



Test Monitoring Center


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<http://astmtmc.cmu.edu>
412-365-1000

MEMORANDUM: 16-009

DATE: April 28, 2016

TO: Brad Bubonic, Chairman, L-60-1 Surveillance Panel

FROM: Scott Parke 

SUBJECT: L-60-1 Reference Oil Testing from October 1, 2015 through March 31, 2016

Please find attached a summary of testing activity this period.

SDP/sdp/mem16-009.sdp.doc

cc: Frank Farber

Jeff Clark

L-60-1 Surveillance Panel

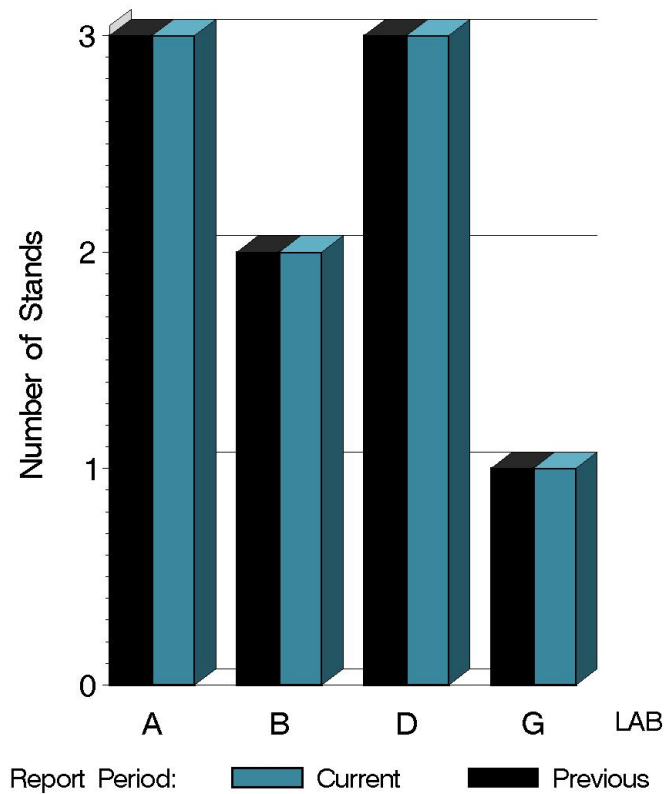
<ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/semiannualreports/l601-04-2016.pdf>

Distribution: email

L-60-1 (D5704)

	Reporting Data	Calibrated on 3-31-16
Number of Labs	4	4
Number of Stands	9	8

BY-LAB STAND
DISTRIBUTION



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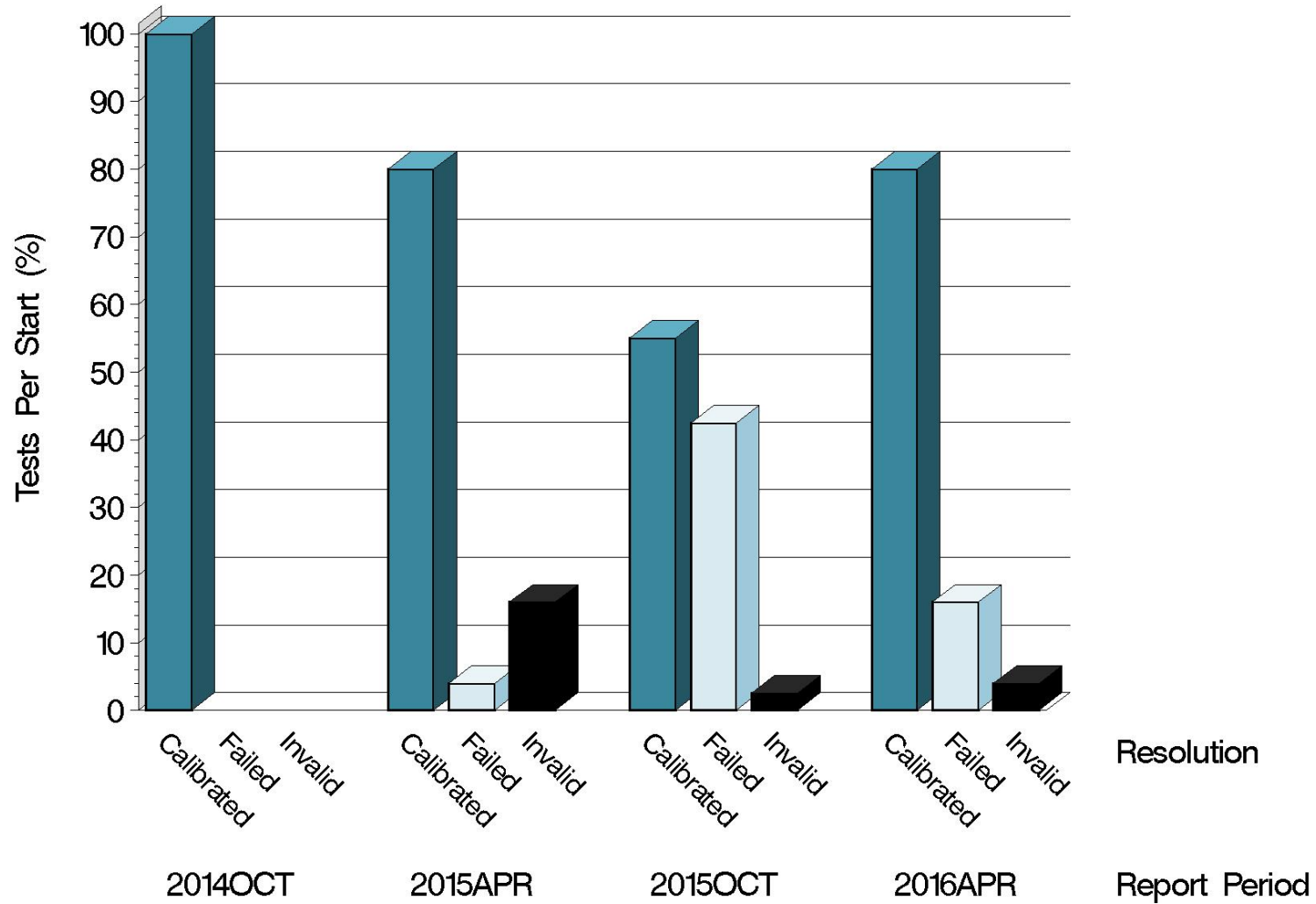
L-60-1 (D5704)

Test Distribution by Oil and Validity

					Totals	
		148-1	151-2	155-1	Last Period	This Period
Accepted for calibration	AC	12	3	5	22	20
Rejected (Mild)	OC	0	0	0	1	0
Rejected (Severe)	OC	0	1	0	14	1
Rejected (Precision)	OC	1	0	2	2	3
Invalidated calibration	LC	0	0	0	0	0
Acceptable info run	NI	0	1	0	0	1
Unacceptable info run	MI	0	0	0	0	0
Operationally invalid	RC	0	0	0	0	0
Aborted	XC	1	0	0	1	1
Total		14	5	7	40	26

L-60-1 (D5704)

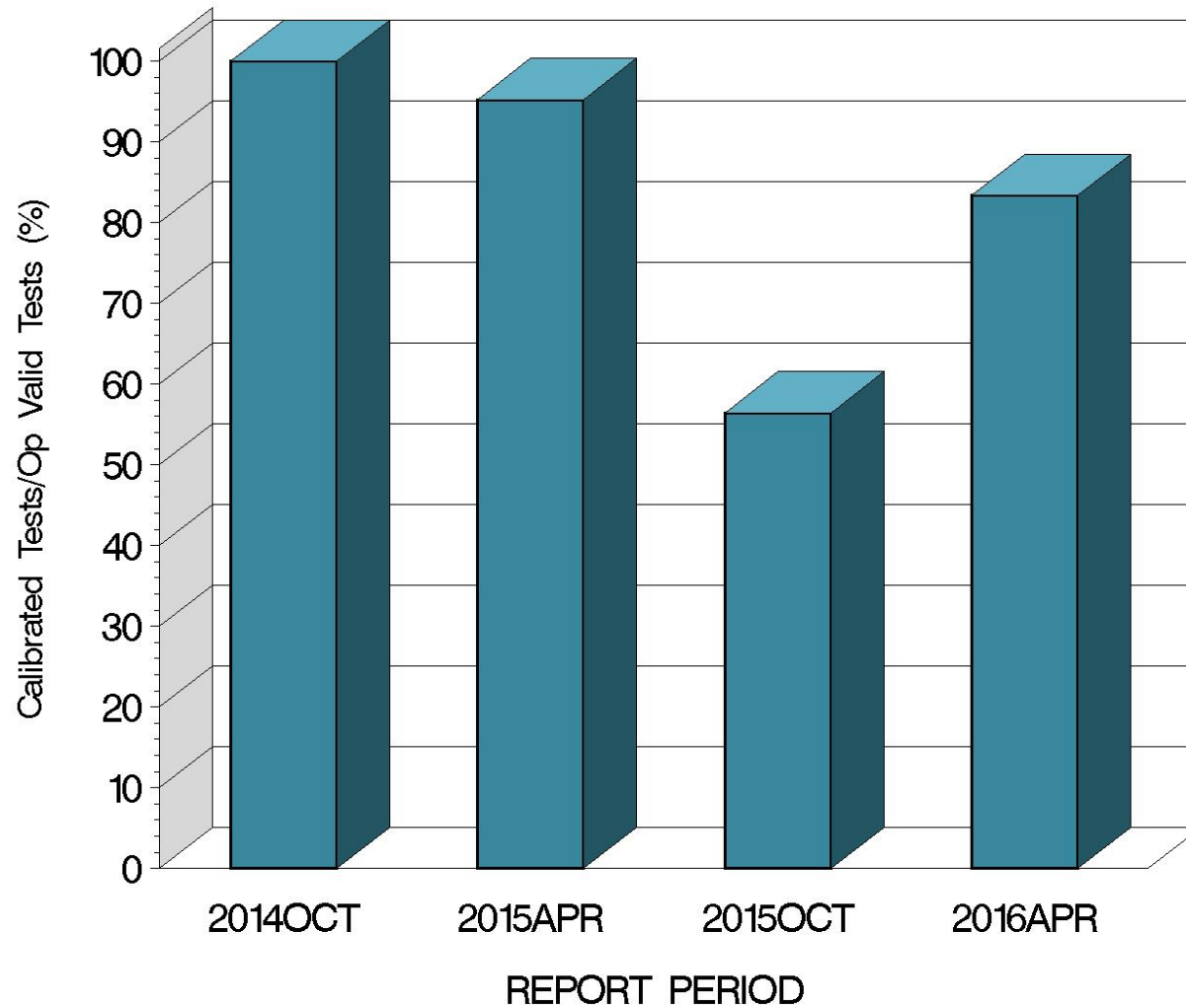
CALIBRATION ATTEMPT SUMMARY



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L-60-1 (D5704)

OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA

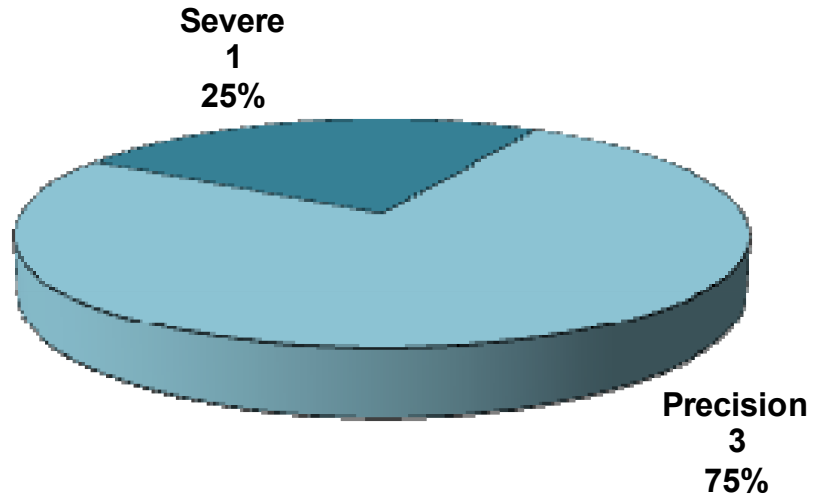


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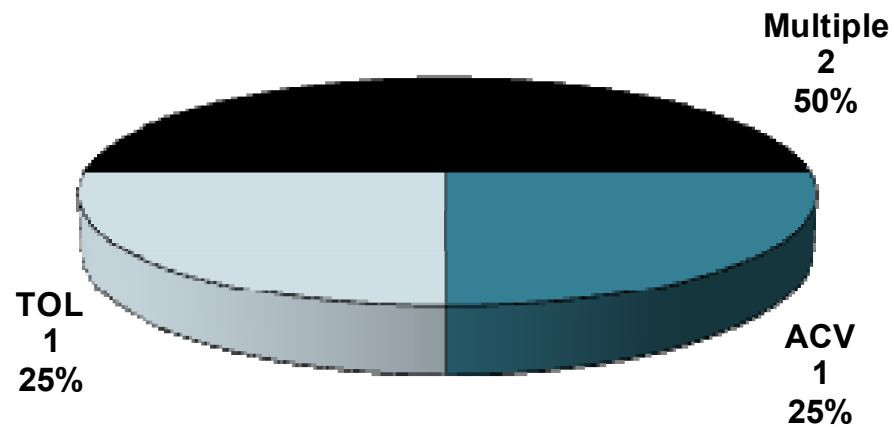
L-60-1 (D5704)

CAUSES FOR FAILED TESTS

By Alarm Type



By Parameter



L-60-1 (D5704)

CAUSES FOR LOST TESTS

		Oil			Validity			Loss Rate		
Lab	Cause	148-1	151-2	155-1	RC	LC	XC	Lost	Starts	%
A	Aborted @34hrs for oil leak	●					●	1	13	8%
	Lost	1	0	0	0	0	1			
	Starts	14	5	7	26	26	26			
	%	7%	0%	0%	0%	0%	4%			

L-60-1 (D5704)

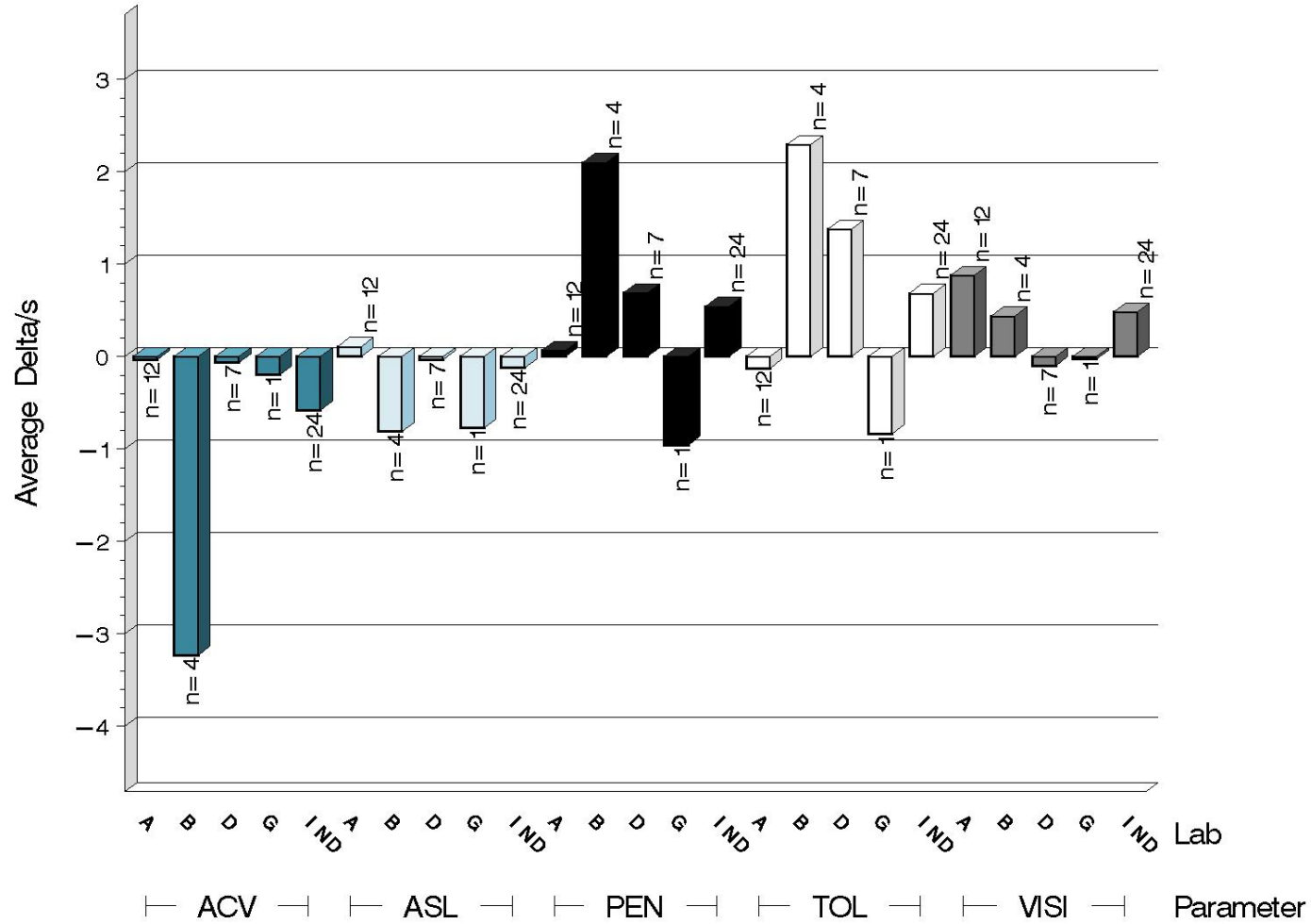
Average Δ /s by Lab						
Lab	n	VISI	PEN	TOL	ACV	ASL
A	12	0.878	0.066	-0.126	-0.031	0.109
B	4	0.440	2.102	2.295	-3.232	-0.811
D	7	-0.099	0.690	1.377	-0.062	-0.032
G	1	-0.026	-0.958	-0.835	-0.195	-0.774
Industry	24	0.482	0.545	0.686	-0.580	-0.122
Shift*	24	3.694	0.225	0.171	-0.296	-0.013

*computed using severity adjustment standard deviation. A correction factor was implemented for ACV on October 1, 2015 that is intended to return industry ACV performance to the level originally seen in the test.

L-60-1 (D5704)

TEST SEVERITY

DELTA/S BY LAB

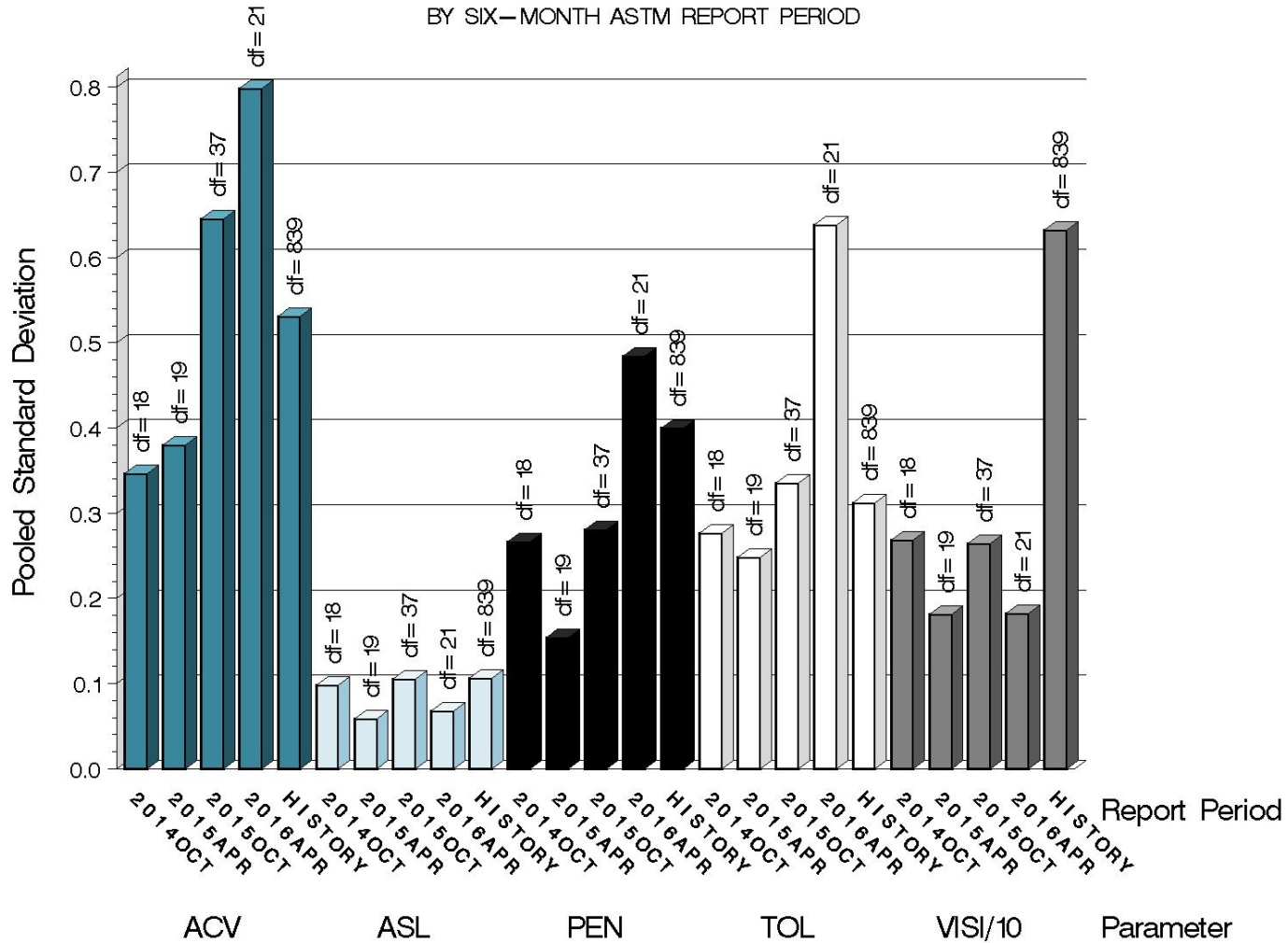


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L-60-1 (D5704)

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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L-60-1 (D5704)

SUMMARY OF SEVERITY & PRECISION

Severity

The Surveillance Panel enacted a correction factor for ACV on October 1, 2015 intended to return ACV to target. Severe ACV results at lab B since then have kept the chart in alarm. Severe PEN and TOL results from lab B have also kept those charts in alarm. ASL and VISI remained within limits this period.

Precision

The severe ACV results from lab B have generated precision alarms this period. Precision for all other parameters continues to be good.

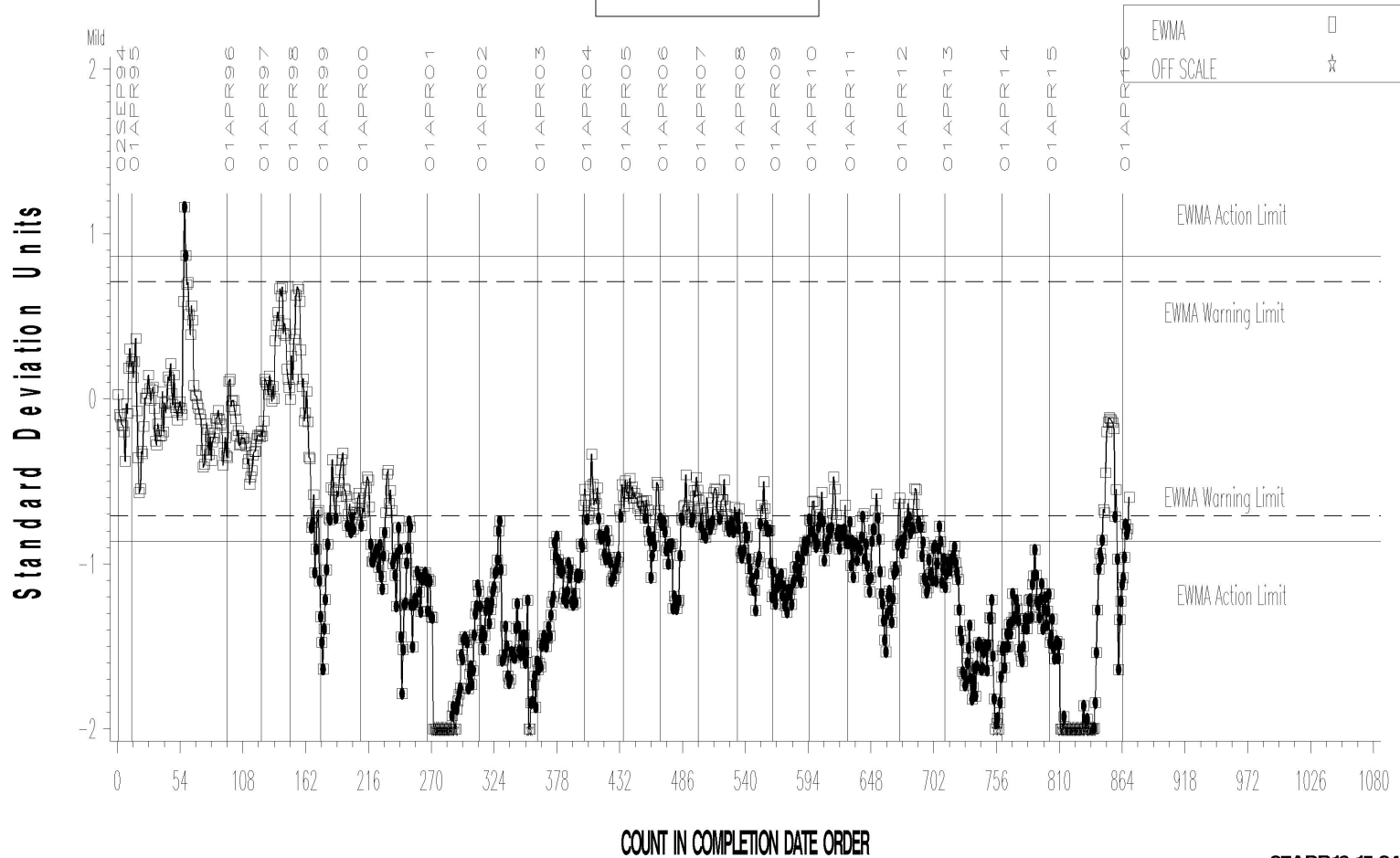
Industry control charts follow.

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Severity Analysis



SPURP

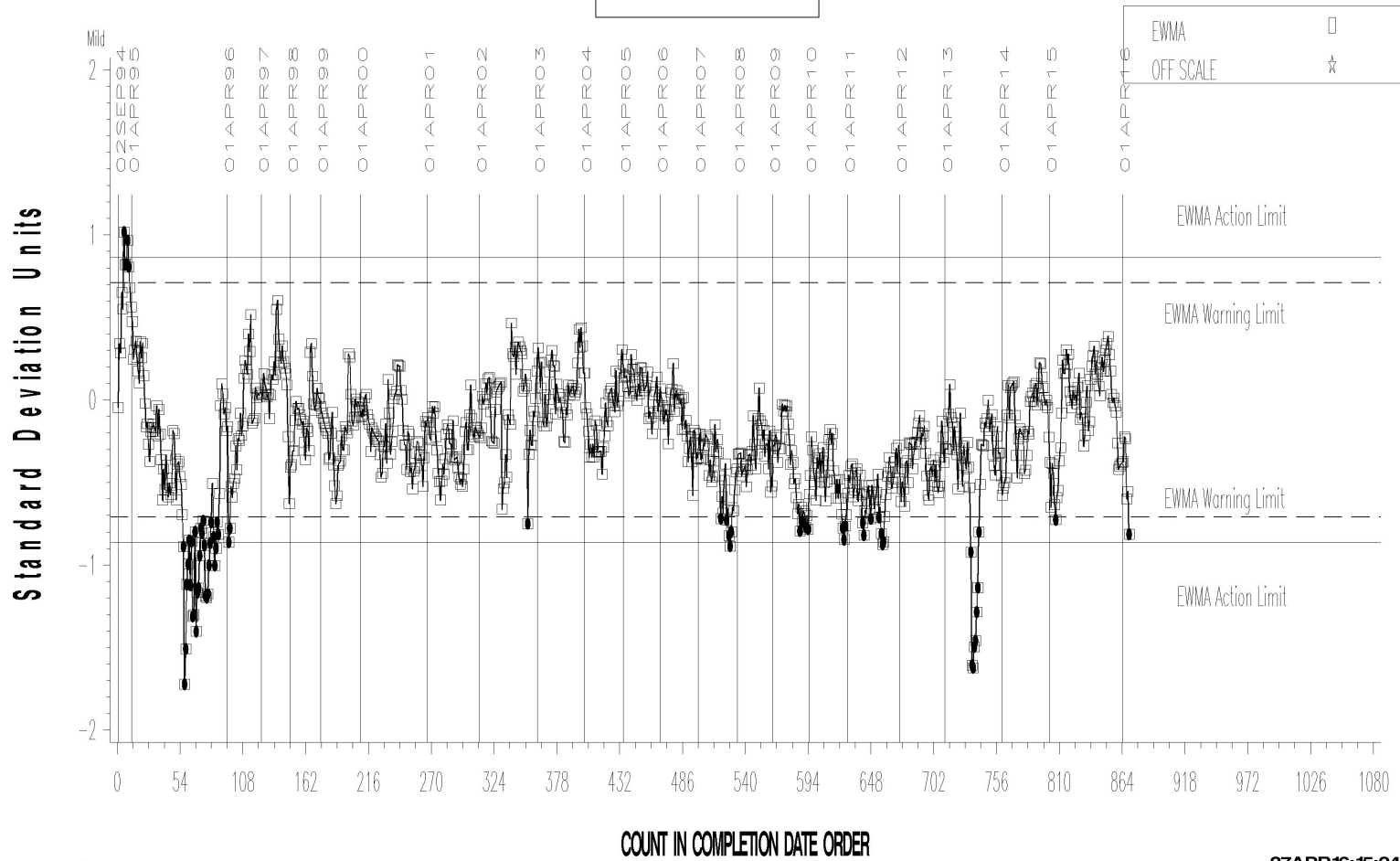
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Severity Analysis



SPURP

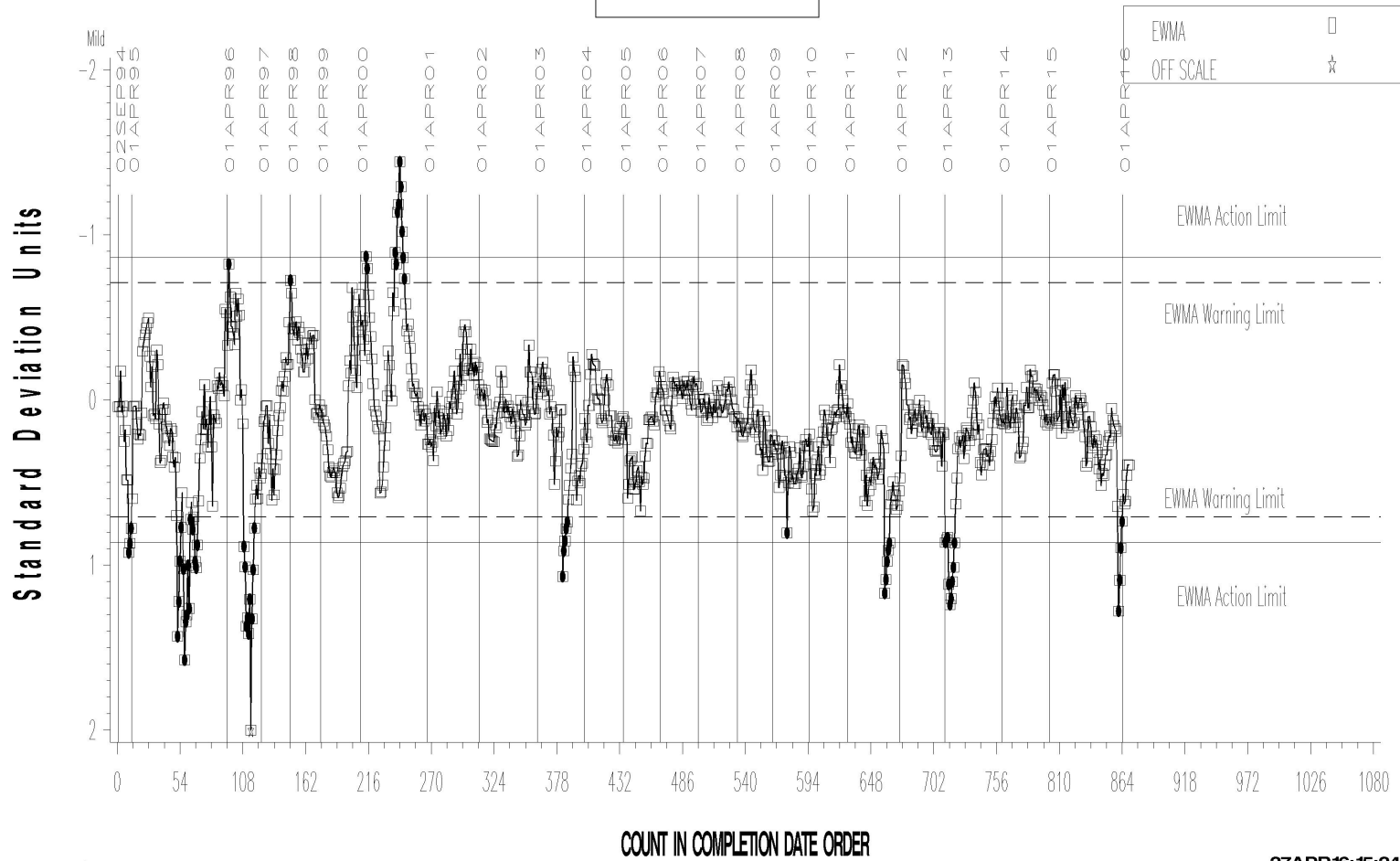
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Severity Analysis



SPURP

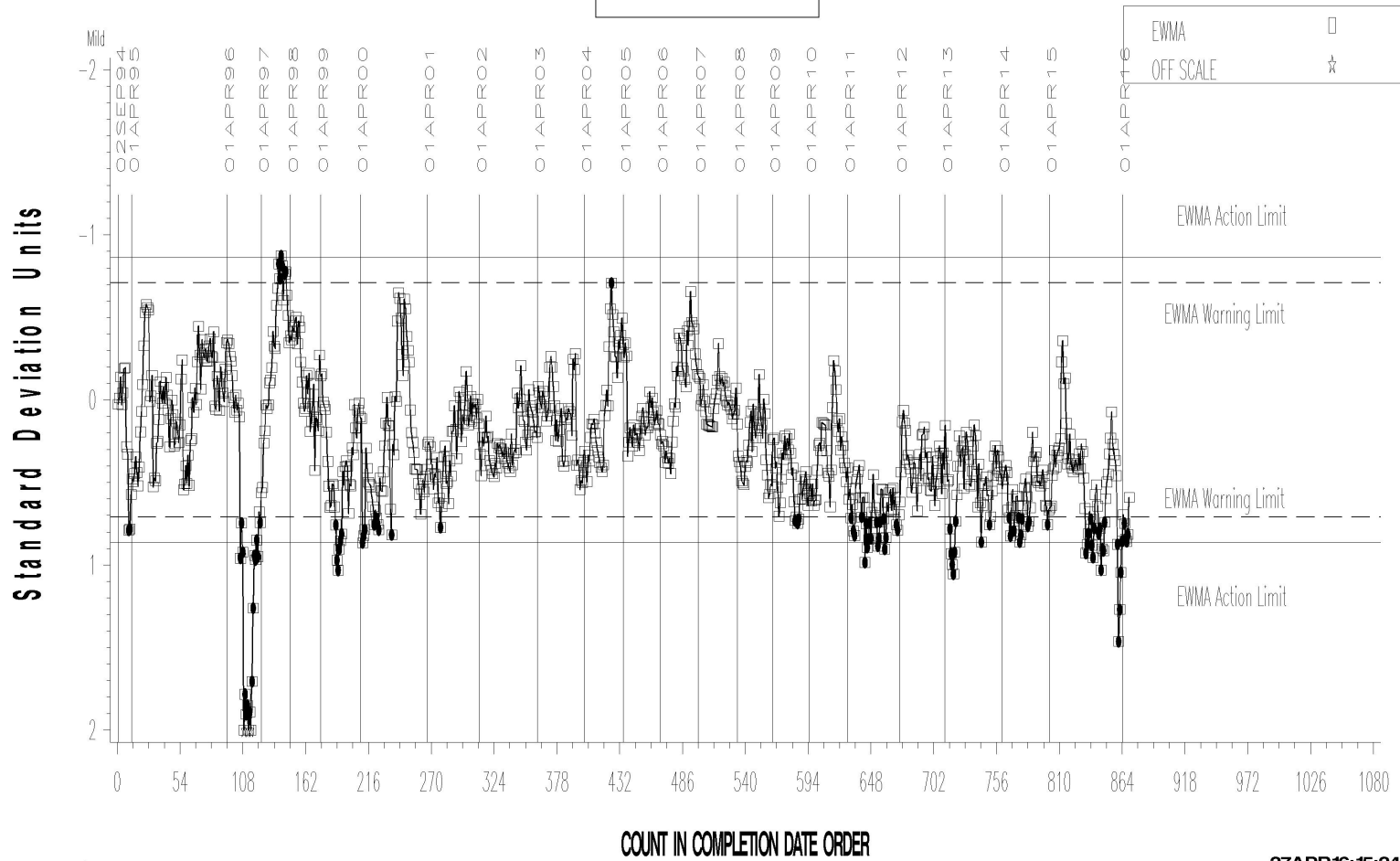
27APR16: 15:24

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Severity Analysis



SPURP

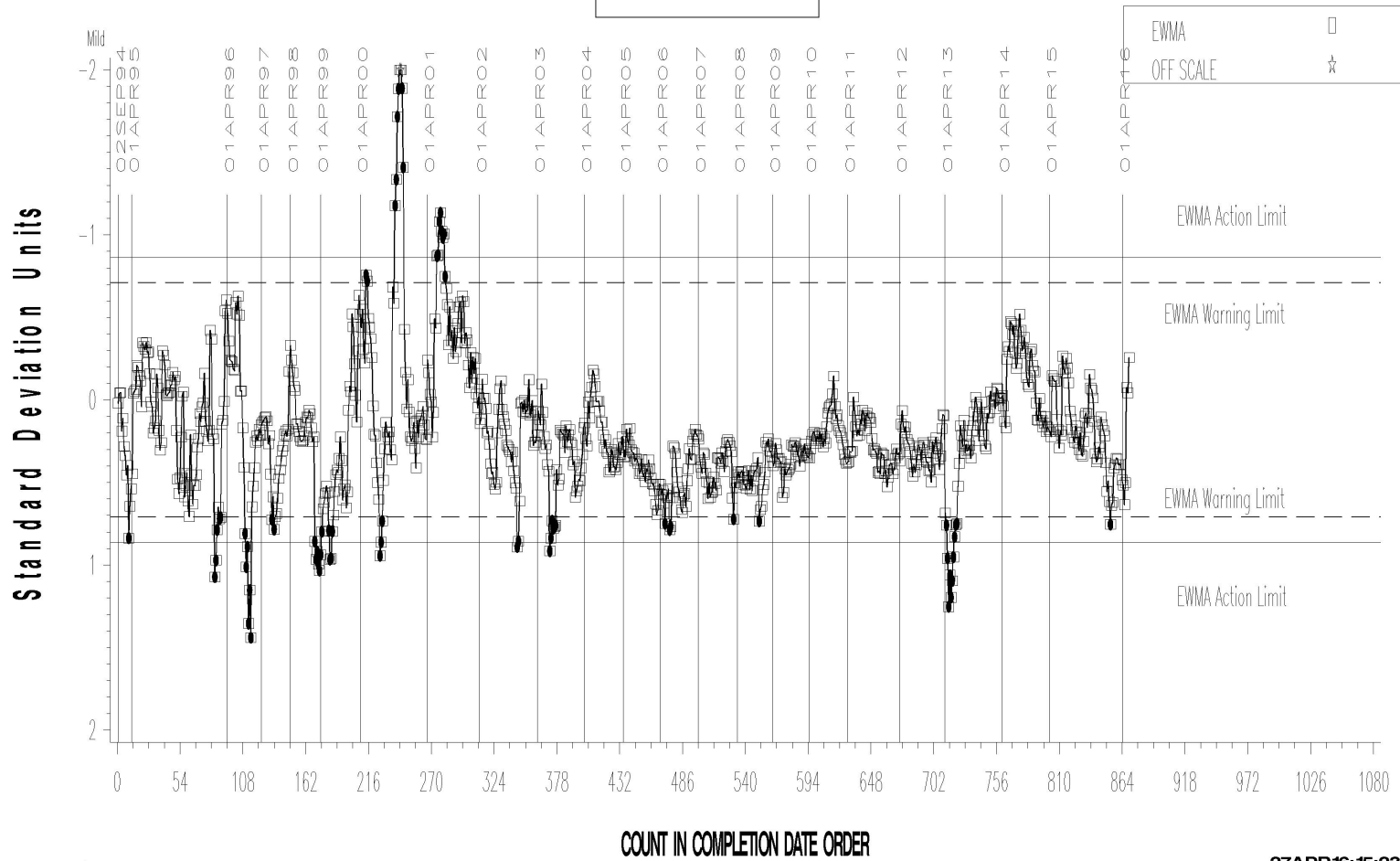
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Severity Analysis



SPURPP

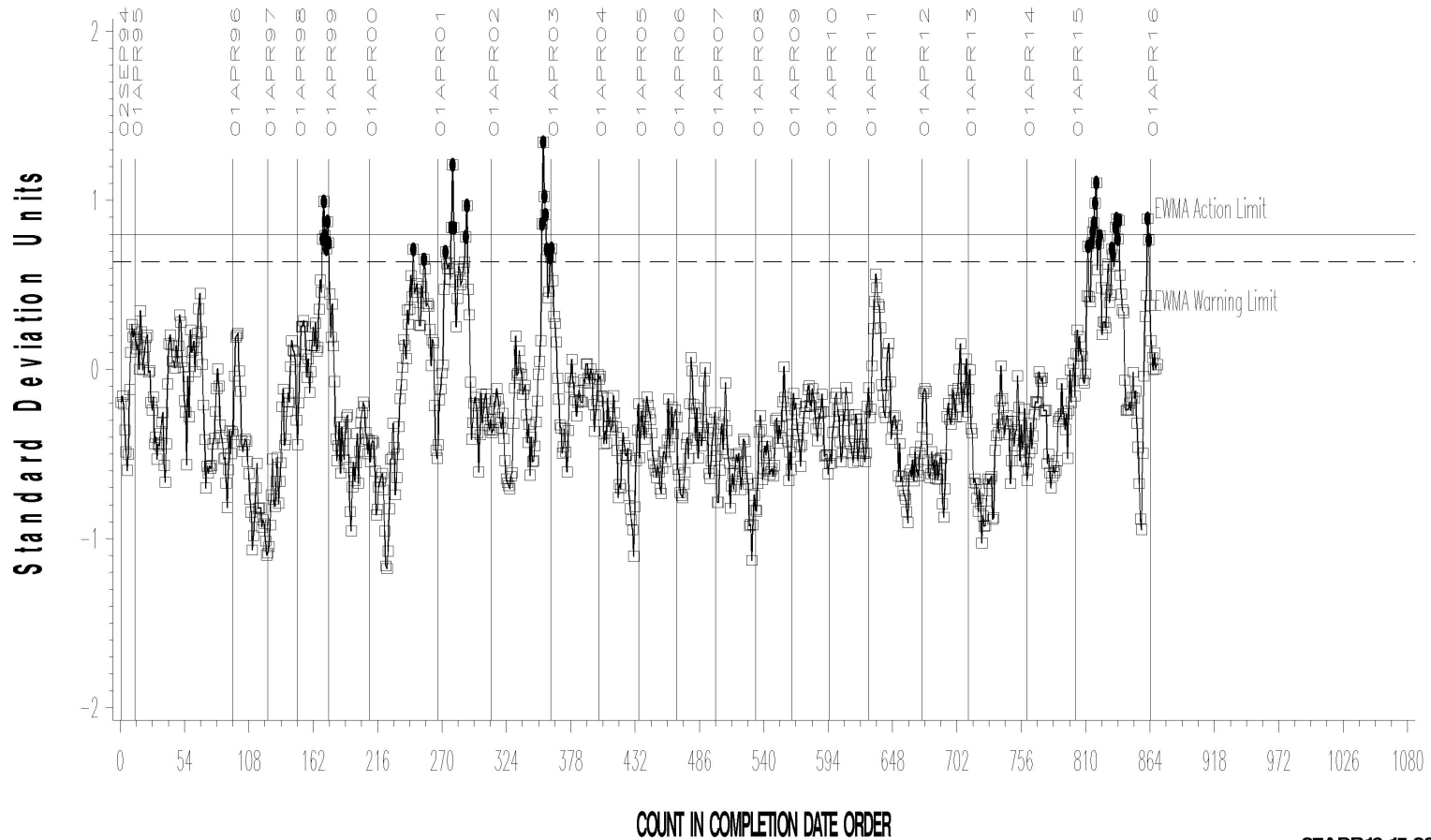
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Precision Analysis



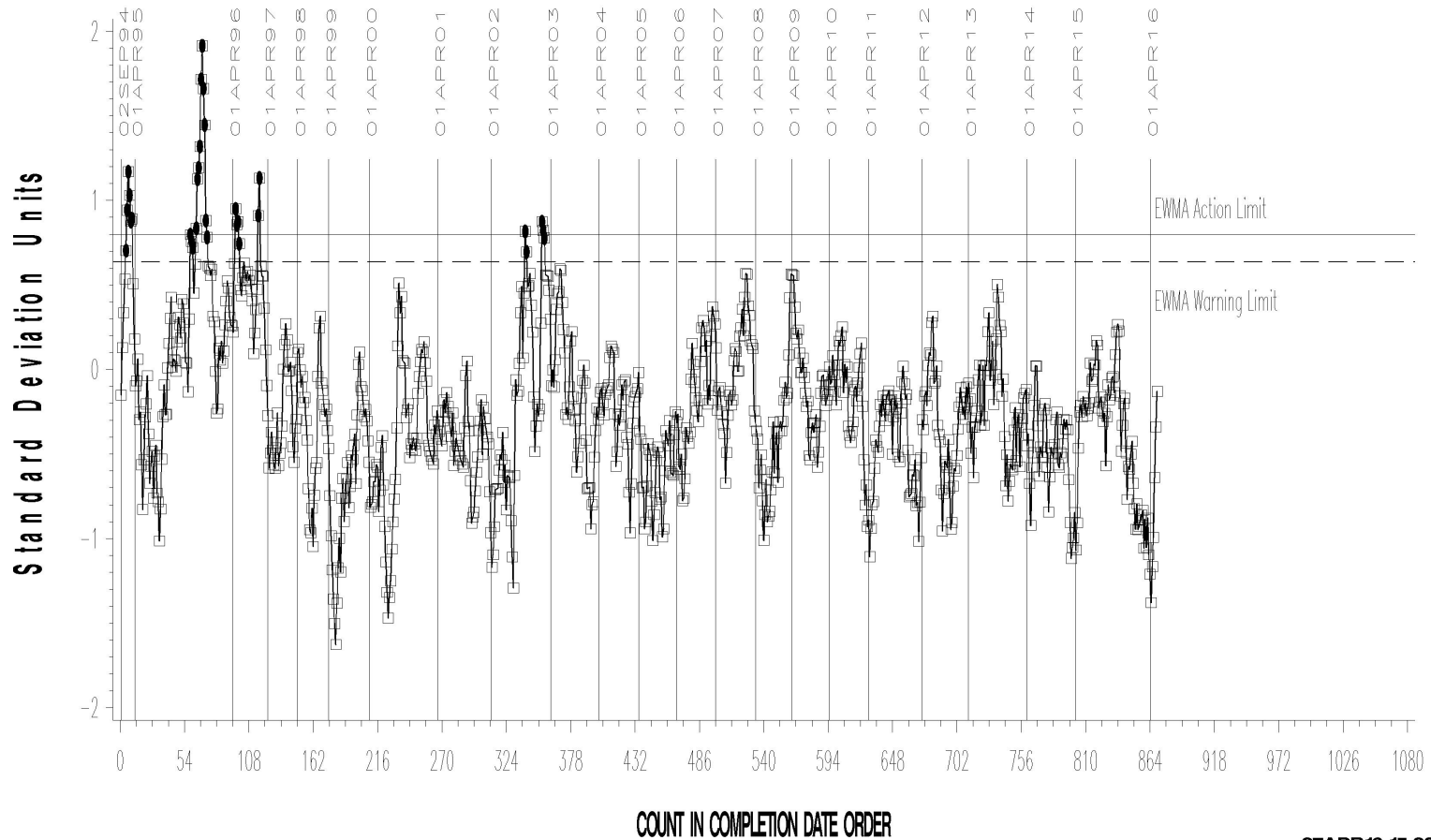
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Precision Analysis



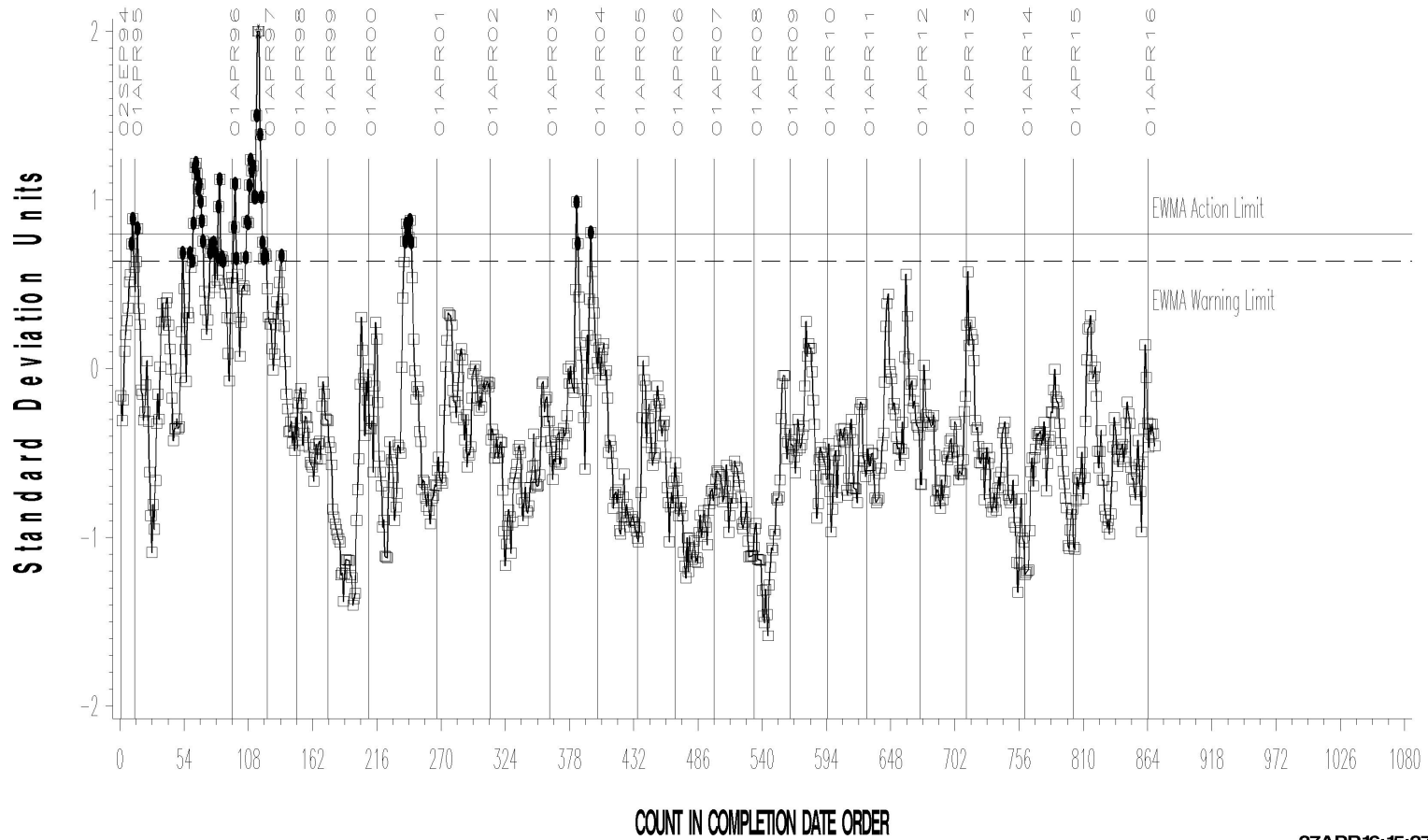
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Precision Analysis



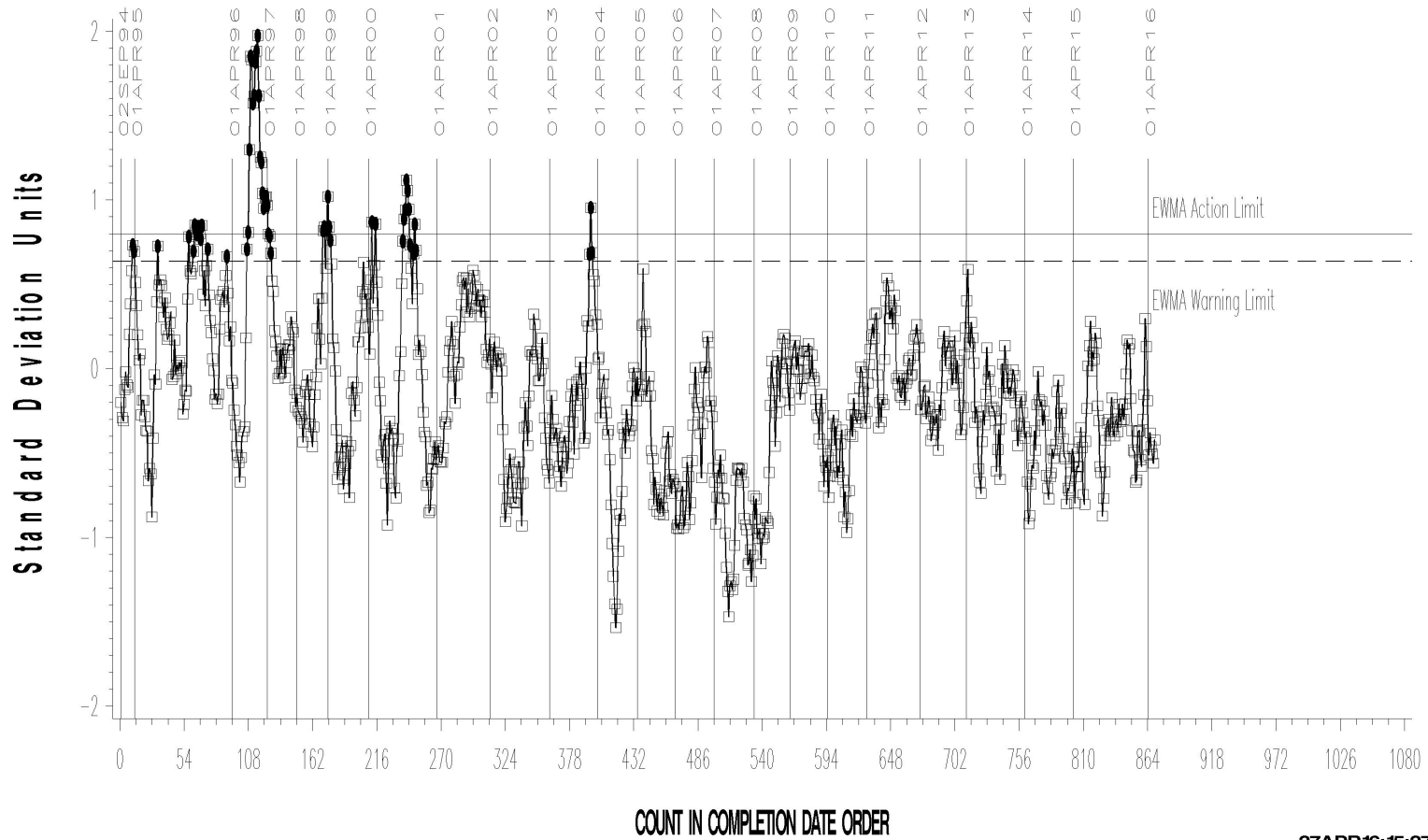
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Precision Analysis



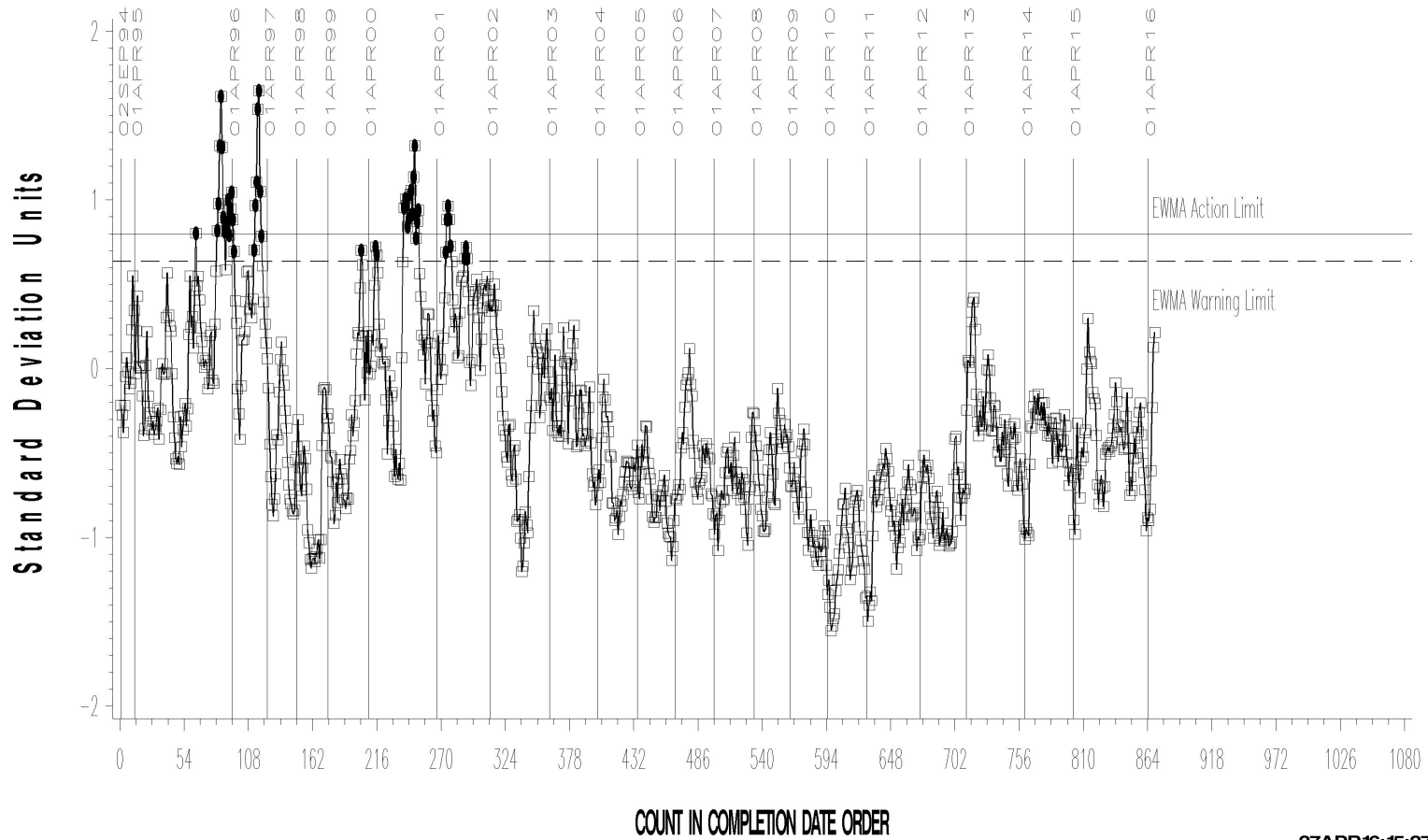
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Precision Analysis



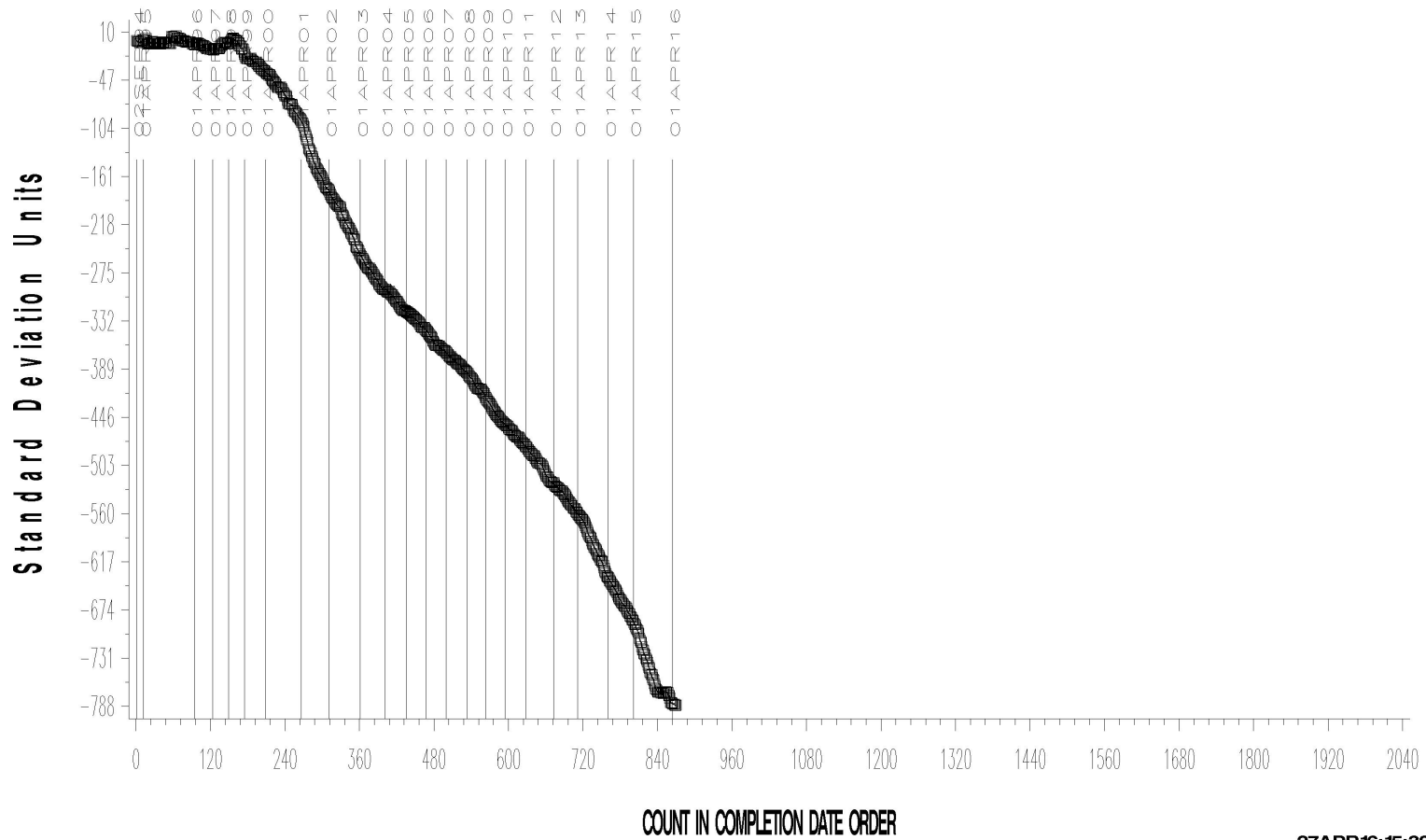
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

CUSUM Severity Analysis



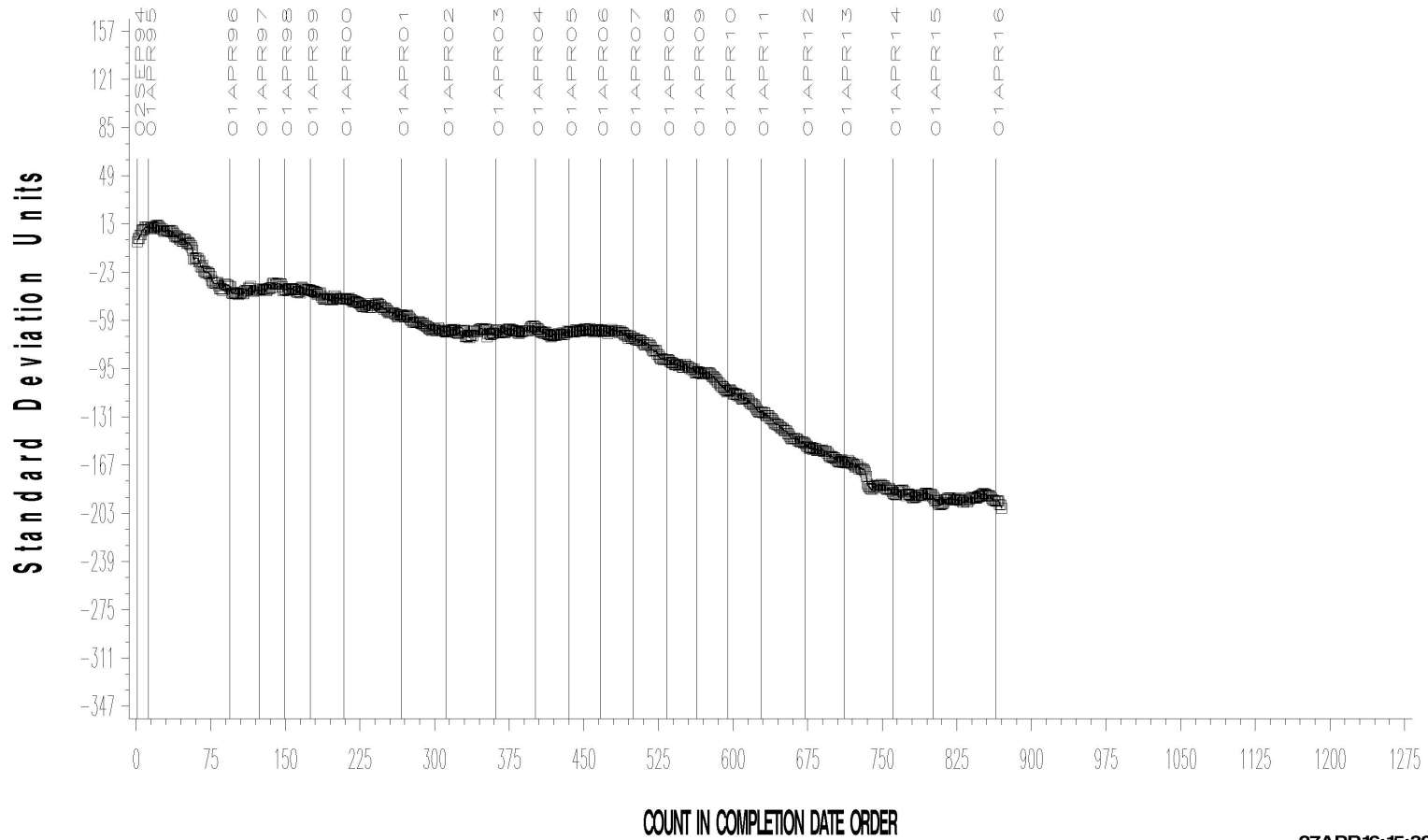
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

CUSUM Severity Analysis



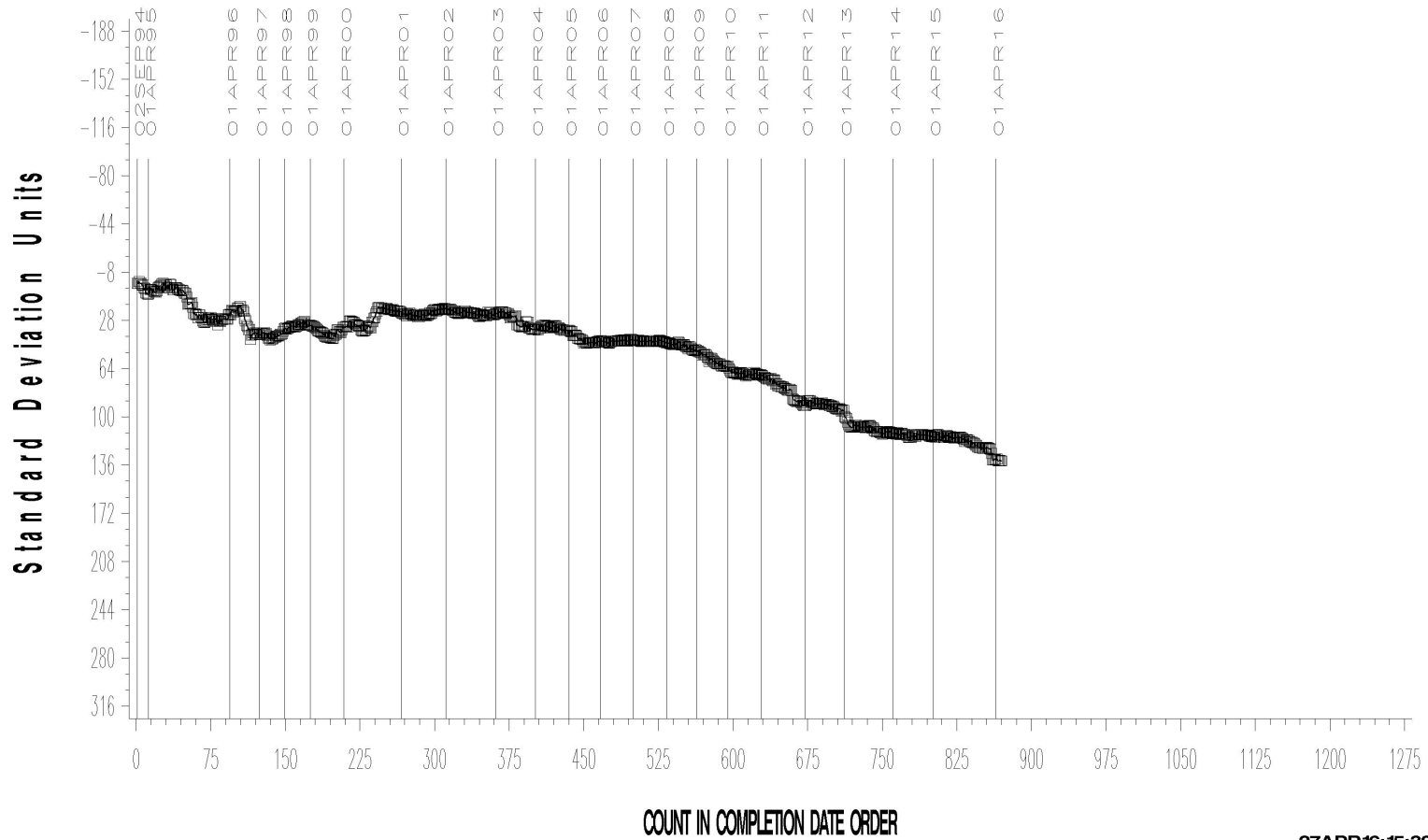
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

CUSUM Severity Analysis



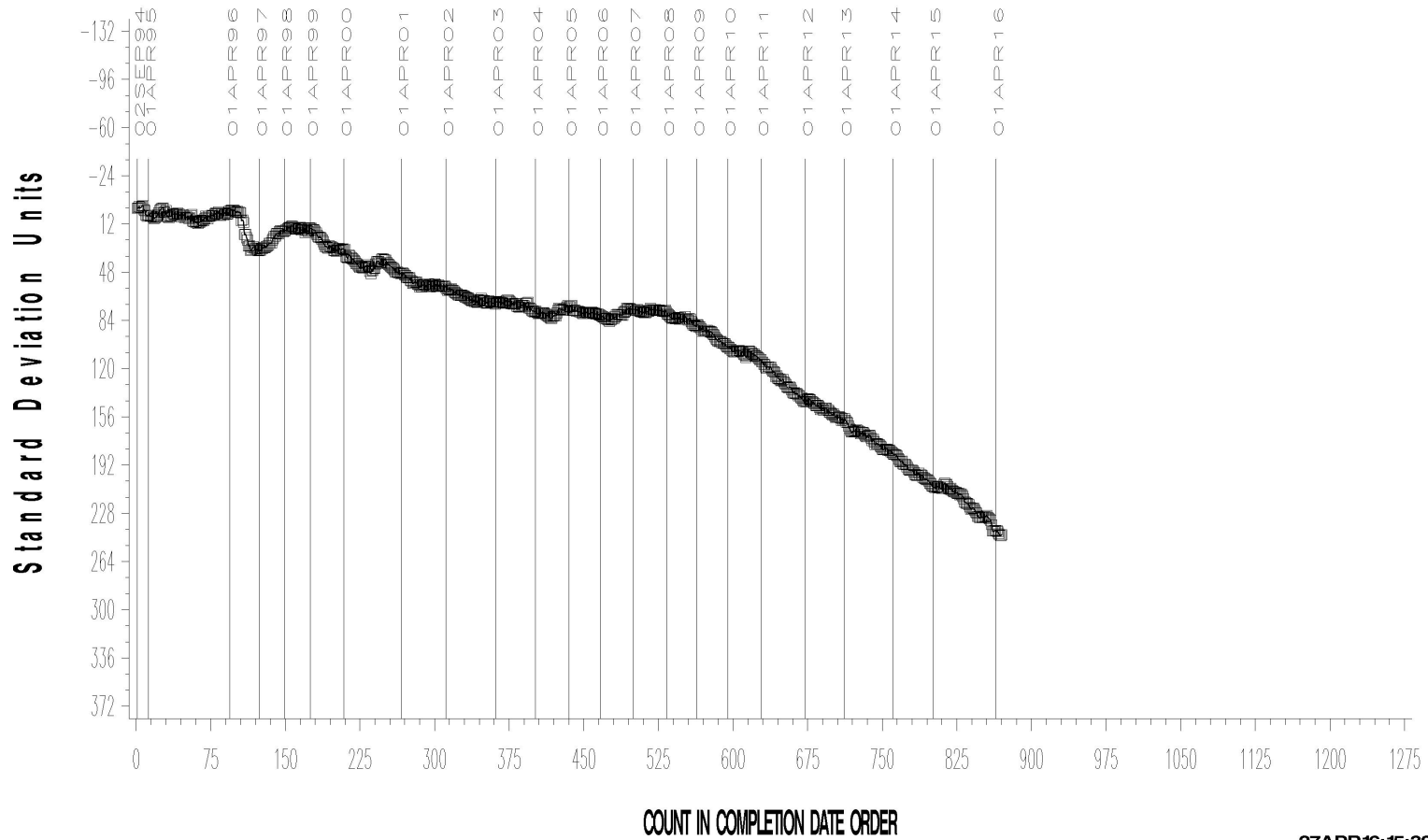
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

CUSUM Severity Analysis



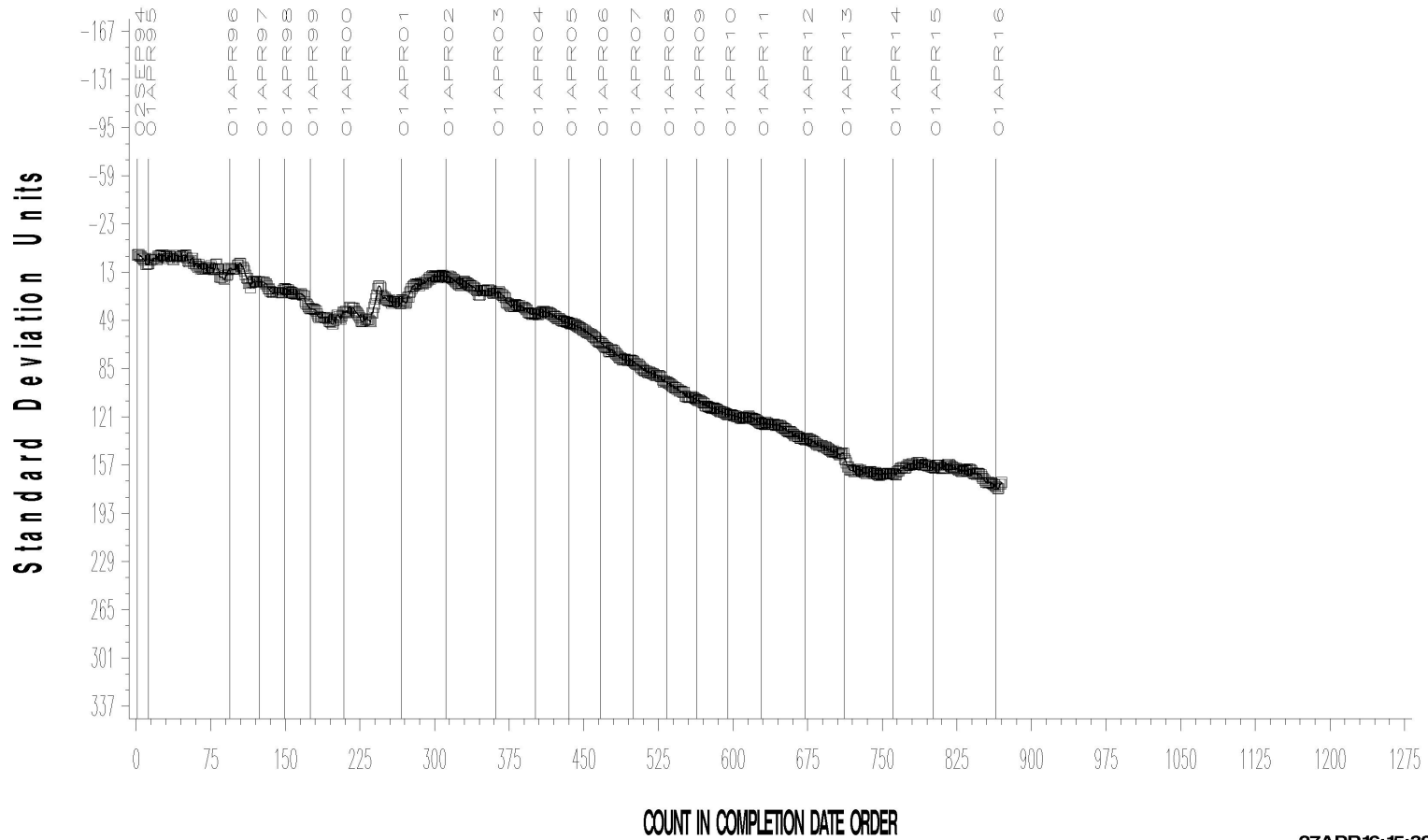
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

CUSUM Severity Analysis



27APR16: 15:30

L-60-1 (D5704)

TIMELINE ADDITIONS

Effective Date	Information Letter	Event
20151029	15-4	Discontinue transformation of test results
20151029	15-4	Implementation of ACV correction factor

L-60-1 (D5704)

LAB VISITS

No L-60-1 lab visits were conducted this period.

INFORMATION LETTERS

Information Letter 15-4 was issued on October 29, 2015 to discontinue the transformation of test results and to implement an ACV correction factor.

L-60-1 (D5704)

STATUS OF REFERENCE OIL SUPPLY

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
148-1	23	448	28.1
151-2	1	0	0.0
155-1	24	635	39.7
Total	48	1083	67.8

A reblend of 151-2 (151-3) was acquired by TMC in 1999 but has since been consumed in other test types. That oil was then replaced by 155 which is also now depleted. A 155 reblend (155-1) is on hand at TMC. The surveillance panel has asked that the TMC reserve a portion of that oil for L-60-1 testing. The TMC quantity shown for this oil is for that reserved portion. A separate quantity of 231 gallons is available for use in other gear testing.

Four hundred and forty eight tests of oil 148-1 remain in TMC inventory; however, this is only 28 gallons. When the need arises, it will not be possible to obtain a reblend of this oil. The panel is advised to begin considering a possible replacement for this oil.