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Test Monitoring Center

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412-365-1000

MEMORANDUM: 24-013
DATE: May 14, 2024
TO: Nick Schaup, Chairman, L-60-1 Surveillance Panel
FROM: Dylan Beck *Dylan Beck*
SUBJECT: L-60-1 Reference Oil Testing from October 1, 2023 through March 31, 2024

Attached is a summary of testing activity this period

DJB/djb/mem24-013.djb.doc

cc: Jeff Clark

Sean Moyer

L-60-1 Surveillance Panel

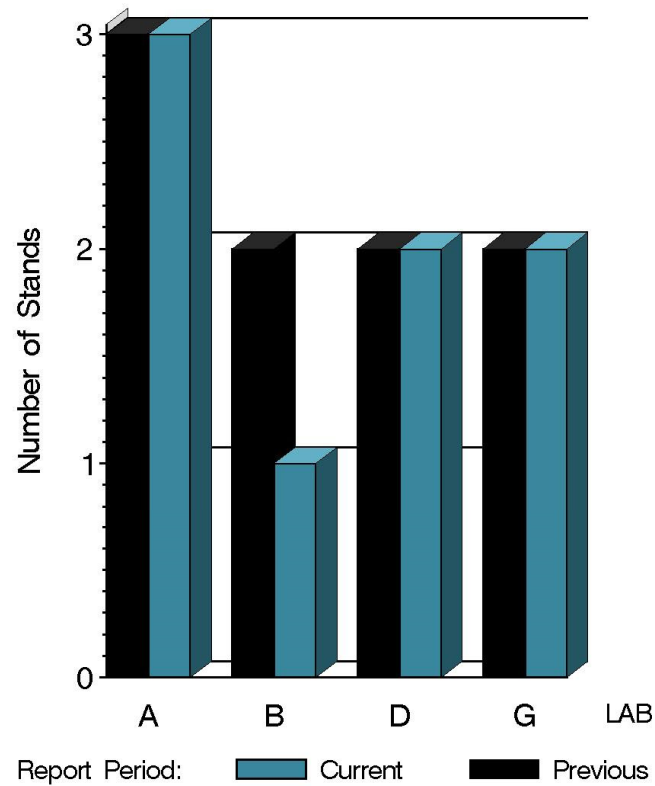
<https://www.astmtmc.org/ftp/docs/gear/l601/semiannualreports/l601-04-2024.pdf>

Distribution: email

L-60-1 (D5704)

	Reporting Data	Calibrated on 3-31-24
Number of Labs	4	4
Number of Stands	8	8

BY-LAB STAND
DISTRIBUTION



9:02:51 23APR2024



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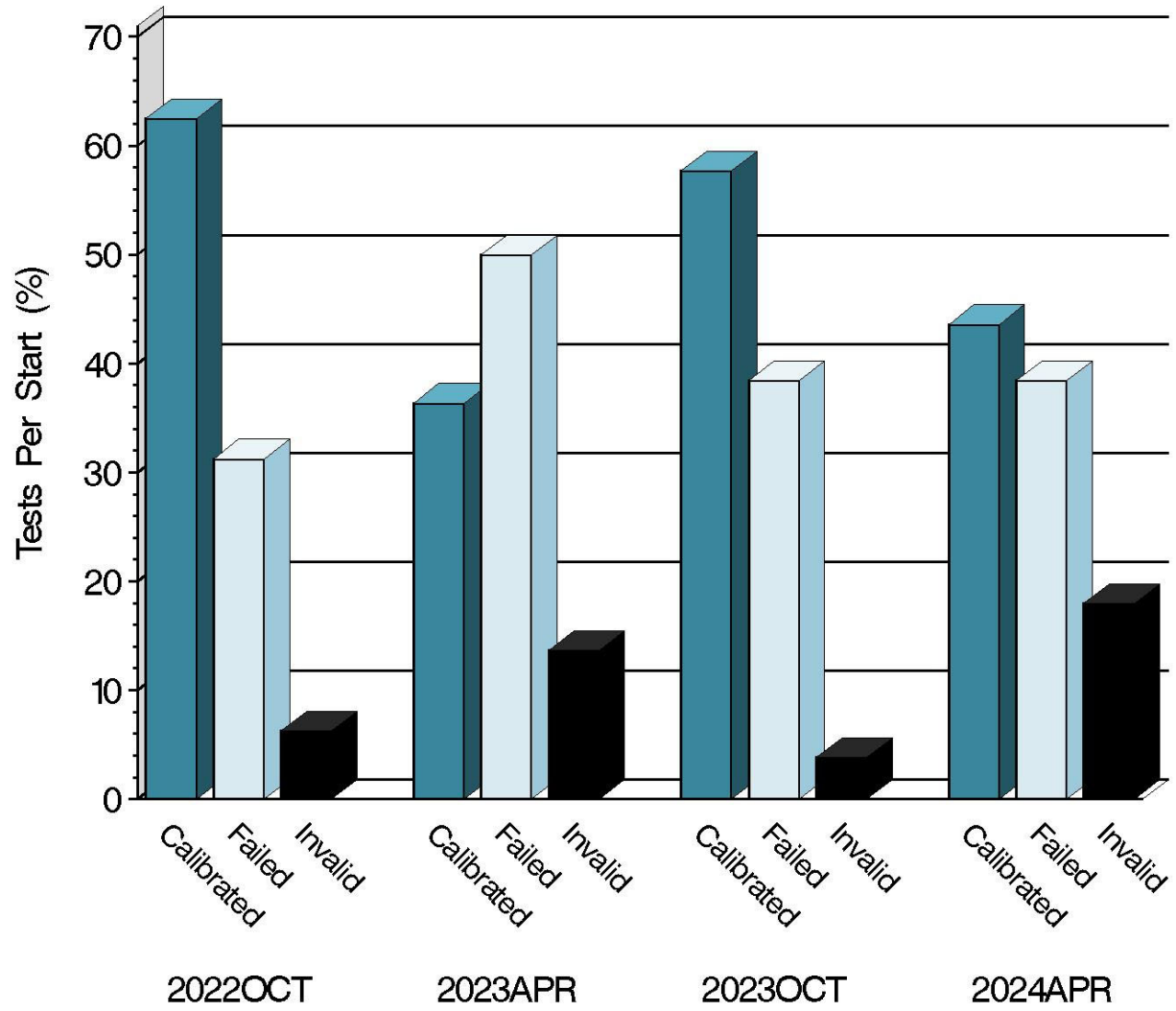
L-60-1 (D5704)

Test Distribution by Oil and Validity

		148-1	155-1	155-2	Totals	
					Last Period	This Period
Accepted for calibration	AC	0	0	17	14	17
Rejected (Mild)	OC	0	0	5	1	5
Rejected (Severe)	OC	0	0	10	3	10
Rejected (Combination)	OC	0	0	0	4	0
Rejected (Precision)	OC	0	0	0	2	0
Invalid cal attempt	LC	0	0	4	1	4
Unacceptable Info Run	MI	0	0	0	0	0
Acceptable info run	NI	0	0	0	2	0
Aborted	XC	0	0	3	0	3
Total		0	0	39	27	39

L-60-1 (D5704)

CALIBRATION ATTEMPT SUMMARY



Resolution

Report Period

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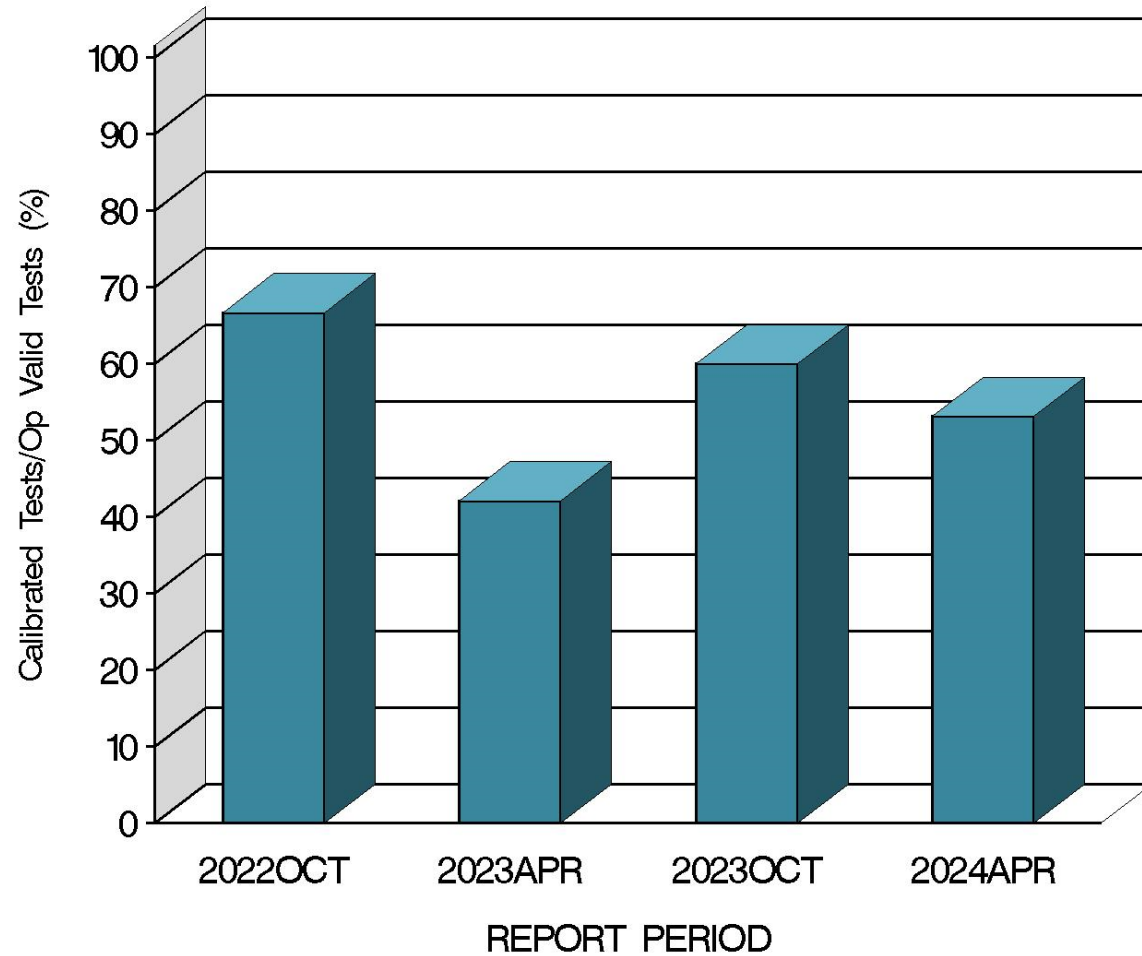
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OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA



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CAUSES FOR LOST TESTS

		Oil		Validity			Loss Rate		
Lab	Cause	148-1	155-2	LC	RC	XC	Lost	Starts	%
G	Temp Calibration Error (3 tests)		•	•			6	18	33.3%
	Oil Loss >20%		•			•			
	Oil temp outside limits		•			•			
	Shutdown time exceeded		•			•			
D	Oil Loss >20%		•	•			1	9	11%
	Lost	0	4	4	0	3			
	Starts	0	39	39	39	39			
	%	0%	10.2%	10.2%	0%	7.7%			

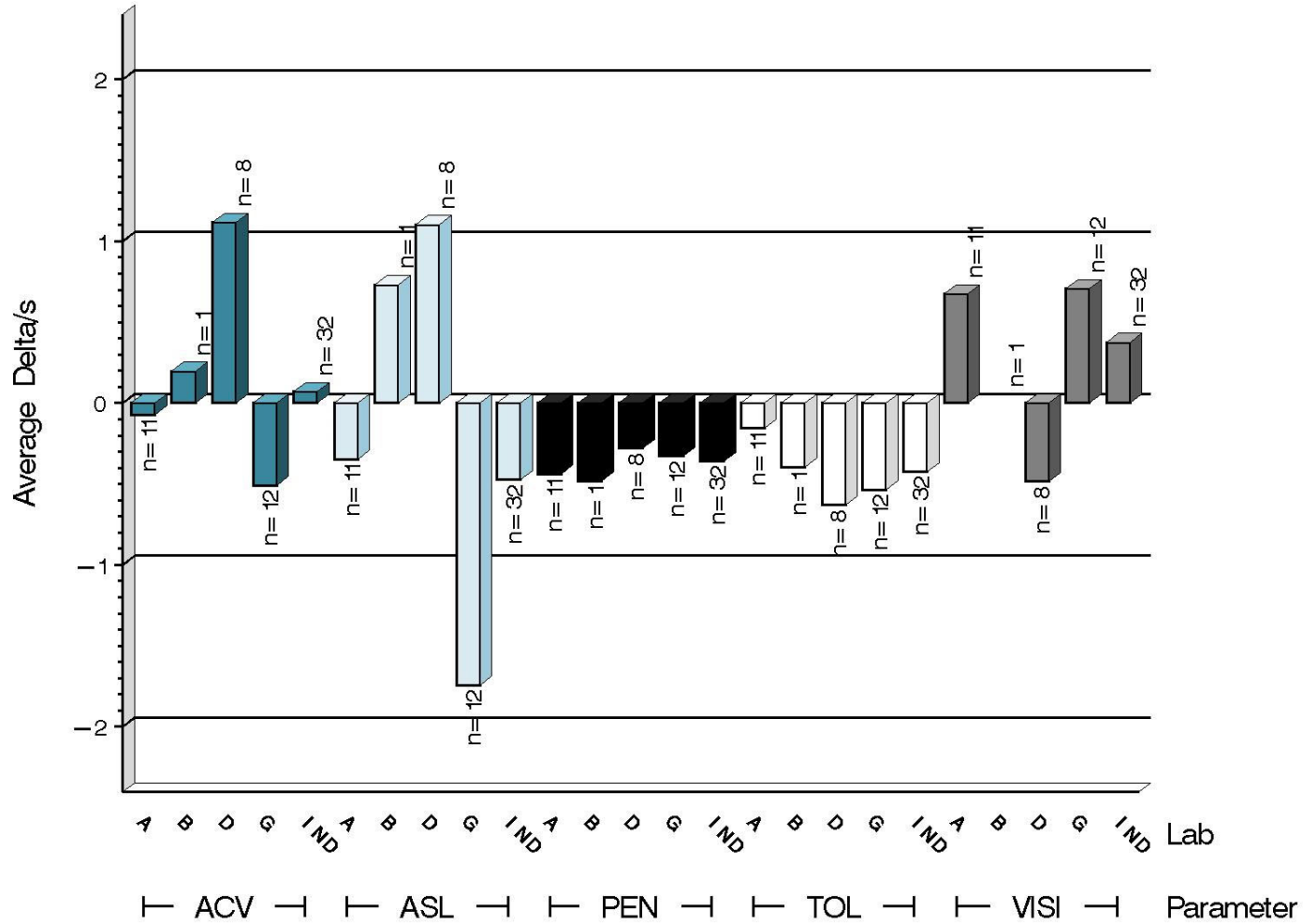
L-60-1 (D5704)

Average Δ /s by Lab						
Lab	n	VISI	PEN	TOL	ACV	ASL
A	11	0.674	-0.440	-0.154	-0.072	-0.347
B	1	0.000	-0.482	-0.394	0.198	0.733
D	8	-0.485	-0.280	-0.630	1.116	1.104
G	12	0.706	-0.328	-0.536	-0.508	-1.743
<i>Industry</i>	32	0.375	-0.359	-0.424	0.070	-0.474
<i>Shift*</i>	32	2.873	-0.148	-0.10 %	0.036 merits	-0.050 merits

*computed using severity adjustment standard deviation.

L-60-1 (D5704)

TEST SEVERITY
DELTA/S BY LAB



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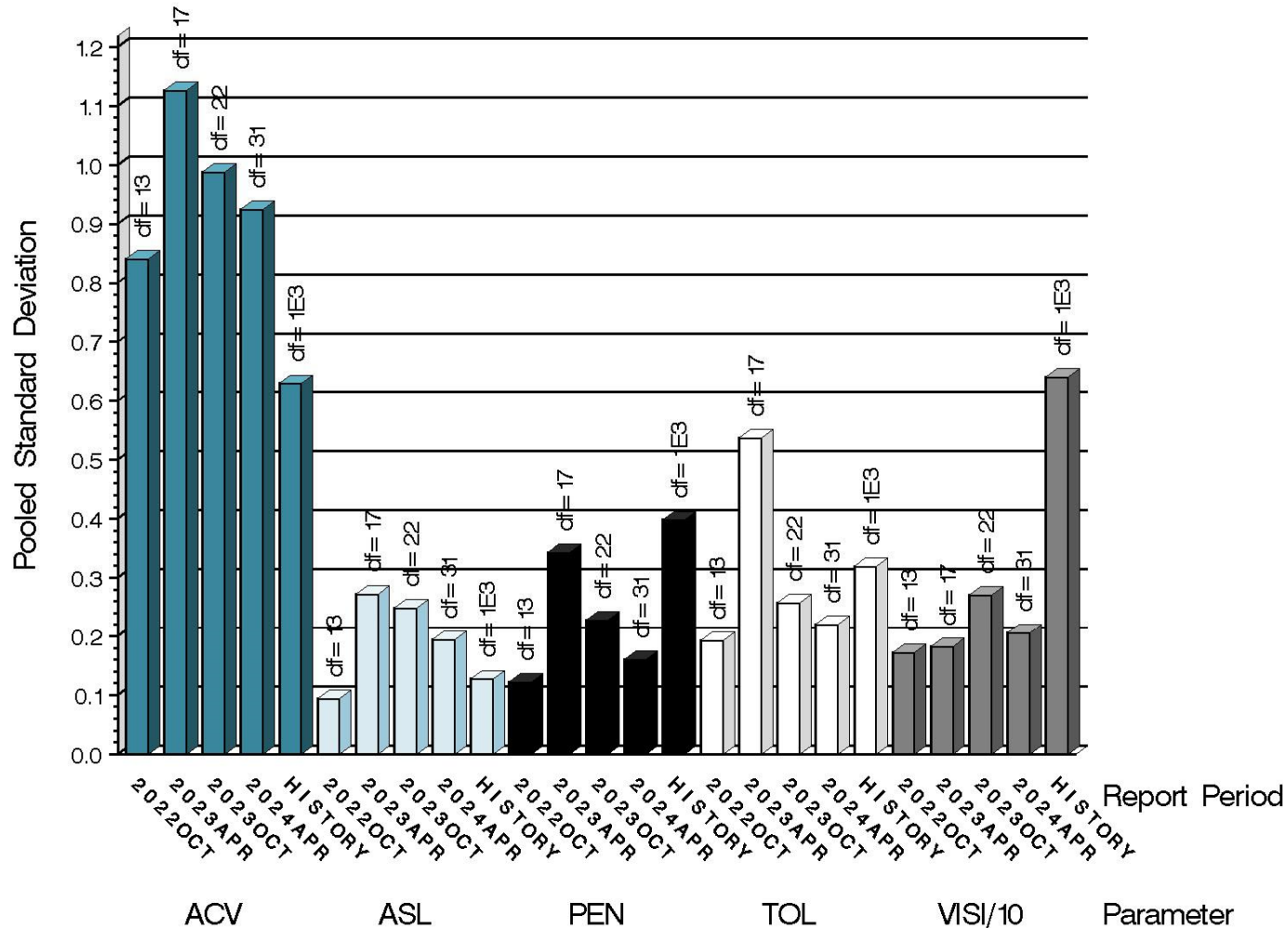


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TEST PRECISION
 POOLED STANDARD DEVIATION
 BY SIX-MONTH ASTM REPORT PERIOD



due to the vastly larger reported results for VISI in relation to the other parameters, it is shown scaled by 0.1

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SUMMARY OF SEVERITY & PRECISION

Severity

ACV remained within the limits this period.

ASL started the period outside of the limits in the severe direction and finished the reporting period exceeding the limits in the mild direction.

TOL remained within the limits this period.

VISI remained within the limits this period.

Precision

ACV and ASL both exceeded the action limit this period but have now returned within limits.

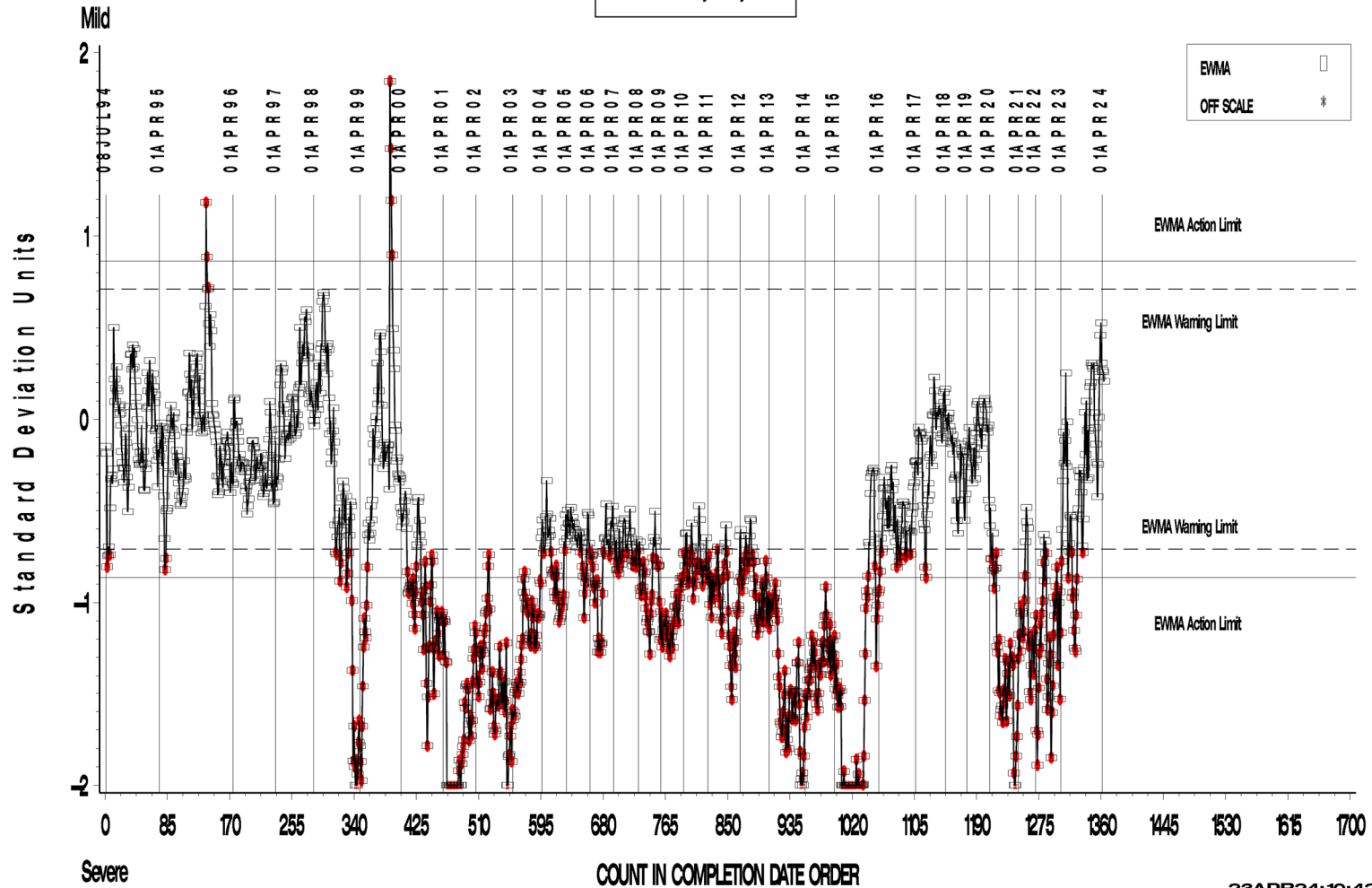
Industry control charts follow.

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Severity Analysis



23APR24:10:42



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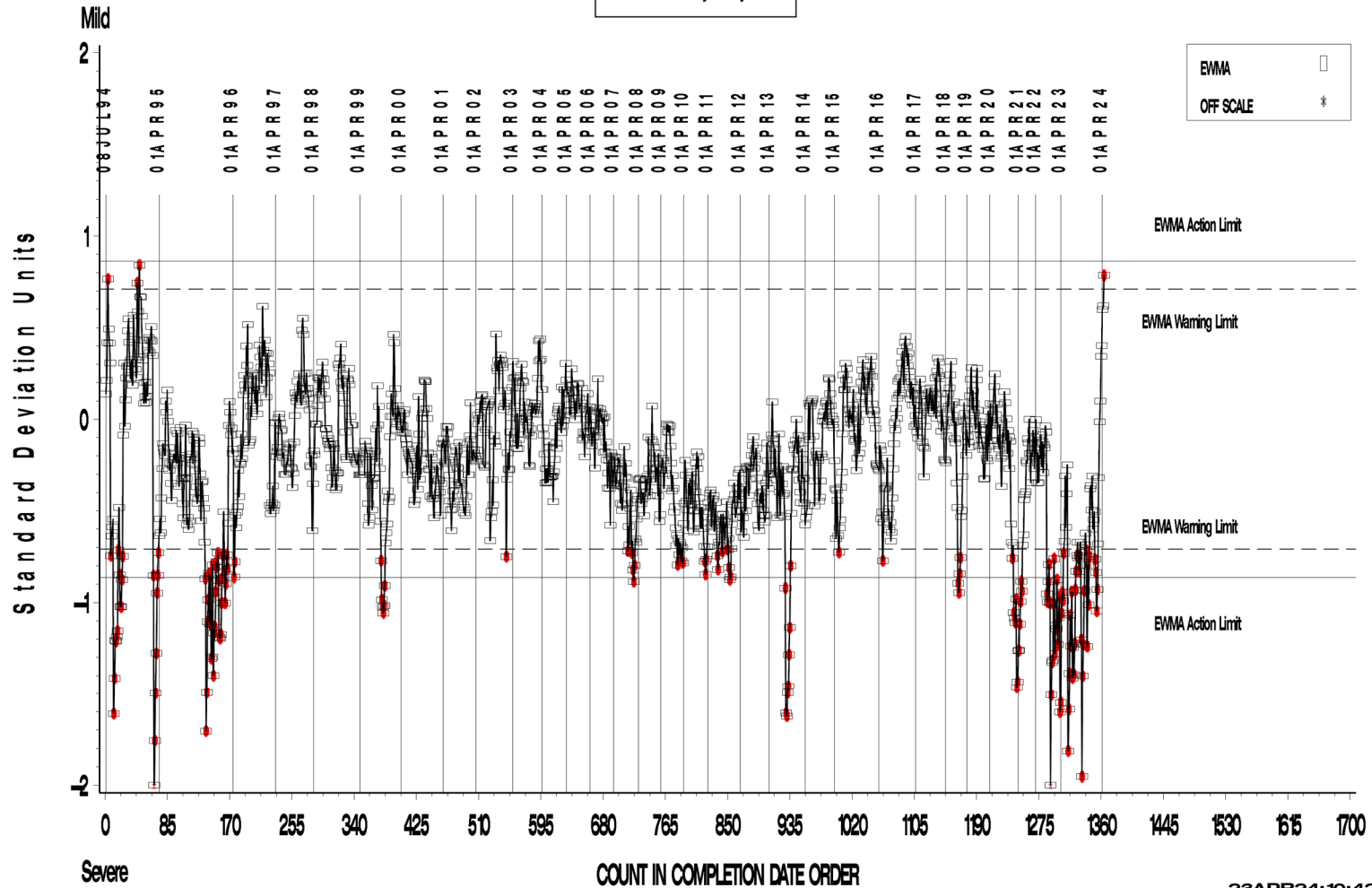
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L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Severity Analysis



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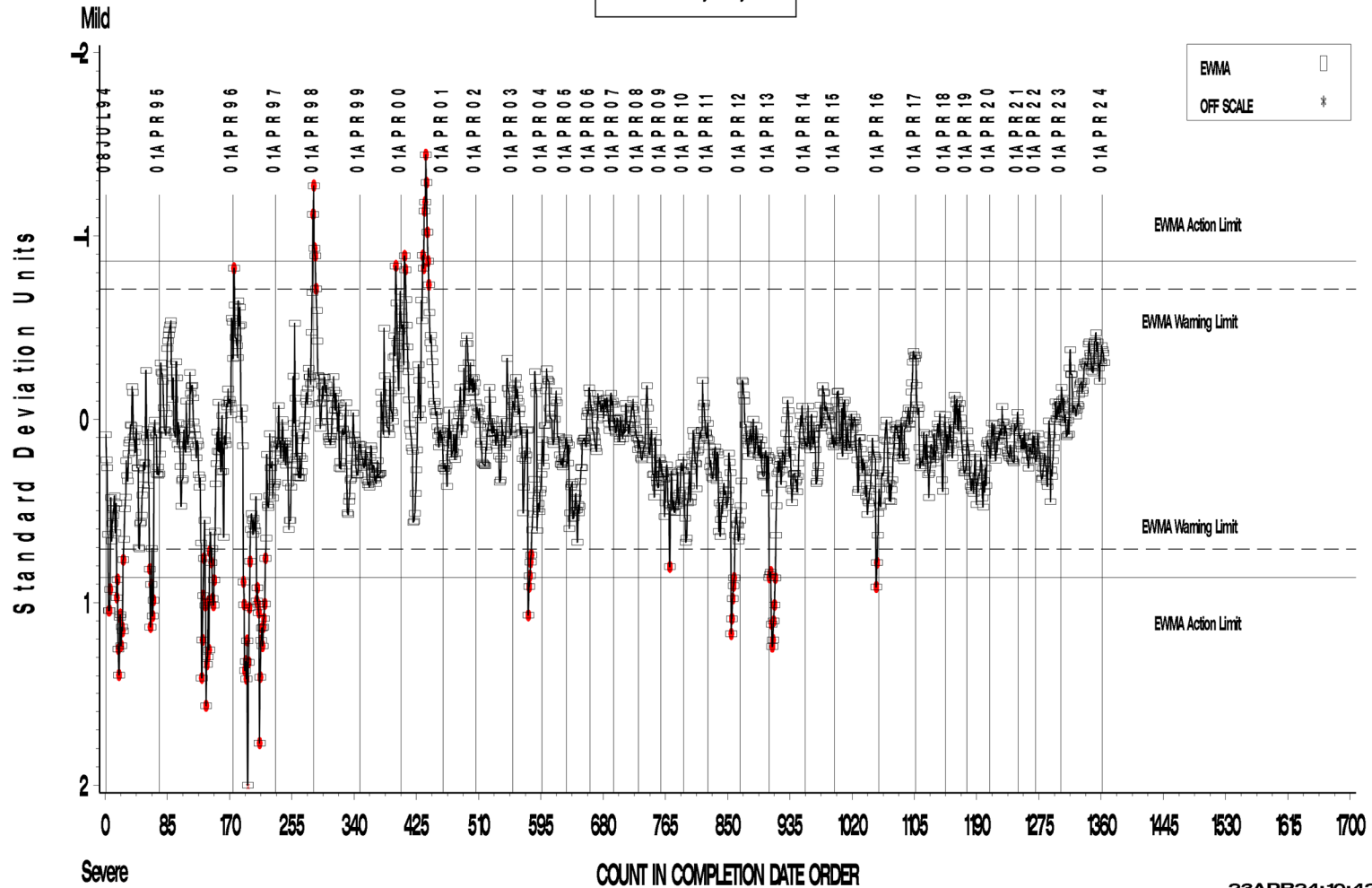
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Severity Analysis



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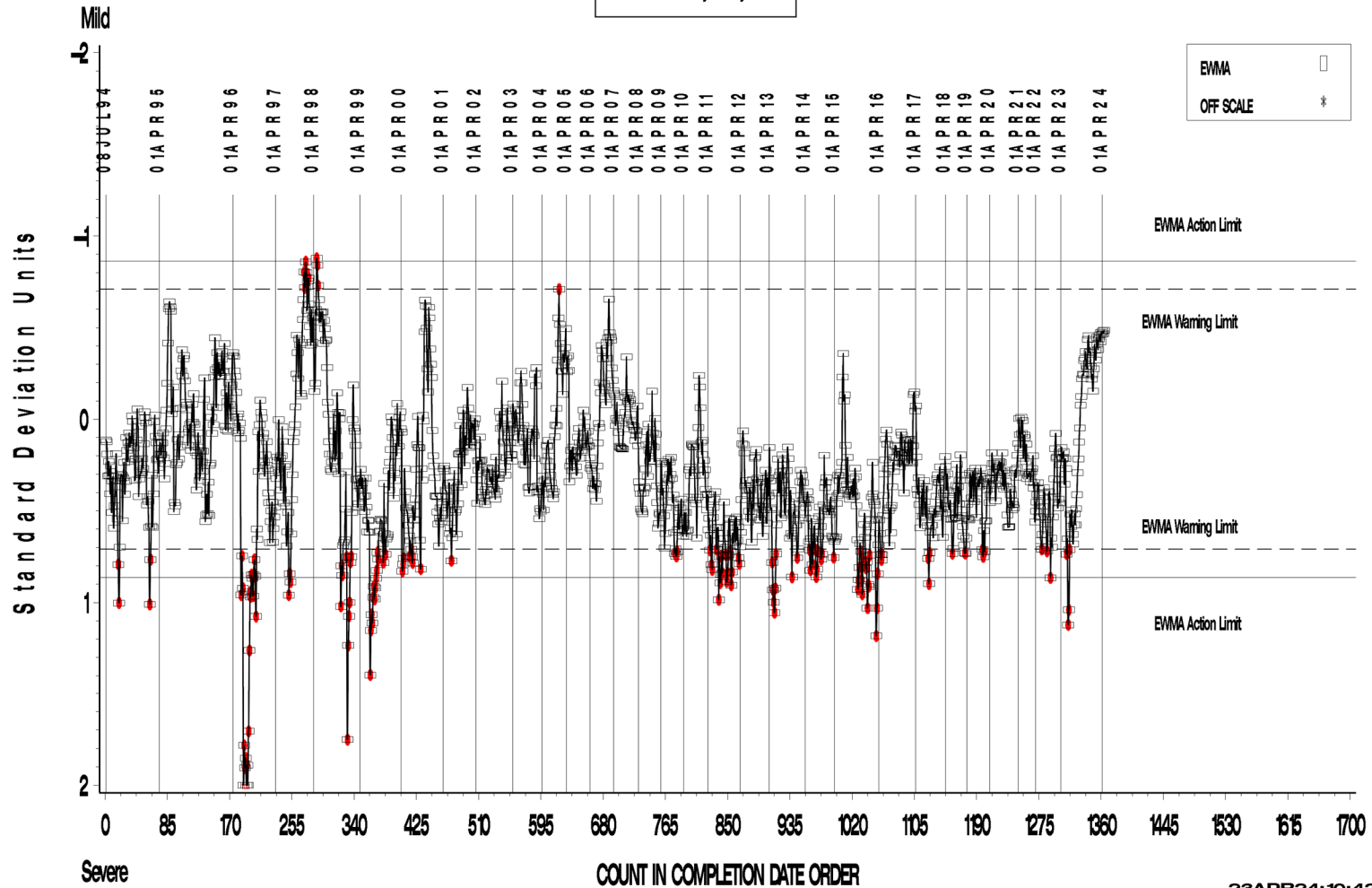
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Severity Analysis



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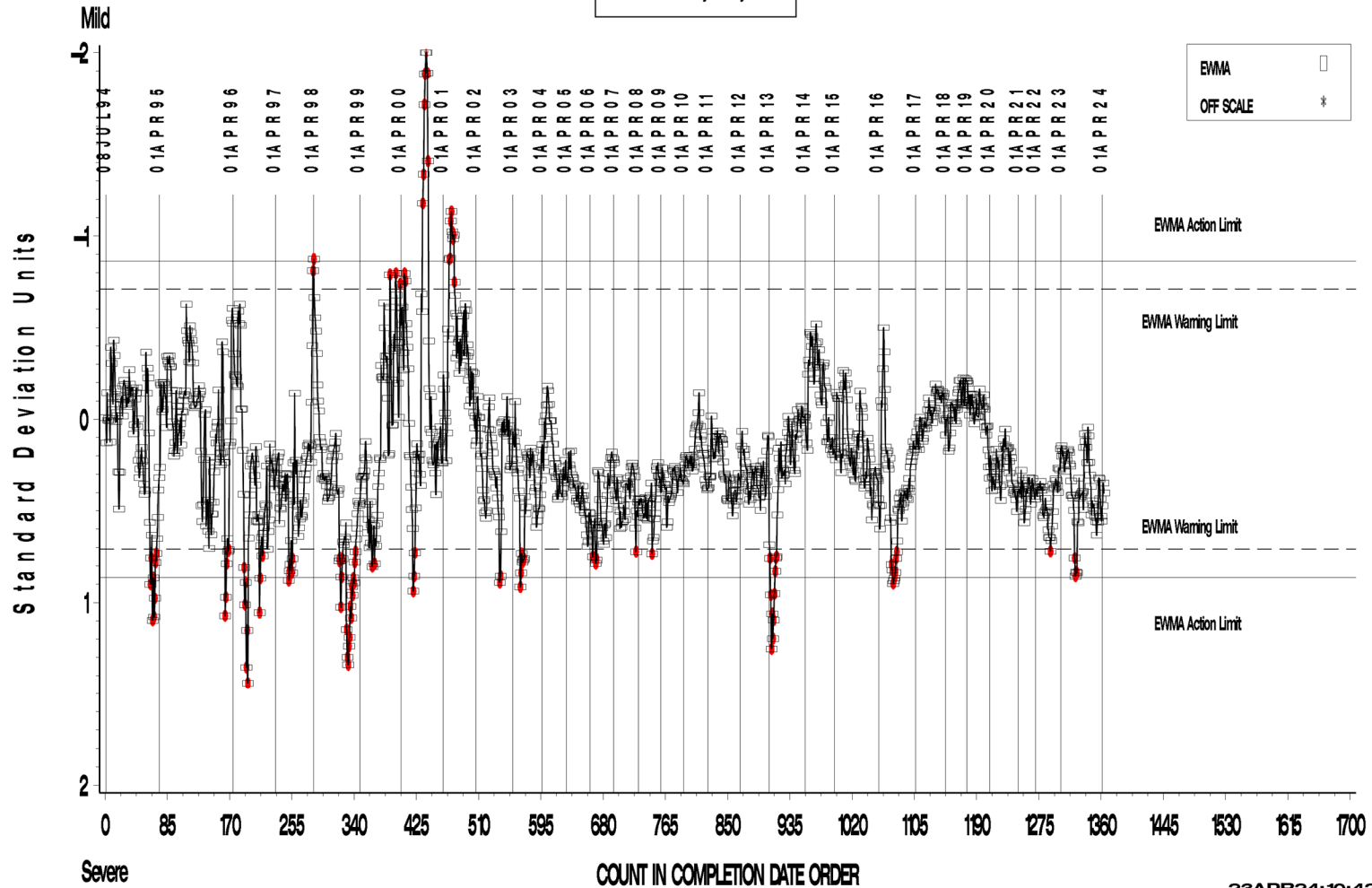
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L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Severity Analysis



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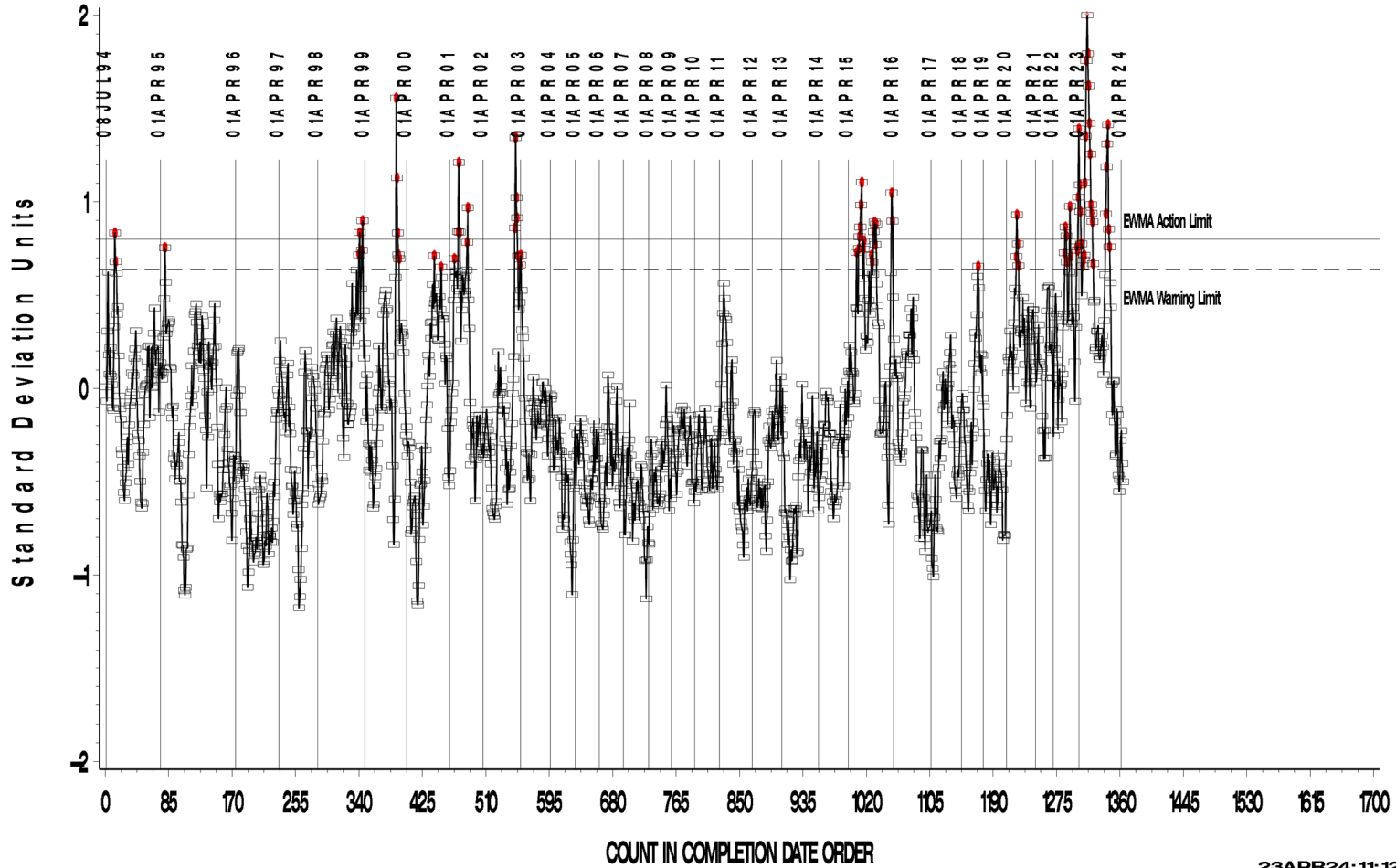
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L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Precision Analysis



23APR24: 11: 12



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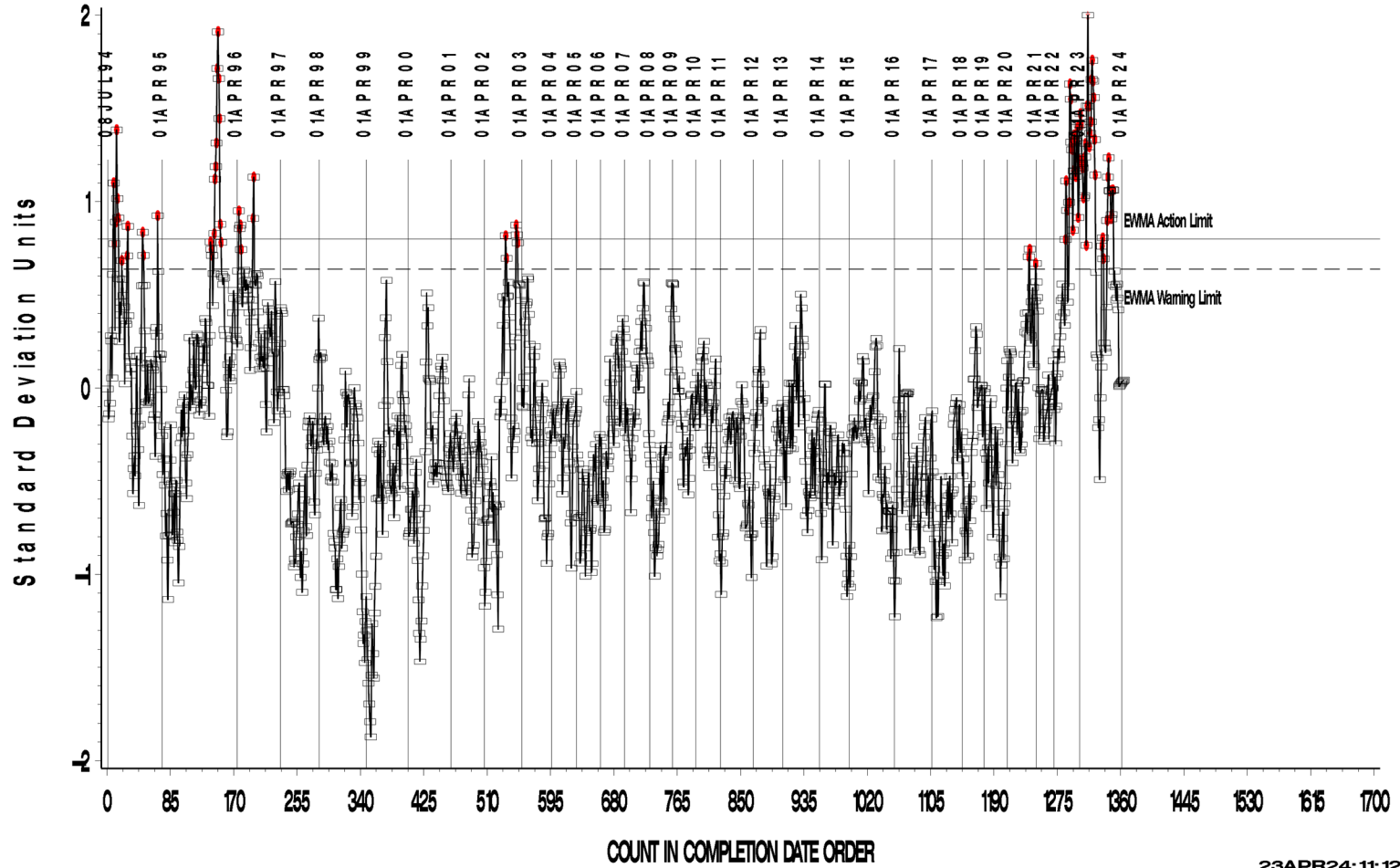
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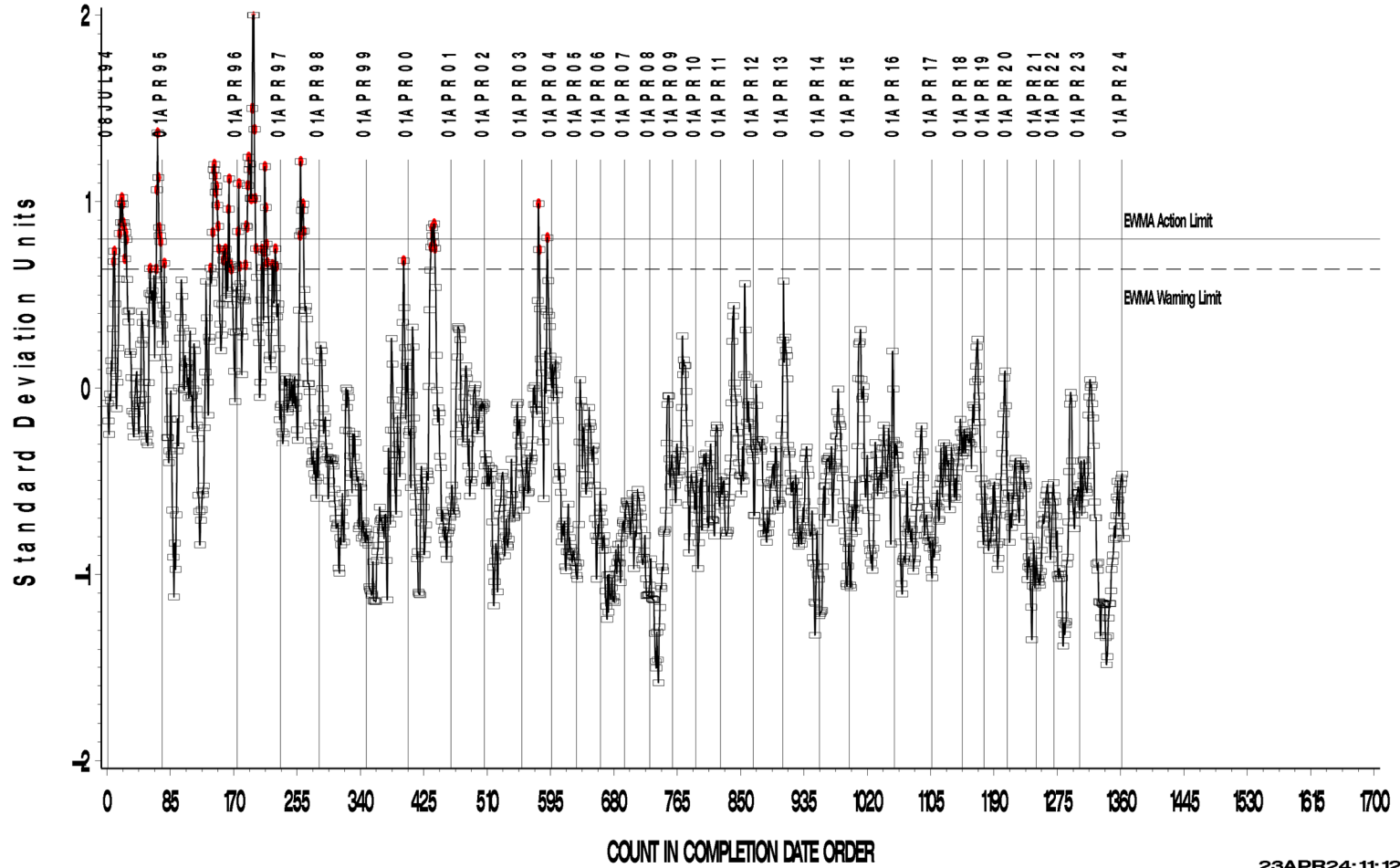
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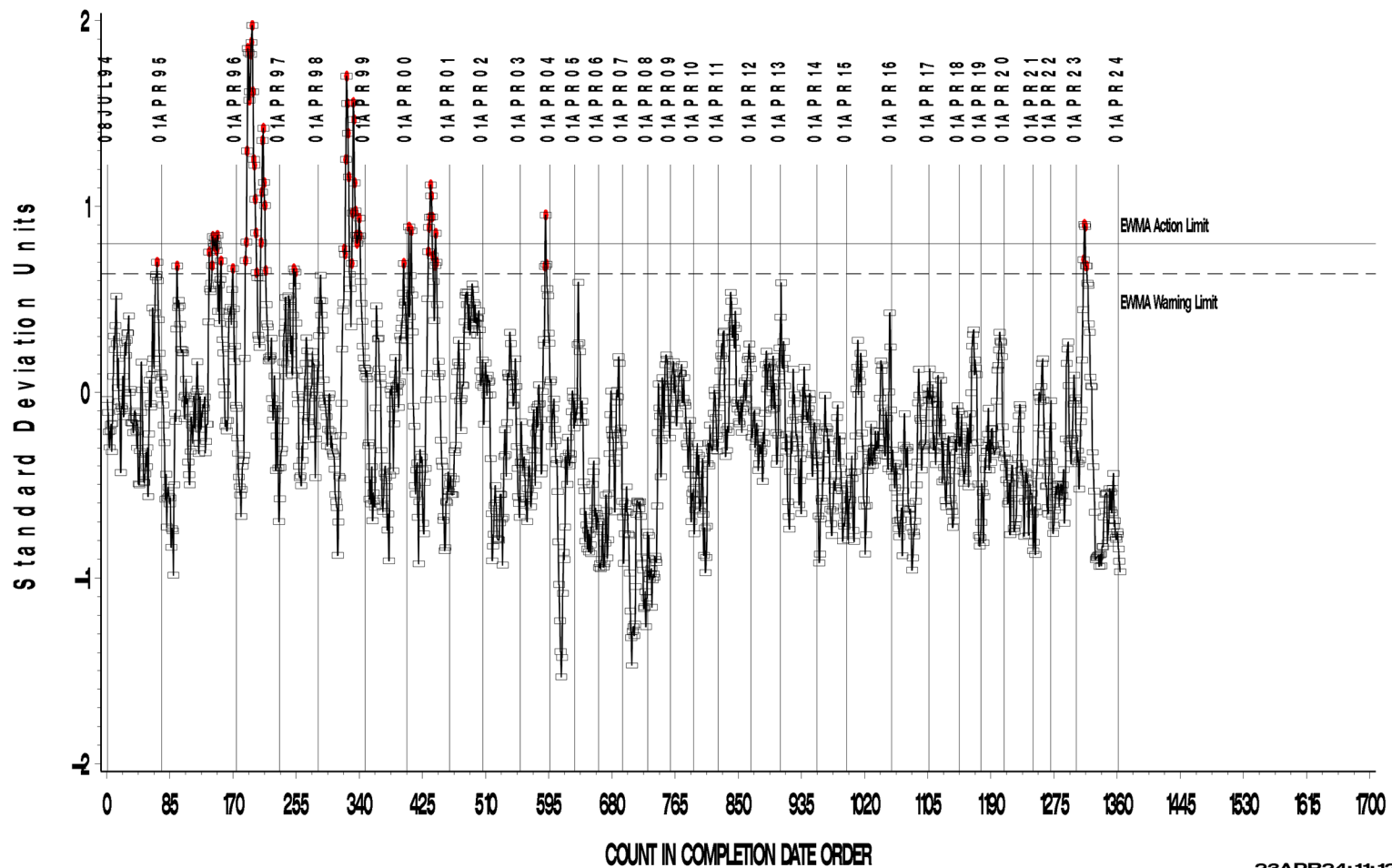
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L-60-1 (D5704)

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REF. FINAL TOLUENE INSOLUBLES

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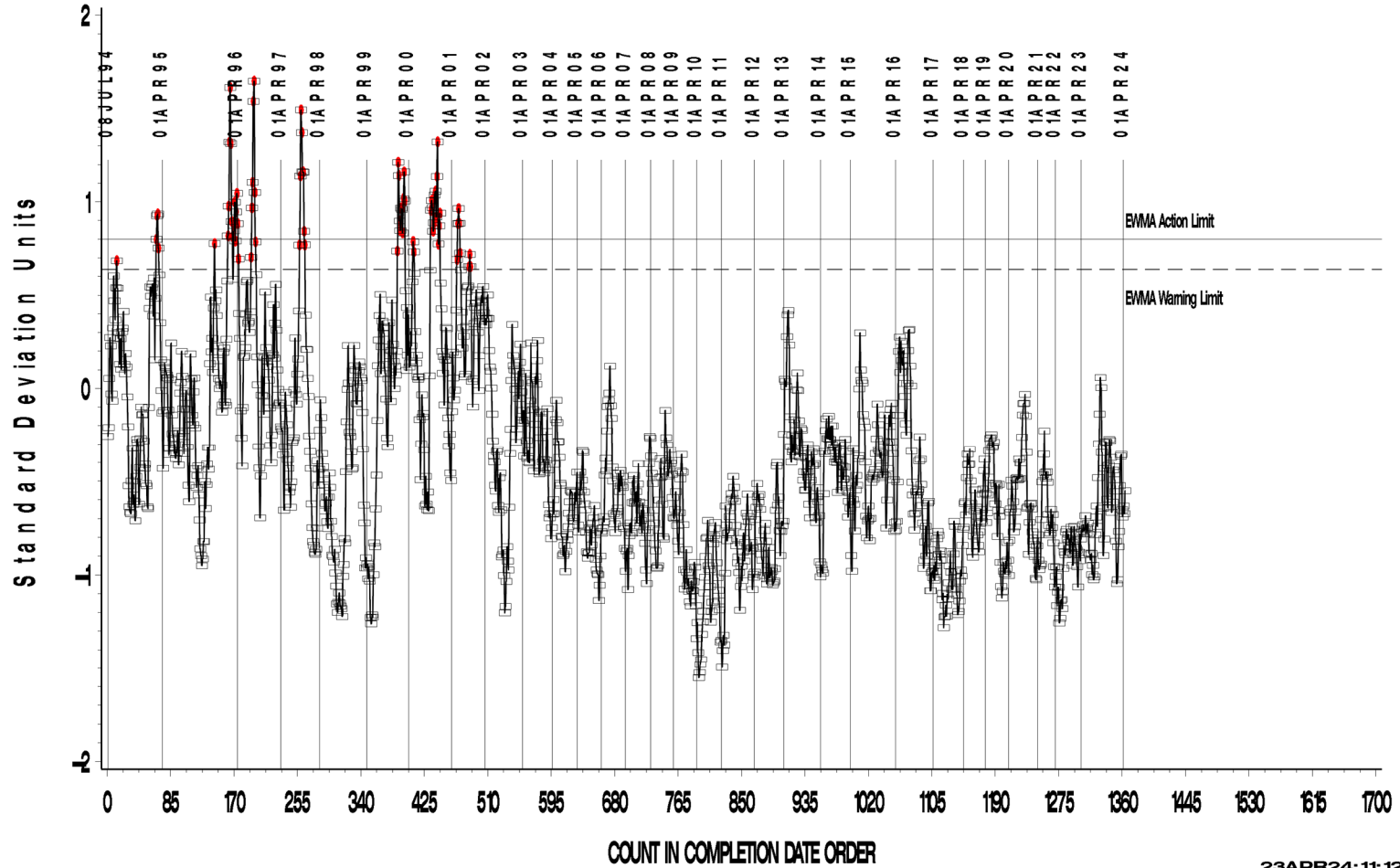
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L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

CUSUM Severity Analysis



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L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

CUSUM Severity Analysis



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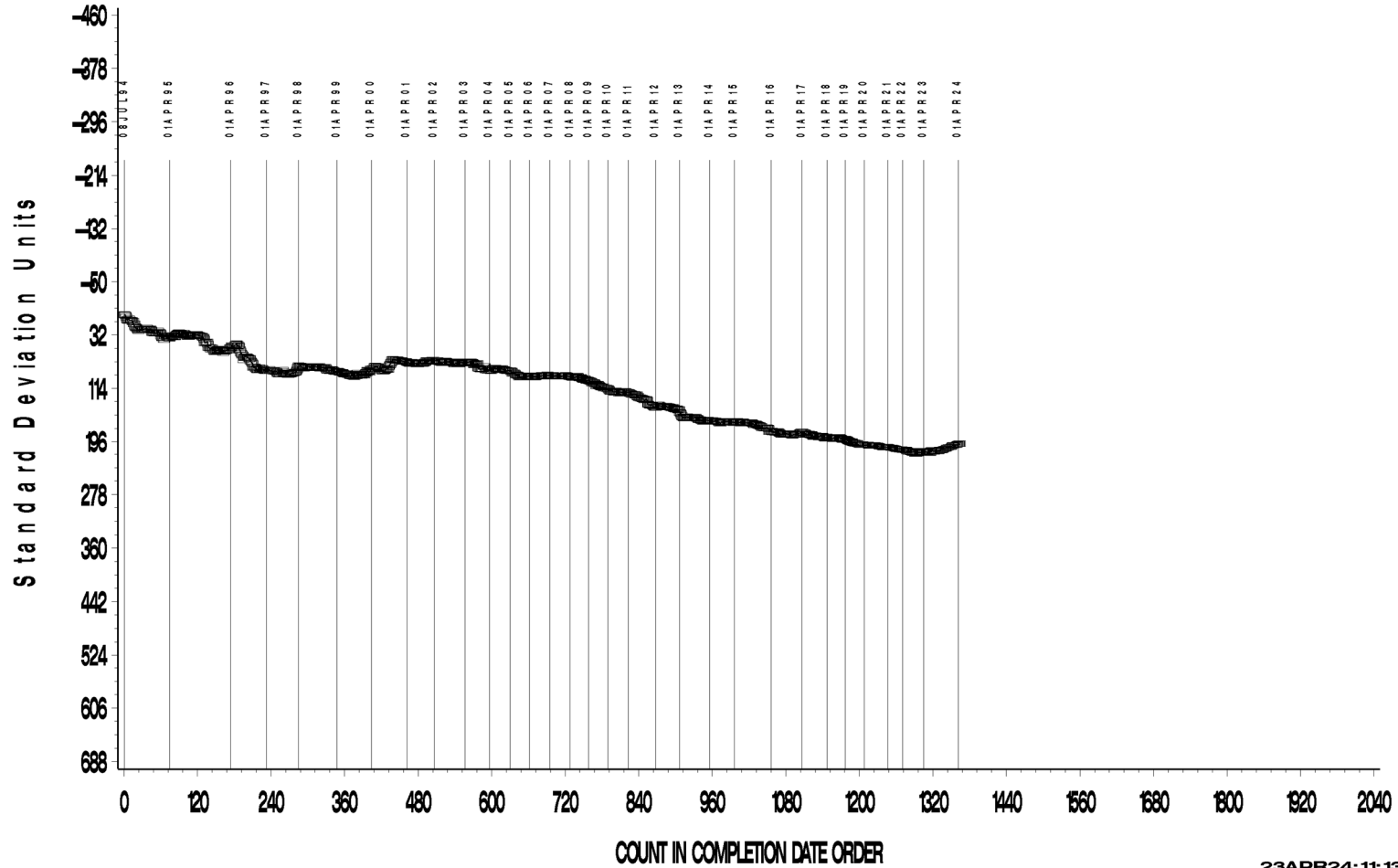
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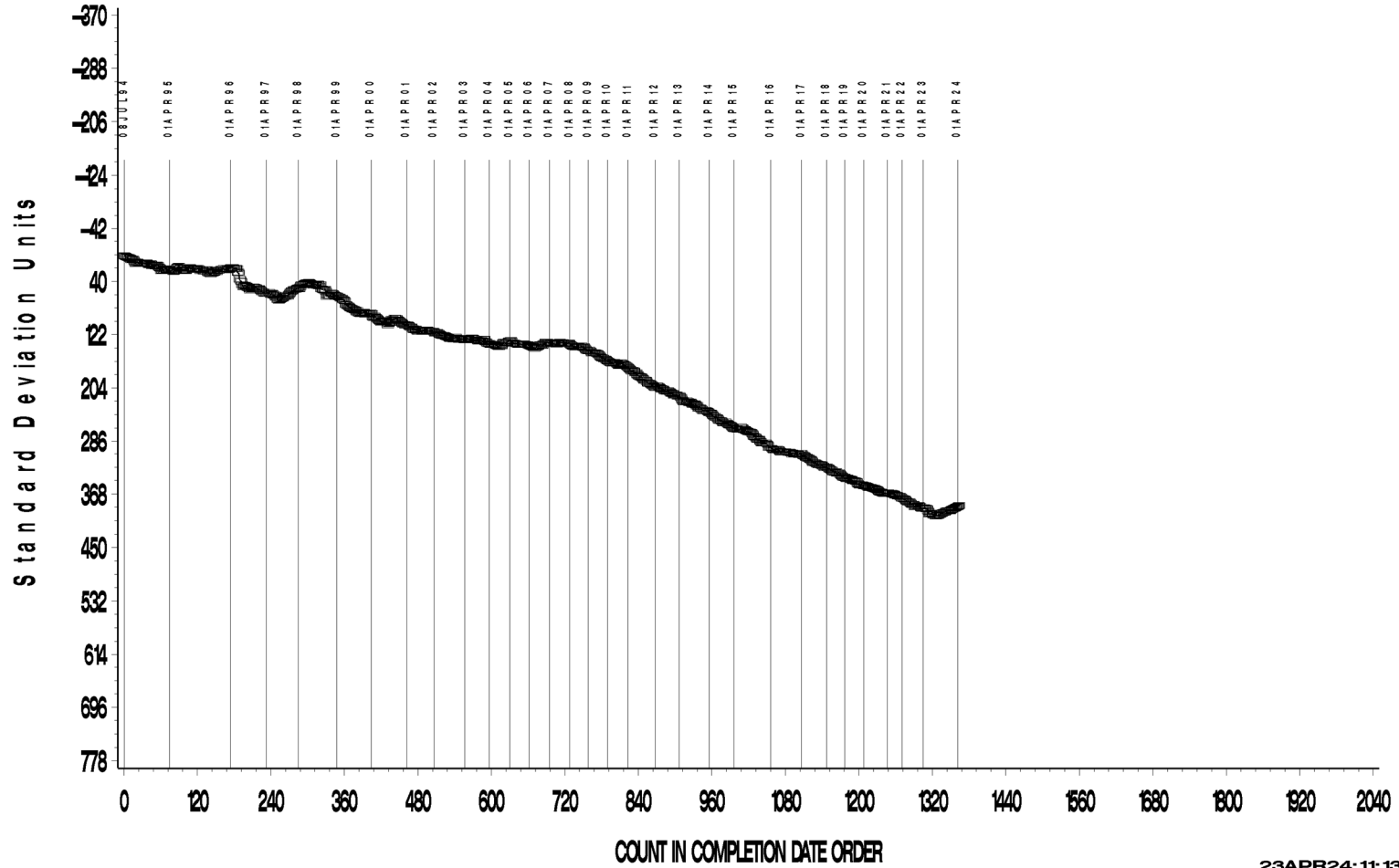
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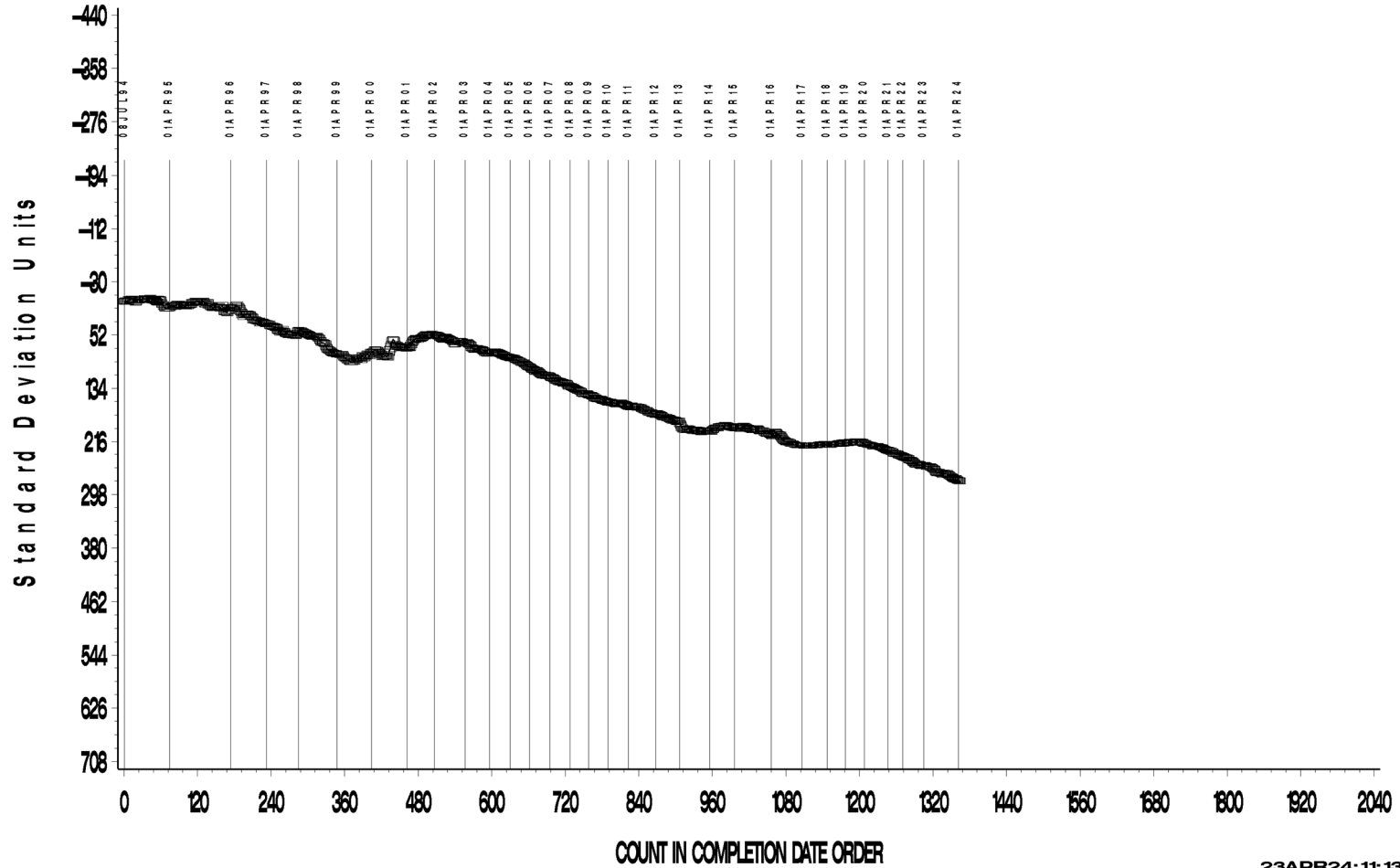
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L-60-1 (D5704)

TIMELINE ADDITIONS

Effective Date	Information Letter	Event
February 7, 2024	L-60-1 IL 24-001	Changes to section 10.7 to allow for non-reference tests to extend beyond the 50-hour test limit. This is necessary since a 300-hour version of the test can be required by the LRI review committee.
February 21, 2024	TMC Memo 24-002	Target update for reference oil 155-2. Targets remained the same for ASL, TOL and PEN. The standard deviation for ACV and the mean and standard deviation for VISI changed with this update. Previous 155-2 TCR's were recalculated to update the Z(i)'s calculations to this target change.

L-60-1 (D5704)

LAB VISITS

One L-60-1 lab visit was conducted during this reporting period. No conflicts with the test procedure were observed during this visit.

INFORMATION LETTERS

Information letter 24-001 was issued during this reporting period. See the previous timelines and events section for more information on the content of this information letter.

L-60-1 (D5704)

STATUS OF REFERENCE OIL SUPPLY

Oil	Tests	Year	Blend Quantity	TMC Inventory	Estimated Life	Comment
155-1	L-33-1, L-37-1, L-60-1, HTCT, OSCT	2010	495	27.14	1.5 years	
155-2	L-33-1, L-37-1, L-60-1, HTCT, OSCT	2020	265	208	6 years	155-2 has replaced 155-1 for tests, L-33-1, L-60-1

The panel approved 155-2 as a replacement for 155-1 in September 2023.

Reference oil 148-1 was removed from the reference oil pool in August 2023. It is not possible to obtain a reblend of this oil. The panel has begun the search process for a possible replacement for this oil.