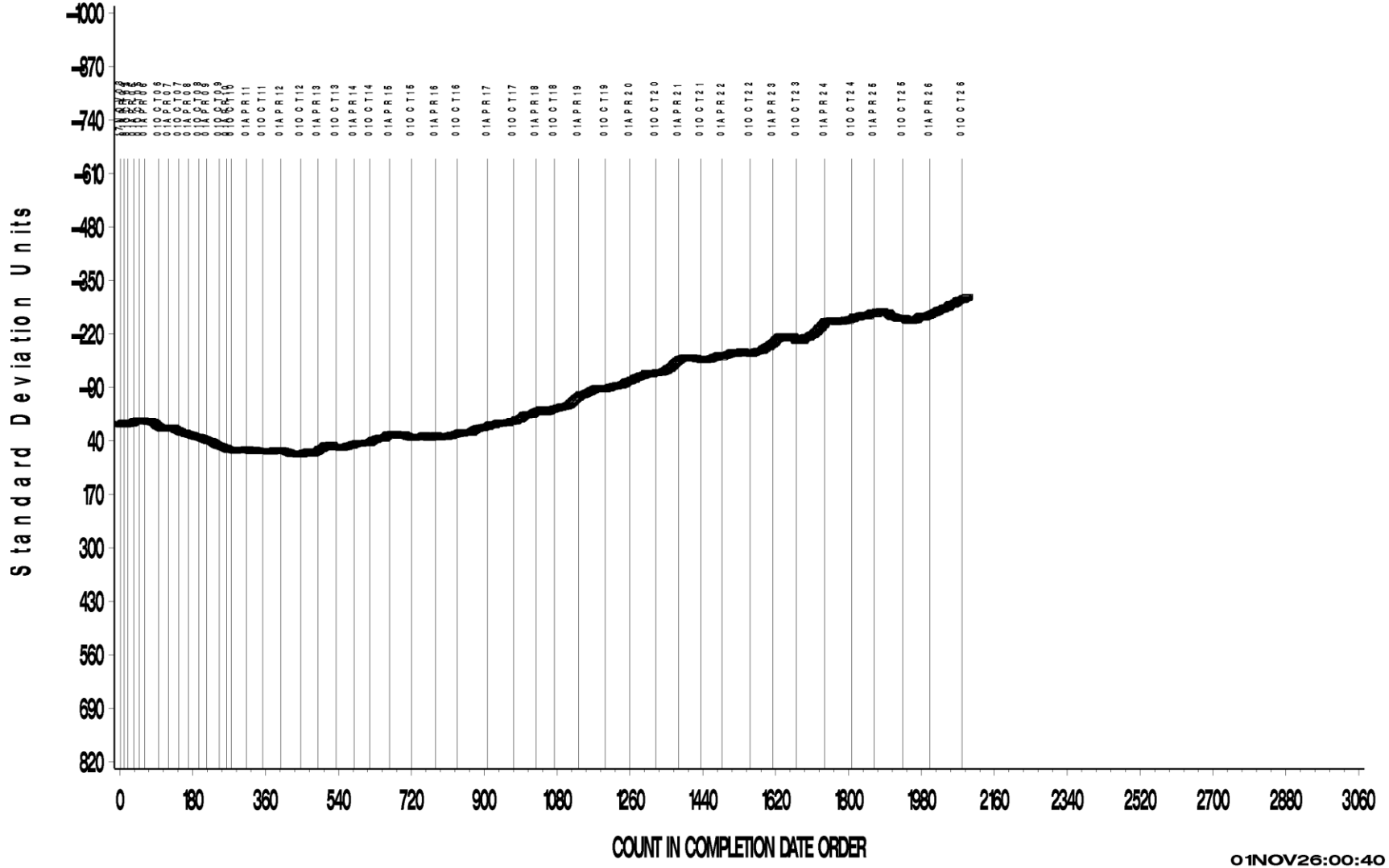


EOEC — ETHYLENEACRYLATE INDUSTRY OPERATIONALLY VALID DATA
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FINAL REFERENCE VAMAC G ELONGATION AVERAGE

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CUSUM Severity Analysis



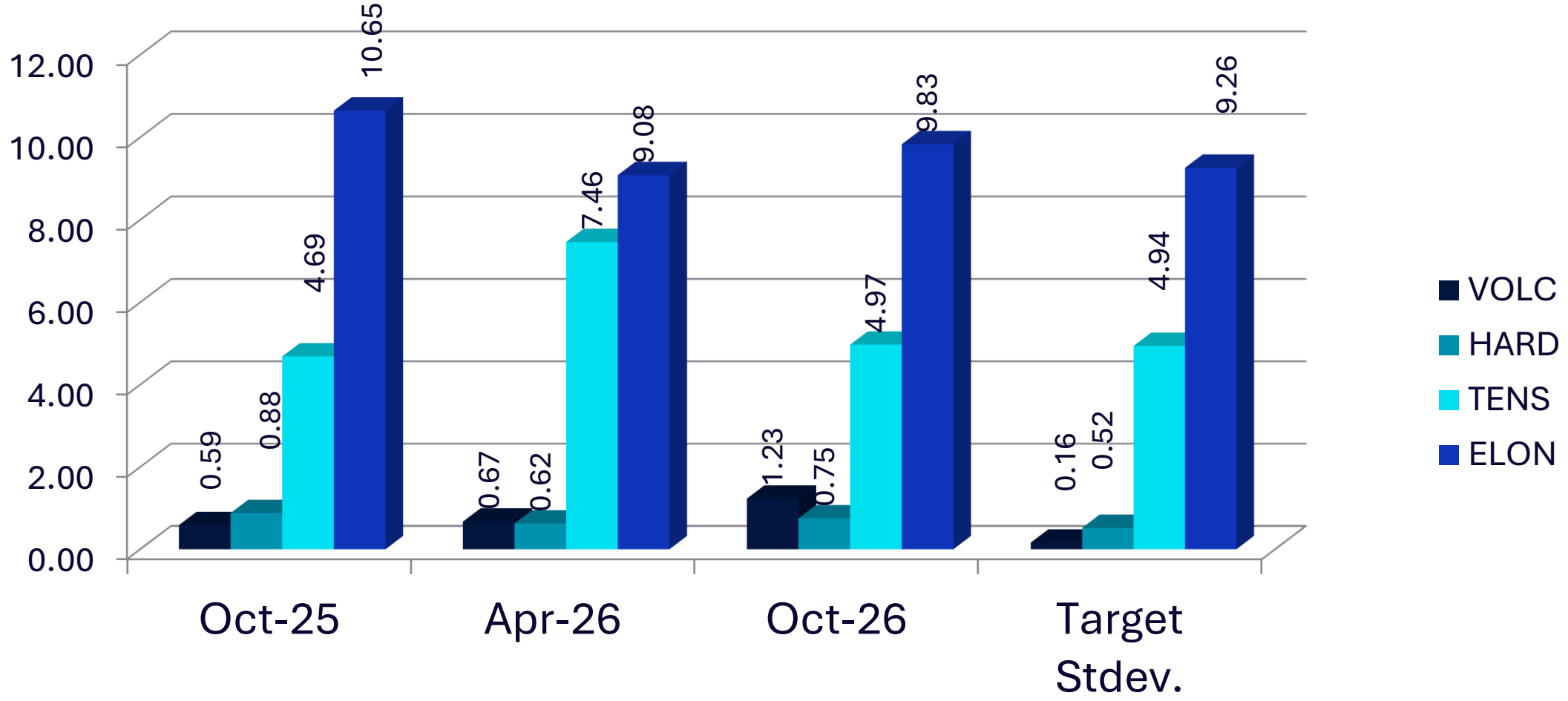
EOEC Test Severity

Hydrogenated NBR (HNBR)

Parameter	Period Mean Δ/s	Status
Volume Change	0.0458	On Target
Points Hardness Change	-0.9252	Very Mild
Tensile Strength Change	-0.6068	Very Mild
Elongation Change	-0.5804	Very Mild

April 1, 2026 – September 30, 2026

EOEC Precision Estimates – Hydrogenated NBR



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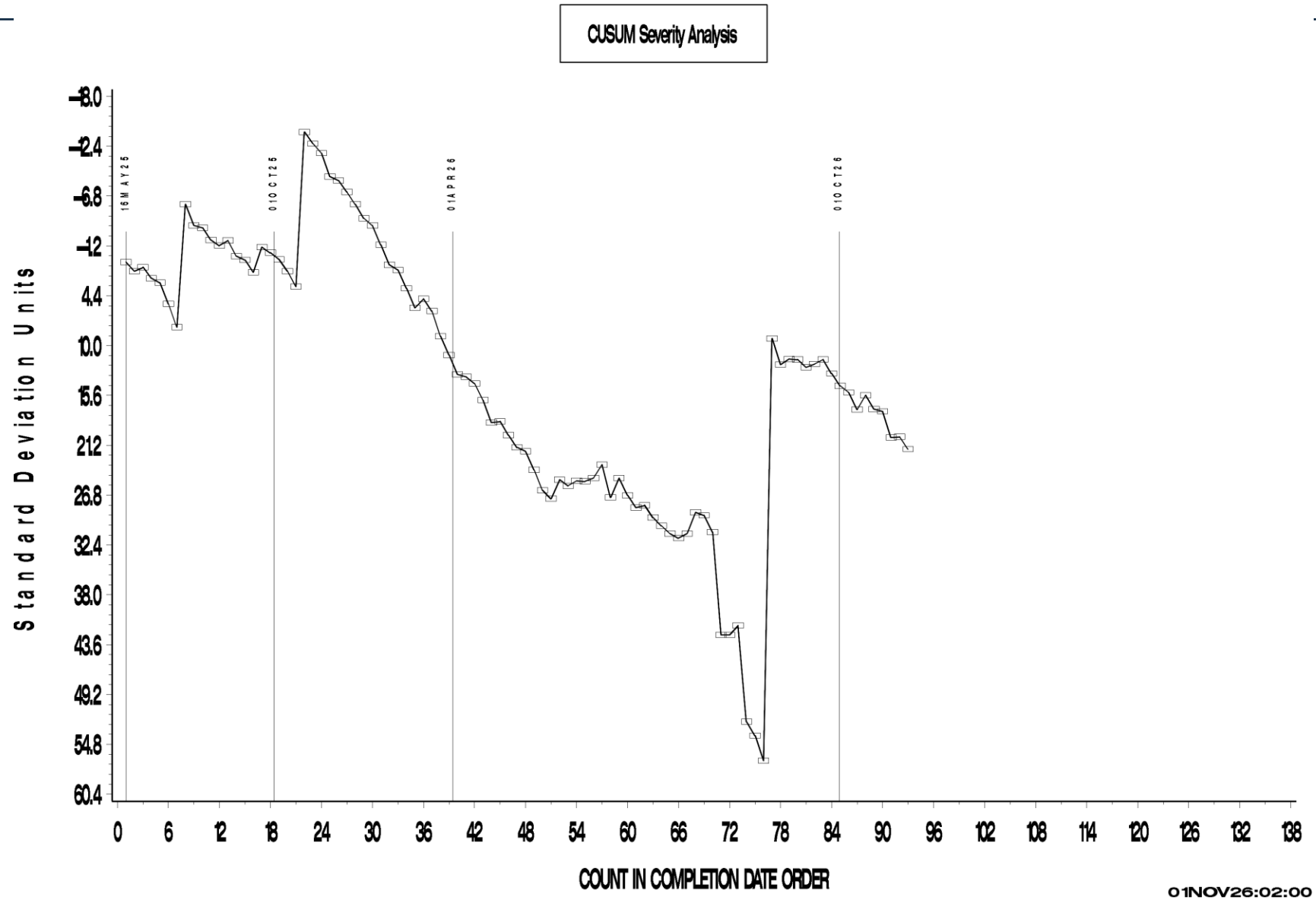
EOEC Precision Estimates by Lab: HNBR

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	16	7	0	16	5	0	0	1
Volume	Mean	4.29	4.89		3.67	4.07			4.27
	Pooled s	0.21	0.71		1.92	0.12			
	Mean /s	0.98	4.74		-2.87	-0.38			0.88
Hardness	Mean	-2.06	-2.00		-2.12	-2.8			0.00
	Pooled s	0.77	0.58		0.34	1.10			
	Mean /s	-0.83	-0.71		-0.95	-2.25			3.13
Tensile Strength	Mean	4.33	6.44		3.86	6.42			6.90
	Pooled s	3.81	3.19		7.08	0.90			
	Mean /s	-0.70	-0.27		-0.79	-0.28			-0.18
Elongation	Mean	-4.68	-1.84		0.00	-3.84			-5.70
	Pooled s	5.01	9.24		14.5	2.39			
	Mean /s	-0.82	-0.51		-0.31	-0.72			-0.93

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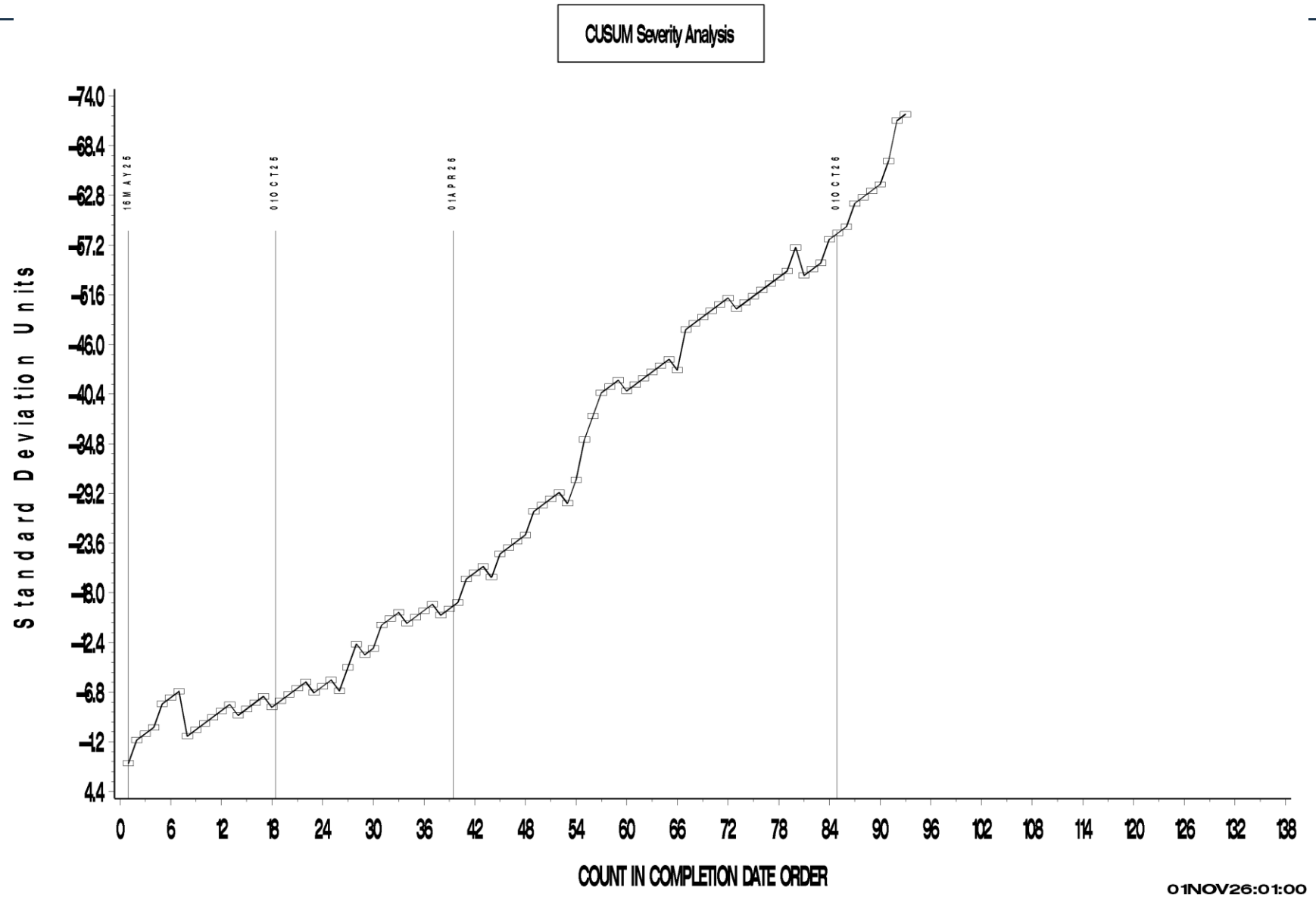
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REFERENCE HNITRILE VOLUME CHANGE CORRECTED AVERAGE

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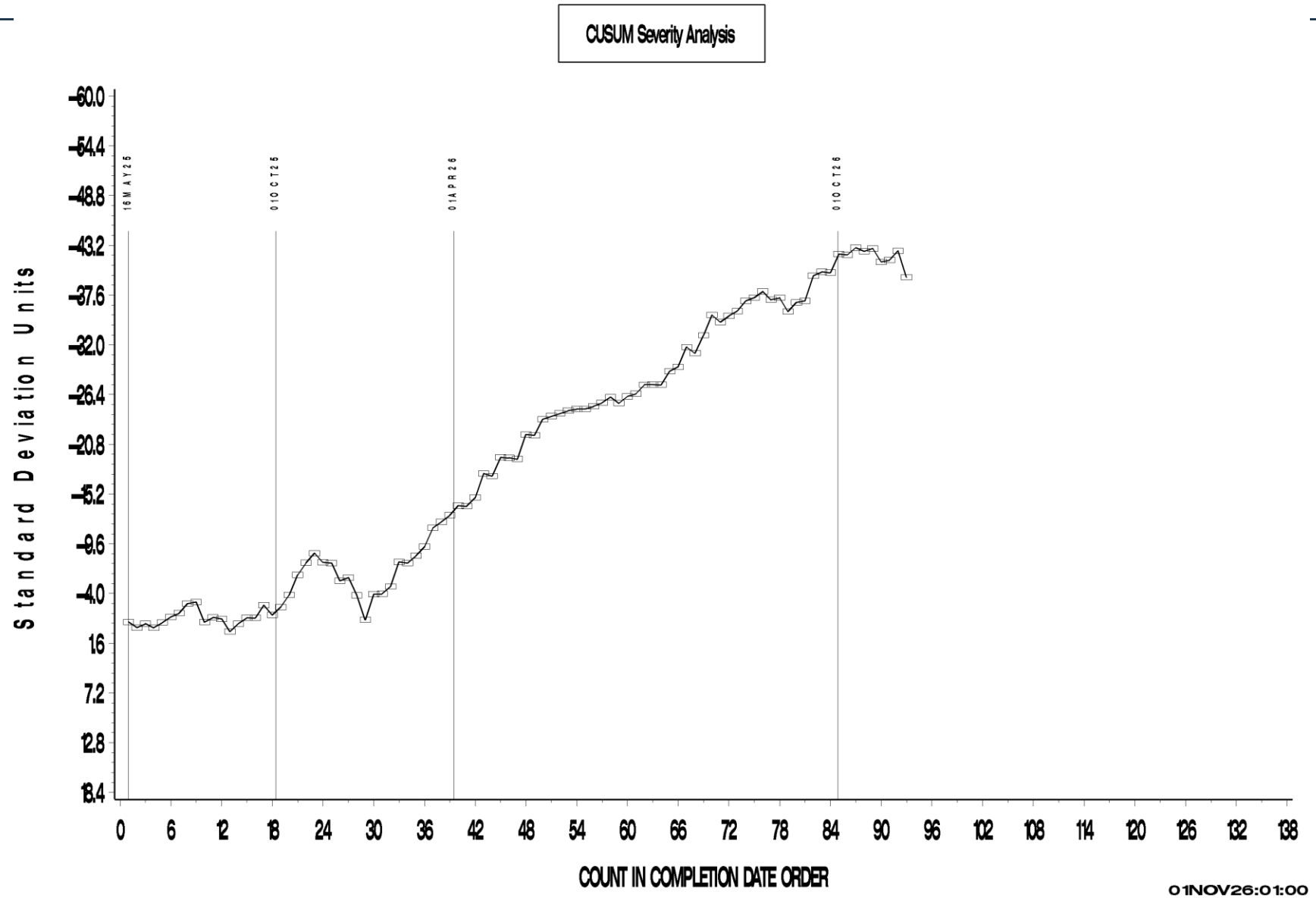


EOEC —HYDROGENATED NITRILE INDUSTRY OPERATIONALLY VALID DAT
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REFERENCE HY NITRILE PTS HARD CHANGE CORRECTED AVG

TEST MONITORING CENTER

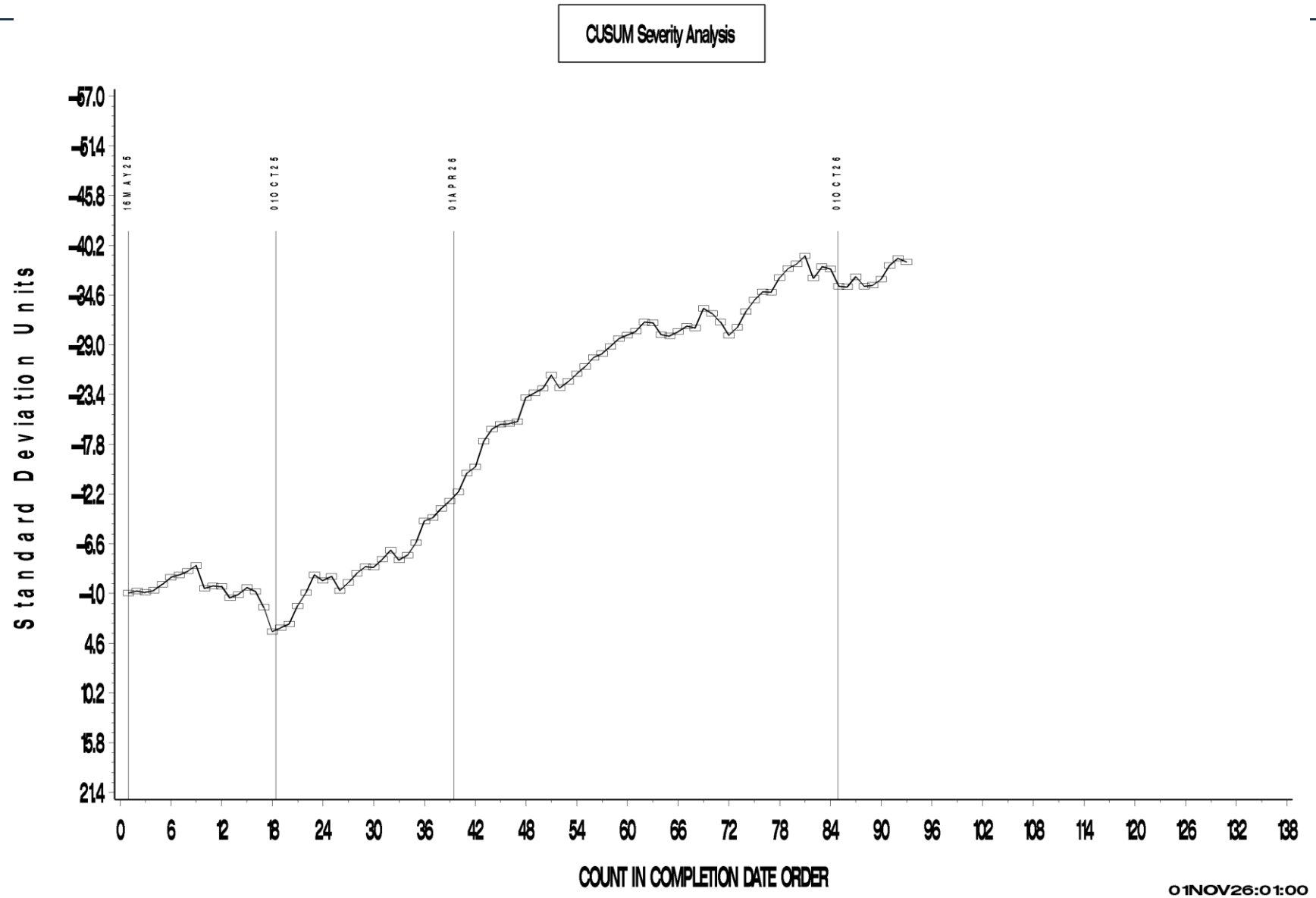


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CUSUM SEVERITY ANALYSIS
REF HYD NITRILE TENS STRENGTH CHANGE CORRECTED AVG



EOEC —HYDROGENATED NITRILE INDUSTRY OPERATIONALLY VALID DAT
CUSUM SEVERITY ANALYSIS
REF HY NITRILE ELONGATION CHANGE CORRECTED AVERAGE

TMC TEST MONITORING CENTER



Information Letters & Technical Updates*

Test	Date	IL or Memo Number	Topic
EOEC	20260516	MEM26-1	Update to the EOECP (ACM; Polyacrylate) Test Targets
EOEC	20260522	IL26-1	Update to the ASTM D 7216 Test procedure

One information letter and one Memo were released this semester.

*Available from TMC Website

Reference Oil Inventory Estimated Life

EOEC & LDEOC

Oil	TMC Inventory Gallons	Gallons Shipped Past 6 Months	Estimated Life
SL107 [A, B]	3276 [C]	329	5 years

[A] TMC Inventory is used across several test methods

[B] SL107 has fully replaced oil 1006; Oil 1006 is no longer used as an EOEC Reference Fluid

[C] Includes inventory of SL107 and reblend (SL107-1)

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ASTM Reference Testing Semi-Annual Report D7216 LDEOC

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ASTM D 7216

Engine Oil Elastomer Compatibility

LDEOC (Light-Duty)	
OHT PART NUMBER	BATCH CODE*
OHTLDEOC-HNBR1-A	35
OHTLDEOC-FKM1-A	33
OHTLDEOC-ACM1-B	27
OHTLDEOC-VMQ1-A	44
OHTLDEOC–AEM1–B	34
OHTLDEOC–ACM2–A	4
OHTLDEOC–AEM2–A	4
OHTLDEOC–FKM3–A	4
OHTLDEOC–AEM3–A	4

* As of 20260930

Calibrated Labs and Stands[1]

(change shown in parentheses)

Test	Labs	Stands
D7216 LDEOC	9[2] (+0)	N/A

[1] As of 9/30/2026

[2] Not all Elastomer Types were run at each lab

LDEOC Test Activity

Test Status		Ethylene Acrylate	Fluoroelast.	Nitrile	Polyacrylate	Silicone	Total
	LABS	7	7	7	9	8	
	BATHS	37	36	17	39	35	
Acceptable Calibration Test	AC	73	78	79	87	69	**386**
Failed Calibration Test	OC	8	3	0	4	0	**15**
Acceptable Industry Informational Test	AG	0	0	0	7	0	**7**
Unacceptable Industry Informational Test	LB, OG	0	0	0	4	0	**4**
Operationally Invalid, by lab	LC	0	0	0	3	1	**4**
Operationally Invalid, by TMC	RC	1	0	0	0	0	**1**
Aborted	XC	0	0	0	0	0	**0**
Acceptable Informational Run	NN	0	0	1	0	0	**1**
Unacceptable/Aborted Informational Run	MN, XN	0	1	0	0	0	**1**
Total		**82**	**82**	**80**	**105**	**70**	**419**

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LDEOC Test Activity

Test Status		Ethylene Acrylate 2	Ethylene Acrylate 3	Fluoroelast.3	Polyacrylate2	Total
LABS		8	8	8	8	
BATHS		34	38	33	33	
Acceptable Calibration Test	AC	83	78	72	79	**312**
Failed Calibration Test	OC	2	4	0	3	**9**
Operationally Invalid, by lab	LC	2	1	1	2	**6**
Operationally Invalid, by TMC	RC	1	0	0	0	**1**
Aborted	XC	1	0	0	2	**3**
Acceptable Informational Run	NN	0	0	0	0	**0**
Unacceptable/Aborted Informational Run	MN, XN	0	0	0	0	**0**
Total		**89**	**83**	**73**	**86**	**331**

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LDEOC Failing Calibration (OC) Tests

Cause	Elastomer	#
TENSILE STRENGTH (SEVERE)	AEM2, 3AEM3	4
TENSILE STRENGTH (MILD)	AEM2, AEM3	2
VOLUME (MILD)	8AEM, FKM, 2ACM	11
VOLUME (SEVERE)	FKM	1
HARDNESS (MILD)	ACM, 3ACM2	4
HARDNESS (SEVERE)	ACM	1
HARDNESS (MILD), VOLUME (MILD)	FKM	1
Total		**24**

April 1, 2026 – September 30, 2026

LDEOC Lost Tests

Validity	Cause	No. of Tests
LC	BATH TEMPERATURE/POWER OUTAGE	0
LC	TEST TIME NOT 336Hrs	1
LC	LOST SAMPLE	7
LC	WRONG ELASTOMER TESTED	3
LC	MISSING WEIGHTS DATA (VOLUME TESTING)	0
XC	ABORTED: POWER OUTAGE / BATH FAILURE	3
XC	WRONG ELASTOMER TESTED	0
XN	ABORTED INFORMATIONAL (SHAKEDOWN) TEST	1
RC	INCORRECT RUN TIME	1
RC	BATH TEMPERATURE/POWER OUTAGE	0
RC	WRONG ELASTOMER TESTED	0
Total		**16**

*Invalid (LC,RC) and Aborted (XC) calibration tests

April 1, 2026 – September 30, 2026

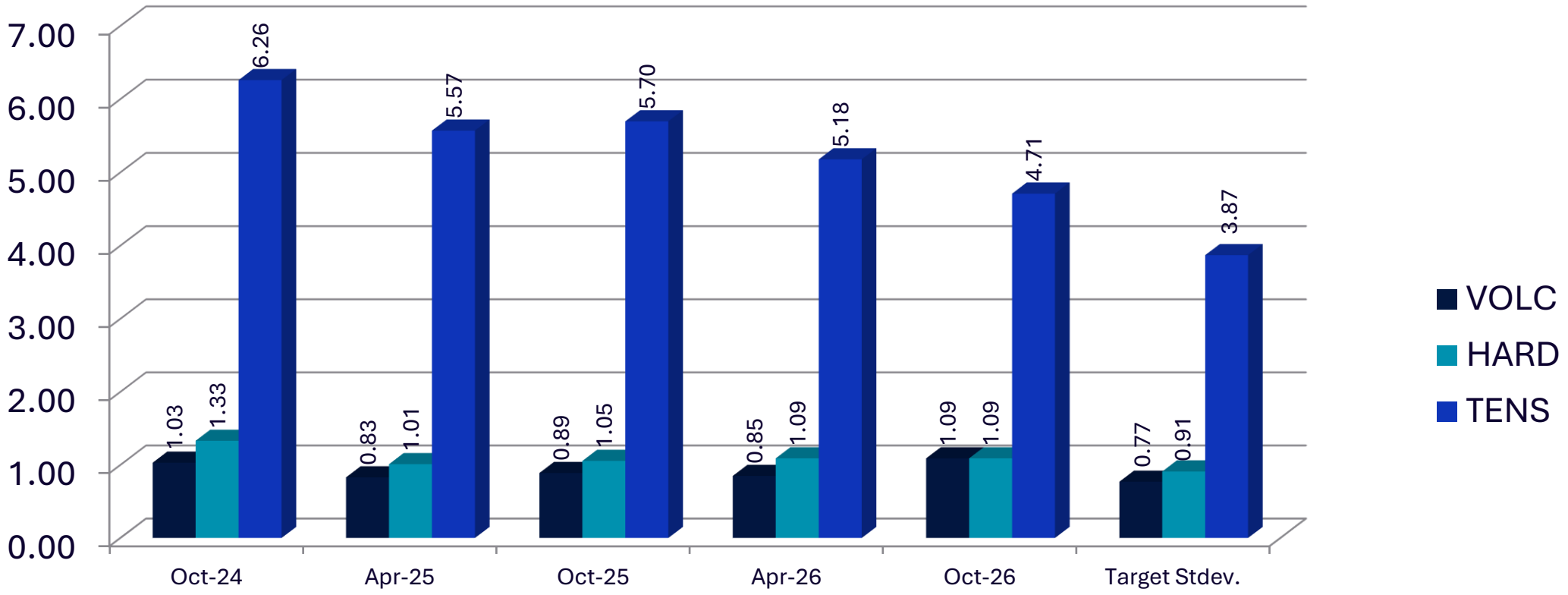
LDEOC Test Severity

Ethylene Acrylate (AEM1)

Parameter	Period Mean Δ/s	Status
Volume Change	-1.6683	Very Mild
Points Hardness Change	0.5851	Severe
Tensile Strength Change	-0.1855	Slightly Mild

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates – Ethylene Acrylate



April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: AEM1

Test Parameter	Statistic	LTMS Lab								
		A	B	BB	G	I	K	L	P	V
	n=	**23**	**6**	**3**	**24**	**10**	**0**	**6**	**0**	**9**
Volume	Mean	22.5	22.8	23.1	23.6	23.3		23.0		21.8
	Pooled s	0.48	0.27	0.29	1.41	1.12		0.56		0.42
	Mean /s	-2.24	-1.79	-1.45	-0.76	-1.22		-1.60		-3.14
Hardness	Mean	-12.3	-13.1	-13.0	-12.2	-11.5		-11.0		-12.4
	Pooled s	1.22	0.41	0.00	1.19	0.71		0.00		0.53
	Mean /s	0.47	-0.48	-0.30	0.53	1.35		1.90		0.31
Tensile Strength	Mean	-17.2	-20.0	-20.3	-18.7	-12.5		-17.9		-18.2
	Pooled s	4.54	2.90	1.23	5.41	3.75		0.64		3.92
	Mean /s	-0.09	-0.80	-0.89	-0.49	1.11		-0.27		-0.36

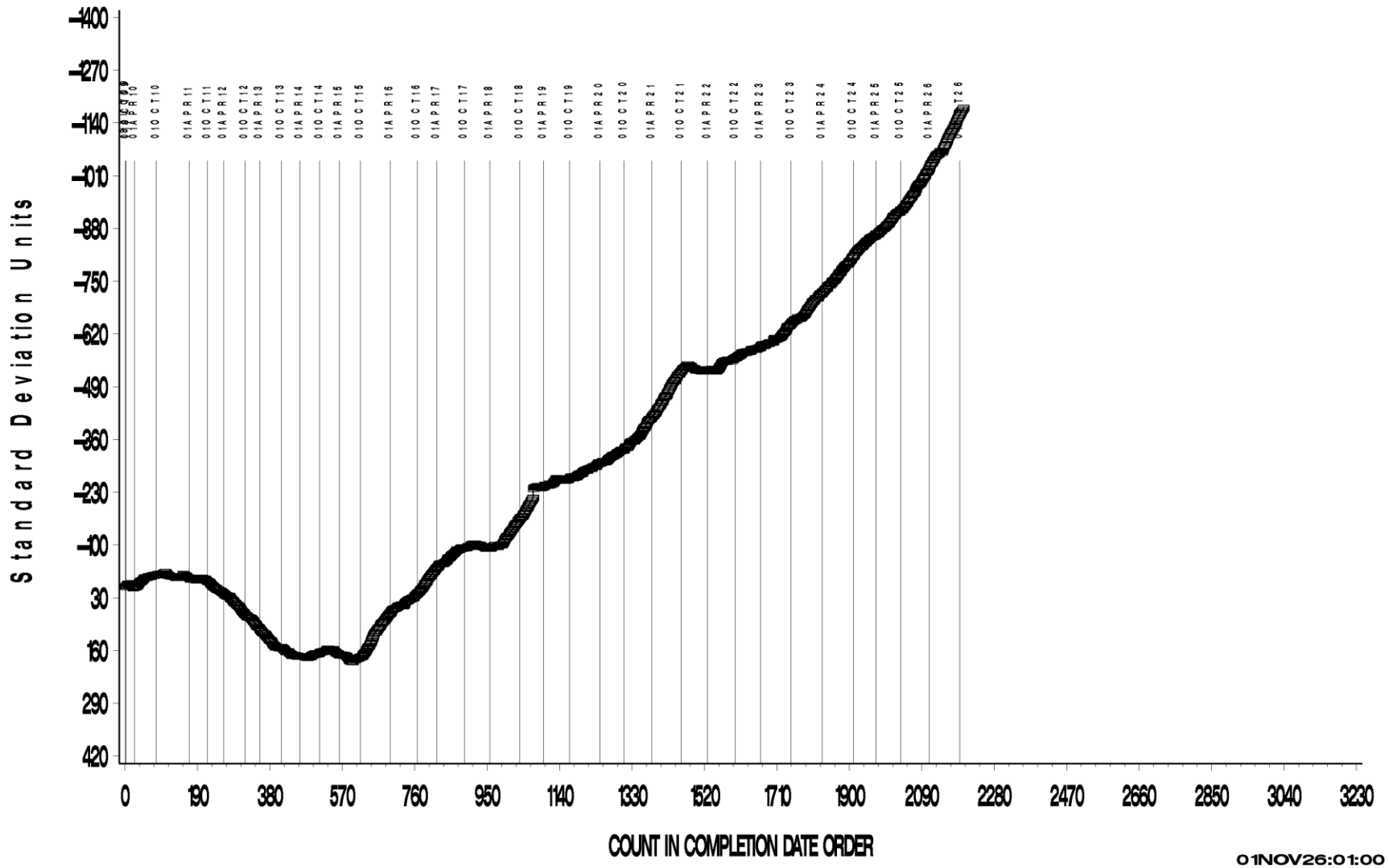
April 1, 2026 – September 30, 2026

LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER

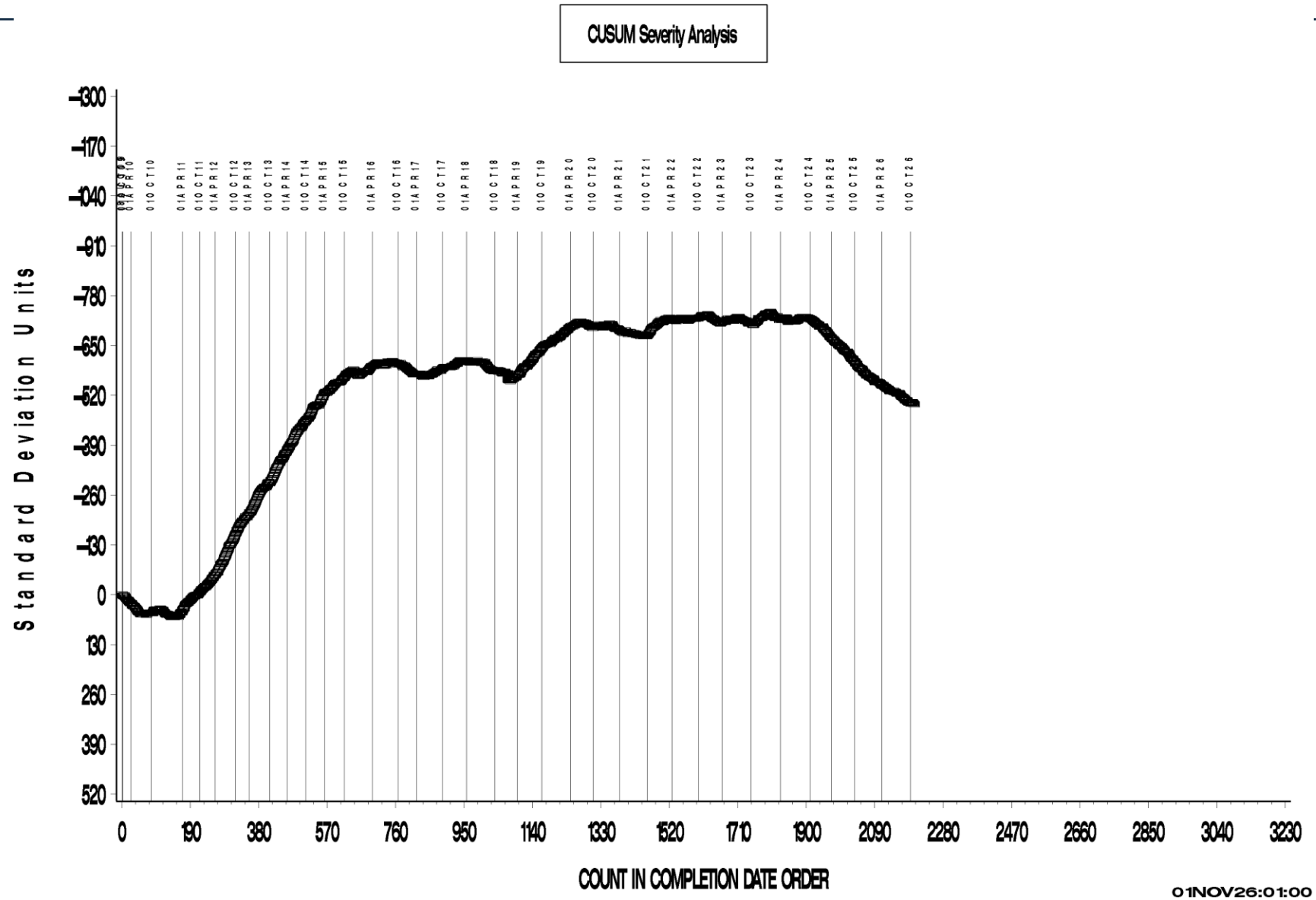
TMC

CUSUM Severity Analysis



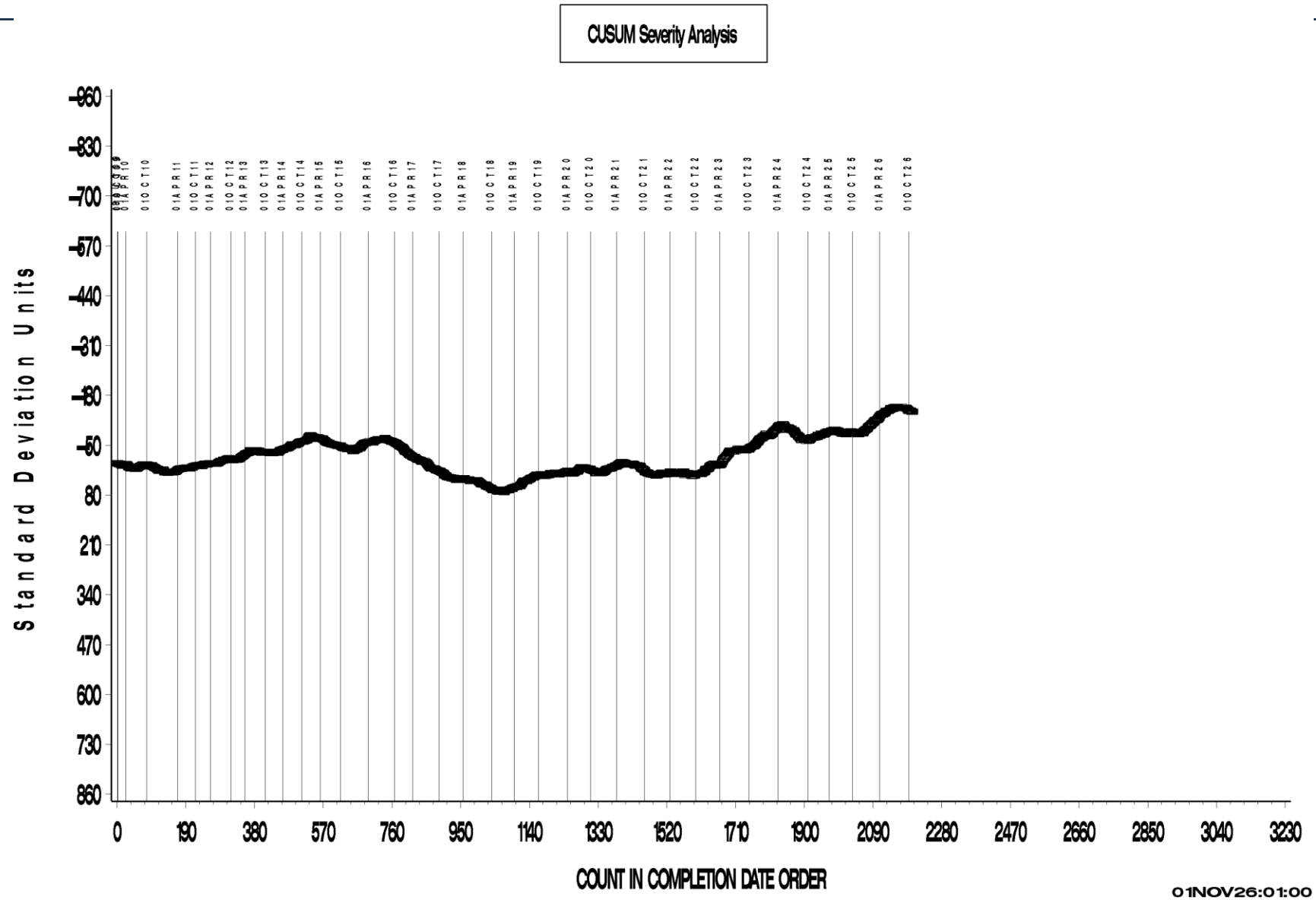
LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE POINTS HARDNESS CHANGE FINAL

TMC TEST MONITORING CENTER



LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE TENSILE STRENGTH CHANGE FINAL

TMC TEST MONITORING CENTER



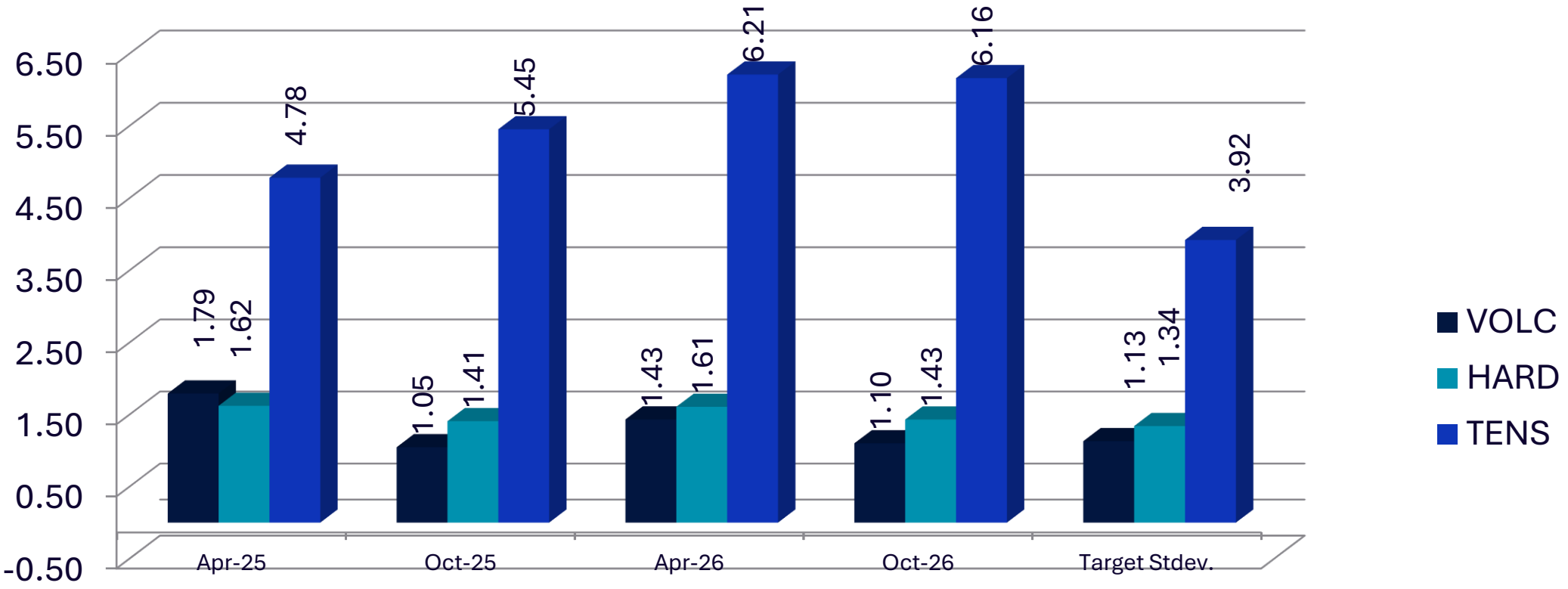
LDEOC Test Severity

Ethylene Acrylate (AEM2)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.2986	Slightly Severe
Points Hardness Change	-0.0035	On Target
Tensile Strength Change	-0.3378	Severe

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates – Ethylene Acrylate 2



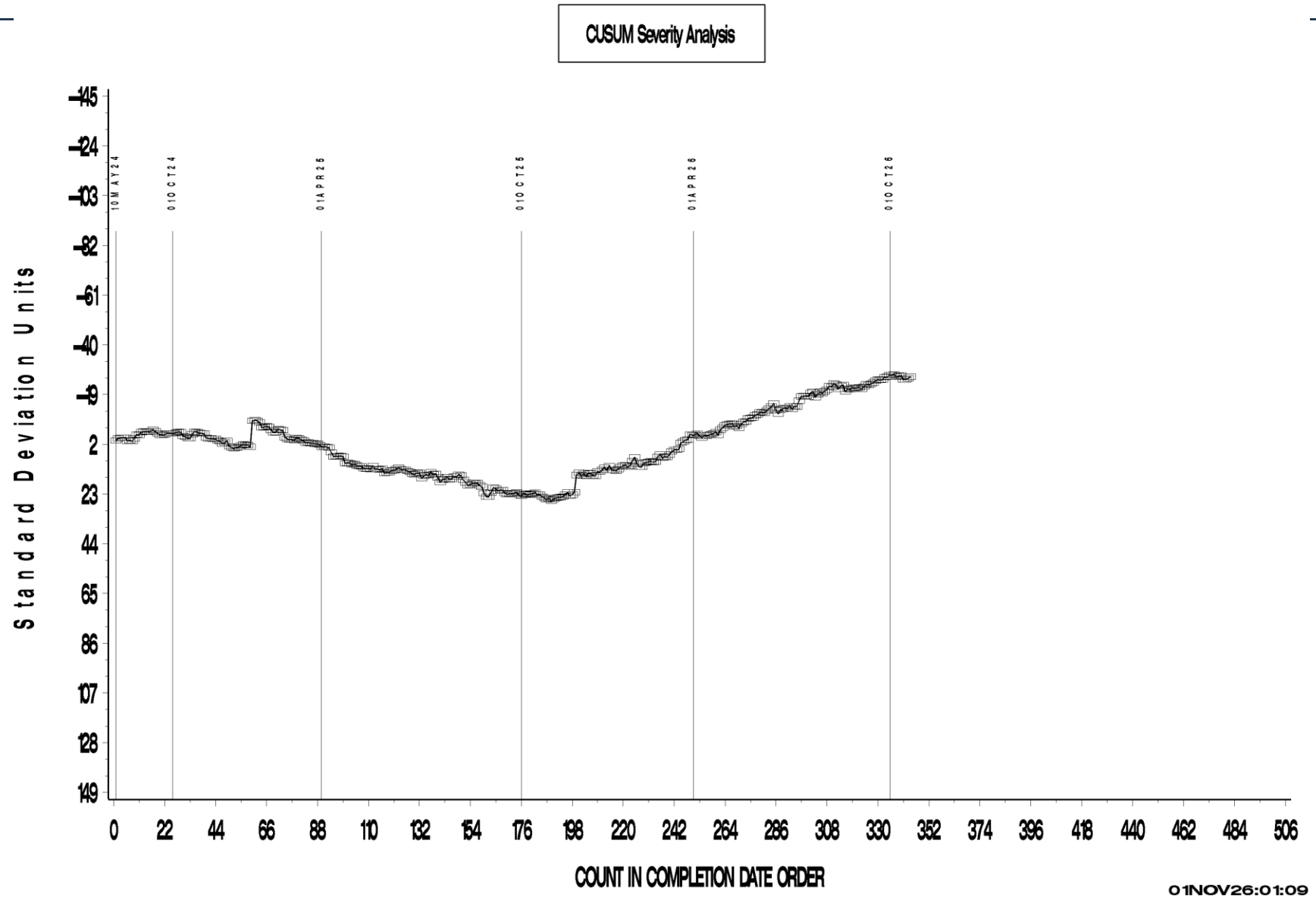
April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: AEM2

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	**22**	**10**	**3**	**25**	**9**	**5**	**1**	**10**
Volume	Mean	20.2	20.8	21.4	21.4	20.7	20.1	20.3	19.4
	Pooled s	0.50	0.85	0.92	1.35	0.70	0.43		0.53
	Mean /s	-0.65	-0.17	0.37	0.41	-0.27	-0.80	-0.64	-1.37
Hardness	Mean	-8.55	-7.10	-9.33	-7.84	-6.56	-7.00	-9.00	-7.40
	Pooled s	0.92	1.37	1.15	1.62	1.33	0.71		1.07
	Mean /s	-0.59	0.49	-1.17	-0.06	0.90	0.57	-0.93	0.27
Tensile Strength	Mean	-4236	-48.5	-40.8	-44.0	-41.1	-42.8	-34.4	-42.1
	Pooled s	4.46	4.47	5.47	8.27	3.89	2.01		5.80
	Mean /s	-0.14	-1.65	0.30	-0.51	0.23	-0.20	1.94	-0.03

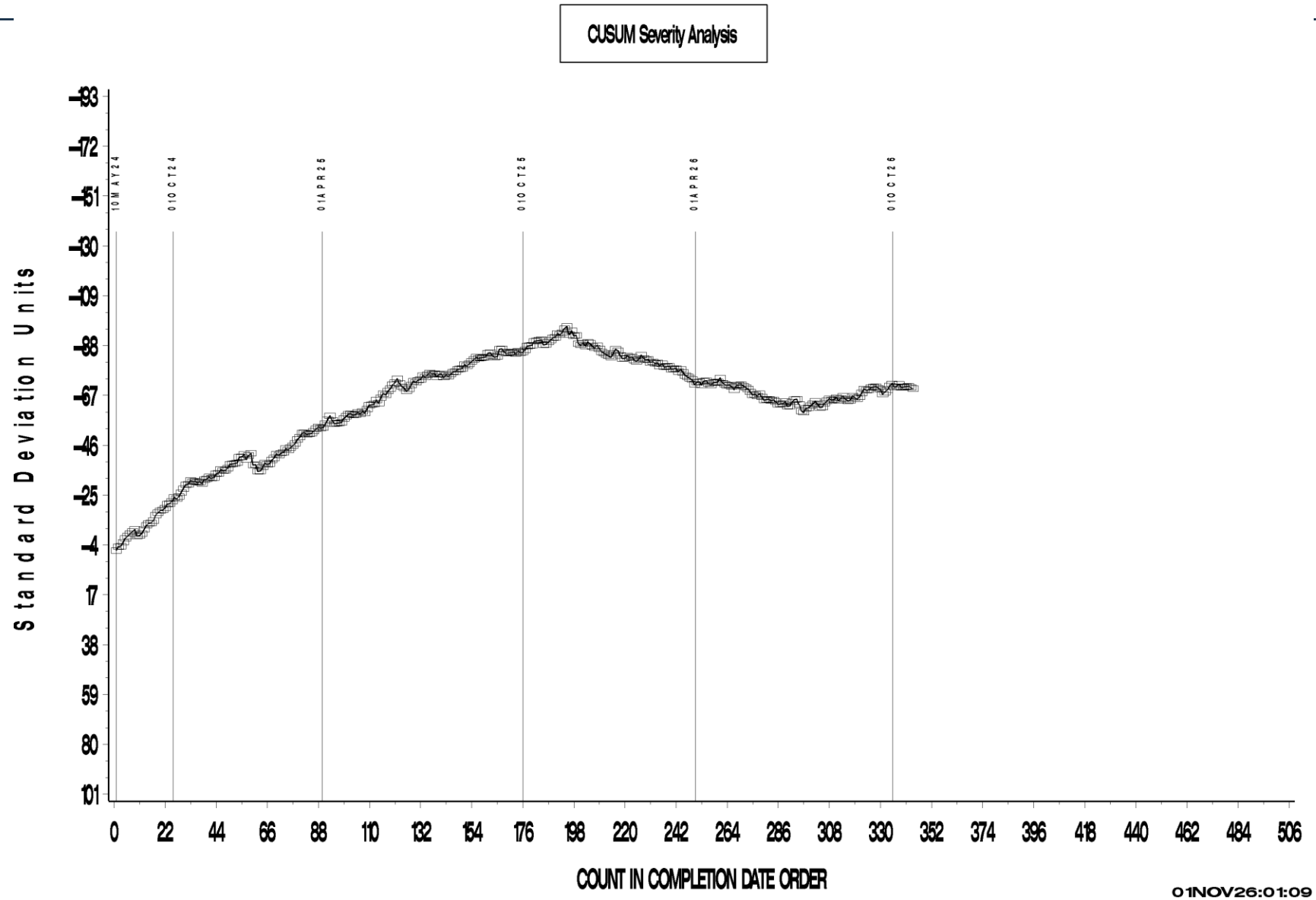
April 1, 2026 – September 30, 2026

LDEOC —ETHYLENE ACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE—2 VOLUME CHANGE FINAL



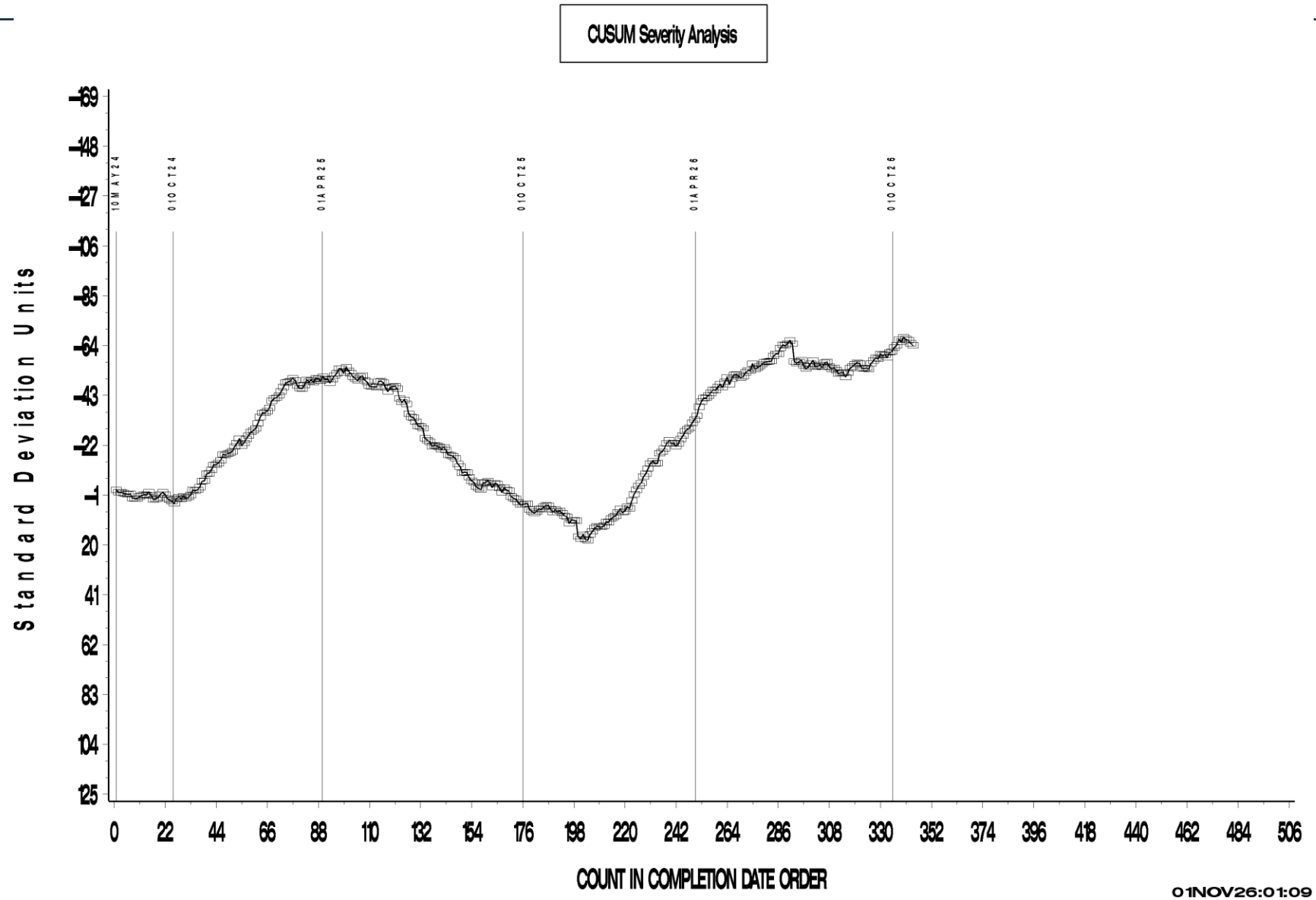
LDEOC —ETHYLENE ACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE—2 POINTS HARDNESS CHANGE AVG

TEST MONITORING CENTER



LDEOC —ETHYLENE ACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE—2 TENSILE STRENGTH CHANGE FINAL

TEST MONITORING CENTER



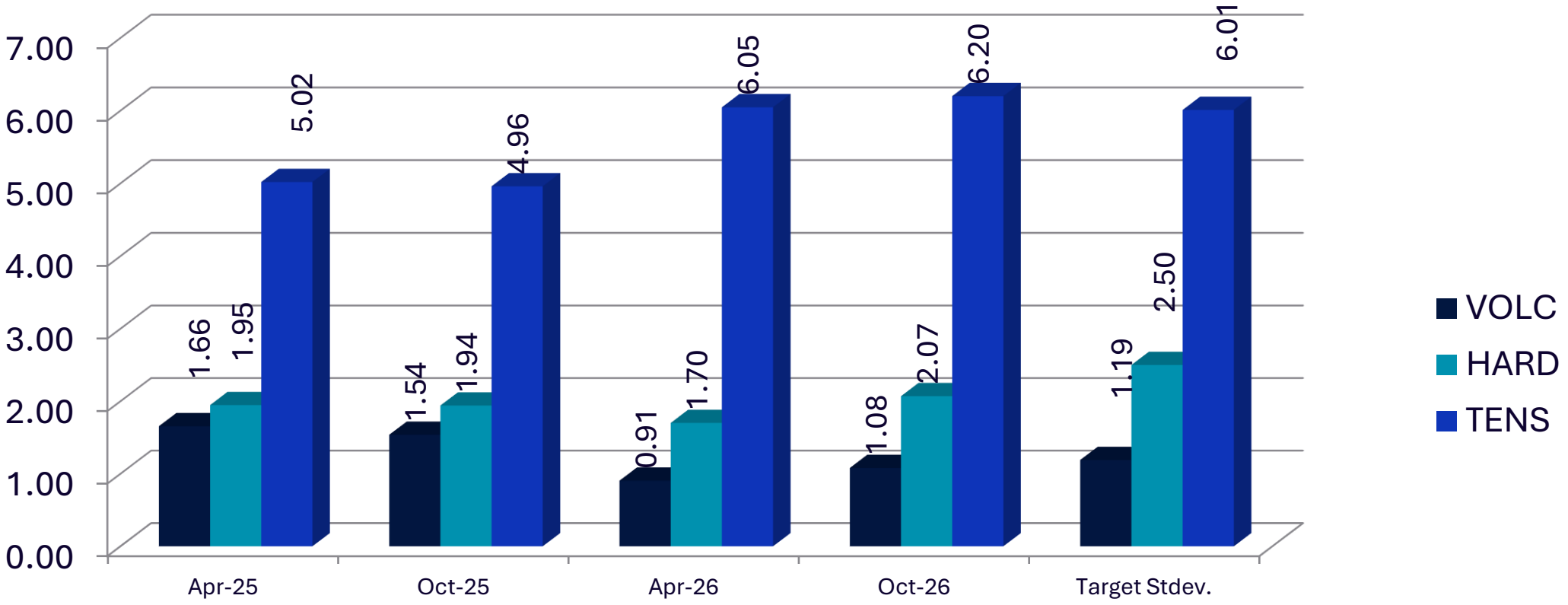
LDEOC Test Severity

Ethylene Acrylate (AEM3)

Parameter	Period Mean Δ/s	Status
Volume Change	0.0719	On Target
Points Hardness Change	0.4634	Severe
Tensile Strength Change	-1.9556	Very Mild

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates – Ethylene Acrylate 3



April 1, 2026 – September 30, 2026

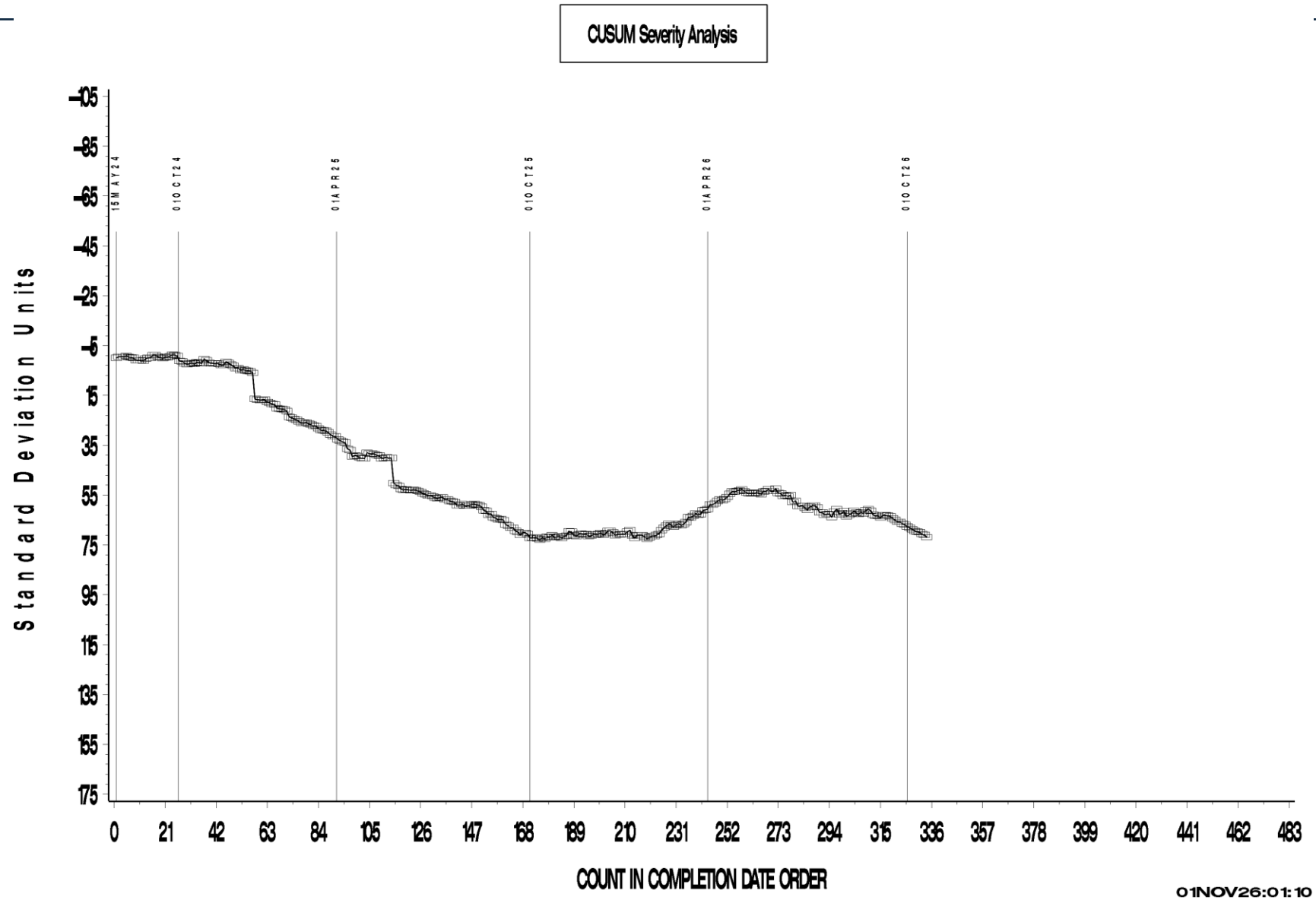
LDEOC Precision Estimates by Lab: AEM3

Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	**22**	**8**	**3**	**25**	**9**	**3**	**1**	**11**
Volume	Mean	7.98	7.80	8.77	9.06	8.14	7.83	6.94	8.34
	Pooled s	0.84	0.80	0.60	1.32	1.05	0.21		0.41
	Mean /s	-0.26	-0.41	0.41	0.65	-0.12	-0.38	-1.13	0.05
Hardness	Mean	0.45	0.62	-1.00	-0.52	2.00	1.33	3.00	1.27
	Pooled s	1.47	0.74	4.58	2.60	1.50	1.15		0.65
	Mean /s	0.36	0.43	-0.22	-0.03	0.98	0.71	1.38	0.69
Tensile Strength	Mean	-51.3	-52.6	-50.7	-49.0	-47.7	-45.5	-45.0	-50.6
	Pooled s	3.52	2.71	4.77	9.27	4.38	2.99		5.11
	Mean /s	-2.19	-2.41	-2.09	-1.79	-1.58	-1.22	-1.14	-2.07

April 1, 2026 – September 30, 2026

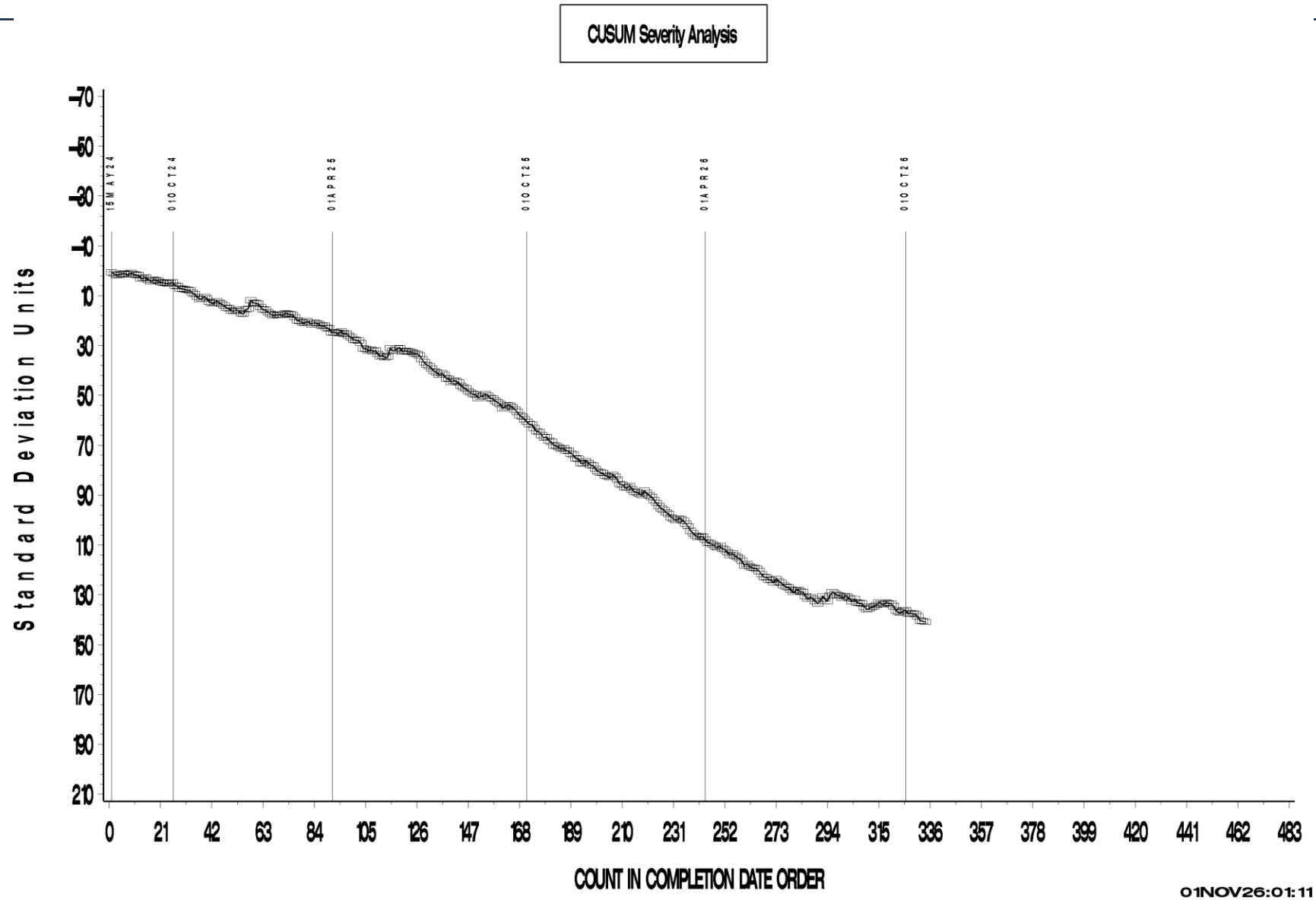
LDEOC —ETHYLENE ACRYLATE3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE—3 VOLUME CHANGE FINAL

TEST MONITORING CENTER

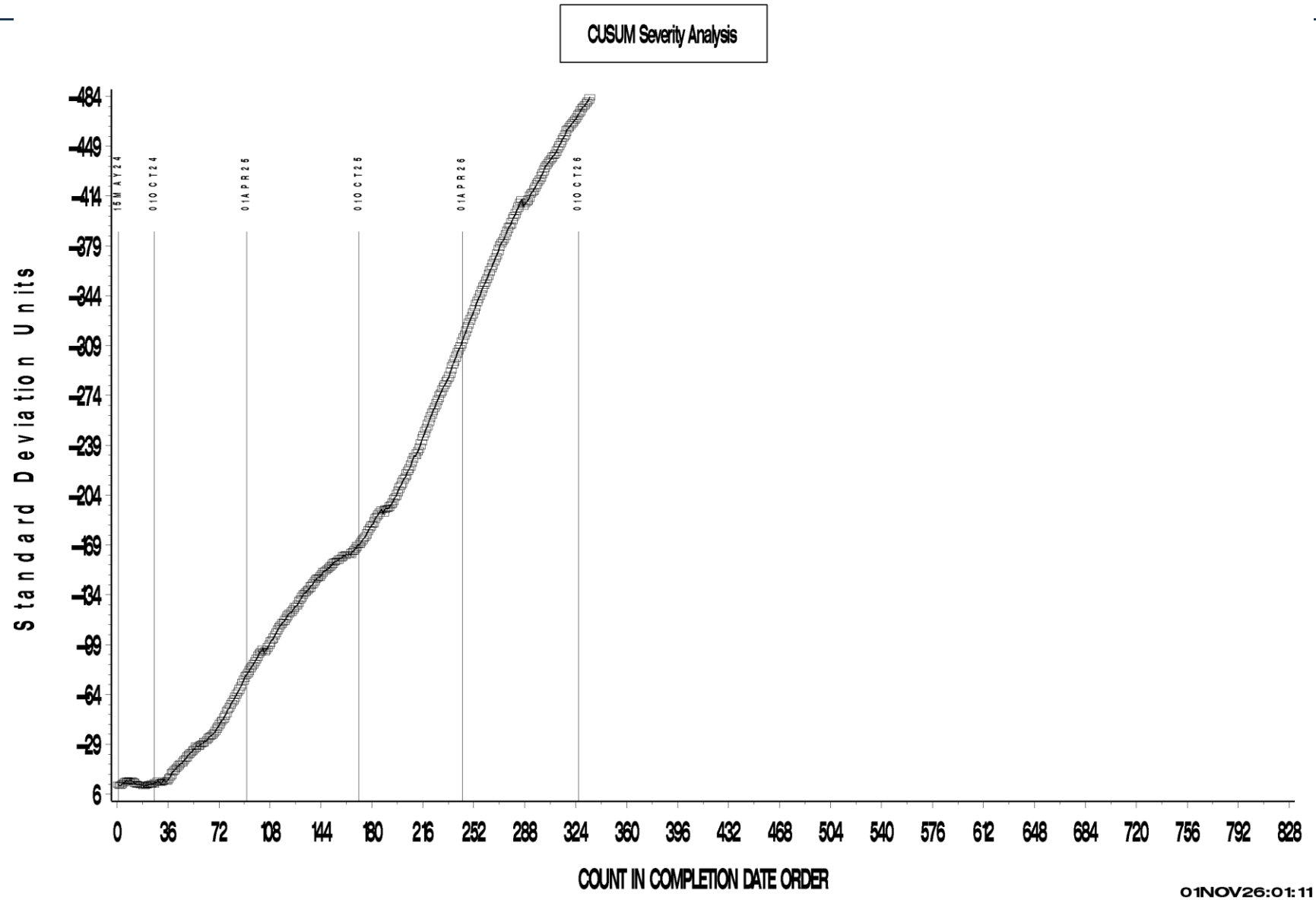


LDEOC —ETHYLENE ACRYLATE3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE —3 POINTS HARDNESS CHANGE AVG

TEST MONITORING CENTER



LDEOC —ETHYLENE ACRYLATE3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE ETHYLENE ACRYLATE—3 TENSILE STRENGTH CHANGE FINAL



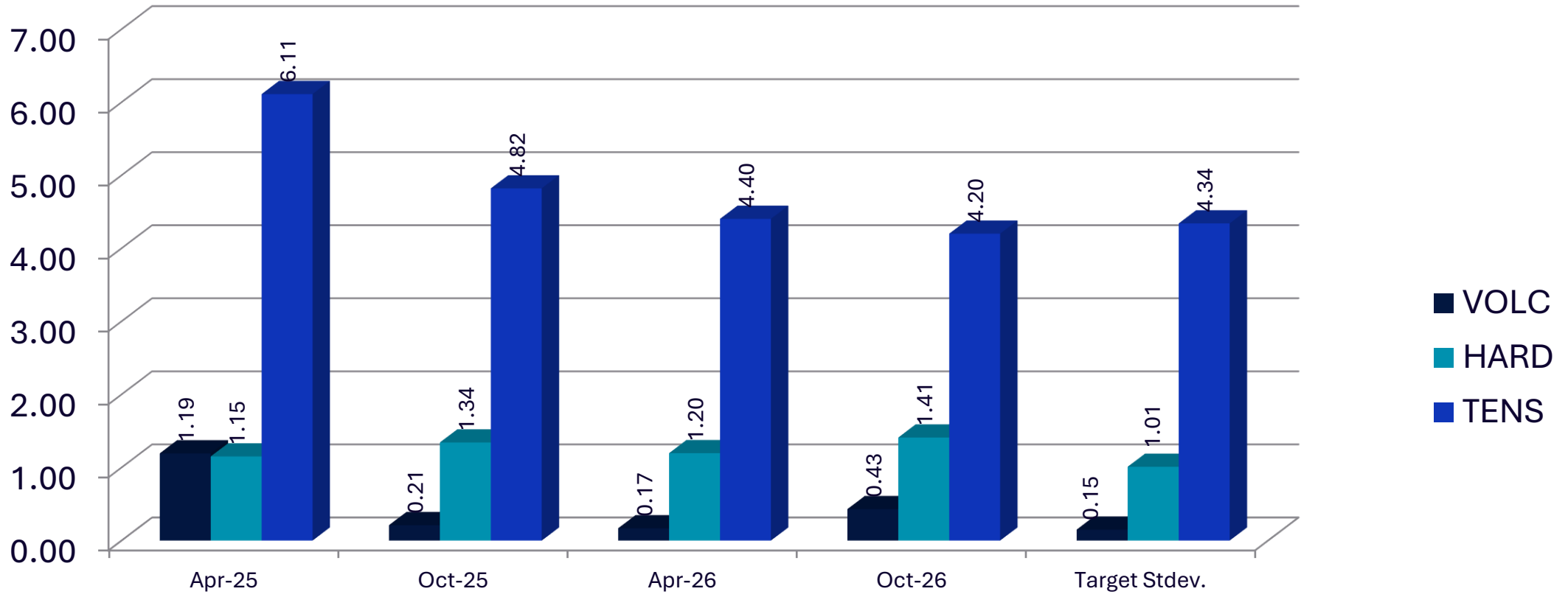
LDEOC Test Severity

Fluoroelastomer (FKM1)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.7613	Mild
Points Hardness Change	0.4144	Severe
Tensile Strength Change	-0.0395	On Target

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates - Fluoroelastomer



April 1, 2026 – September 30, 2026

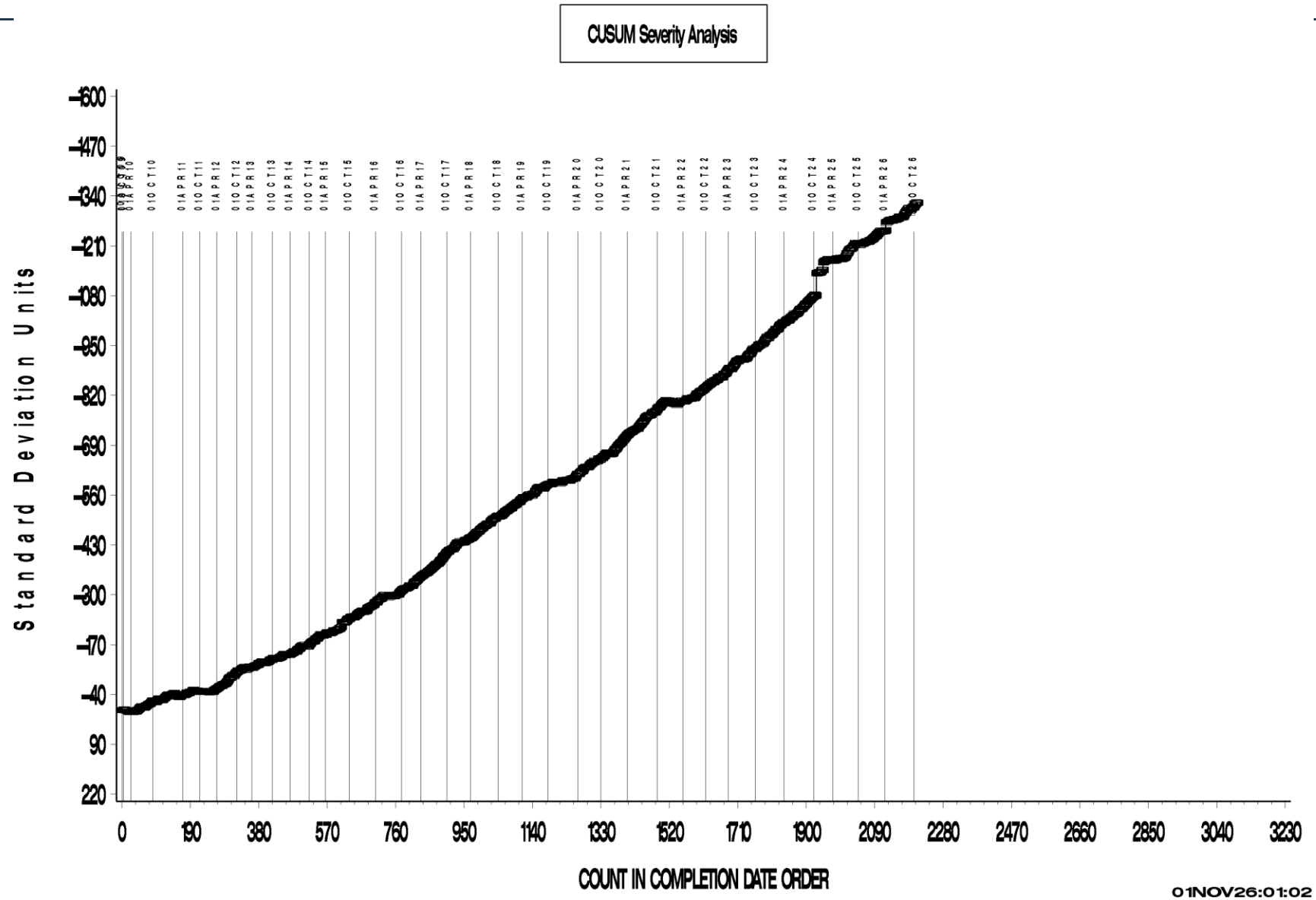
LDEOC Precision Estimates by Lab: FKM1

Test Parameter	Statistic	LTMS Lab*								
		A	B	BB	G	I	K	L	P	V
	n=	**23**	**7**	**3**	**25**	**9**	**0**	**4**	**0**	**10**
Volume	Mean	0.54	0.47	0.70	0.54	0.65		0.51		0.66
	Pooled s	0.14	0.28	0.21	0.70	0.41		0.04		0.17
	Mean /s	-0.92	-1.42	0.13	-0.94	-0.19		-1.13		-0.13
Hardness	Mean	4.86	4.00	3.00	3.92	4.44		4.50		6.20
	Pooled s	0.83	1.29	1.00	1.68	1.24		0.58		0.42
	Mean /s	0.72	-0.10	-1.09	-0.18	0.34		0.40		2.08
Tensile Strength	Mean	-58.0	-59.4	-62.1	-57.1	-50.8		-57.6		-61.2
	Pooled s	2.53	1.82	1.89	4.78	1.70		1.11		1.96
	Mean /s	-0.15	-0.45	-1.09	0.07	1.52		-0.03		-0.88

April 1, 2026 – September 30, 2026

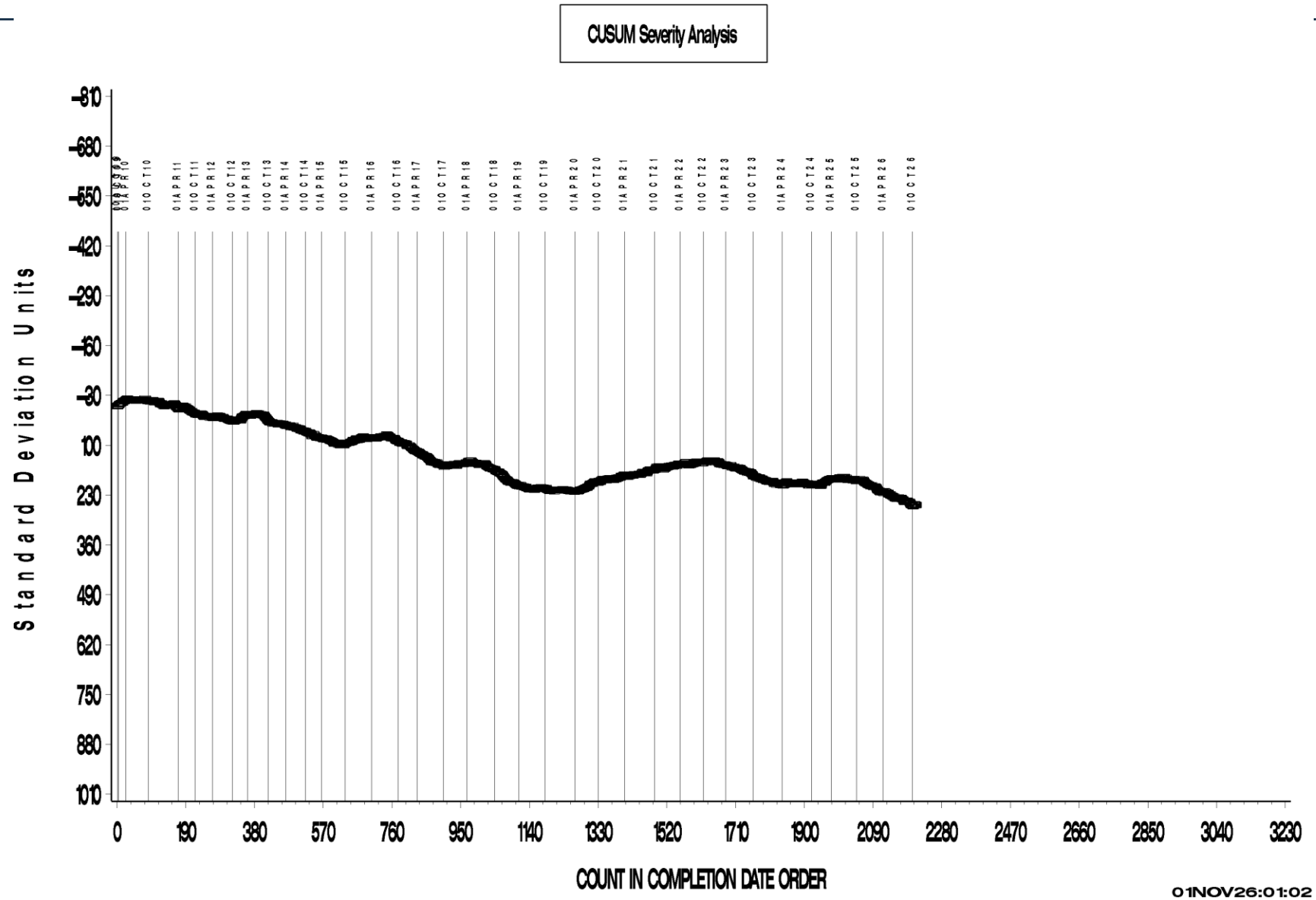
LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER



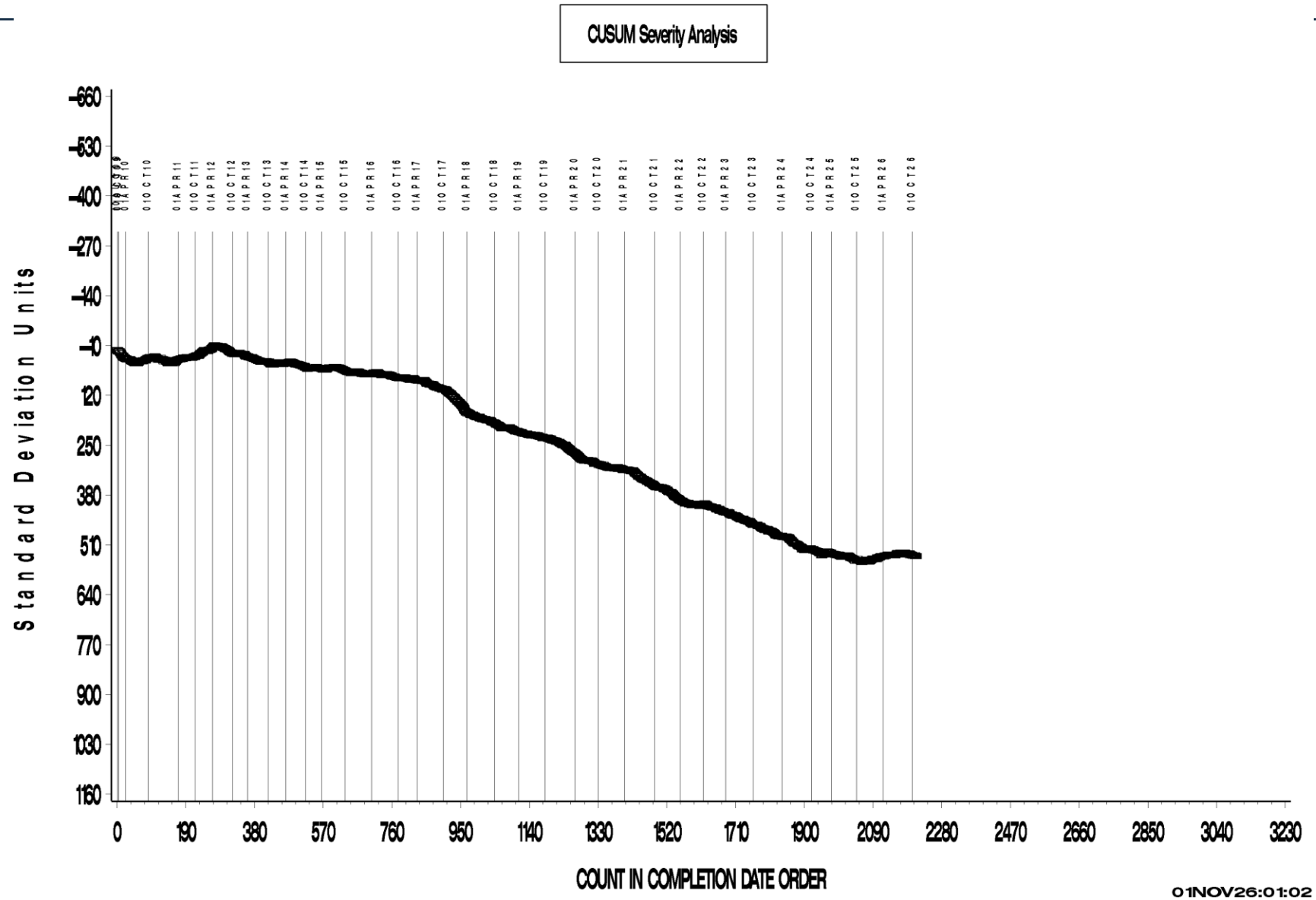
LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER POINTS HARDNESS CHANGE FINAL

TMC TEST MONITORING CENTER



LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER TENSILE STRENGTH CHANGE FINAL

TMC TEST MONITORING CENTER



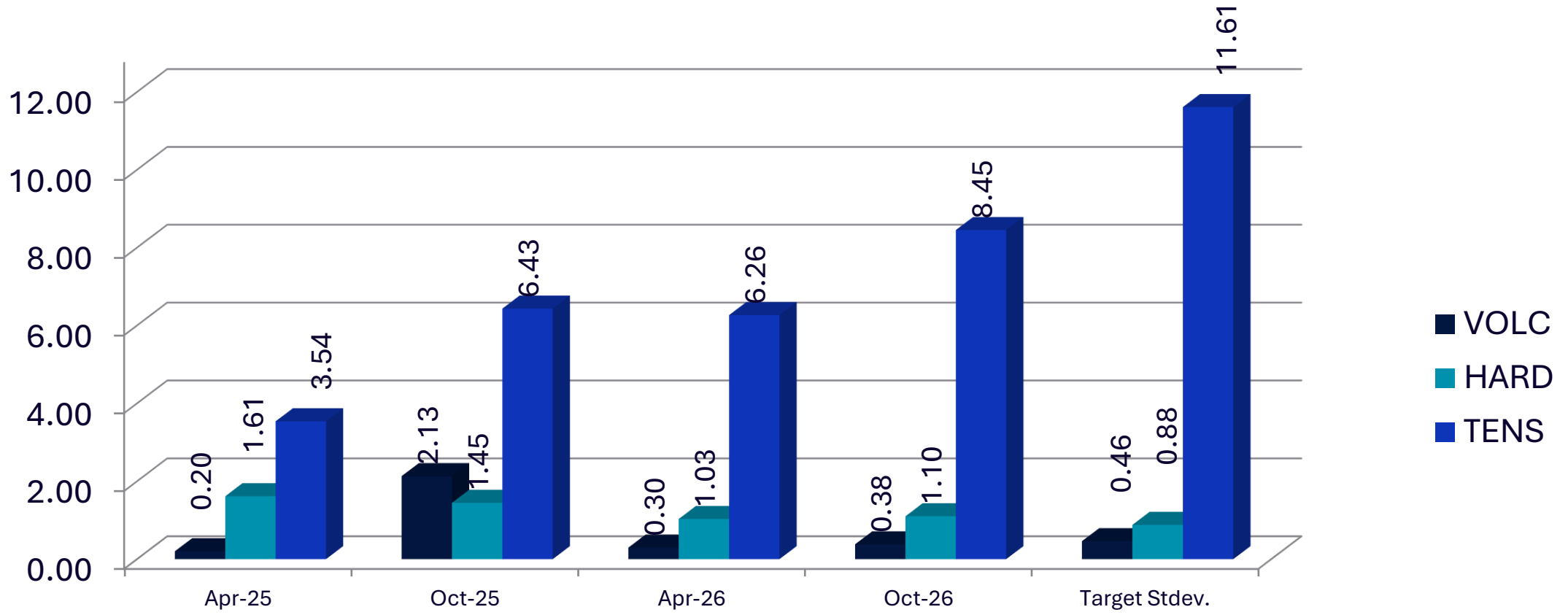
LDEOC Test Severity

Fluoroelastomer (FKM3)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.1256	Slightly Mild
Points Hardness Change	0.0789	On Target
Tensile Strength Change	-0.2929	Slightly Severe

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates – Fluoroelastomer3



April 1, 2026 – September 30, 2026

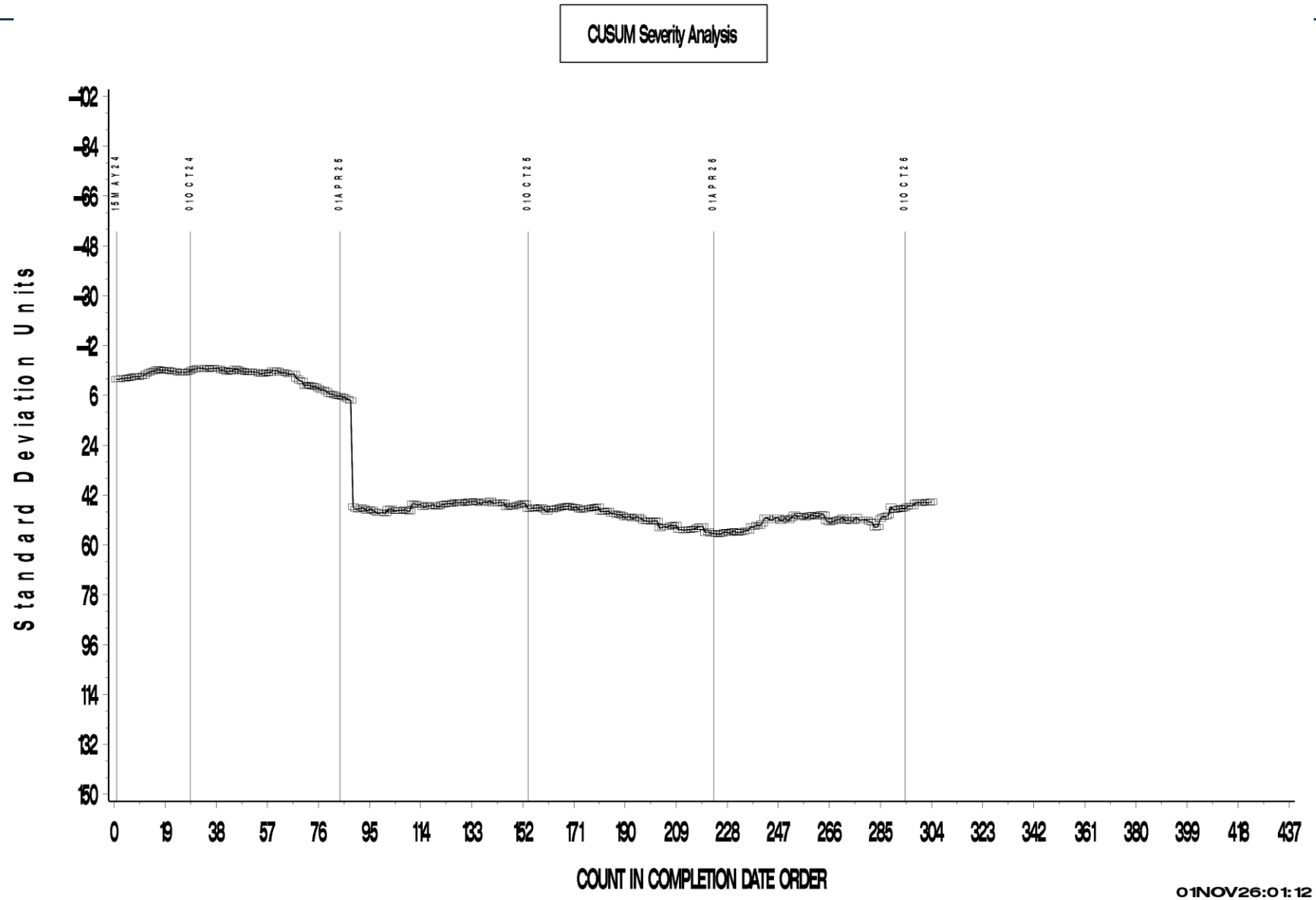
LDEOC Precision Estimates by Lab: FKM3

Test Parameter	Statistic	LTMS Lab*							
		A	B	BB	G	I	L	P	V
	n=	**21**	**7**	**3**	**19**	**9**	**2**	**1**	**10**
Volume	Mean	0.70	0.79	0.71	0.63	0.50	0.68	0.66	0.89
	Pooled s	0.14	0.18	0.79	0.44	0.67	0.2		0.14
	Mean /s	-0.11	0.09	-0.09	-0.25	-0.54	-0.16	-0.20	0.31
Hardness	Mean	4.14	4.00	2.67	3.47	4.33	3.00	4.00	5.50
	Pooled s	0.79	0.58	0.58	1.07	1.22	0.00		0.53
	Mean /s	0.16	0.00	-1.52	-0.60	0.38	-1.14	0.00	1.70
Tensile Strength	Mean	-58.1	-56.8	-58.4	-44.0	-50.9	-58.2	-45.2	-62.5
	Pooled s	4.89	2.86	5.37	8.00	2.18	1.41		1.44
	Mean /s	-0.66	-0.55	-0.69	0.55	-0.04	-0.67	0.45	-1.04

April 1, 2026 – September 30, 2026

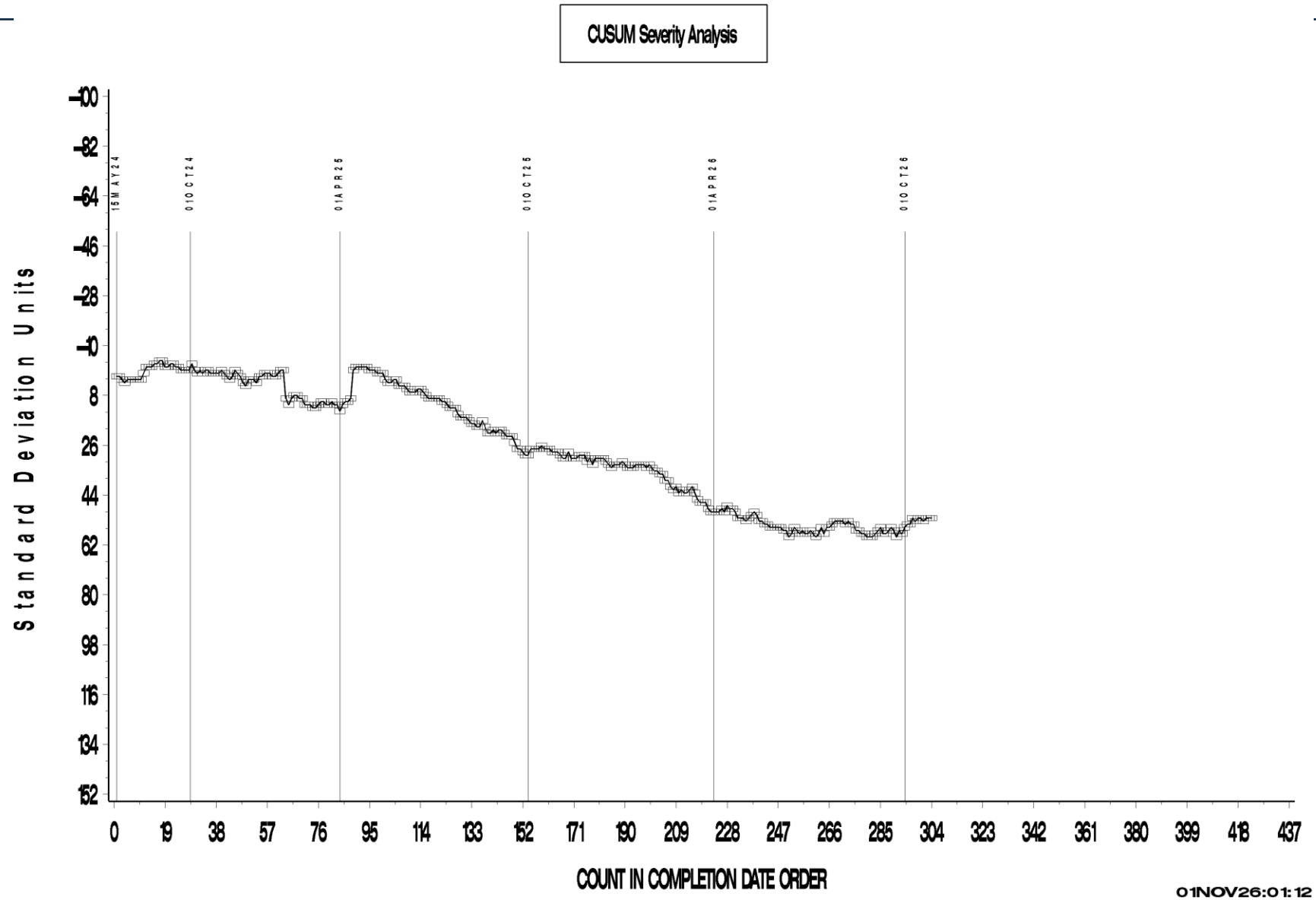
LDEOC —FLUOROELASTOMER3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER—3 VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER

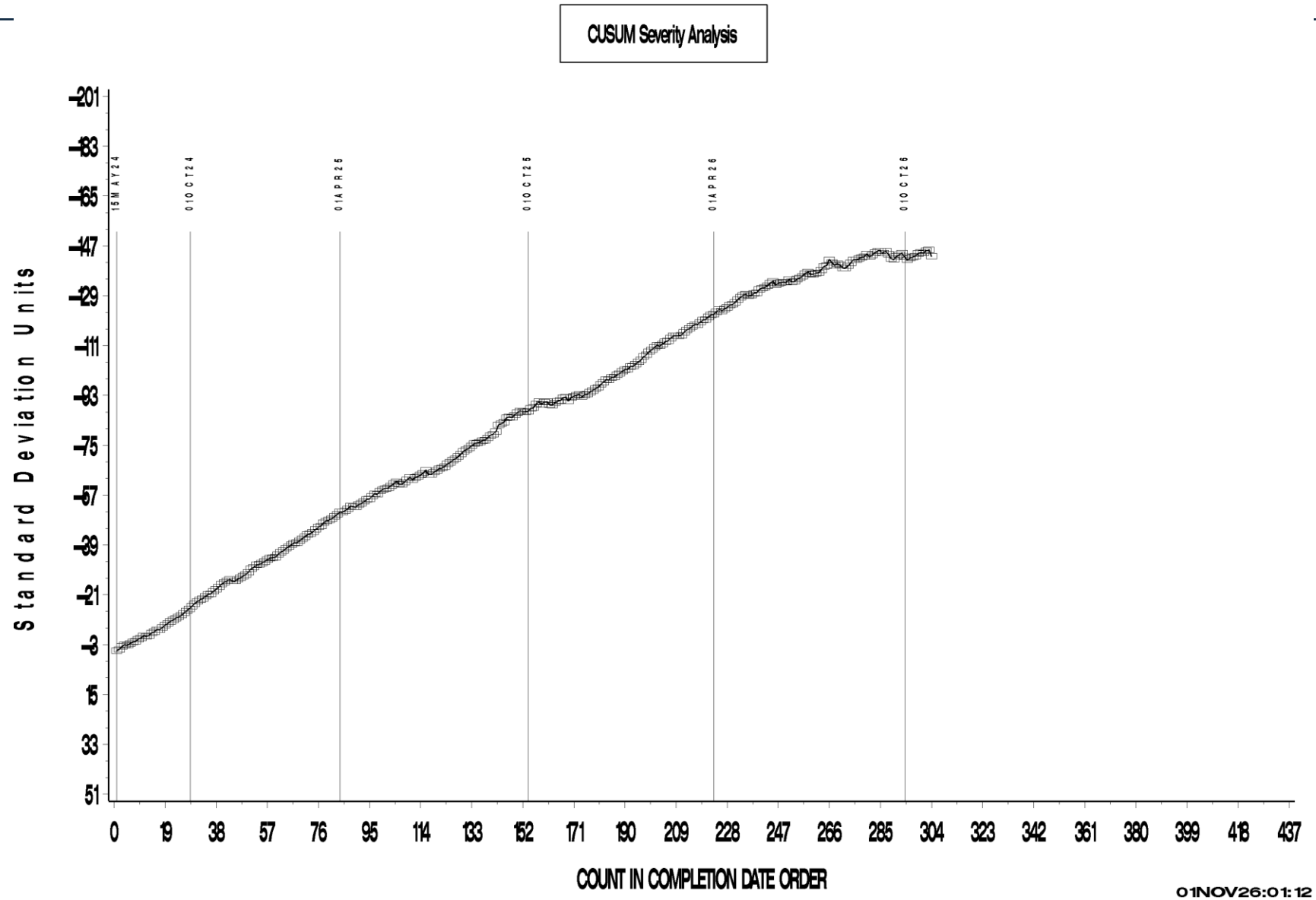


LDEOC —FLUOROELASTOMER3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER—3 POINTS HARDNESS CHANGE AVG

TEST MONITORING CENTER



LDEOC —FLUOROELASTOMER3 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE FLUOROELASTOMER—3 TENSILE STRENGTH CHANGE FINAL



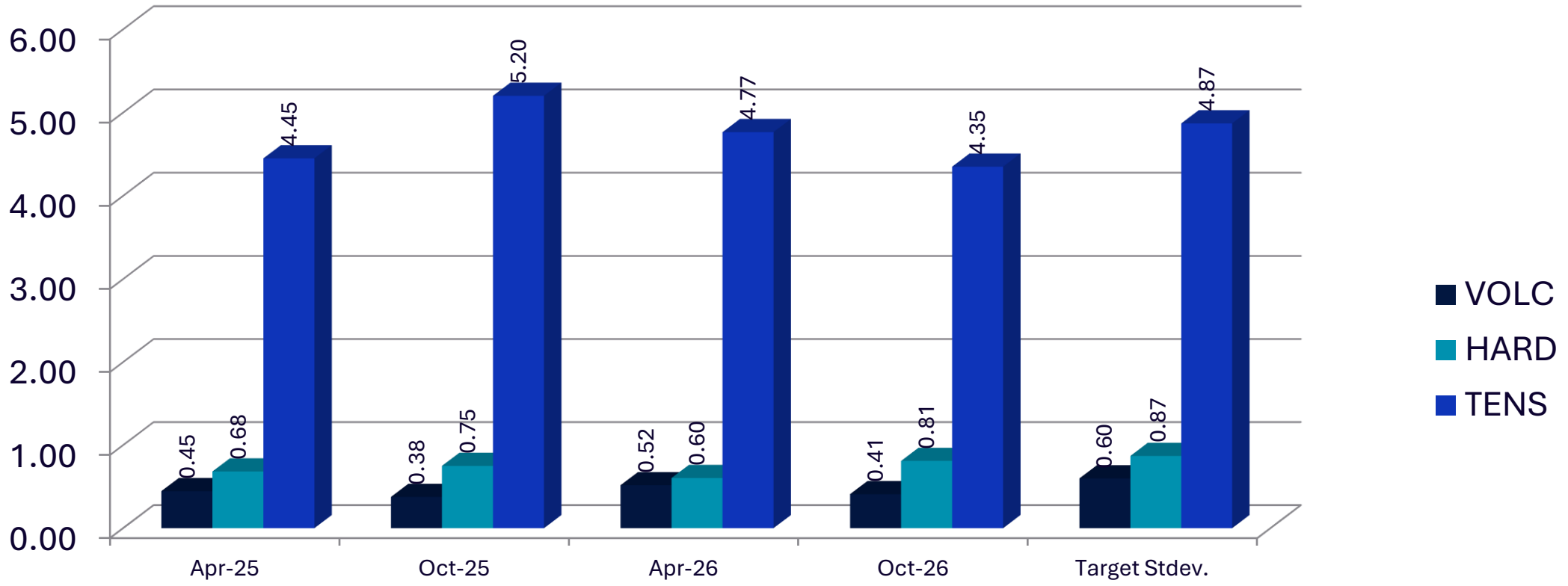
LDEOC Test Severity

Nitrile (NBR1)

Parameter	Period Mean Δ/s	Status
Volume Change	1.7930	Very Severe
Points Hardness Change	-0.4624	Mild
Tensile Strength Change	-0.5672	Mild

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates - Nitrile



April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: NBR1

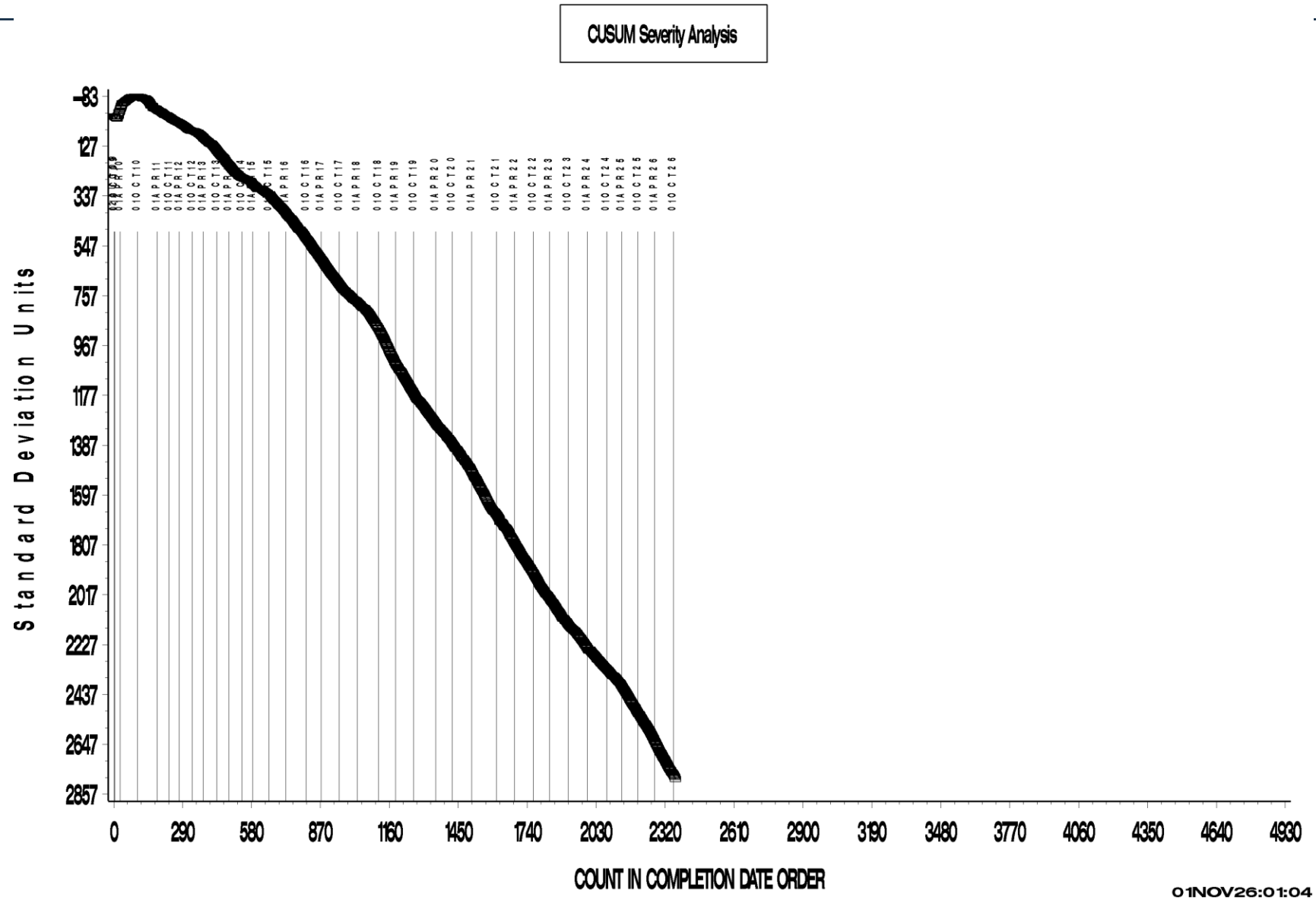
Test Parameter	Statistic	40LTMS Lab								
		A	B	BB	G	I	K	L	P	V
	n=	**23**	**6**	**3**	**26**	**9**	**0**	**7**	**0**	**5**
Volume	Mean	1.40	1.48	0.93	1.38	1.68		1.04		1.60
	Pooled s	0.11	0.15	0.10	0.58	0.44		0.20		0.12
	Mean /s	1.80	1.94	1.02	1.77	2.26		1.20		2.13
Hardness	Mean	-1.39	-1.00	-1.67	-2.12	-1.22		-1.29		-1.40
	Pooled s	0.72	0.89	0.58	0.59	1.09		0.76		0.55
	Mean /s	-0.24	0.21	-0.560.66	-1.08	-0.05		-0.12		-0.25
Tensile Strength	Mean	3.36	0.67	-0.83	4.48	1.91		3.93		2.68
	Pooled s	4.08	2.81	2.36	5.72	2.52		1.78		2.44
	Mean /s	-0.54	-1.09	-1.40	-0.31	-0.83		-0.42		-0.68

April 1, 2026 – September 30, 2026

LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE NITRILE VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

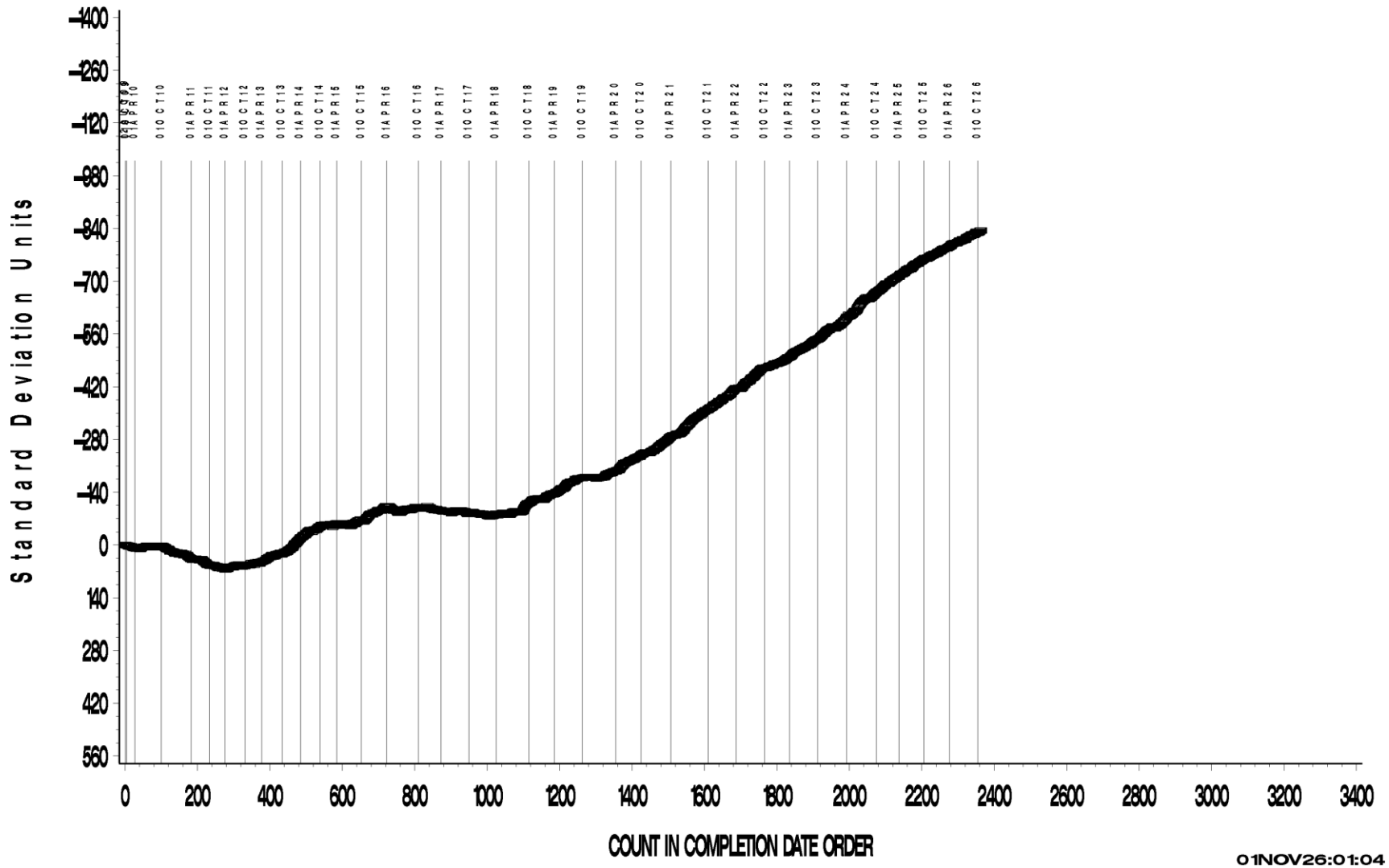


LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE NITRILE POINTS HARDNESS CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



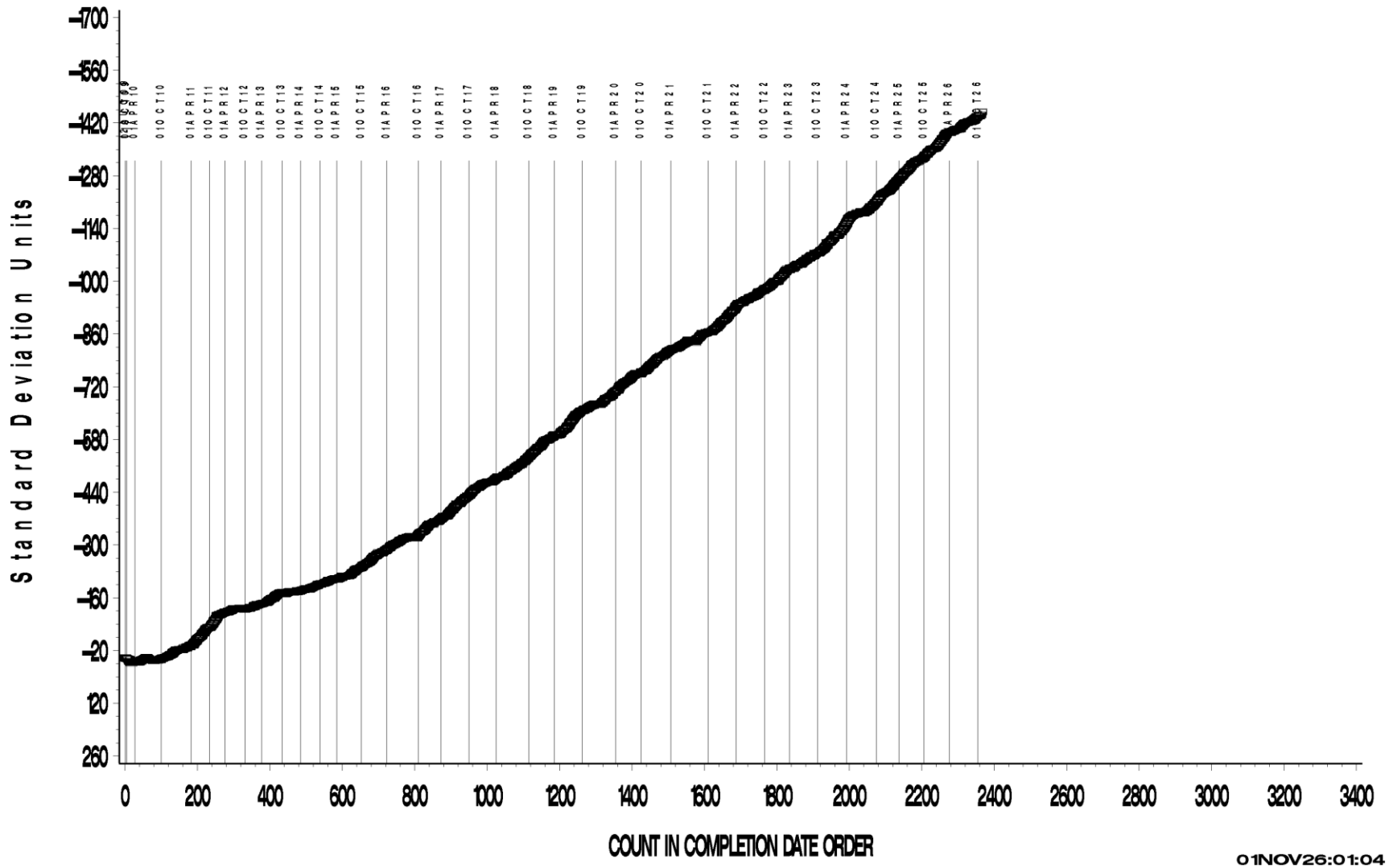
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LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE NITRILE TENSILE STRENGTH CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



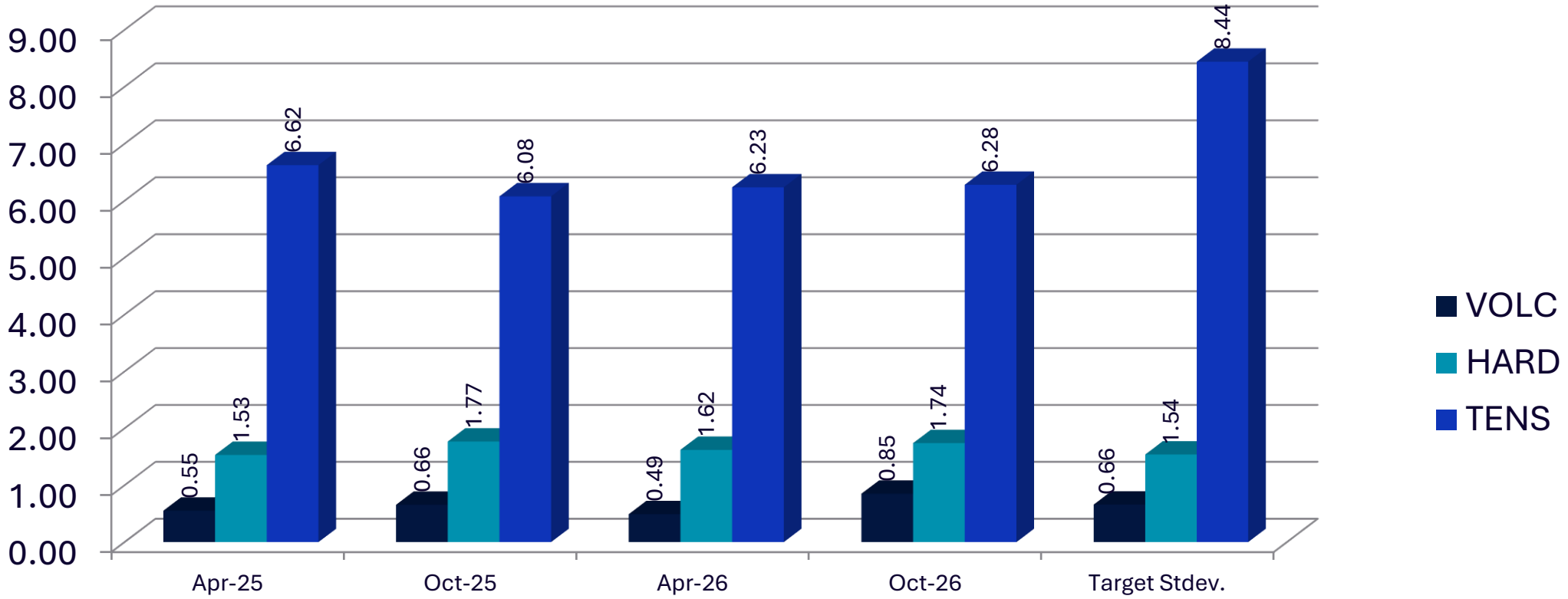
LDEOC Test Severity

Polyacrylate (ACM1)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.1787	Mild
Points Hardness Change	-1.2194	Very Mild
Tensile Strength Change	-0.9911	Very Mild

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates - Polyacrylate



April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: ACM1

Test Parameter	Statistic	LTMS Lab								
		A	B	BB	G	I	K	L	P	V
	n=	**24**	**6**	**3**	**31**	**11**	**1**	**5**	**1**	**9**
Volume	Mean	1.81	2.07	2.24	1.79	2.79	2.17	1.64	1.64	1.66
	Pooled s	0.29	0.9	0.54	1.26	0.54		0.10		0.45
	Mean /s	-0.37	0.03	0.29	-0.39	1.12	0.18	-0.62	-0.62	-0.59
Hardness	Mean	-2.71	-1.83	-1.67	-1.71	-1.73	-4.00	-1.20	-2.00	-2.78
	Pooled s	0.95	2.23	0.58	2.08	0.91		0.84		2.64
	Mean /s	-1.62	-1.05	-0.95	-0.97	-0.99	-2.46	-0.64	-1.16	-1.67
Tensile Strength	Mean	-2.87	-3.02	-0.93	-12.2	-3.56	-6.80	0.34	-7.10	-0.63
	Pooled s	3.15	4.88	4.80	5.20	2.53		2.10		4.59
	Mean /s	-0.65	-0.66	-0.42	-1.76	-0.73	-1.11	-0.27	-1.15	-0.38

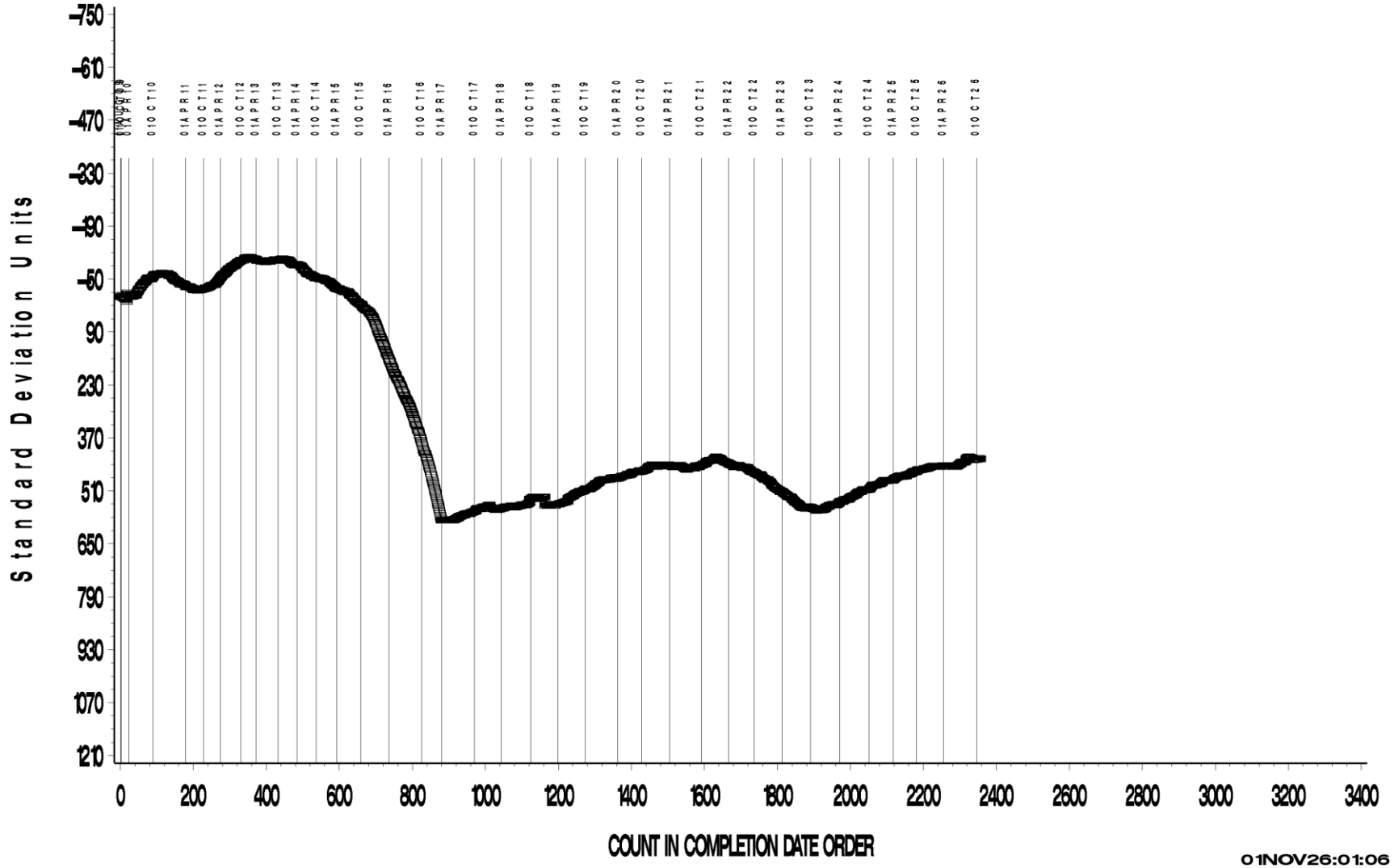
April 1, 2026 – September 30, 2026

LDEOC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis

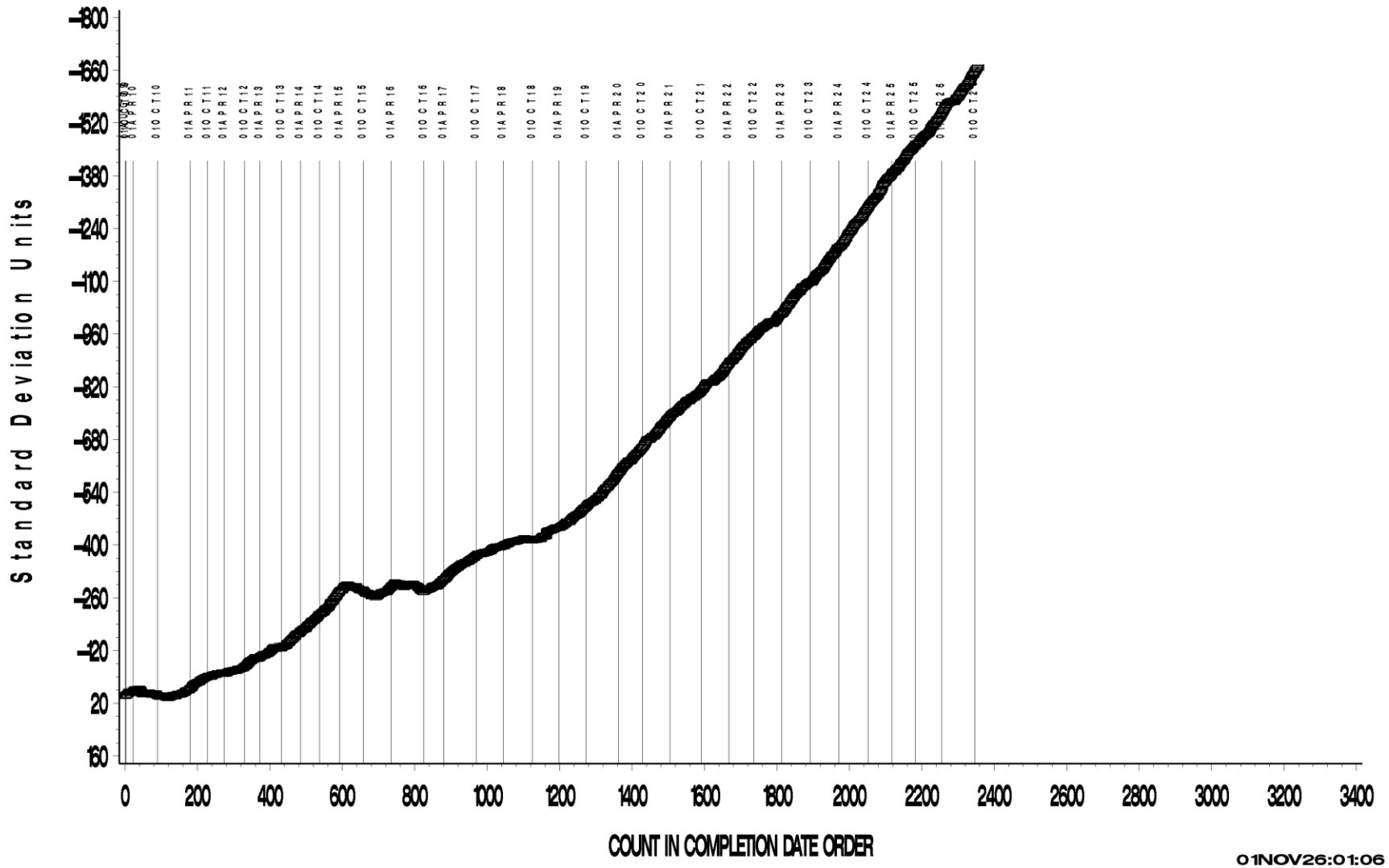


LDEOC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE POINTS HARDNESS CHG FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



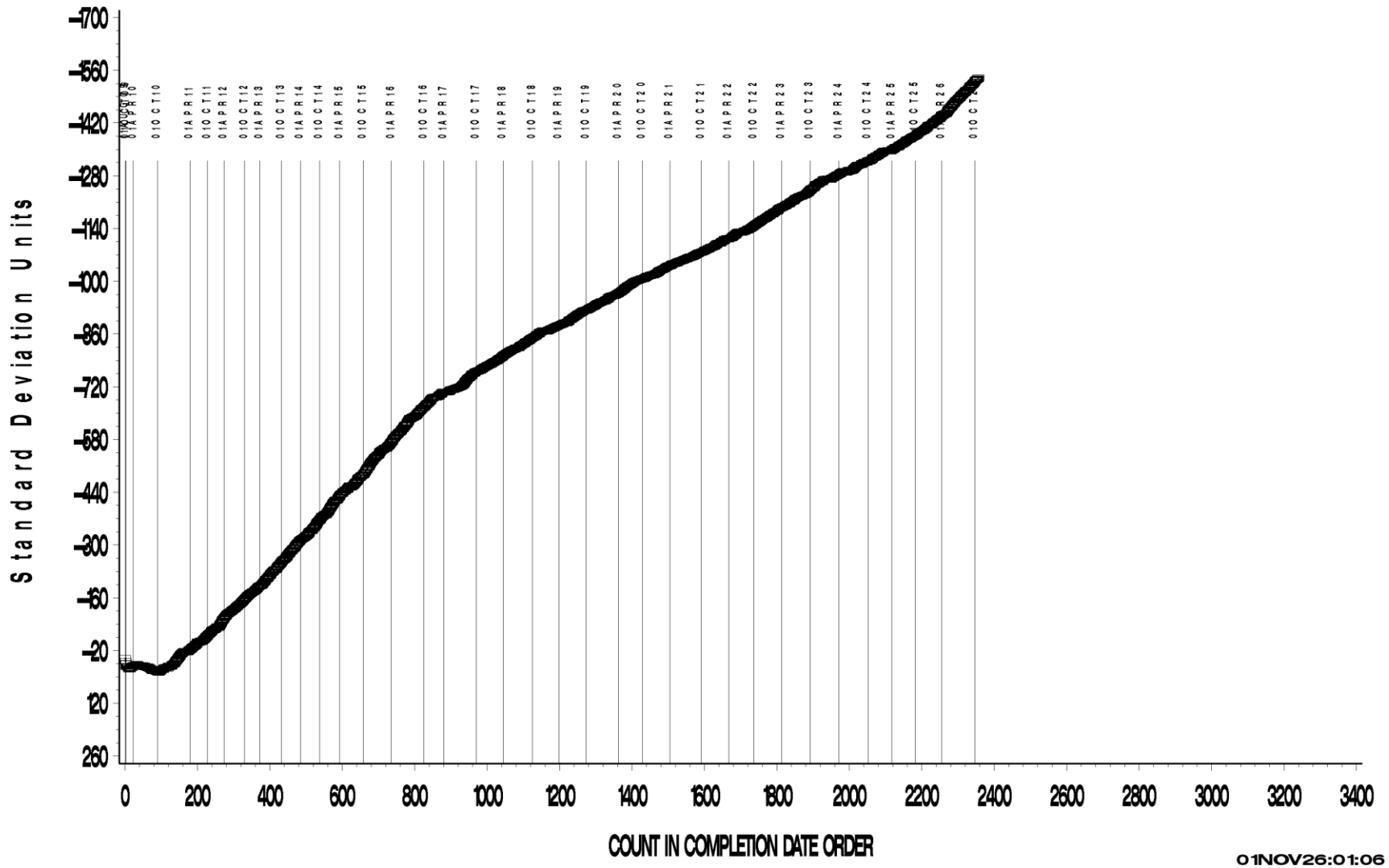
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LDEOC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE TENSILE STRENGTH CHG FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



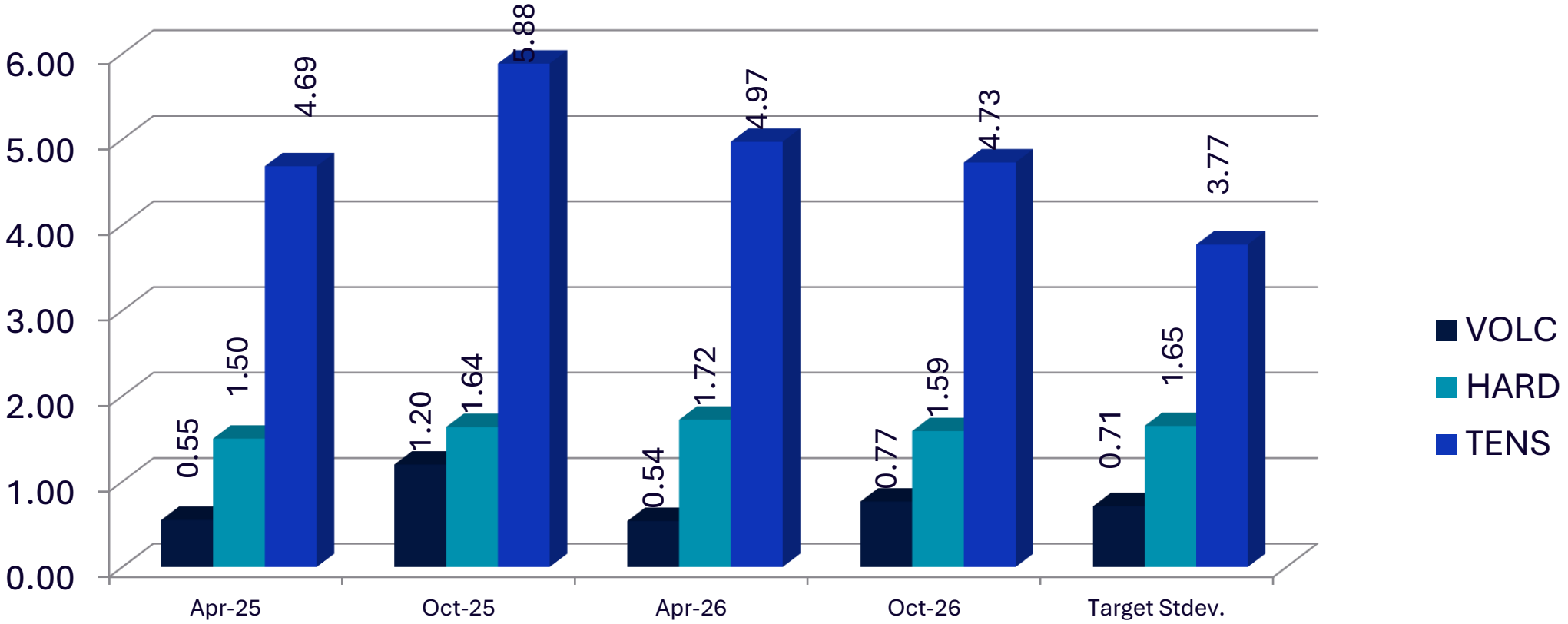
LDEOC Test Severity

Polyacrylate (ACM2)

Parameter	Period Mean Δ/s	Status
Volume Change	1.6487	Very Severe
Points Hardness Change	-1.9115	Very Mild
Tensile Strength Change	0.0961	On Target

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates – Polyacrylate2



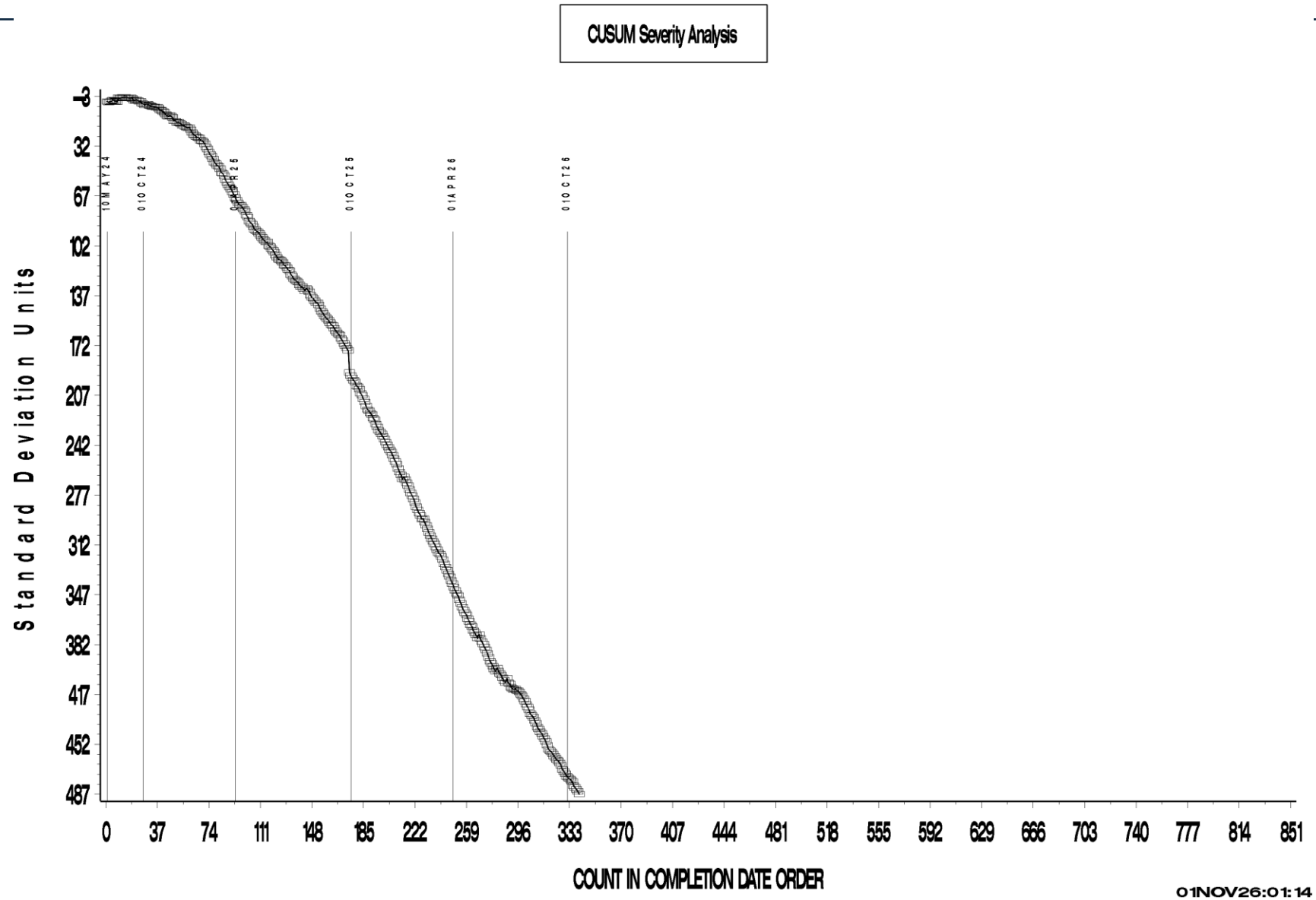
April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: ACM2

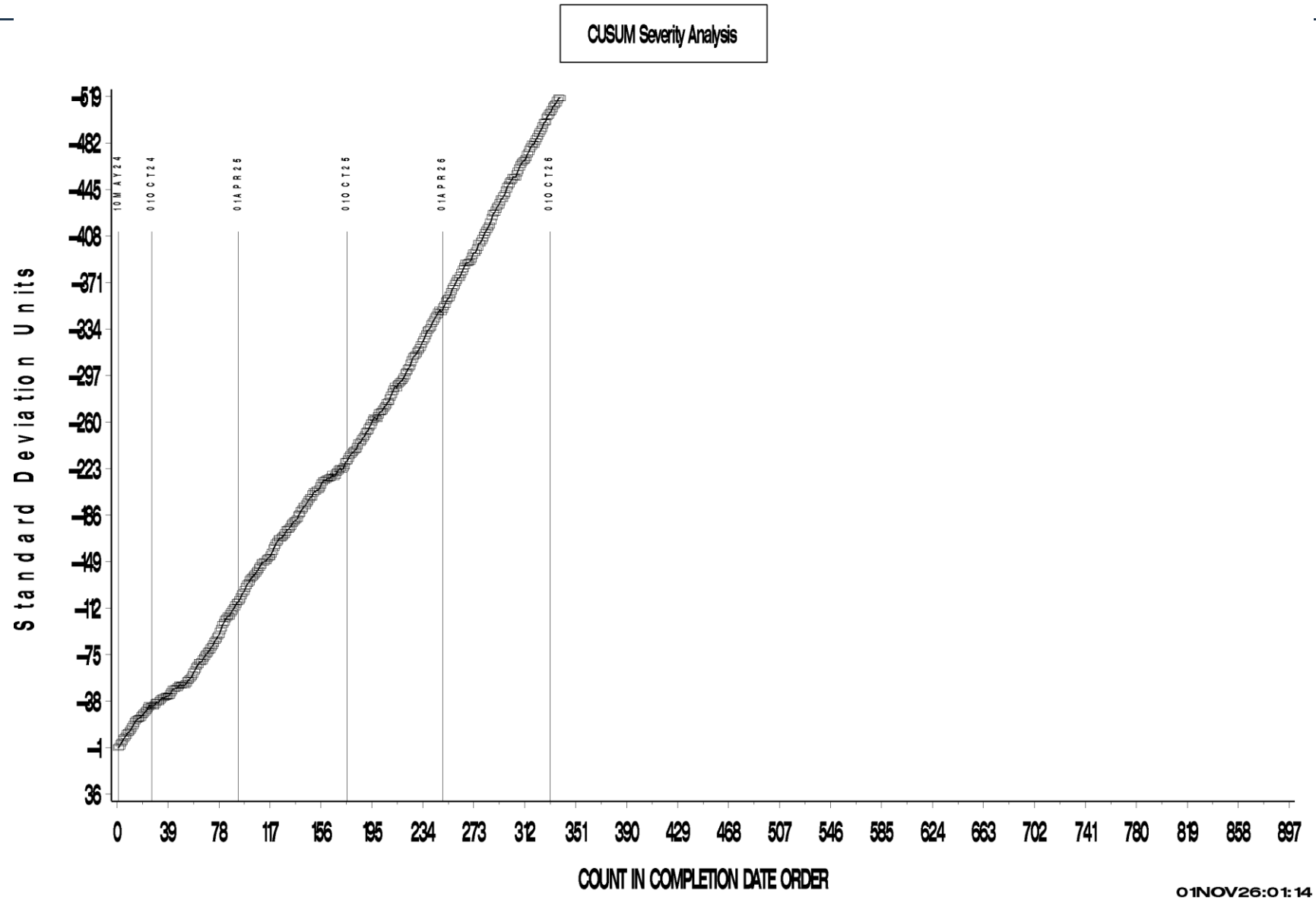
Test Parameter	Statistic	LTMS Lab							
		A	B	BB	G	I	L	P	V
	n=	**23**	**8**	**3**	**24**	**9**	**5**	**1**	**9**
Volume	Mean	12.2	12.1	11.4	11.9	13.0	11.8	12.6	11.9
	Pooled s	0.39	0.23	0.75	1.13	0.20	0.14		0.48
	Mean /s	1.82	1.69	0.61	1.34	2.84	1.18	2.35	1.31
Hardness	Mean	-6.17	-5.62	-4.67	-4.42	-4.11	-5.00	-4.00	-6.33
	Pooled s	1.07	0.52	3.21	1.72	1.62	0.00		0.87
	Mean /s	-2.48	-2.14	-1.56	-1.41	-1.22	-1.76	-1.16	-2.57
Tensile Strength	Mean	-11.7	-14.6	-19.8	-16.1	-11.6	-12.7	-11.4	-12.8
	Pooled s	3.98	4.26	4.21	5.64	1.76	1.65		4.04
	Mean /s	0.64	-0.15	-1.50	-0.53	0.66	0.37	0.72	0.35

April 1, 2026 – September 30, 2026

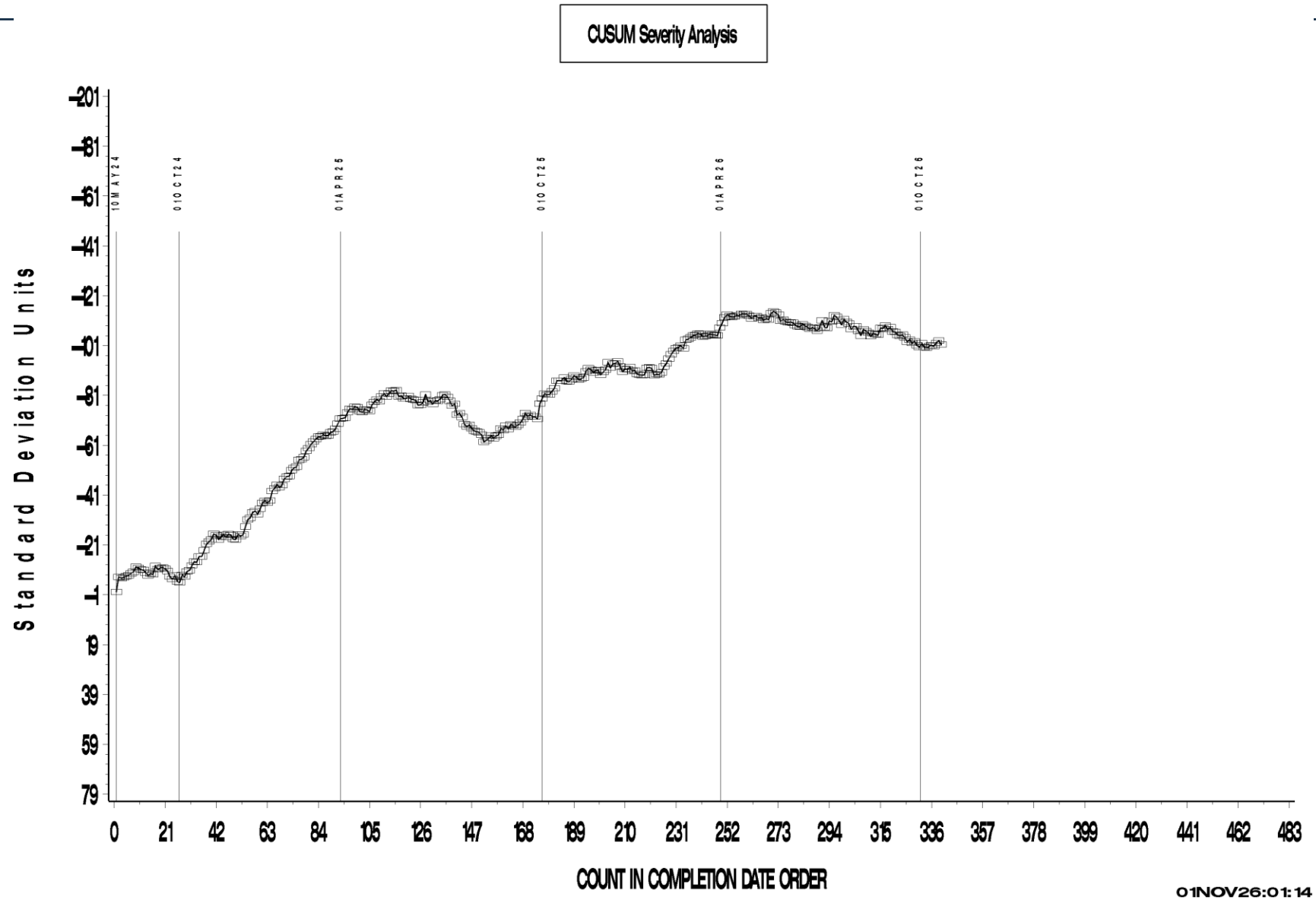
LDEOC —POLYACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE—2 VOLUME CHANGE FINAL



LDEOC —POLYACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE—2 POINTS HARDNESS CHANGE AVG



LDEOC —POLYACRYLATE2 INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE POLYACRYLATE—2 TENSILE STRENGTH CHANGE FINAL



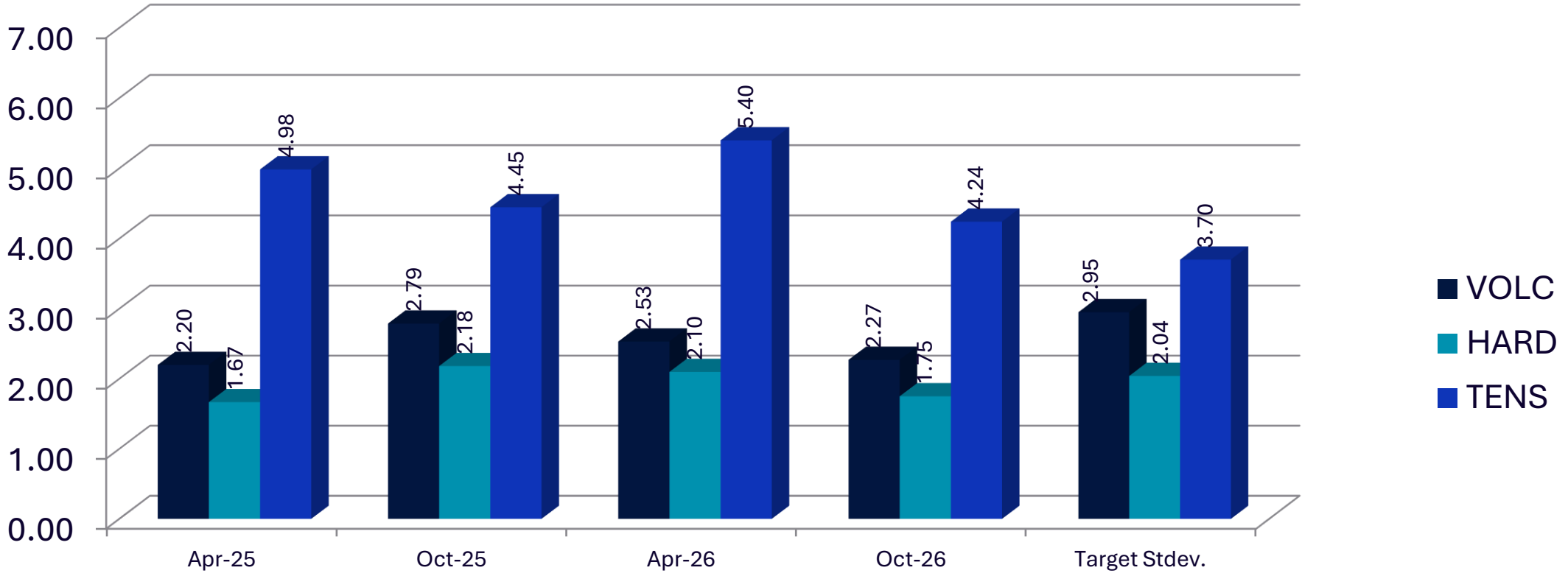
LDEOC Test Severity

Silicone (VMQ1)

Parameter	Period Mean Δ/s	Status
Volume Change	1.0094	Very Severe
Points Hardness Change	-0.4268	Mild
Tensile Strength Change	0.0879	On-Target

April 1, 2026 – September 30, 2026

LDEOC Precision Estimates - Silicone



April 1, 2026 – September 30, 2026

LDEOC Precision Estimates by Lab: VMQ1

Test Parameter	Statistic	LTMS Lab								
		A	B	BB	G	I	K	L	P	V
	n=	**26**	**6**	**1**	**18**	**6**	**0**	**6**	**1**	**5**
Volume	Mean	35.1	35.2	29.0	37.5	31.8		33.0	34.0	34.8
	Pooled s	0.69	0.42		2.26	0.97		1.26		0.65
	Mean /s	0.99	1.02	-1.06	1.82	-0.13		0.28	0.64	0.88
Hardness	Mean	-23.1	-22.5	-21.0	-23.4	-21.7		-18.3	-23.0	-23.2
	Pooled s	0.84	2.07		0.98	1.37		0.52		1.10
	Mean /s	-0.68	-0.40	0.33	-0.84	0.01		1.64	-0.65	-0.74
Tensile Strength	Mean	-34.9	-32.7	-38.8	-32.3	-34.4		-30.1	-37.2	-32.0
	Pooled s	4.16	4.01		4.94	2.54		2.20		2.62
	Mean /s	-0.30	0.28	-1.36	0.40	-0.18		0.99	-0.93	0.48

April 1, 2026 – September 30, 2026

LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE SILICONE VOLUME CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE SILICONE POINTS HARDNESS CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis

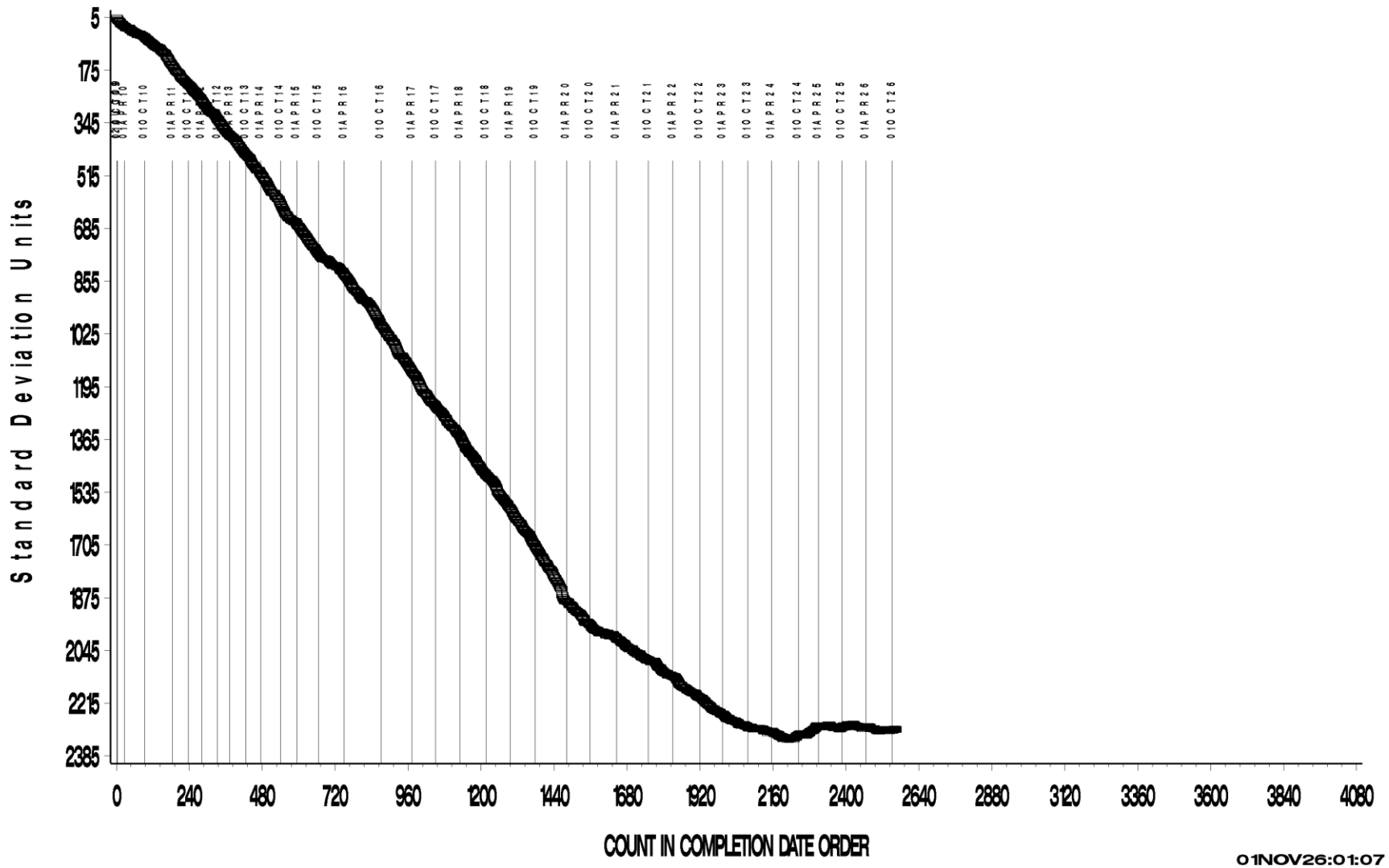


LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
REFERENCE SILICONE TENSILE STRENGTH CHANGE FINAL

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis



Information Letters & Technical Updates*

One information letter and one Memo were released this semester.

Test	Date	IL or Memo Number	Topic
LDEOC	20260522	EOEC IL26-1	Update to the ASTM D 7216 Test procedure

*Available from TMC Website

April 1, 2026 – September 30, 2026

Reference Oil Inventory Estimated Life

EOEC & LDEOC

Oil	TMC Inventory Gallons	Gallons Shipped Past 6 Months	Estimated Life
SL107 [A, B]	3276 [C]	329	5 years

[A] TMC Inventory is used across several test methods

[B] SL107 has fully replaced oil 1006; Oil 1006 is no longer used as an EOEC Reference Fluid

[C] Includes inventory of SL107 and reblend (SL107-1)

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D02.B0.07
TMC Monitored Tests

ASTM D 7528

ROBO

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D7528	6 (+0)	32 (-3)
*As of 9/30/2026		

D7528: Oxidation by ROBO

Test Status	Validity Code	No. Tests
Acceptable Calibration Test	AC	110
Failed Calibration Test	OC	21
Lab Reported Calibration Test as Operationally Invalid	LC	1
Calibration Test Aborted by Lab	XC	5
Calibration Test Declared Operationally Invalid by TMC	RC	1
Total		**138**

Number of Labs Reporting Data: 6

Fail Rate of Operationally Valid Tests: 16.0% (7.9% last period)

April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO

Statistically Unacceptable Tests (OC)	No. Of Tests
Natural Log (MRV Viscosity) Severe	7
Natural Log (MRV Viscosity) Mild	14
Total	**21**

April 1, 2026 – September 30, 2026

D7528: ROBO Failed Tests by Lab

Failed Parameter	LTMS Lab						Number of Tests
	A	AM	AQ	B	BC	G	
Natural Log (MRV Viscosity) Severe	3	0	1	3	0	0	7
Natural Log (MRV Viscosity) Mild	5	1	0	1	1	6	14
Total	**8**	**1**	**1**	**4**	**1**	**6**	**21**

- FIFTEEN different units from SIX different labs reported failing calibration tests

April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO

Operationally Invalid (LC, RC) or Aborted (XC) Calibration Tests

Test Status	Cause	No. of Tests
Invalidated by Lab (LC)	Vacuum malfunction	1
Invalidated by TMC (RC)	Yield Stress NOT <35 Pa (and not RO 434-3)	1
Aborted Test (XC)	Power Outage	3
Aborted Test (XC)	Sample Spilled/Lost	2
Totals		**7**

April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO

NO_2 Delivery Mechanism	Number of Total Tests	Number Of AC Tests	Pass Rate (%)	Number of Labs	Number of Rigs	LAB ID's
Dilute	56	48	85.7	3	17	G, AM, BC
Liquid	75	62	82.7	4	16	A, AQ, B, G
BOTH (Totals)	**131**	**110**	**84.0**	**6***	**33**	**A, AM, AQ, B, BC, G**

*One lab is conducting tests with both NO_2 delivery methods.

April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO

Precision, Performance (Mean Δ/s) by Lab and NO_2 Delivery Mechanism

NO_2 Delivery		Ref Oil 434-3	Ref Oil 435-1	Ref Oil 436	TOTAL
Dilute	No. of Runs	15	25	16	**56**
	Mean	10.6815	10.9605	10.3818	**10.7202**
	Pooled s	0.1812	0.2764	0.1885	**0.2309**
	Mean Δ/s	-0.98	-0.40	0.38	**-0.33**
Liquid	No. of Runs	22	37	16	**75**
	Mean	10.7103	11.0521	10.4716	**10.8280**
	Pooled s	0.1939	0.2708	0.1708	**0.2317**
	Mean Δ/s	-0.77	0.05	1.08	**0.03**
BOTH	**No. of Runs**	**37**	**62**	**32**	**131**
	Mean	**10.6986**	**11.0152**	**10.4264**	**10.7820**
	Pooled s	**0.1868**	**0.2745**	**0.1828**	**0.2320**
	Mean Δ/s	**-0.85**	**-0.13**	**0.73**	**-0.12**

April 1, 2026 – September 30, 2026

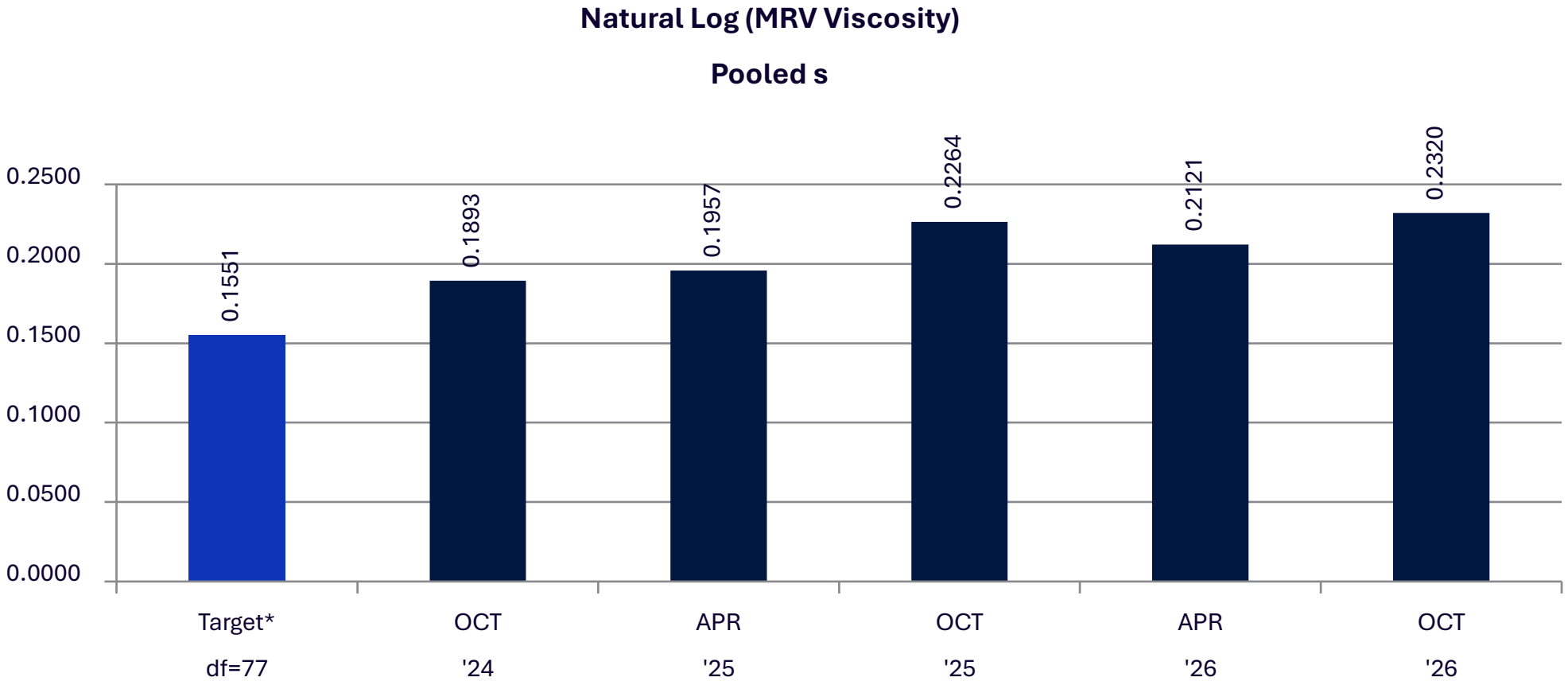
D7528: Oxidation by ROBO

Period Performance (Mean Δ/s) by Lab and NO_2 Delivery Mechanism

NO_2 Delivery Mechanism	LAB A (all L)	LAB AM (all D)	LAB AQ (all L)	LAB B (all L)	LAB BC (all D)	LAB G (mix)
Dilute	n = 0	n = 8	n = 0	n = 0	n = 4	n =44
	N/A	-1.24	N/A	N/A	-1.45	-0.06
Liquid	n = 49	n = 0	n = 5	n = 15	n = 0	n = 6
	-0.24	N/A	1.08	0.79	N/A	-0.53
BOTH	**n = 49**	**n = 8**	**n =5**	**n = 15**	**n = 4**	**n = 50**
	-0.24	**-1.24**	**1.08**	**0.79**	**-1.45**	**-0.12**

April 1, 2026 – September 30, 2026

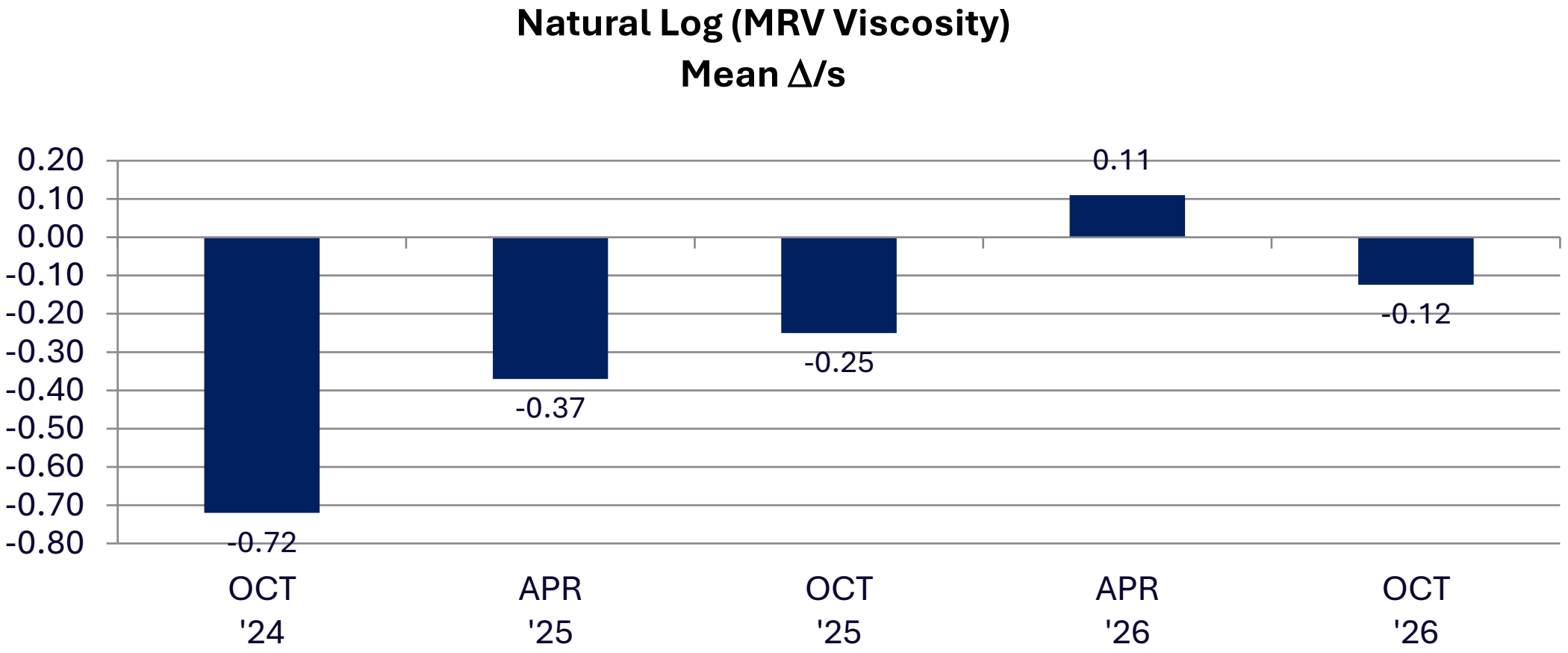
D7528: Oxidation by ROBO



*Updated targets to include latest primary reference oils 434-3, 435-1 and 436

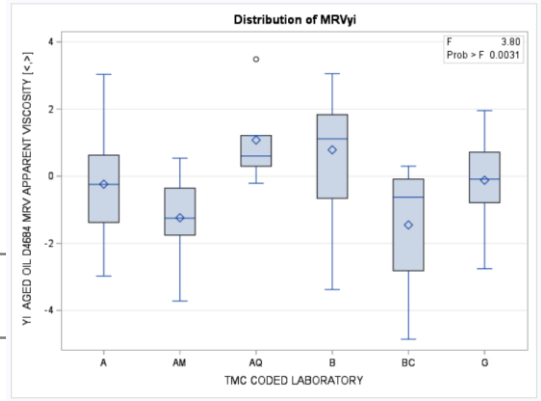
April 1, 2026 – September 30, 2026

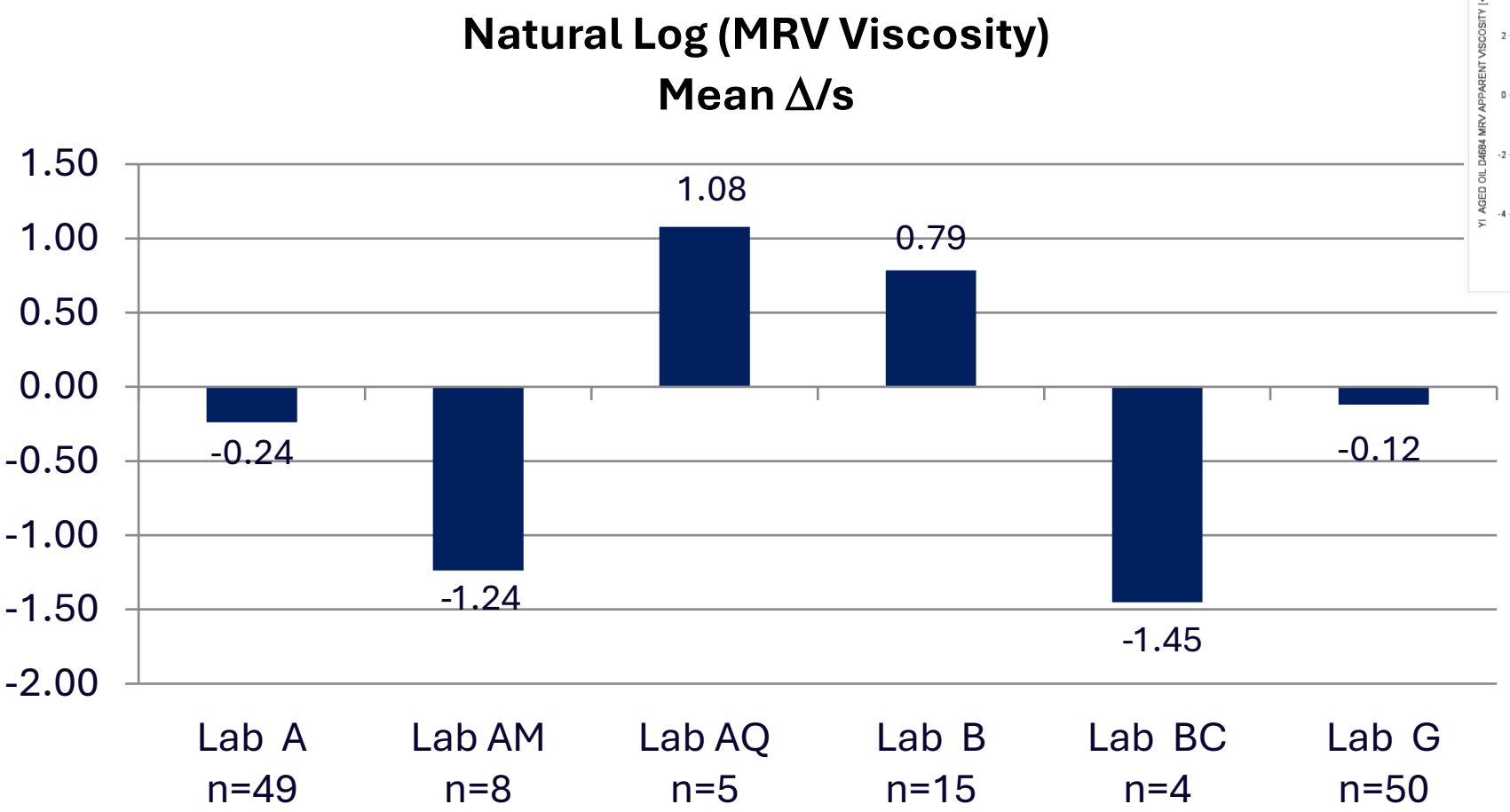
D7528: Oxidation by ROBO



April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO





April 1, 2026 – September 30, 2026

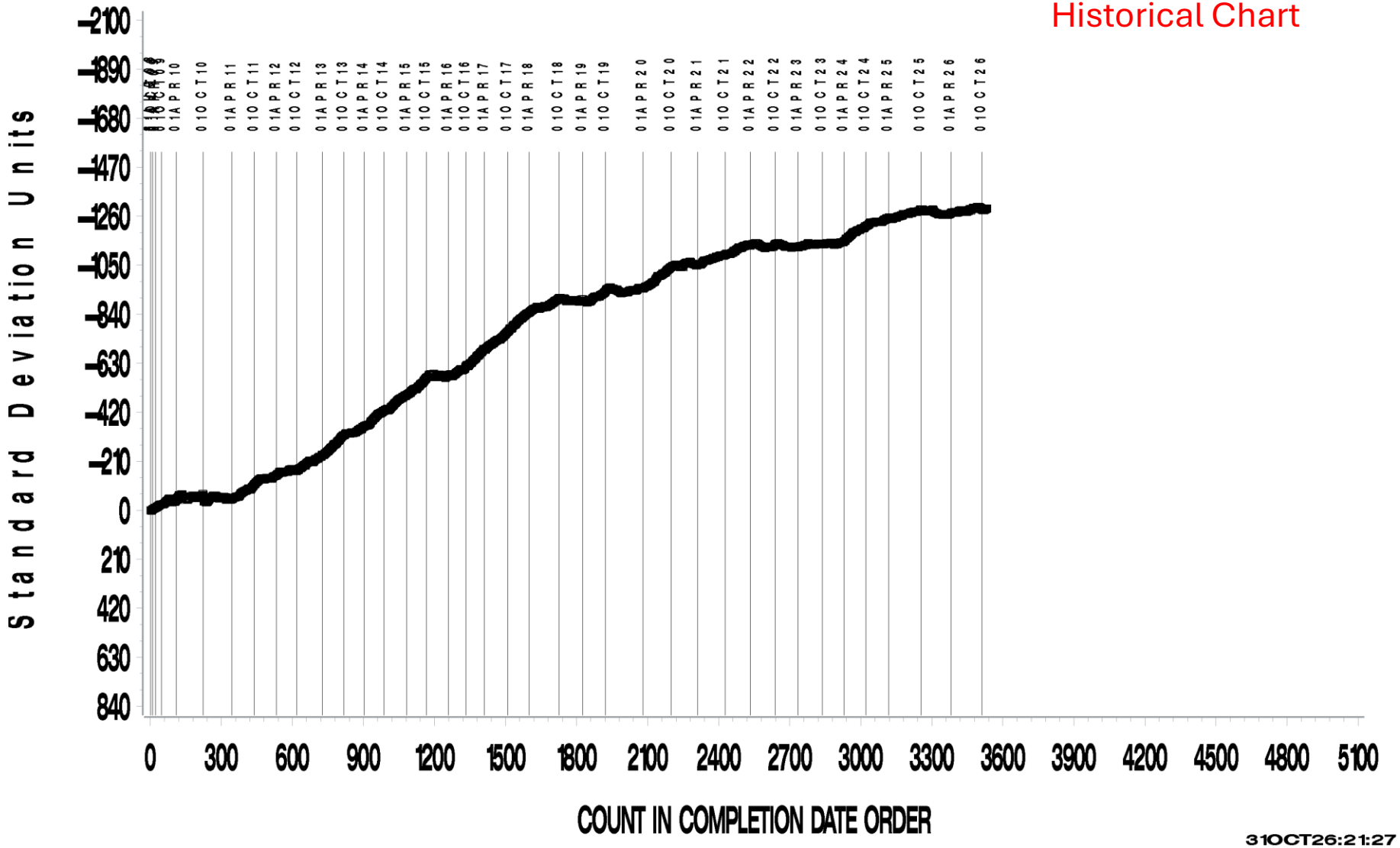
ROBO TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
AGED OIL MRV APPARENT VISCOSITY

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis

Historical Chart



ROBO TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
AGED OIL MRV APPARENT VISCOSITY

TEST MONITORING CENTER

CUSUM Severity Analysis

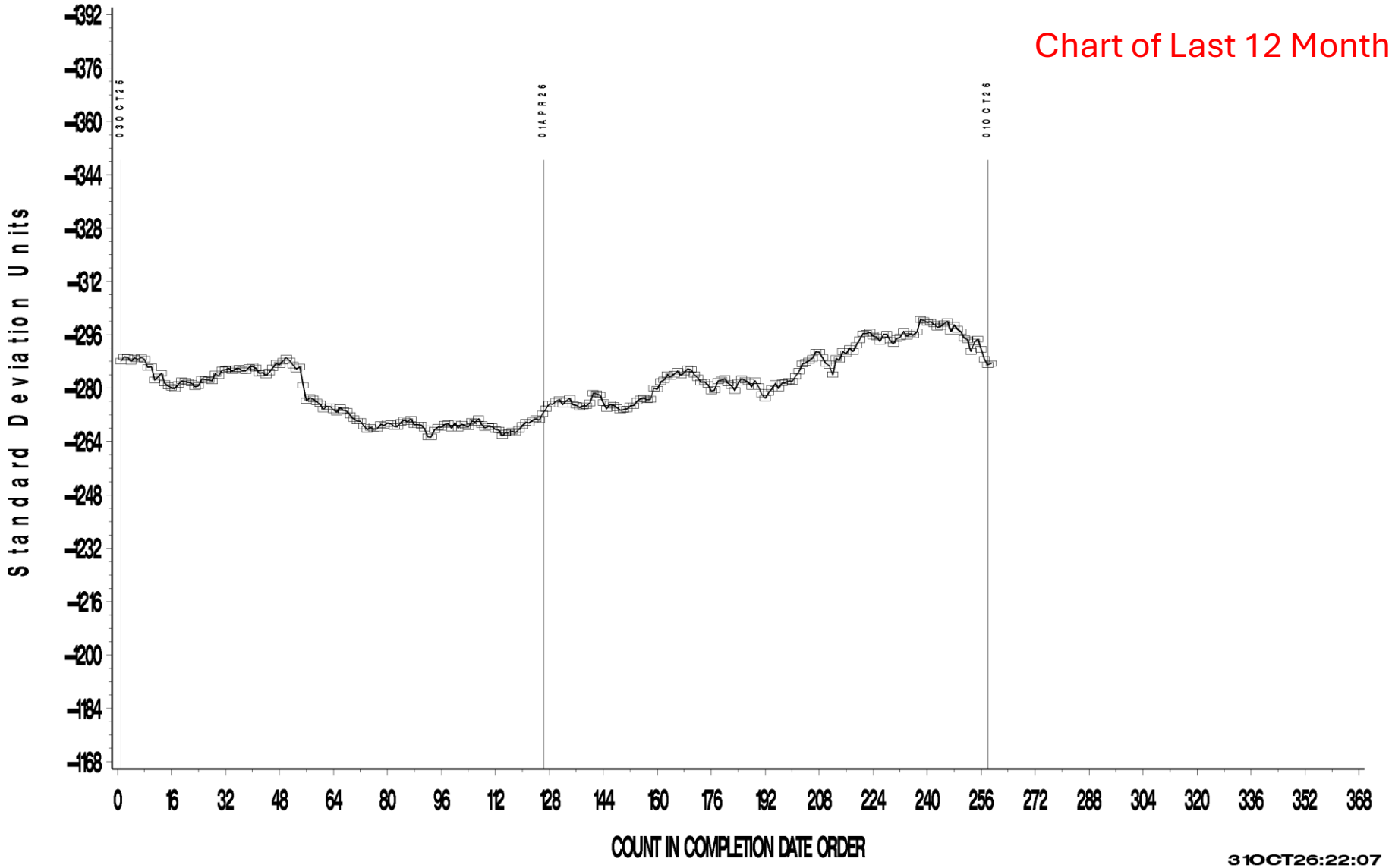


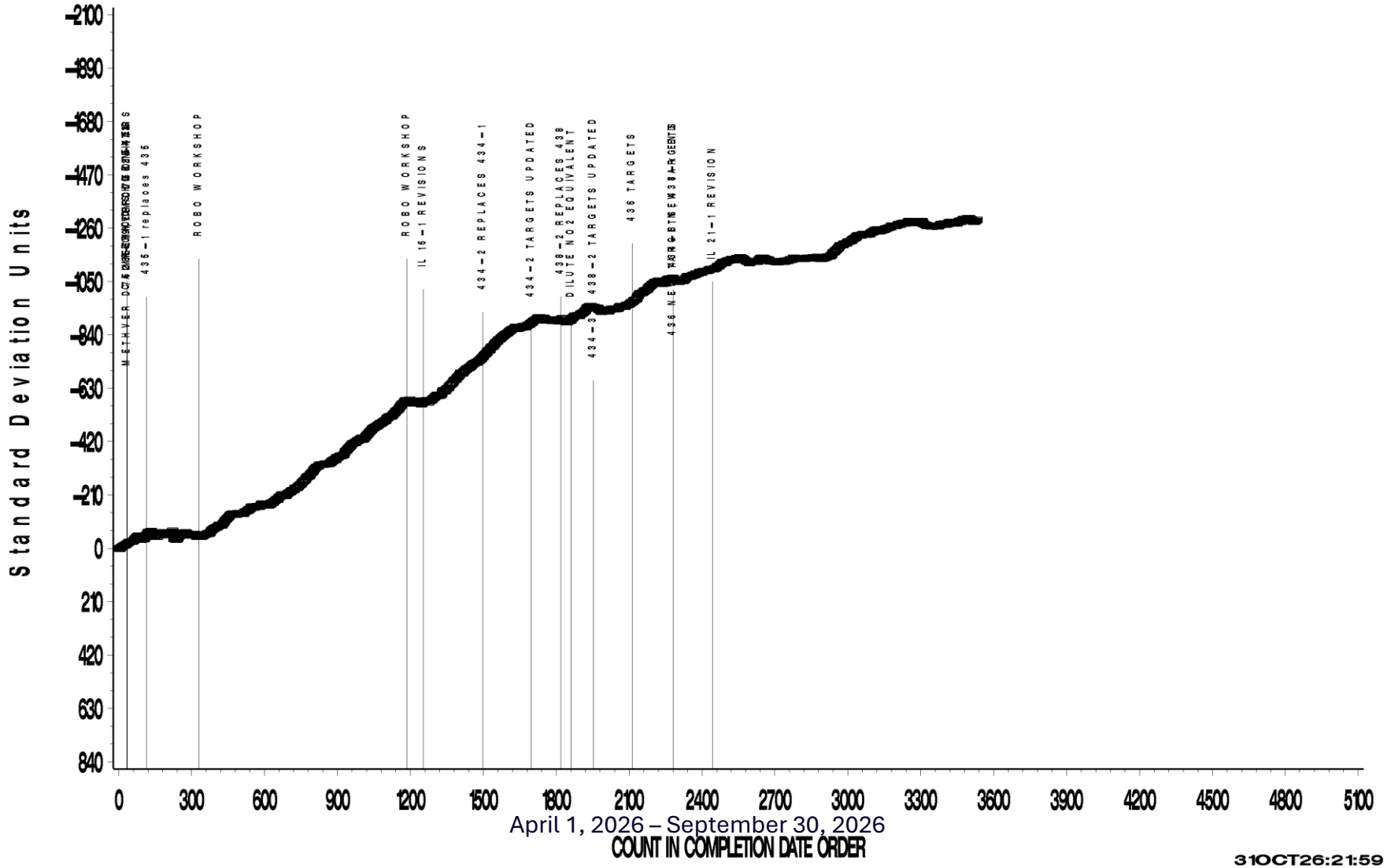
Chart of Last 12 Months

ROBO TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
AGED OIL MRV APPARENT VISCOSITY

TMC TEST MONITORING CENTER

TMC

CUSUM Severity Analysis

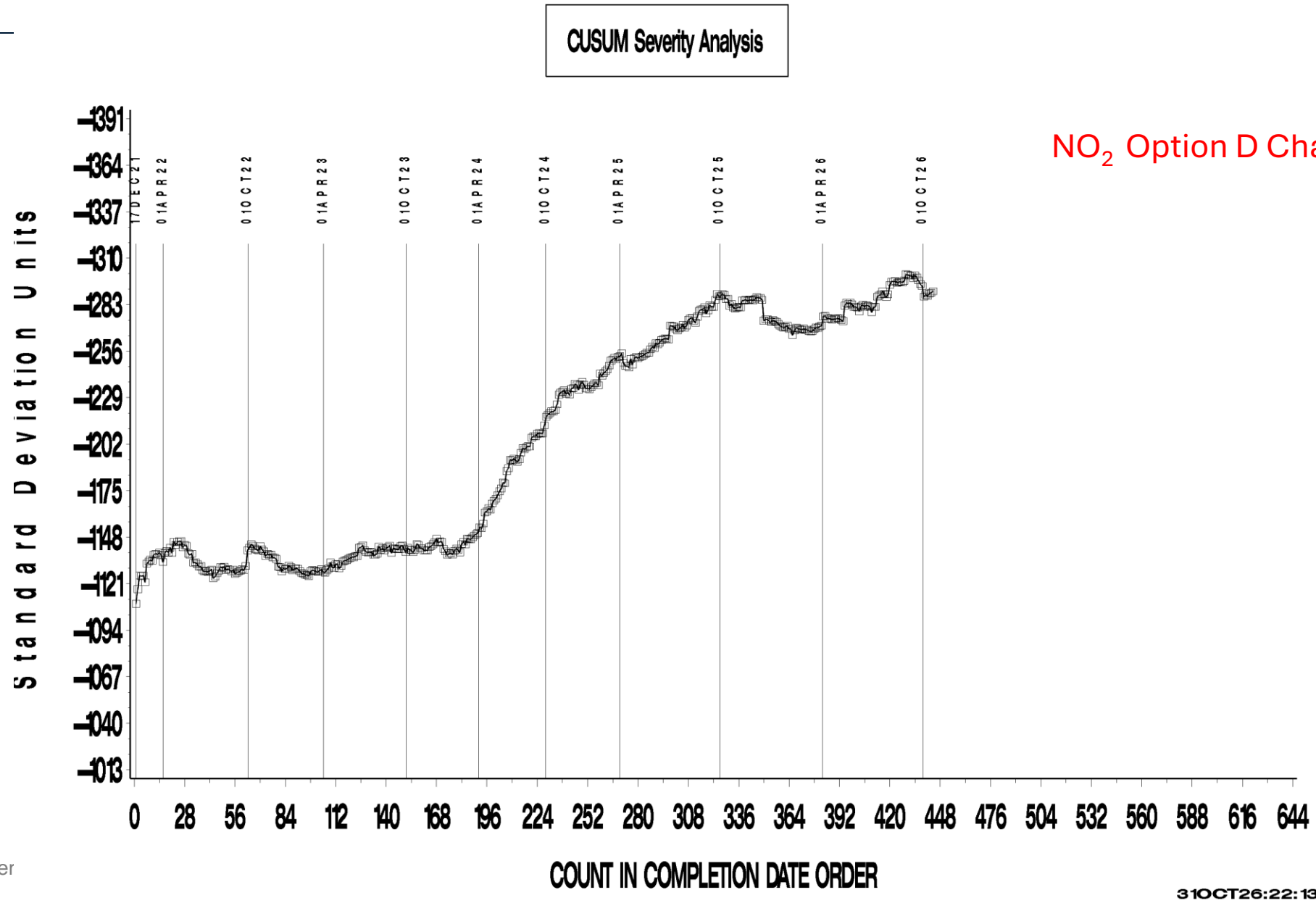


April 1, 2026 – September 30, 2026

COUNT IN COMPLETION DATE ORDER

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ROBO TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS (ProcD)
AGED OIL MRV APPARENT VISCOSITY

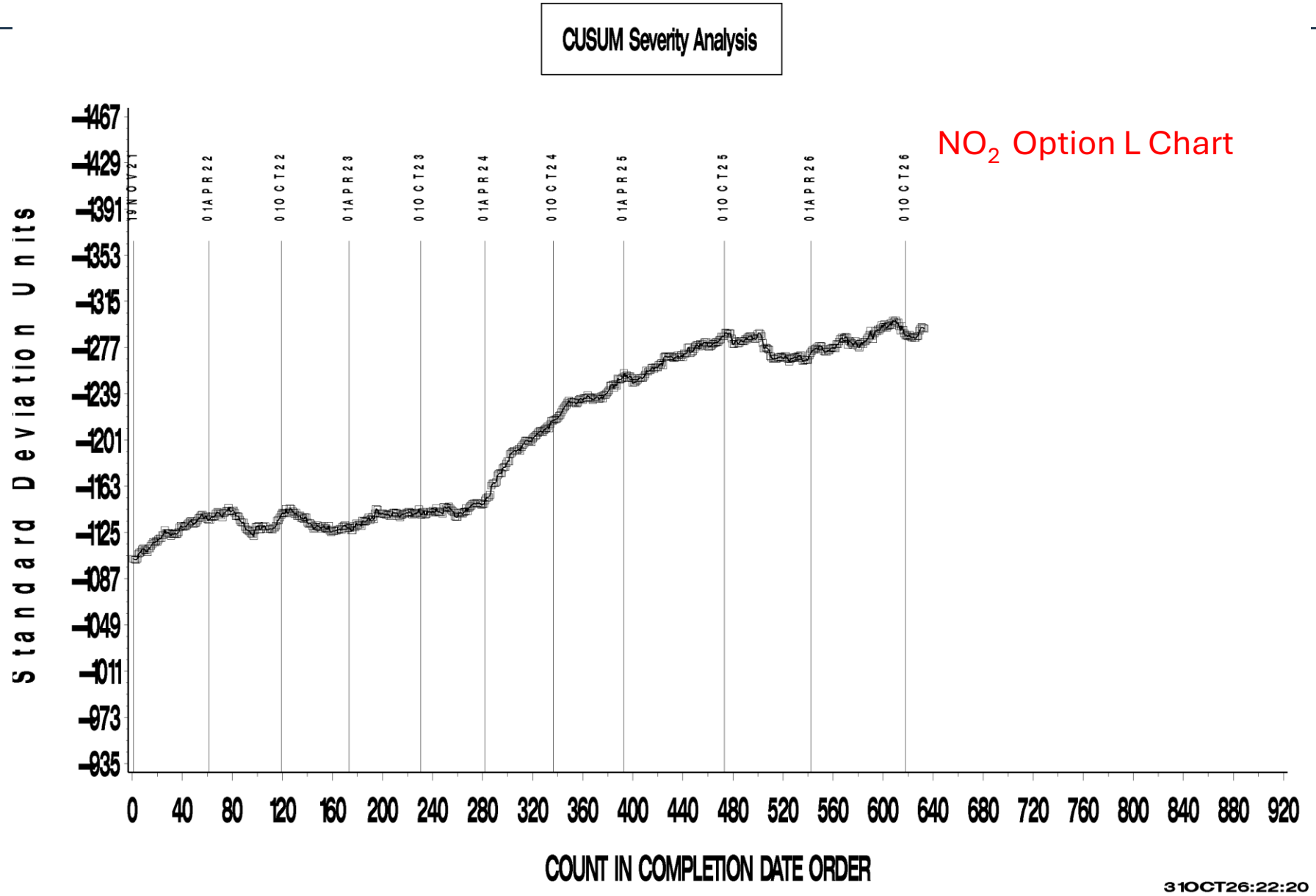


NO_2 Option D Chart

ROBO TEST INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS (ProcL)
AGED OIL MRV APPARENT VISCOSITY

TMC TEST MONITORING CENTER

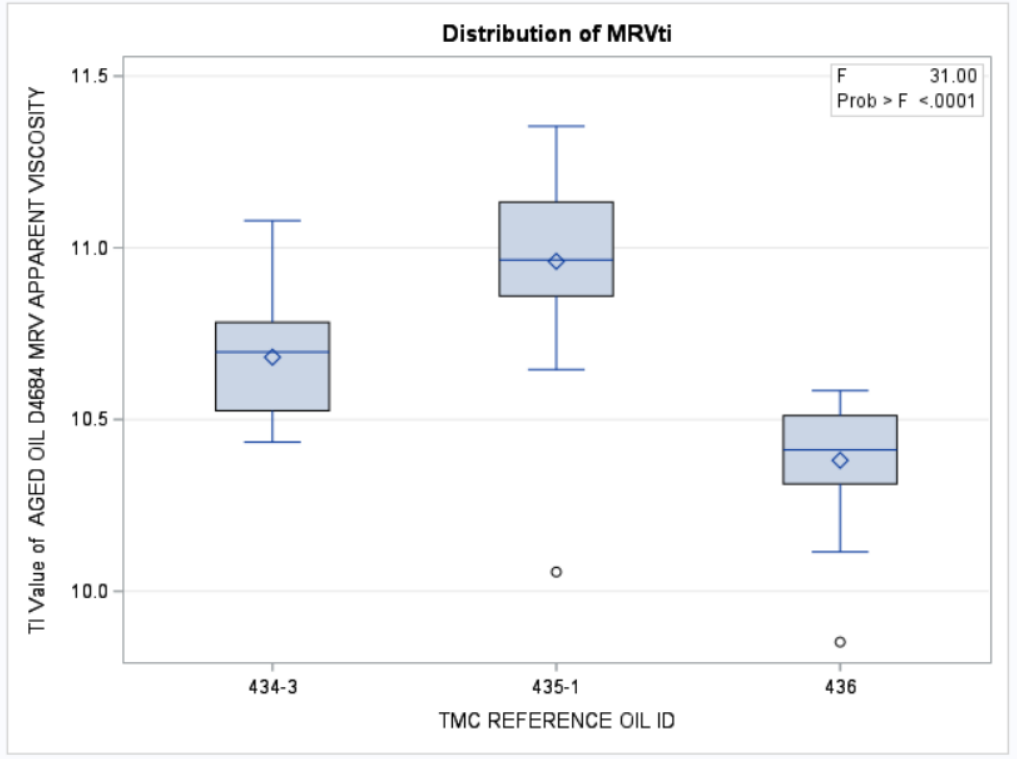
TMC

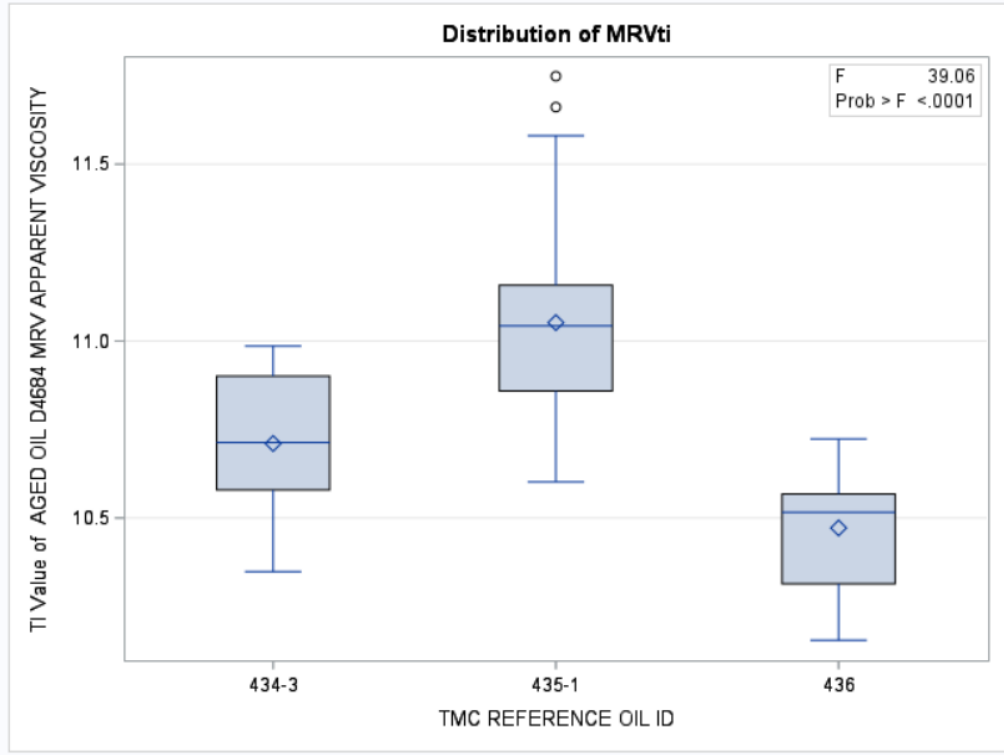


NO_2 Option L Chart

Means by Reference Oil, NO2 Delivery

D (left) and L (right)

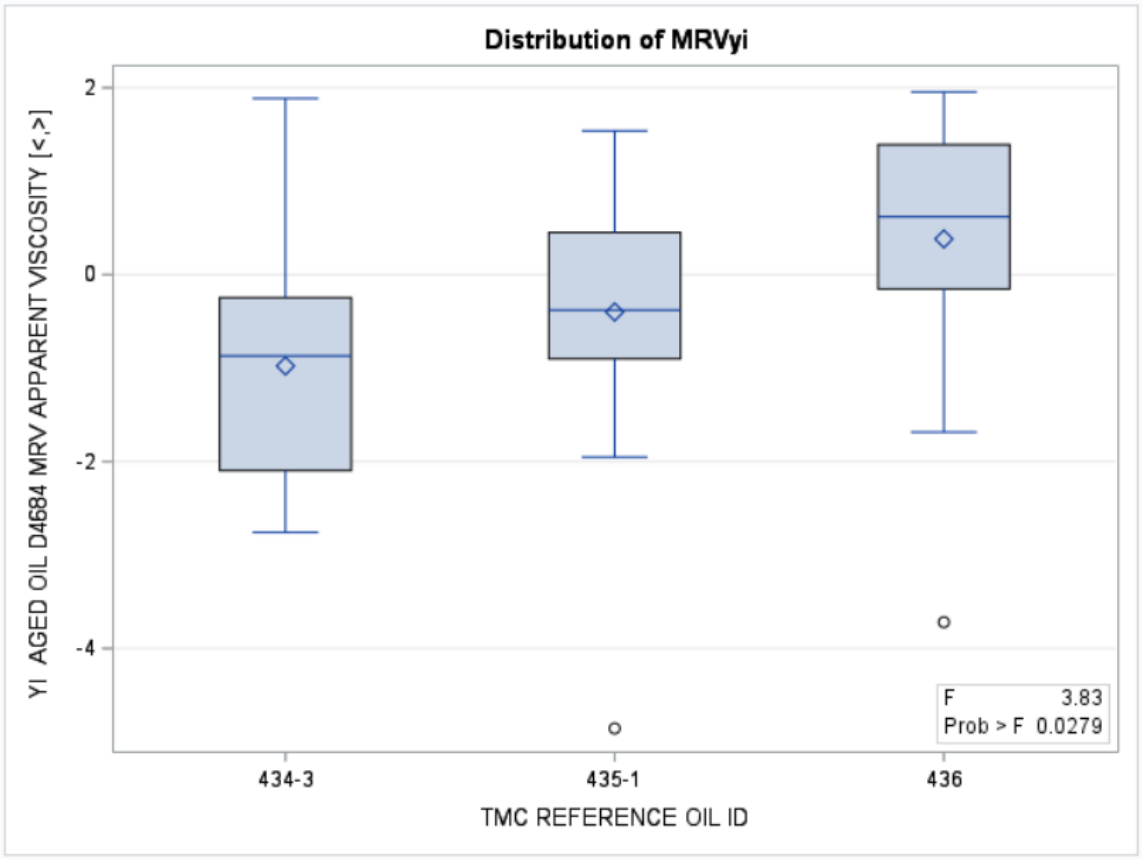


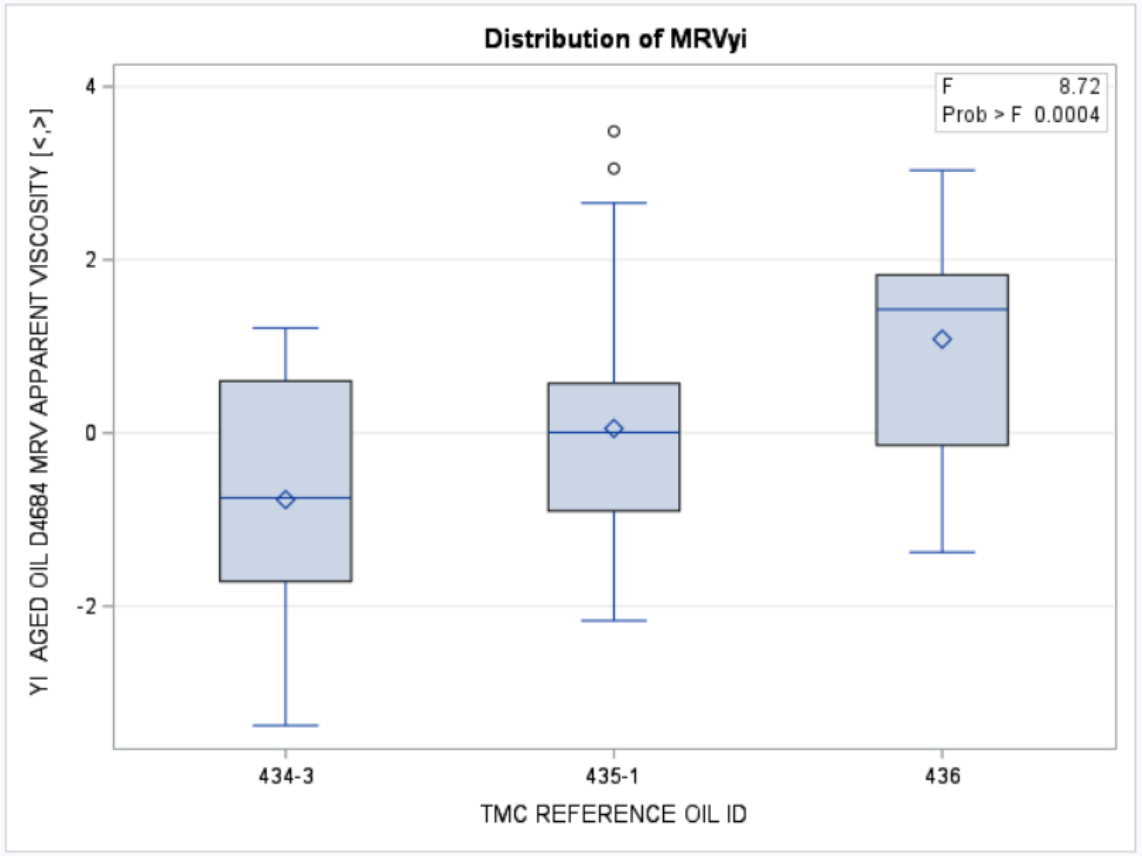


April 1, 2026 – September 30, 2026

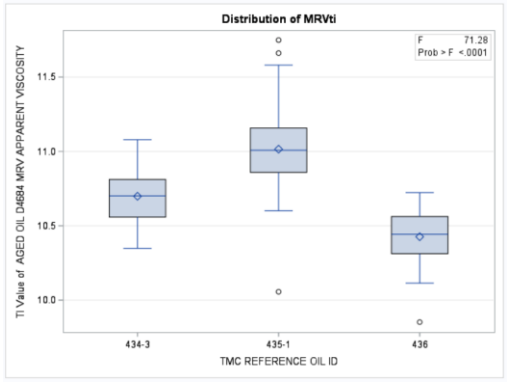
Performance by Ref Oil, NO2 Delivery

D (left) and L (right)

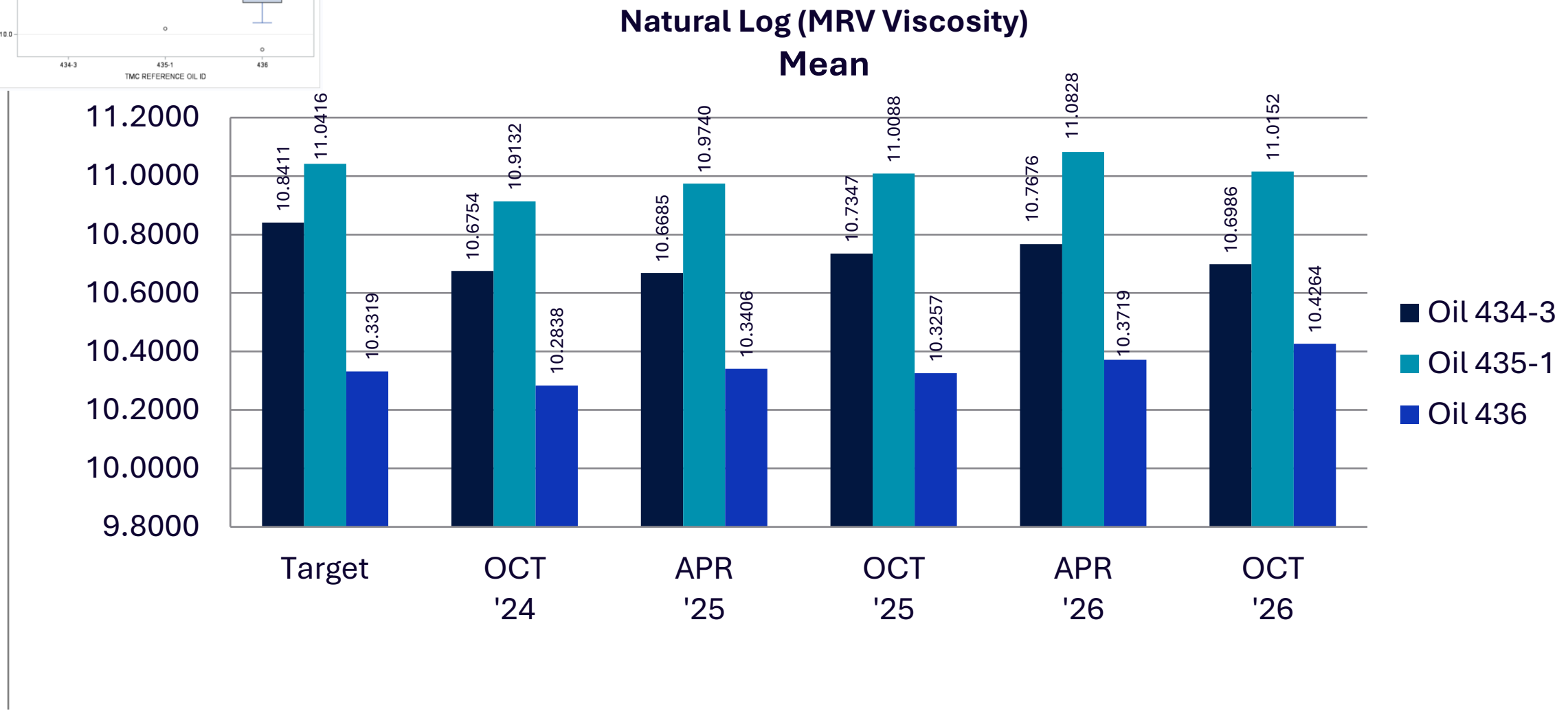




April 1, 2026 – September 30, 2026

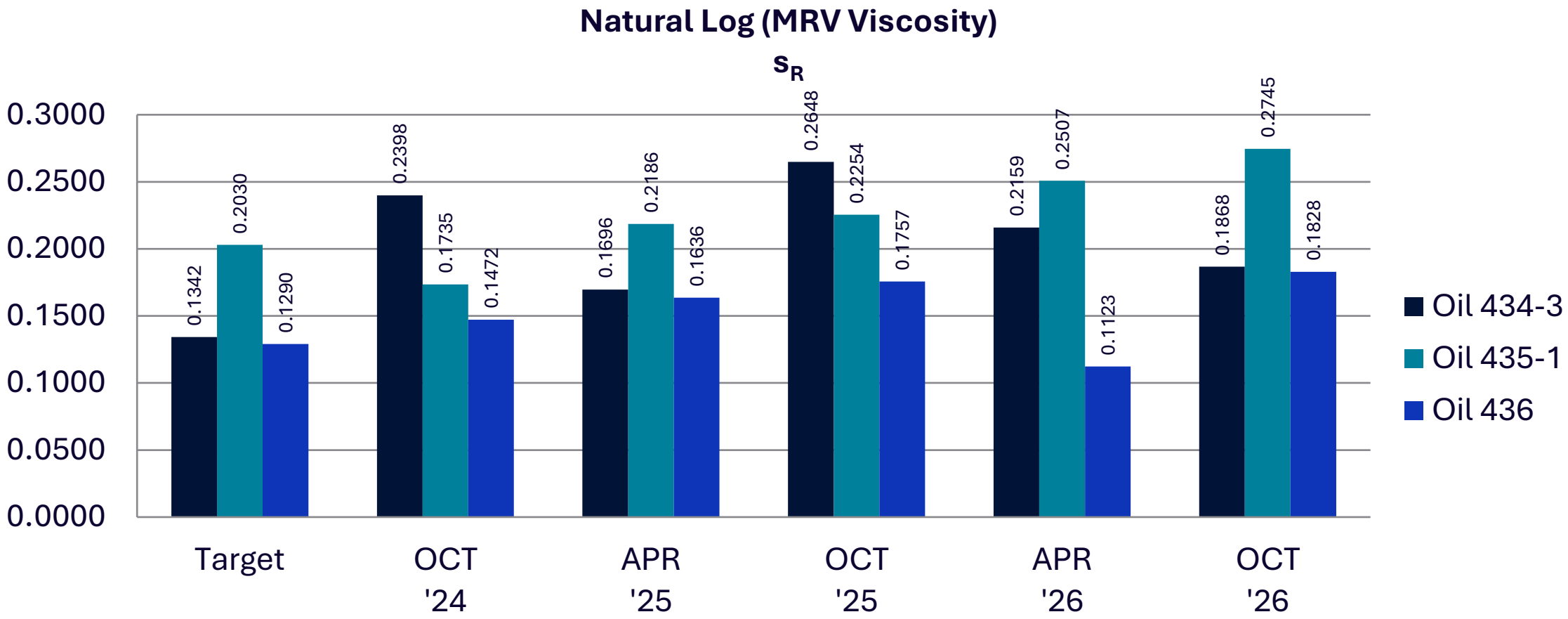


D7528: Oxidation by ROBO



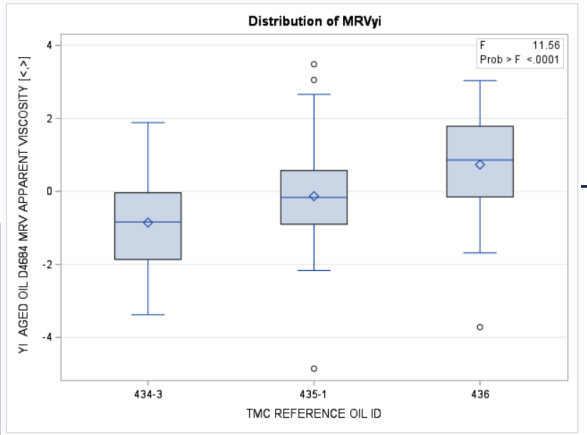
April 1, 2026 – September 30, 2026

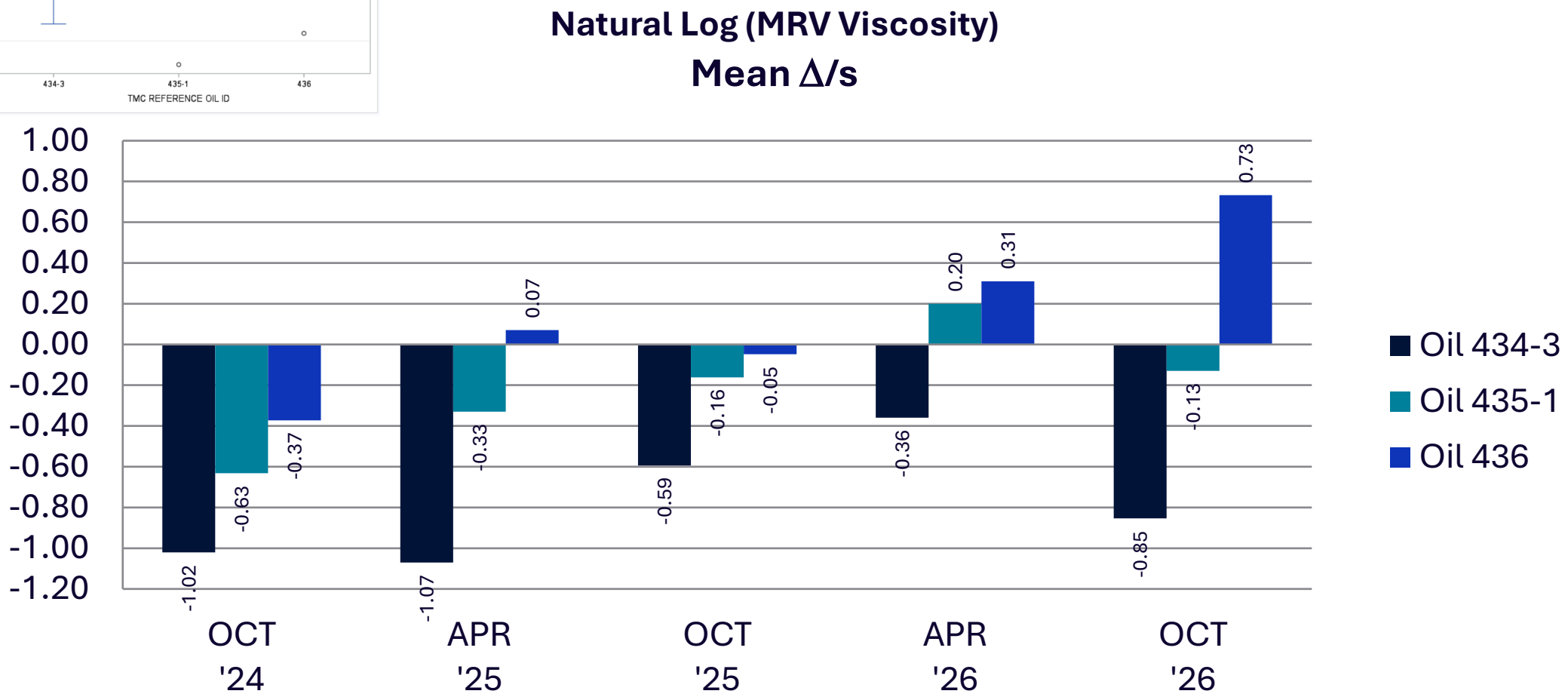
D7528: Oxidation by ROBO



April 1, 2026 – September 30, 2026

D7528: Oxidation by ROBO





D7528: Oxidation by ROBO

- Precision (Pooled s) was steady at 0.2320 (previously 0.2121).
- Severity (Mean Δ/s) has moved to -0.12, continuing to be close to target.
- CUSUM plot for both NO2 delivery methods (D = dilute; L = liquid) have leveled off in the past 12 months.

April 1, 2026 – September 30, 2026

Reference Oil Inventory

ROBO

Oil	Year Rec'd By TMC[A]	Tests	TMC Inventory, gallons	Gallons Shipped last 6 months	Estimated Life
434-3[B]	2017	ROBO	59.6	3.2	5+ years
435-1[B]	2008	ROBO	52.2	10.8	5+ years
436[B]	2014	ROBO	26.3	2.91	5+ years

[A] Integrity of TMC reference oils is confirmed annually by analytical QC testing of chemical and physical properties.
[B] Multi-test oil; estimated aliquot reserved for bench testing. Other drums are available.

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D02.B0.07
TMC Monitored Tests

ASTM D 8665

Engine Oil Gelation Test (EOGT)

April 1, 2026 – September 30, 2026

Calibrated Labs and Stands*
(change since last Semi-Annual report)

Test	Labs	Stands
D8665	2 (New Test)	N/A
*As of 9/30/2026		

- 3 labs reported data

EOGT Test Activity*

Test Status	Validity Code	Number of Tests
Acceptable Calibration Test	AC	4
Failed Calibration Test	OC	0
Invalid Calibration Test	LC	0
Acceptable Informational Run	NN	6
Unacceptable Informational Run	MN / XN	1
Total		**11**

- 0.0% EOFT Calibration Fail Rate
- THREE labs reported data this semester

April 1, 2026 – September 30, 2026

EOGT Failed Tests

Failed Parameter	Number of Tests
Test Result (NVALUE) Less Than or Equal to 31	0
Total	**0**

April 1, 2026 – September 30, 2026

EOGT Failed Tests by Lab

Failed Parameter	LTMS Lab								#
	A	B	BH	D	E1	G	I	V	
Change in Flow Average (CIFA) Severe	0	N/A	N/A	N/A	N/A	0	N/A	N/A	0
Totals	**0**	**N/A**	**N/A**	**N/A**	**N/A**	**0**	**N/A**	**N/A**	**0**

April 1, 2026 – September 30, 2026

EOGT Lost Tests*

Status	Cause	No. of Tests
Invalid (L,R)		0
Aborted (X)		0
Total		**0**

There were no Invalid or Aborted calibration tests this semester.

*Invalid and aborted calibration tests

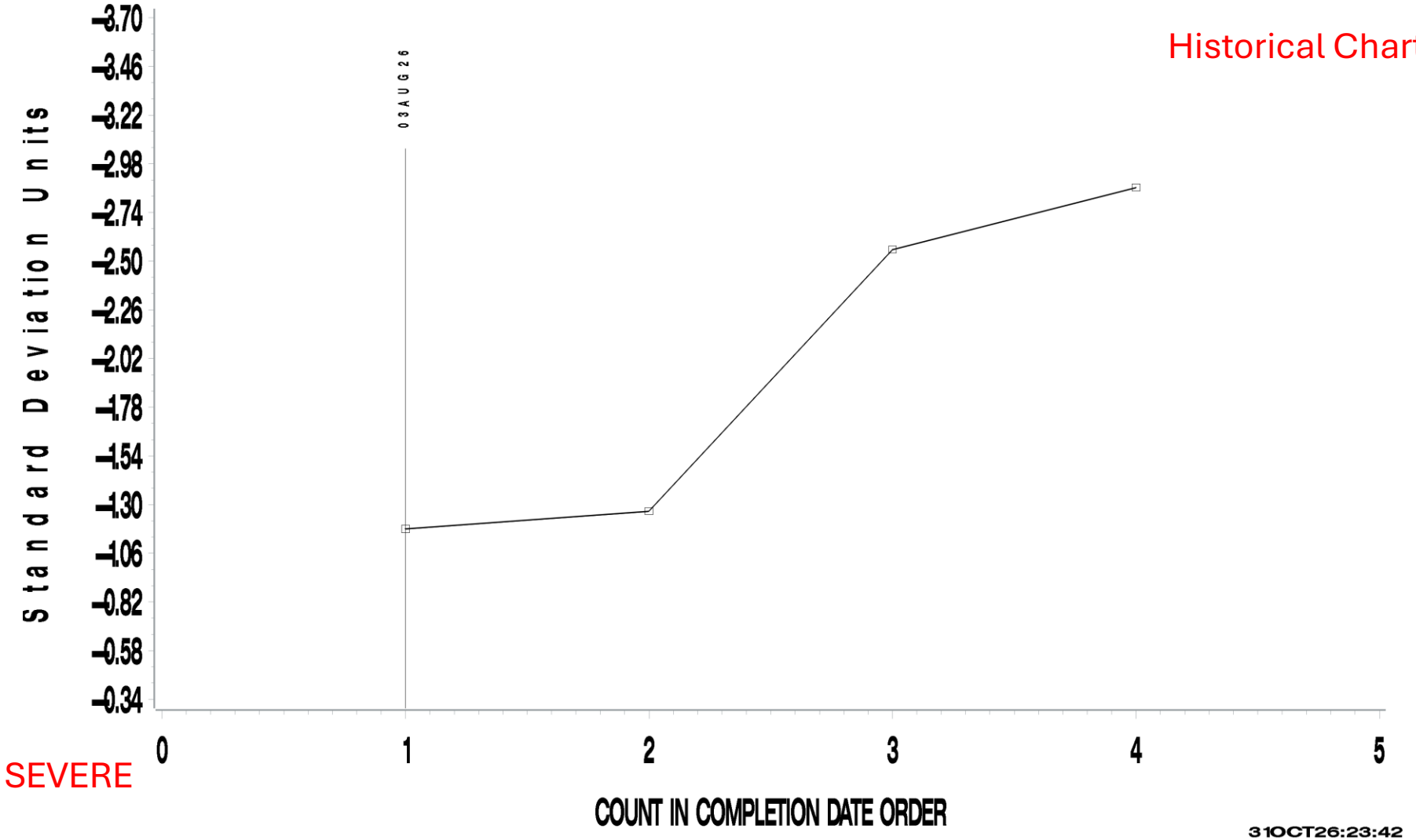
EOGT Information/Shakedown Tests

Informational / Non-blind Results	Number of Tests
Informational / Non-blind Test Result In-Range (NN)	6
Informational / Non-blind Test Result Severe (MN)	1
Informational / Non-blind Test Result Mild (MN)	0
Total	**7**

April 1, 2026 – September 30, 2026

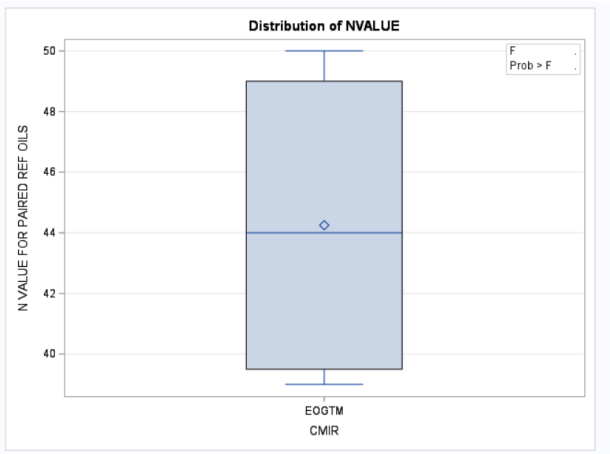
EOGT INDUSTRY OPERATIONALLY VALID DATA
CUSUM SEVERITY ANALYSIS
N VALUE FOR PAIRED REF OILS

MILD

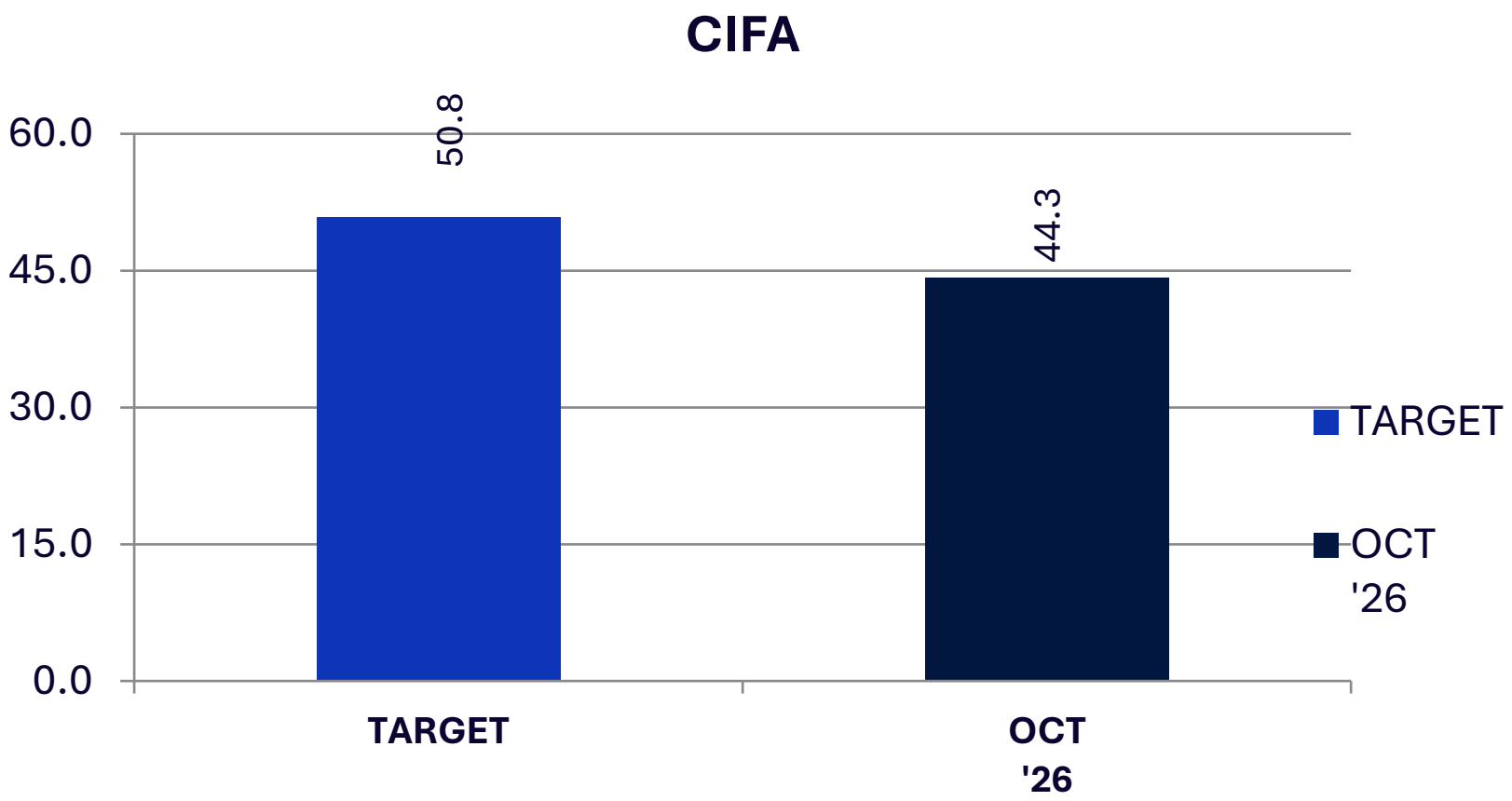


SEVERE

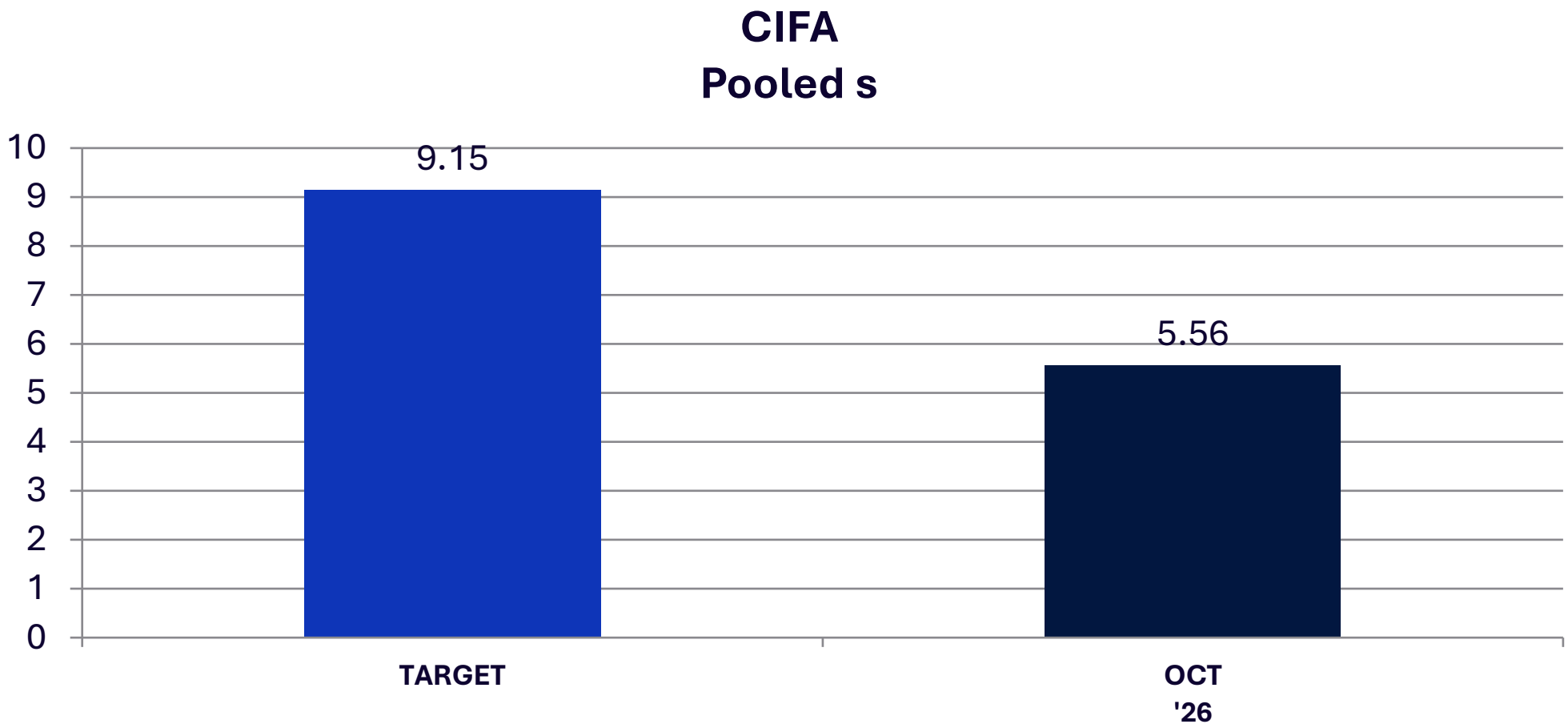
Historical Chart



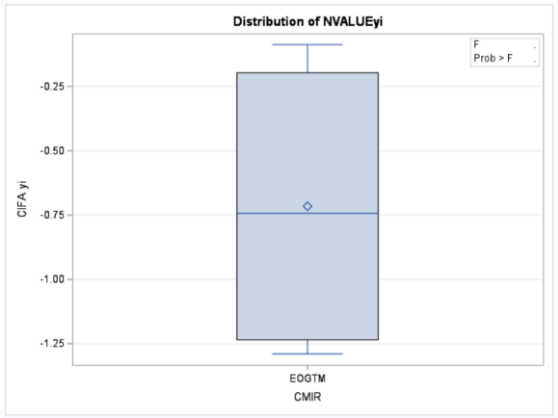
EOGT MEAN CIFA's (%)



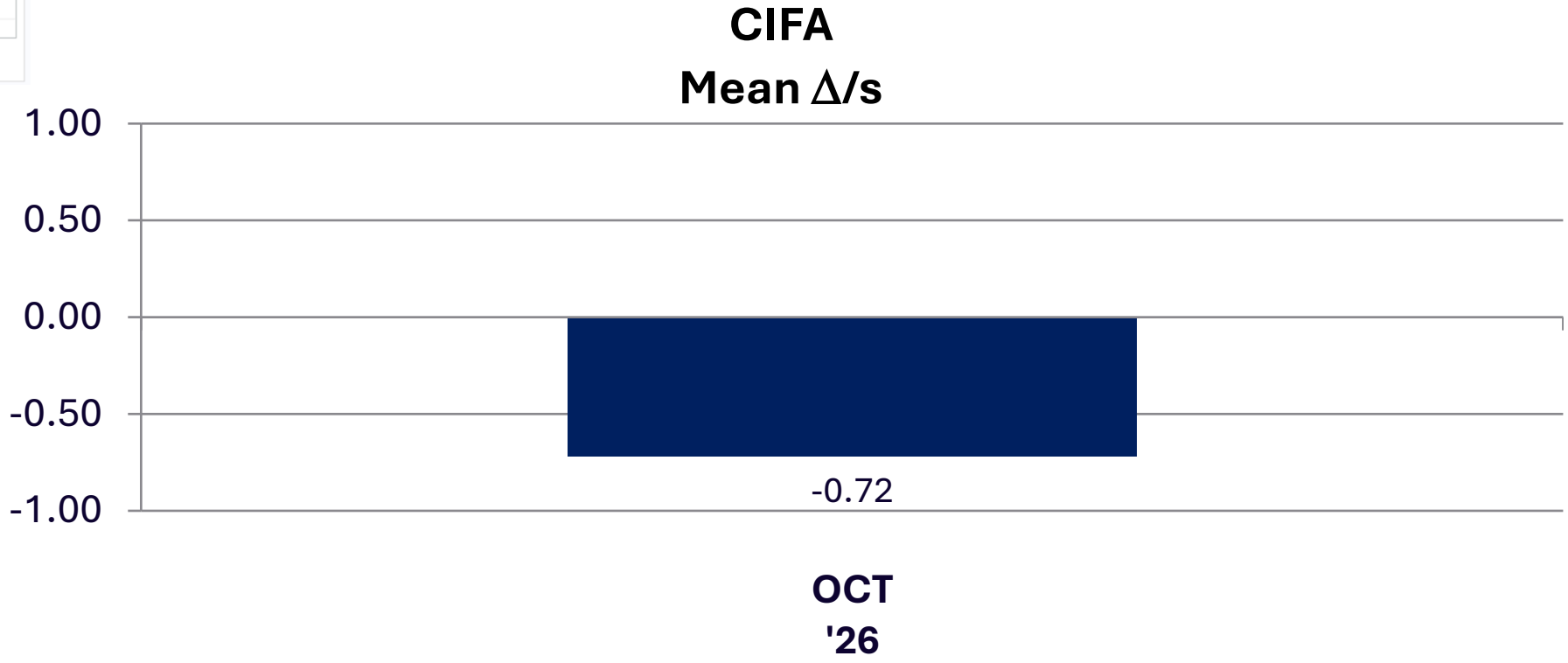
EOGT Precision Estimates



April 1, 2026 – September 30, 2026

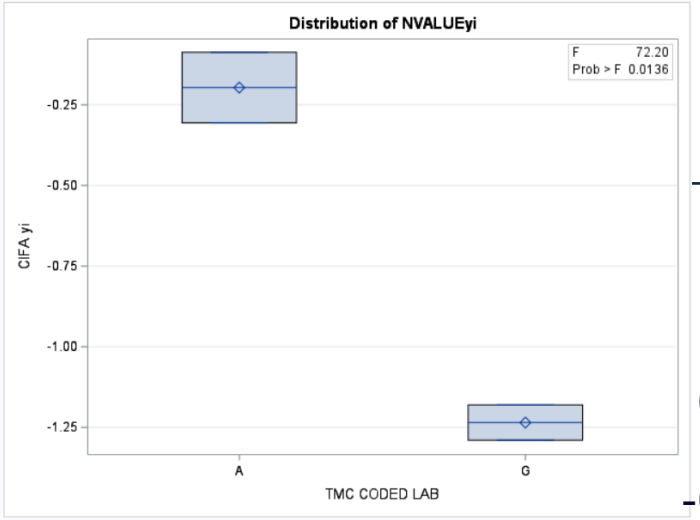


EOGT Severity Estimates



April 1, 2026 – September 30, 2026

EOGT Lab Severity Estimates



April 1, 2026 – September 30, 2026

Information Letters*

Test	Date	IL	Topic
EOGT			

No information letters were issued this semester.

*Available from TMC Website

EOGT Test Status

- Engine Oil Gelation Test (EOGT) became “live” during the April – October 2026 semester.
- EOGT calibrates at the laboratory level (not individual units) and a calibration period lasts 30-days.
- Two laboratories obtained calibration status this semester while a third lab successfully conducted Informational (Shakedown) runs.
- The guidelines for obtaining calibration status are listed in the Lubricant Testing Monitoring System (LTMS) which may be found here: https://www.astmtmc.org/ftp/docs/ltms/ltms.pdf

Reference Oil Inventory Estimated Life

EOGT

Oil	TMC Inventory (gallons)	TEST	Gallons Shipped Past 6 Months	Estimated Life[1]
EOGT-M	113.9	EOGT	2.5	5+ years

[1]Based upon new monthly calibration requirements for EOGT.

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Reference Oil Inventory

OCTOBER 2026

Reference Oil Inventory: October 22, 2026

Original Blend	Oil	Tests	Year	Blend Quantity	TMC Inventory	Estimated Life
44	44-5	D6594	2022	54	37.3	> 5
52	52	D6417	1995	100	59.4	> 5
55	55	D6417	1995	100	65.9	> 5
58	58	D6417, D6417QC, GI	1998	159	111.1	> 5
66	66	D6082	2002	108	63.0	> 5
75	75-2	TEOST	2024	8	3.9	3.5*
77	77-3	EOWT	2015	900	310	>5
79	79	EOWT	2014	1026	9.4	> 5
82	82-2	BRT	2008	10	9.7	> 5
86	86	BRT	2017	54	49	> 5
87	87	BRT	2017	98	92.9	> 5
88	88	EOFT	2026	110	93.0	> 5
91	91	D874	2006	5	2.8	> 5
92	92	D874, D874QC	2020	52	49.7	> 5
432	432	MTEOS	1998	207	100.4	> 5
434	434-3	MTEOS, ROBO	2017	55	59.6	> 5
435	435-1	ROBO	2008	55	52.2	> 5
435	435-2	TEOST	2010	550	29.5	> 5
436	436	ROBO	2014	55	19.2	> 5
820	820-2	D874	2001	55	5.8	> 5
1005	1005-5	D6594	2015	55	4.7	1*
1006	1006	BRT	1996	55	22.4	> 5
1006	1006-2	BRT	2000	110	67.2	> 5
1009	1009	GI	2002	55	32.9	> 5
EOGT-M	EOGTM	EOGT	2026	120	113.9	> 5
FOAMB18	FOAM18B	D6082	2018	102	59.6	> 5
GIA17	GIA17	GI	2017	10	4.8	> 5
GIC18	GIC18	GI	2018	10	7.5	> 5
SL107	SL107	EOEC, LDEOC	2019	3868	302.9	0.5
SL107	SL107-1	EOEC, LDEOC	2026	2974	2974	5
VOLC12	VOLC12	D5800	2013	55	11.2	2.5
VOLD12	VOLD12	D5800	2013	55	9.3	2
VOLD18	VOLD18	D5800QC	2018	1092	380.7	5
VOLE12	VOLE12	D5800	2012	55	7.1	1.5

* Other drums or batches available

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Additional Information

Additional Information

- Available on the TMC's Website:
  - Lubricant Test Monitoring System (LTMS) Document
  - CUSUM Severity Plots
  - Reference Data, Period Statistics and Timelines
  - Information Letters and Technical Memos
  - Report Forms & Data Dictionaries
  - Online Store, and more…

- www.astmtmc.org

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