




Test Monitoring Center

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

MEMORANDUM: 17-016
DATE: May 18, 2017
TO: Brad Bubonic, Chairman, L-60-1 Surveillance Panel
FROM: Scott Parke 
SUBJECT: L-60-1 Reference Oil Testing from October 1, 2016 through March 31, 2017

Attached is a summary of testing activity this period.

SDP/sdp/mem17-016.sdp.doc

cc: Frank Farber

Jeff Clark

L-60-1 Surveillance Panel

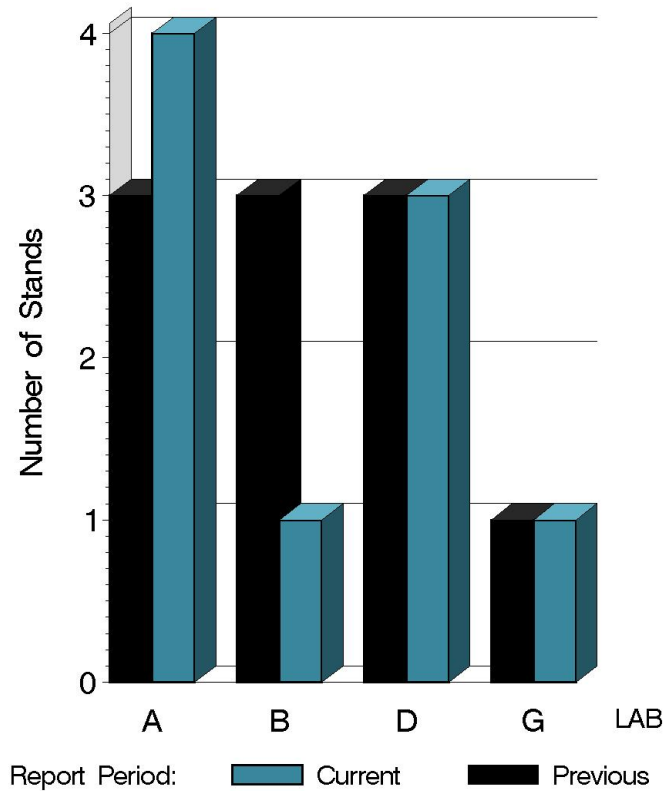
<ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/semiannualreports/l601-04-2017.pdf>

Distribution: email

L-60-1 (D5704)

	Reporting Data	Calibrated on 3-31-17
Number of Labs	4	4
Number of Stands	9	9

BY-LAB STAND
DISTRIBUTION



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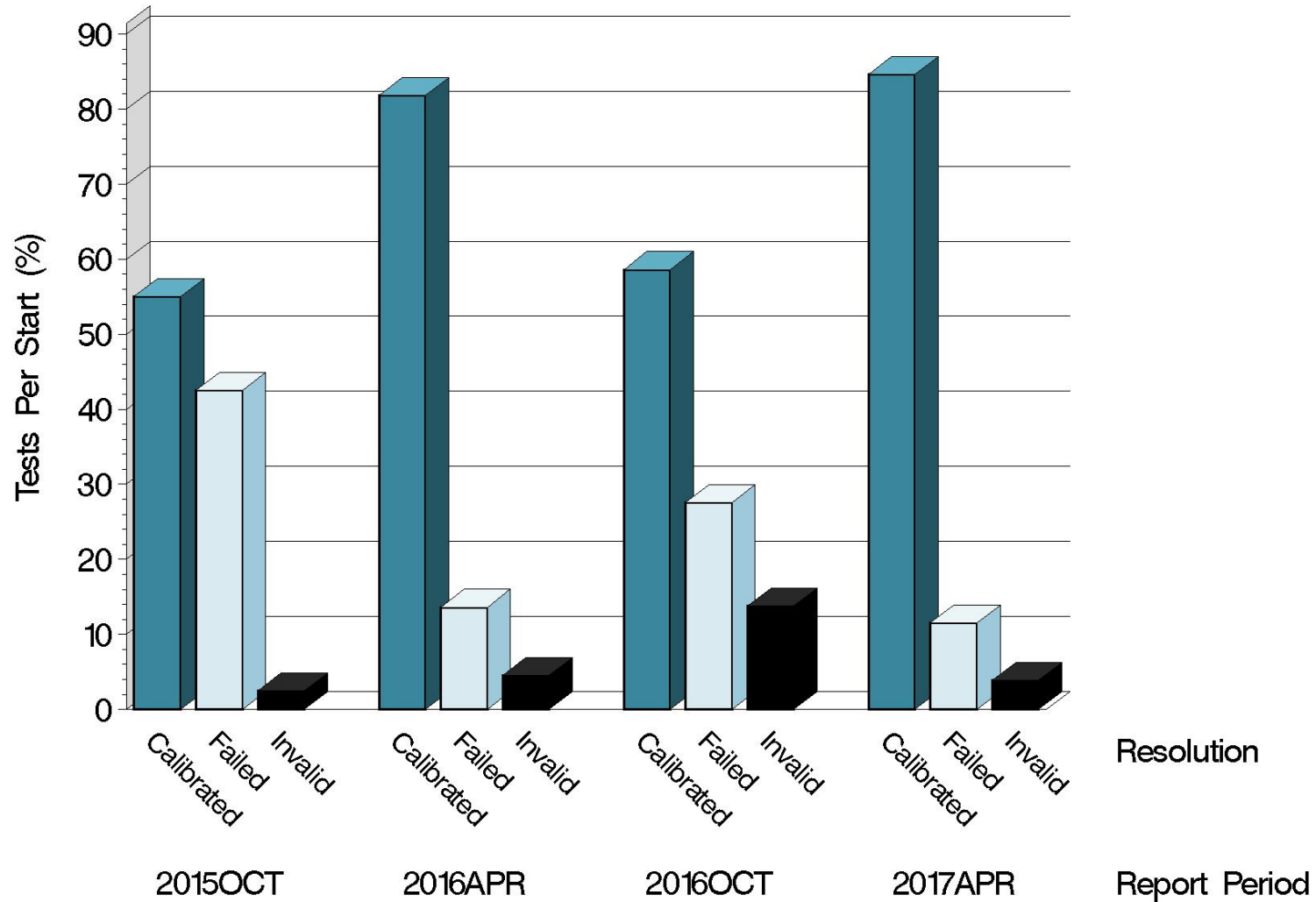
L-60-1 (D5704)

Test Distribution by Oil and Validity

				Totals	
		148-1	155-1	Last Period	This Period
Accepted for calibration	AC	8	14	17	22
Rejected (Mild)	OC	0	0	0	0
Rejected (Severe)	OC	1	1	6	2
Rejected (Combination)	OC	0	0	1	0
Rejected (Precision)	OC	0	1	1	1
Invalidated calibration	LC	0	0	2	0
Acceptable info run	NI	0	0	10	0
Unacceptable info run	MI	0	0	1	0
Aborted	XC	1	0	2	1
Total		10	16	40	26

L-60-1 (D5704)

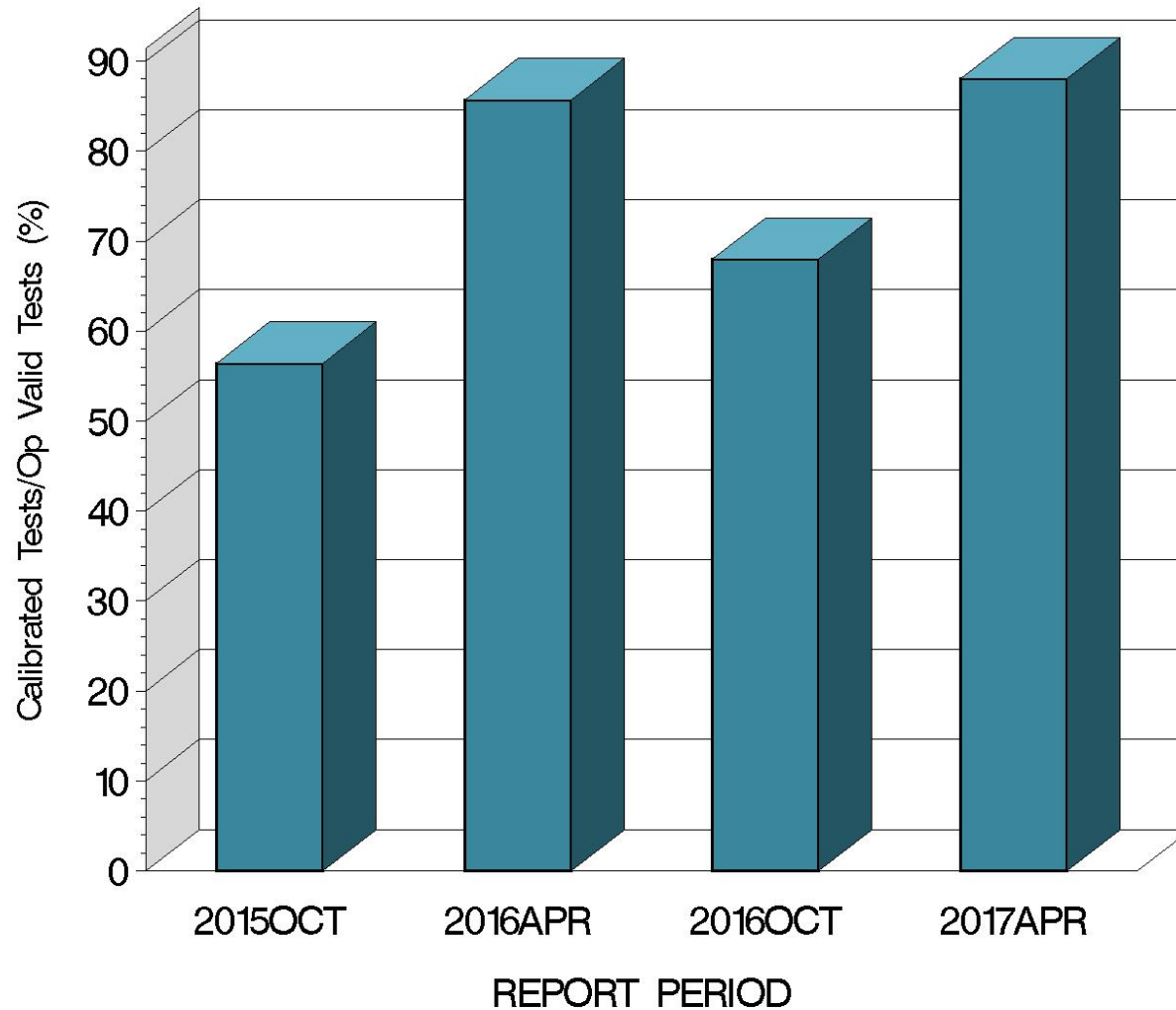
CALIBRATION ATTEMPT SUMMARY



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L-60-1 (D5704)

OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA

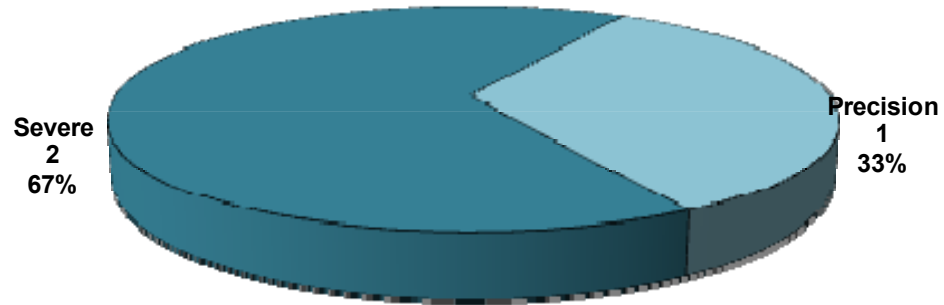


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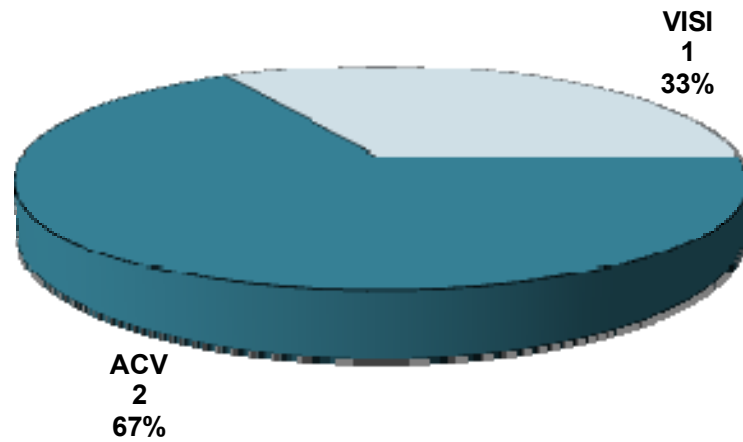
L-60-1 (D5704)

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	155-1	RC	LC	XC	Lost	Starts	%
D	Oil leak @40hrs.	●				●	1	7	14%
	Lost	1	0	0	0	1			
	Starts	10	16	26	26	26			
	%	10%	0%	0%	0%	4%			

L-60-1 (D5704)

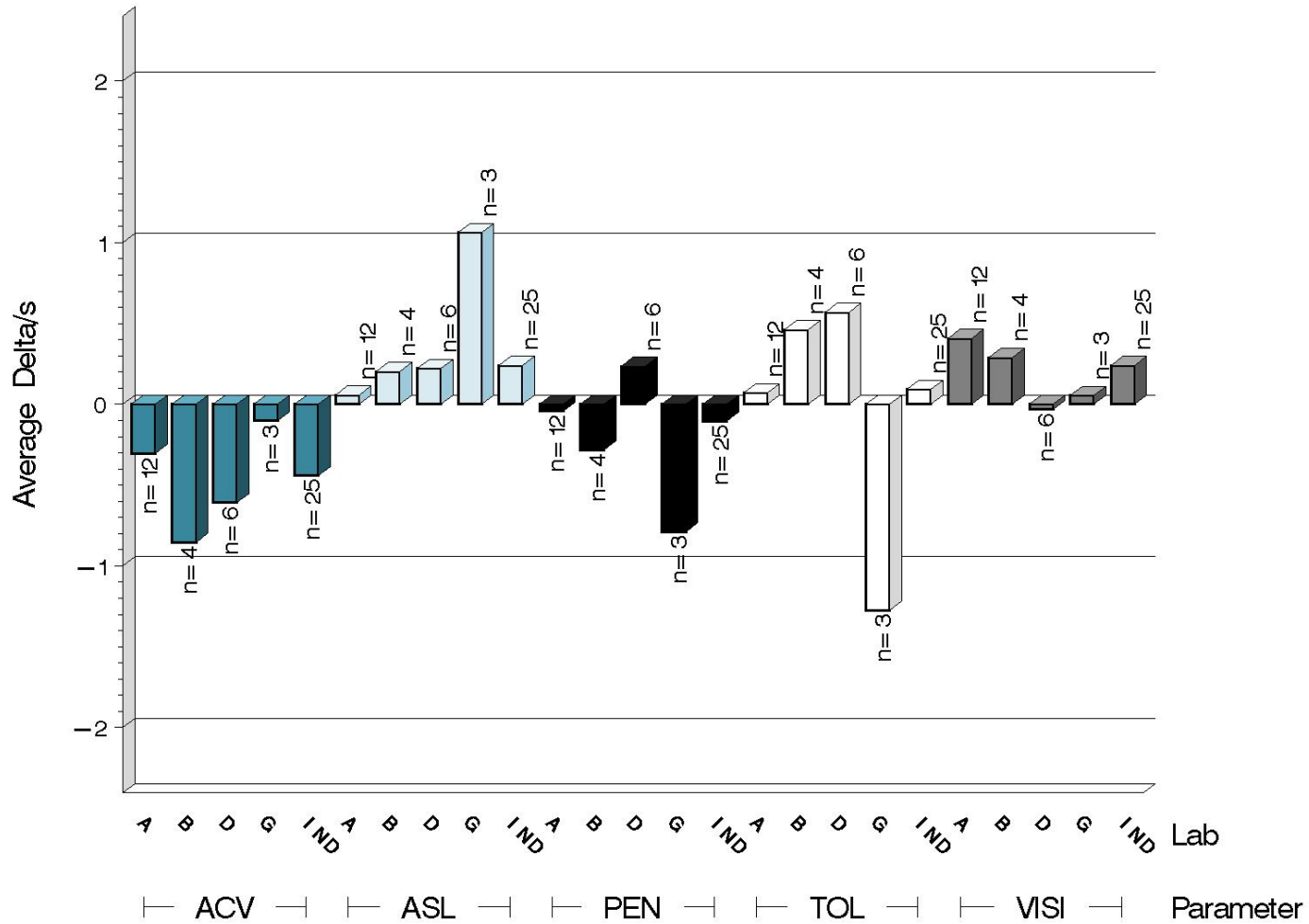
Average Δ /s by Lab						
Lab	n	VISI	PEN	TOL	ACV	ASL
A	12	0.408	-0.041	0.072	-0.303	0.058
B	4	0.291	-0.283	0.461	-0.852	0.204
D	6	-0.031	0.235	0.570	-0.609	0.223
G	3	0.055	-0.789	-1.275	-0.102	1.063
Industry	25	0.242	-0.103	0.092	-0.440	0.241
Shift*	25	1.85%	-0.04%	0.02%	-0.23 merit	0.03 merit

*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

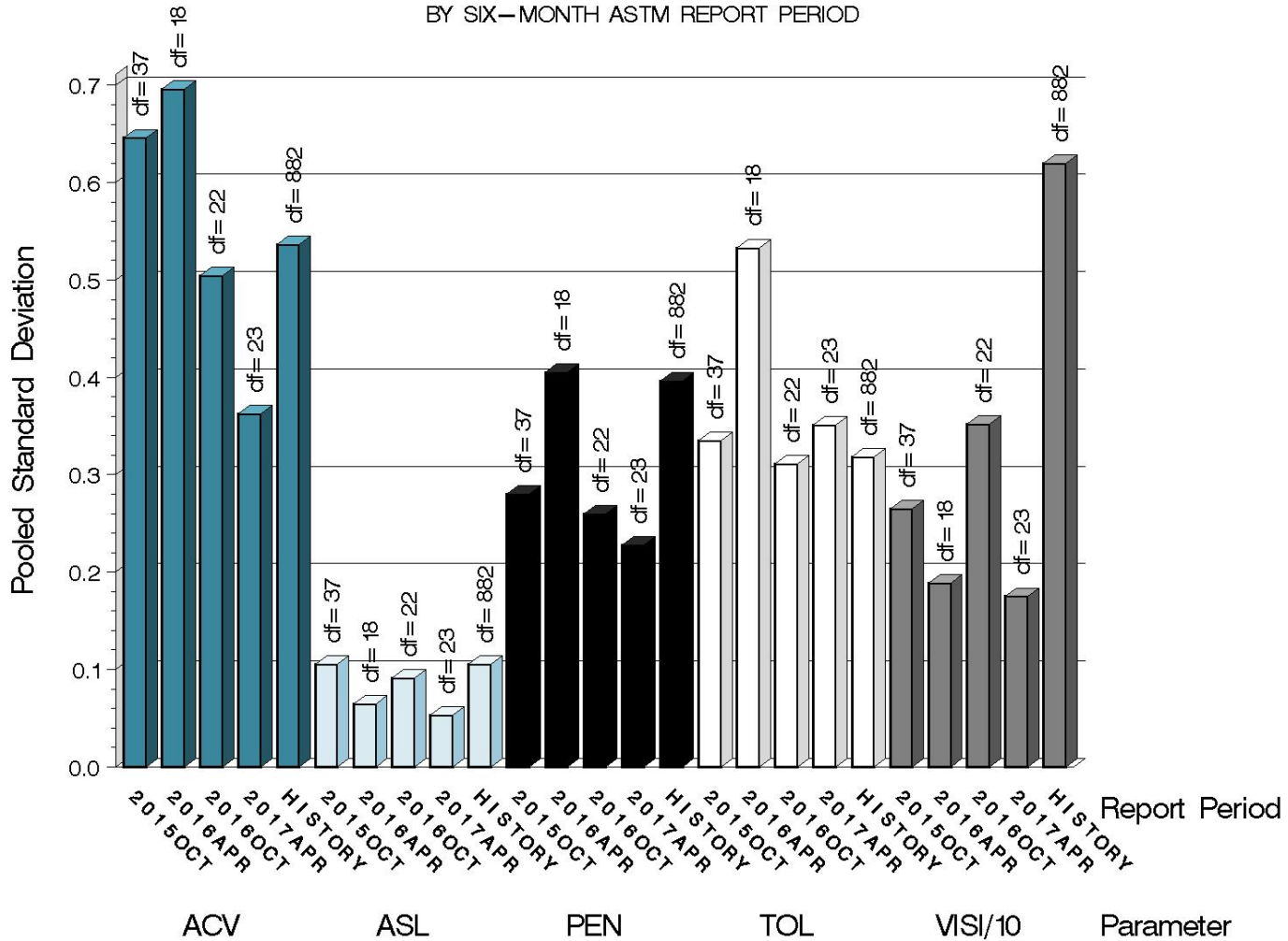


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L-60-1 (D5704)

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 implemented a correction factor for ACV on October 1, 2015 intended to return ACV to target. This correction has improved ACV severity. All parameters remained within alarm limits over this period.

Precision

Precision for all parameters remained within limits this period.

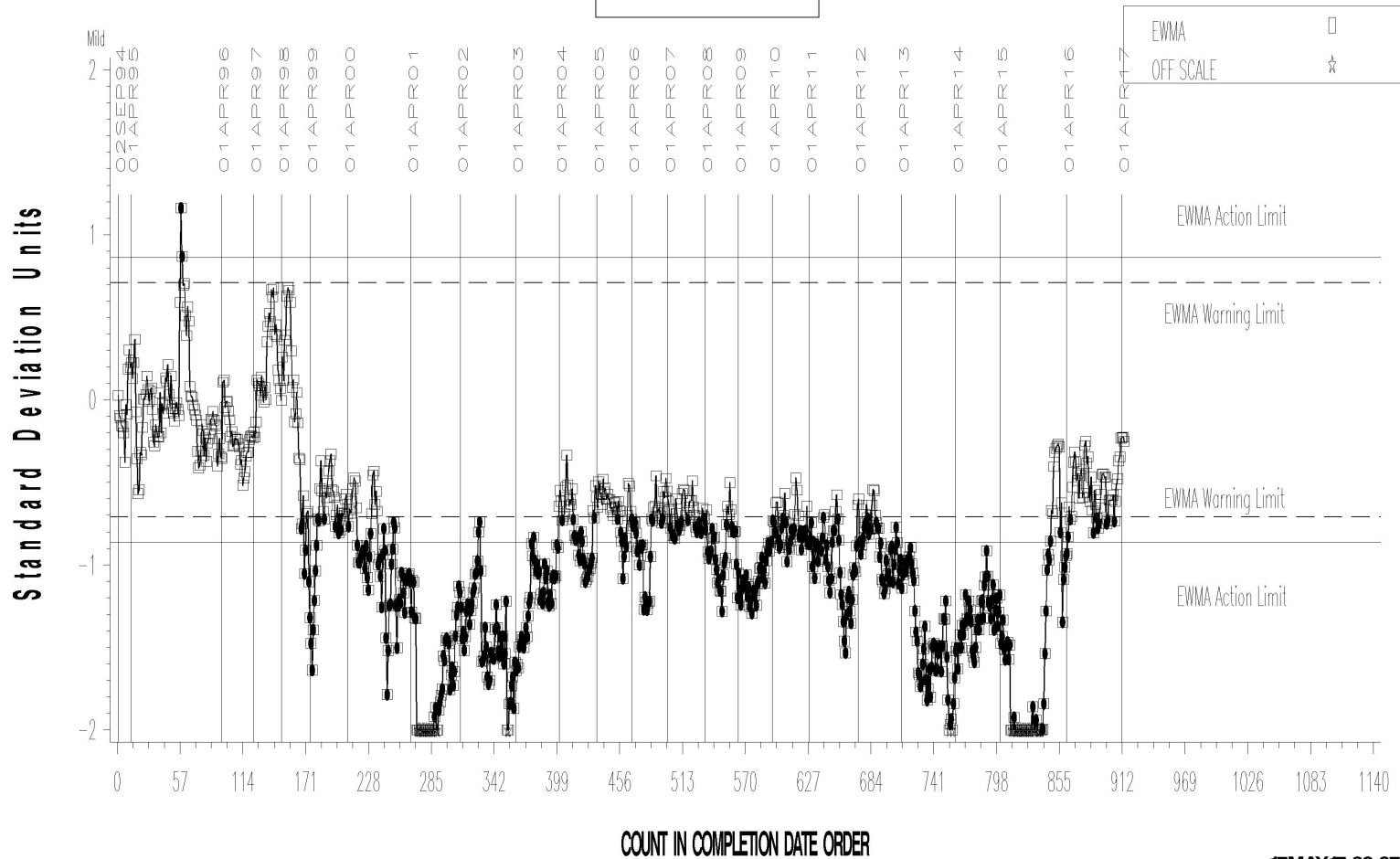
Industry control charts follow.

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Severity Analysis



SPURP

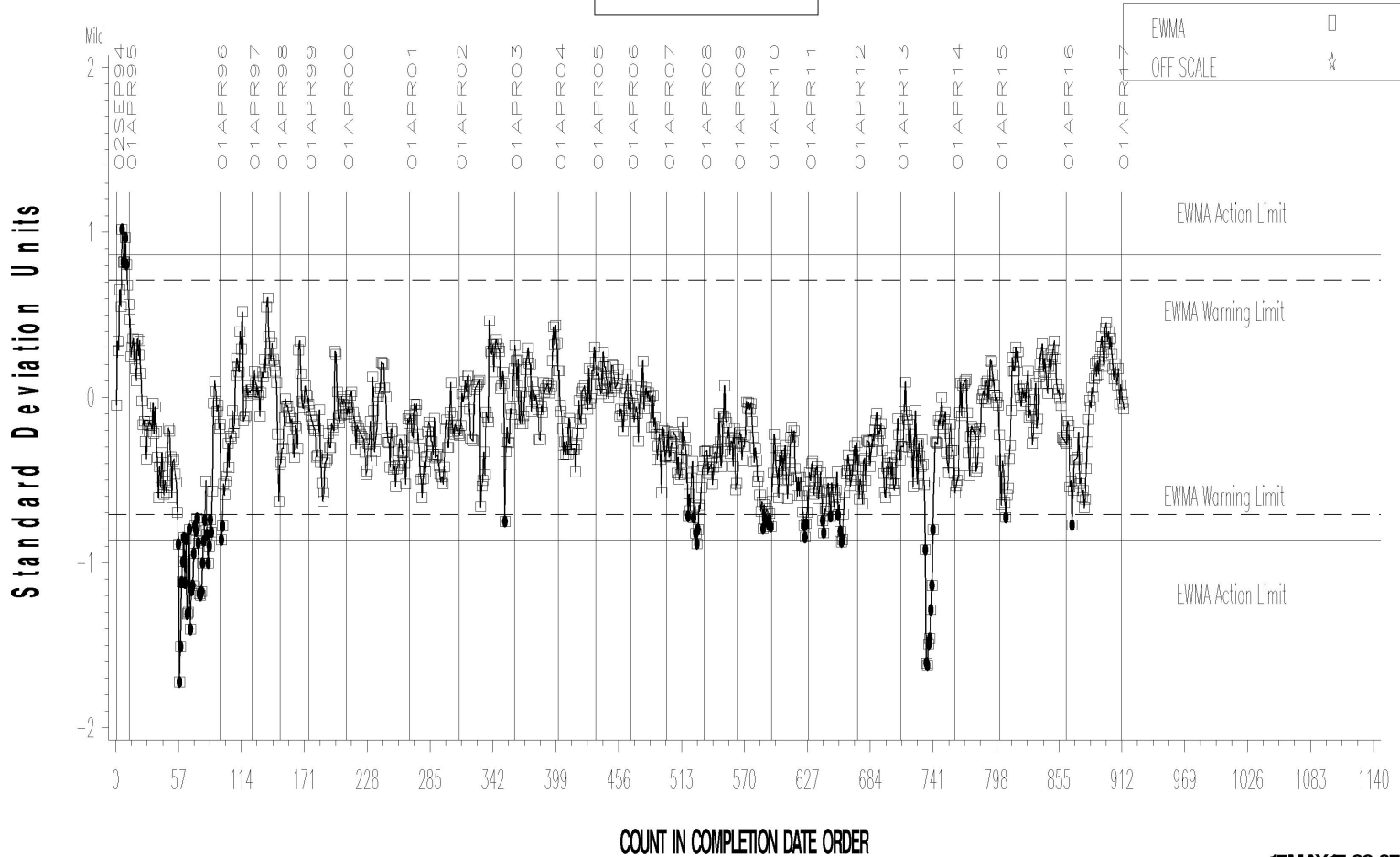
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Severity Analysis



SPURP

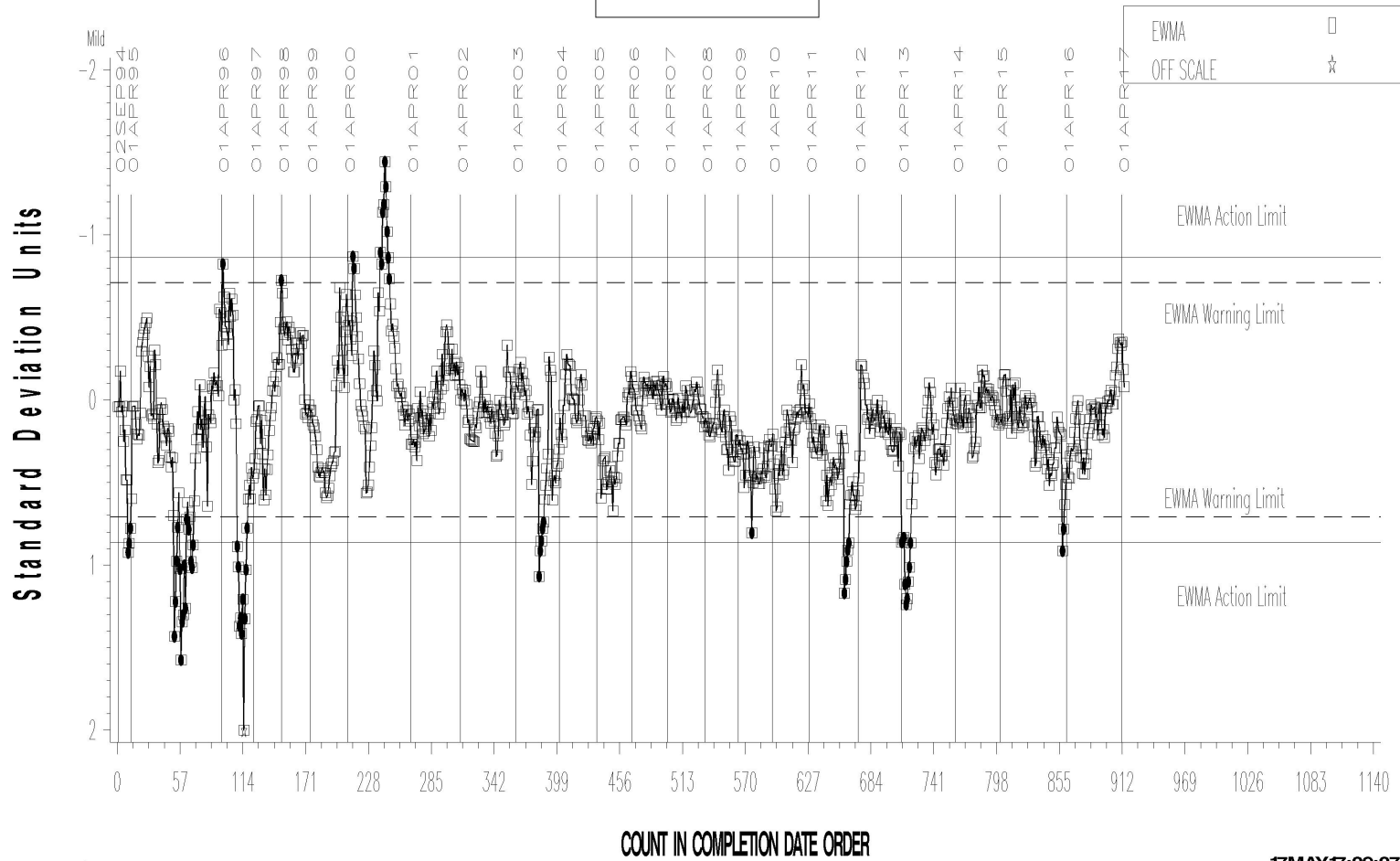
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Severity Analysis



SPURP

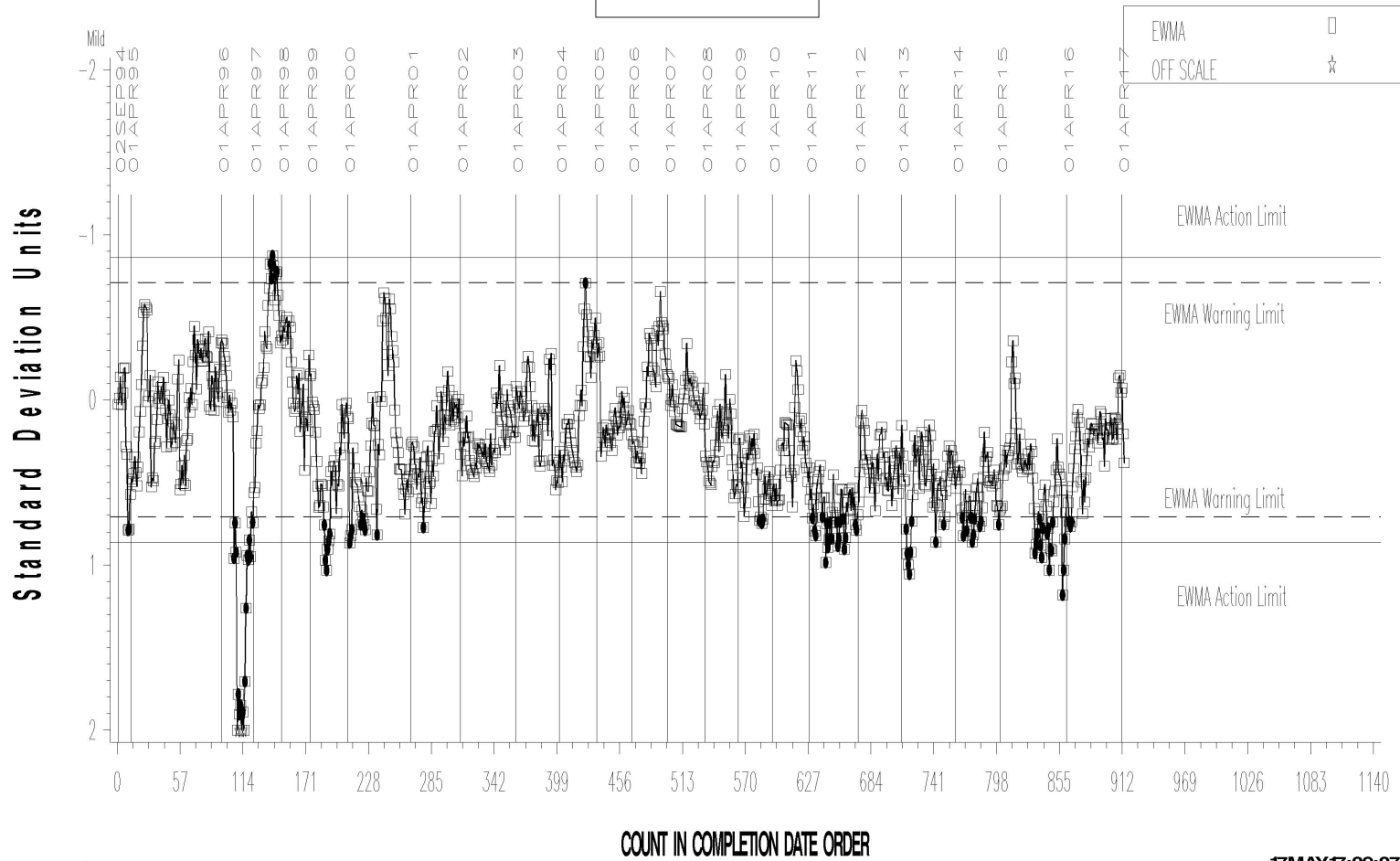
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Severity Analysis



SPURP

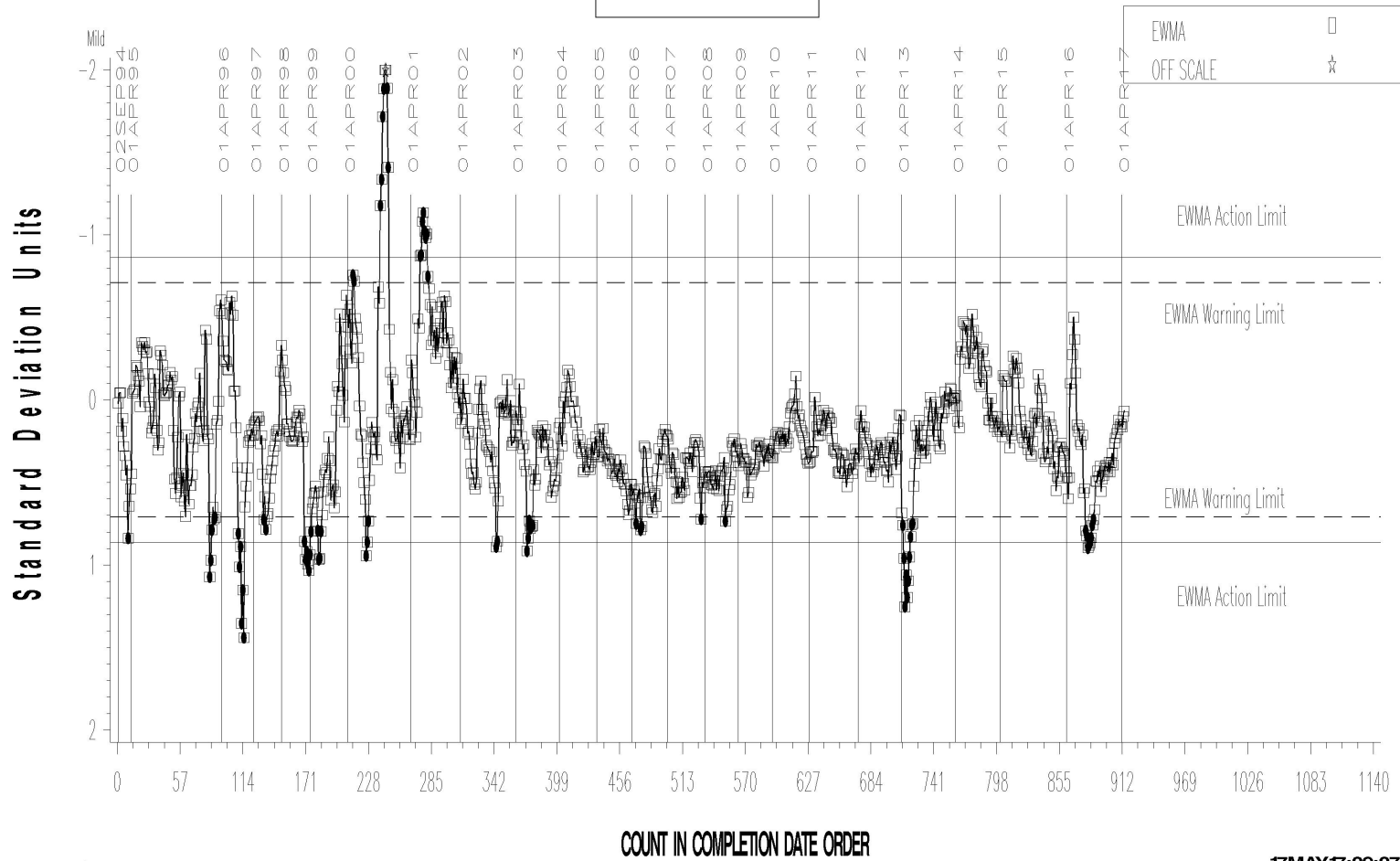
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Severity Analysis



SPURP

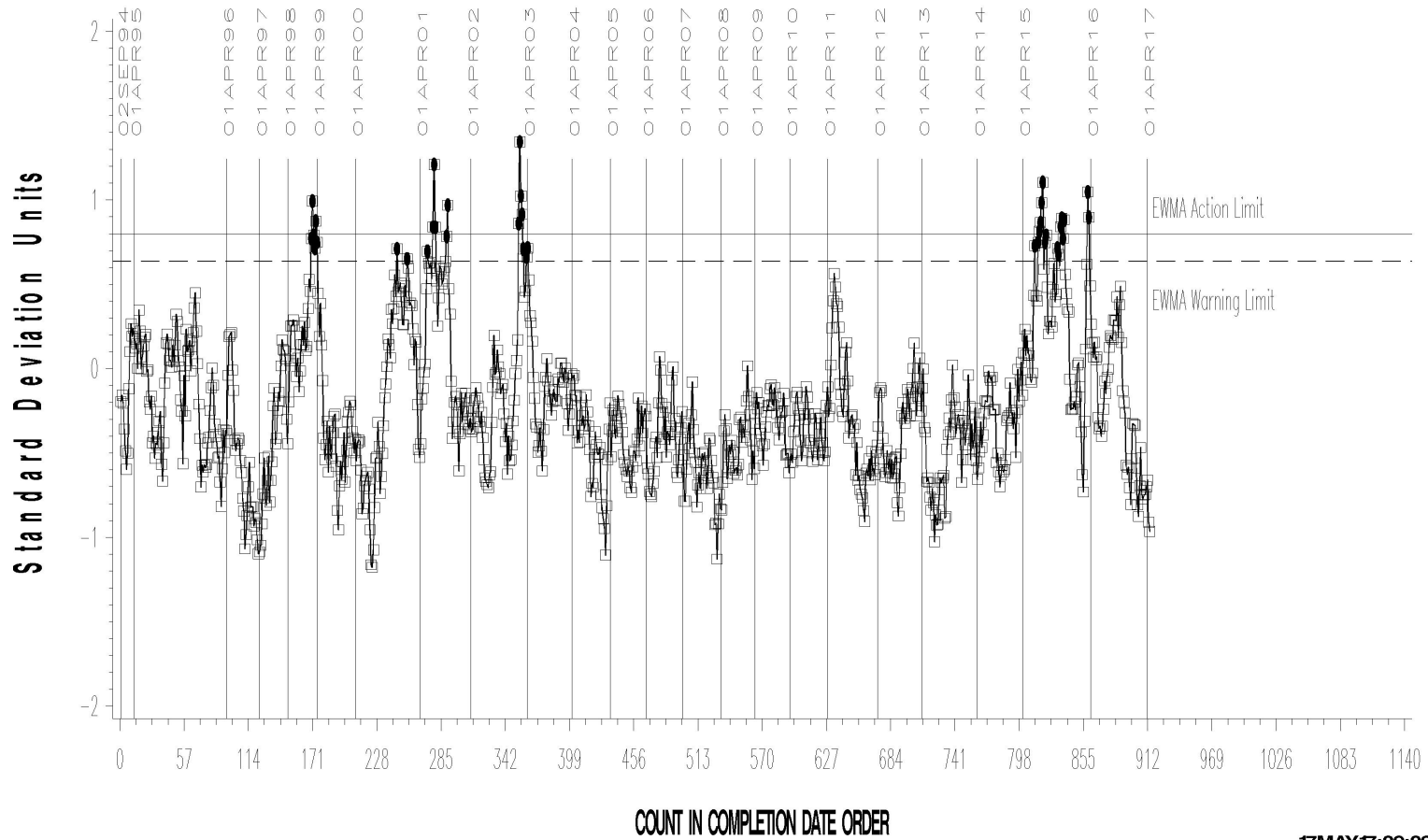
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Precision Analysis



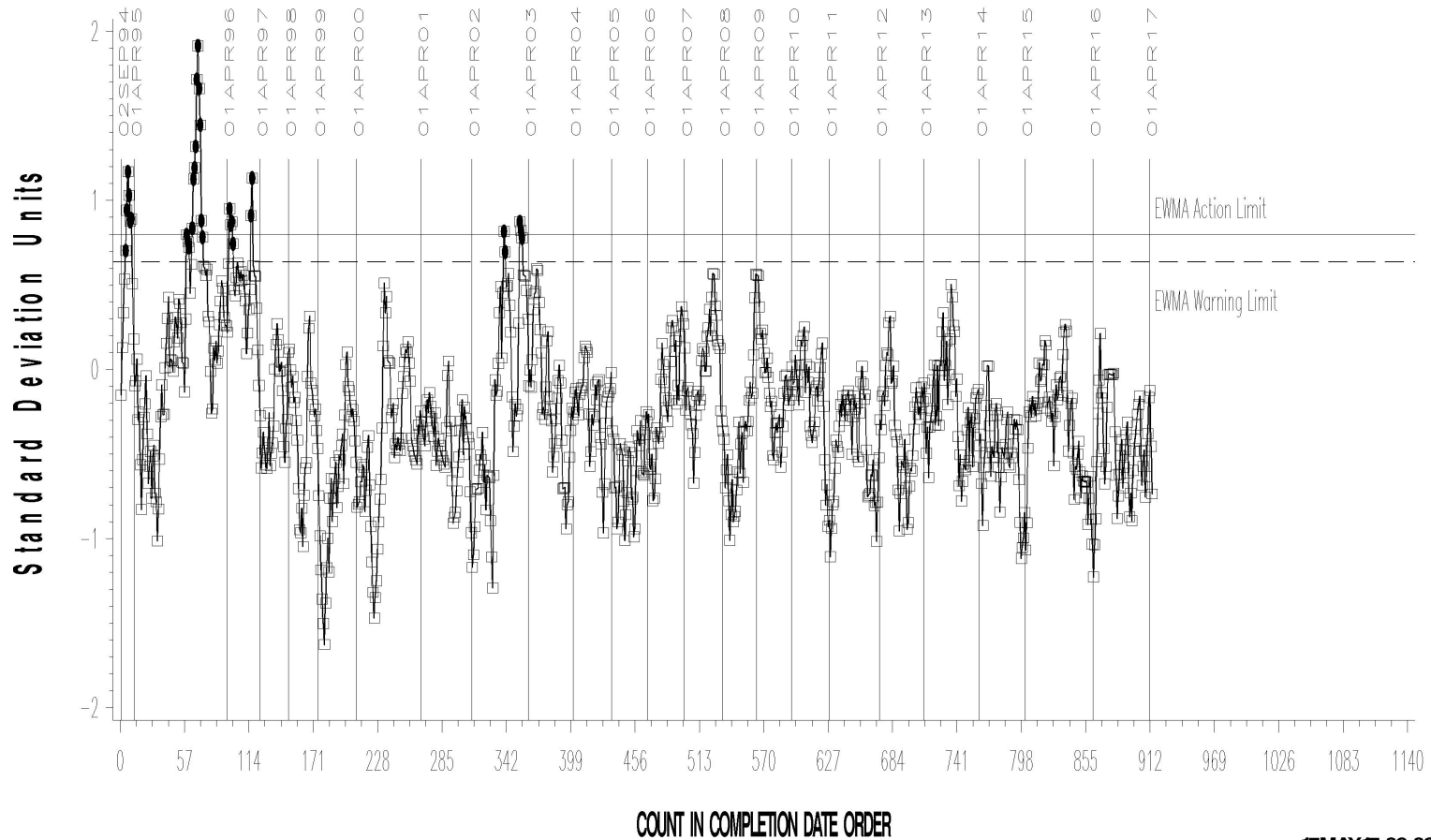
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Precision Analysis



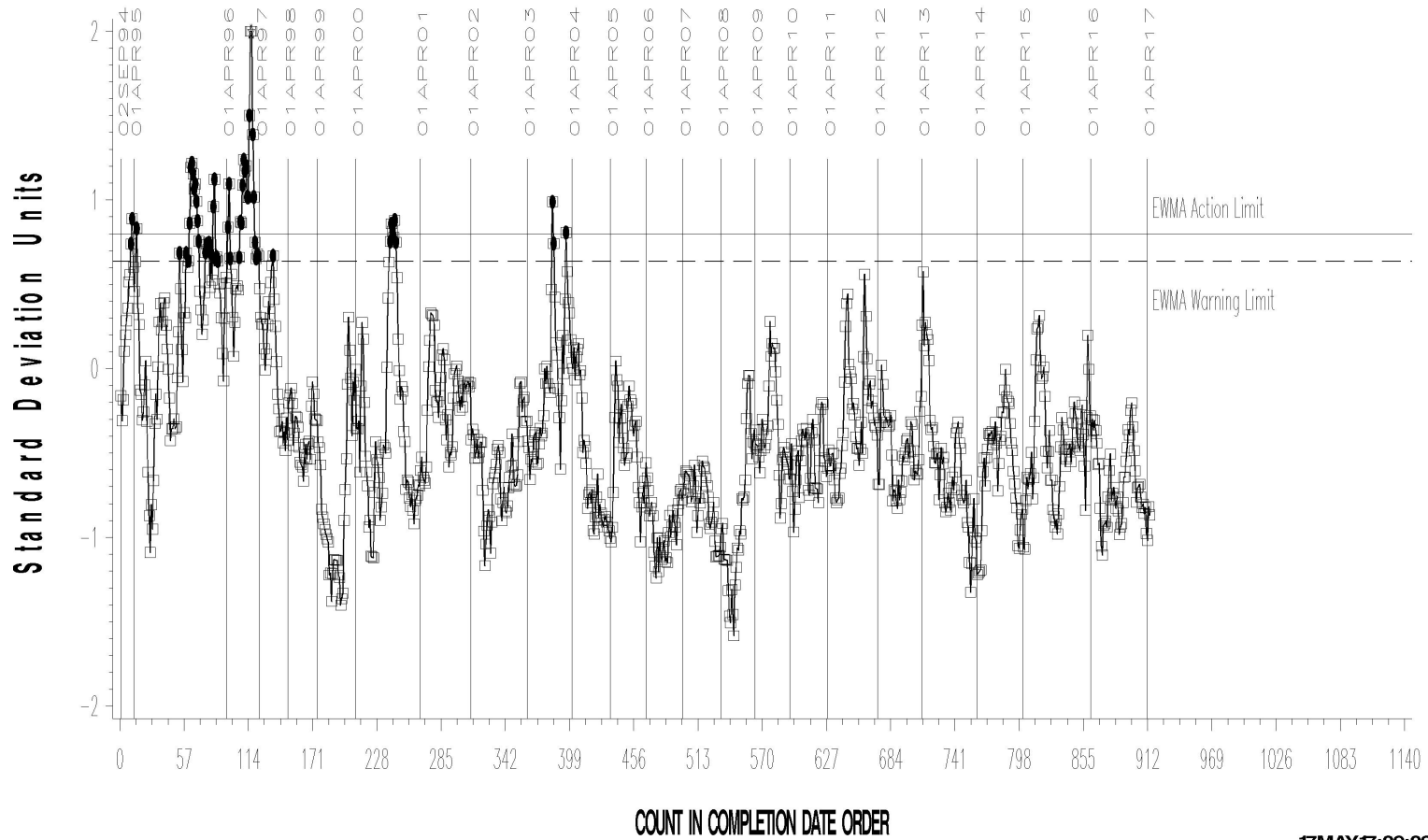
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Precision Analysis



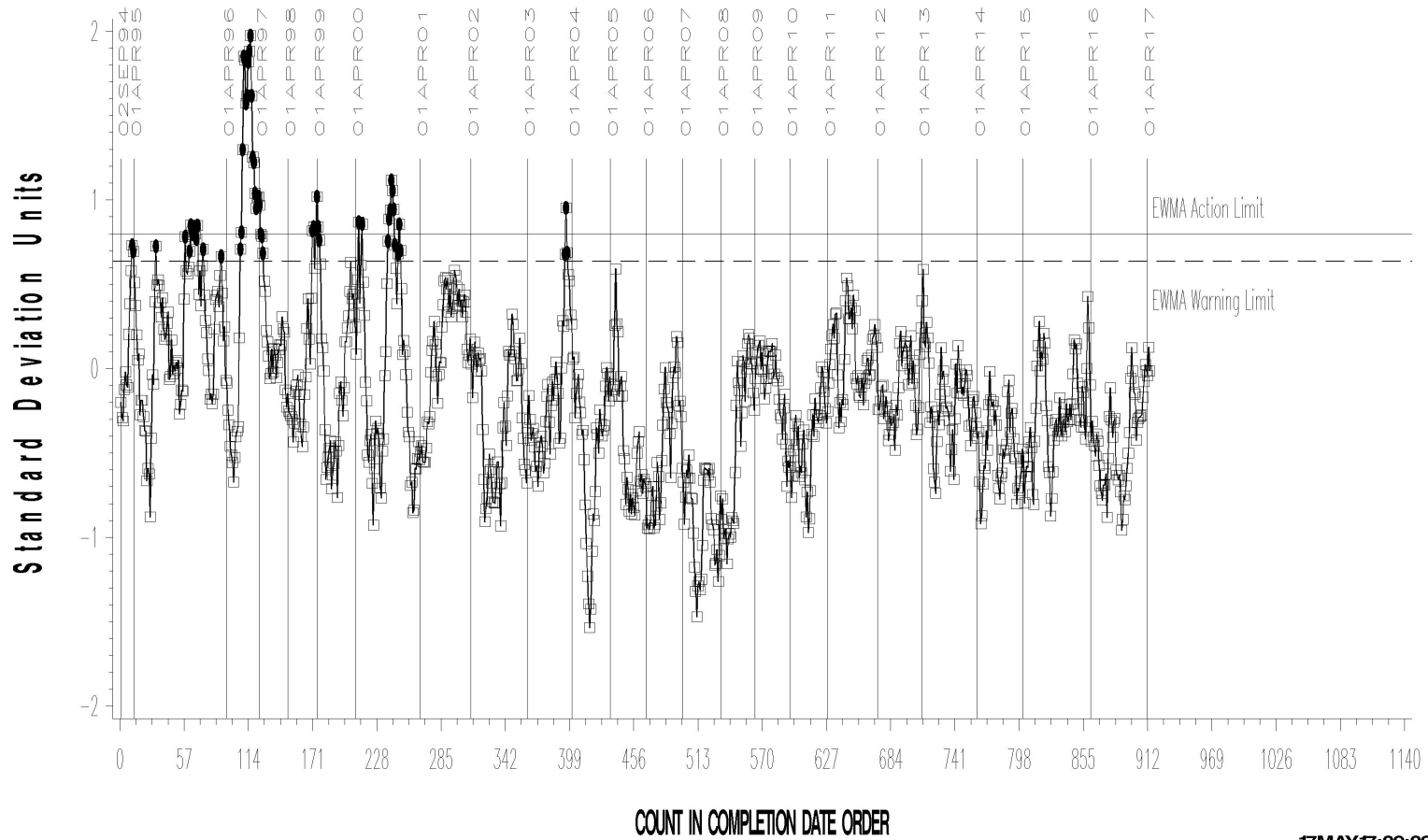
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Precision Analysis



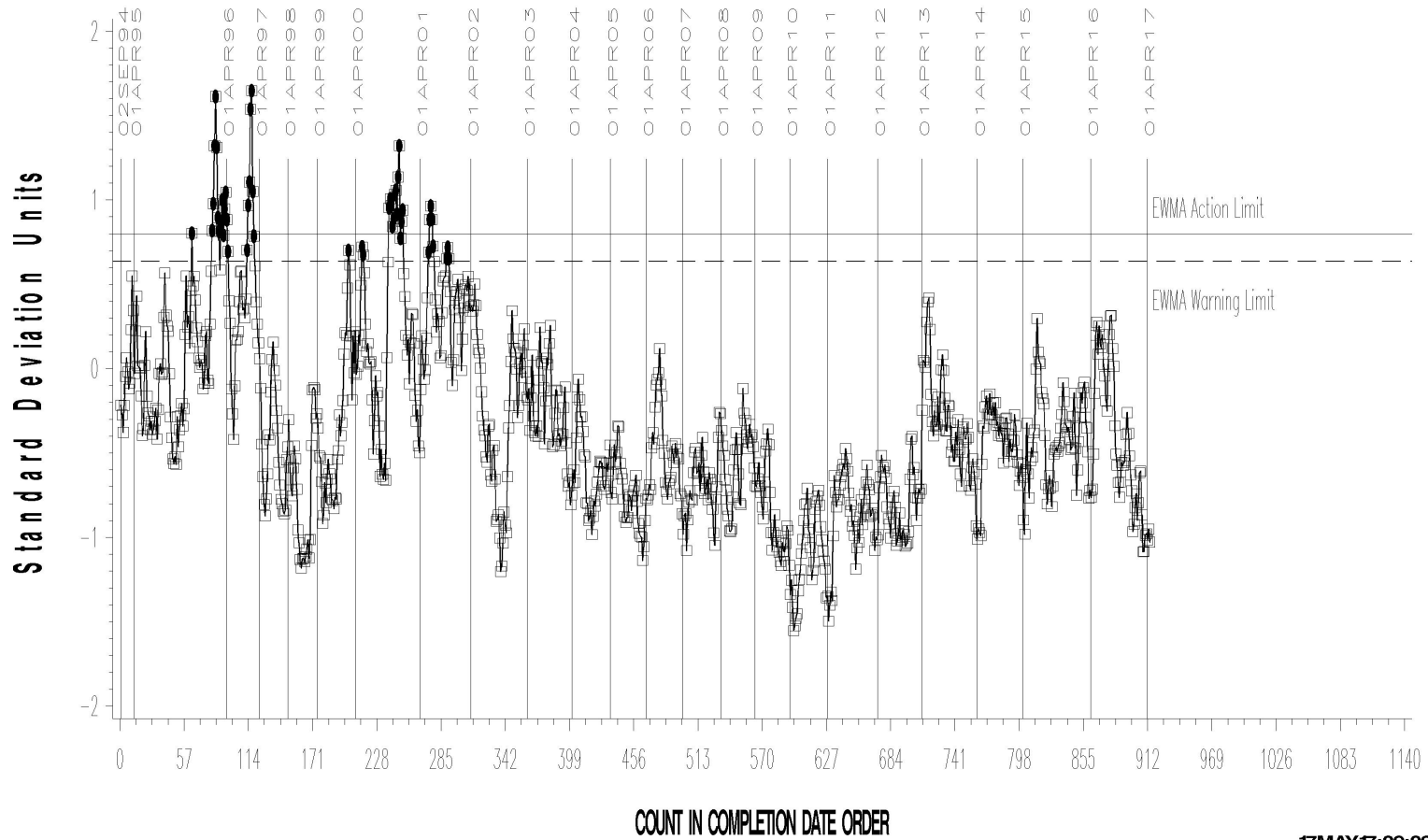
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Precision Analysis



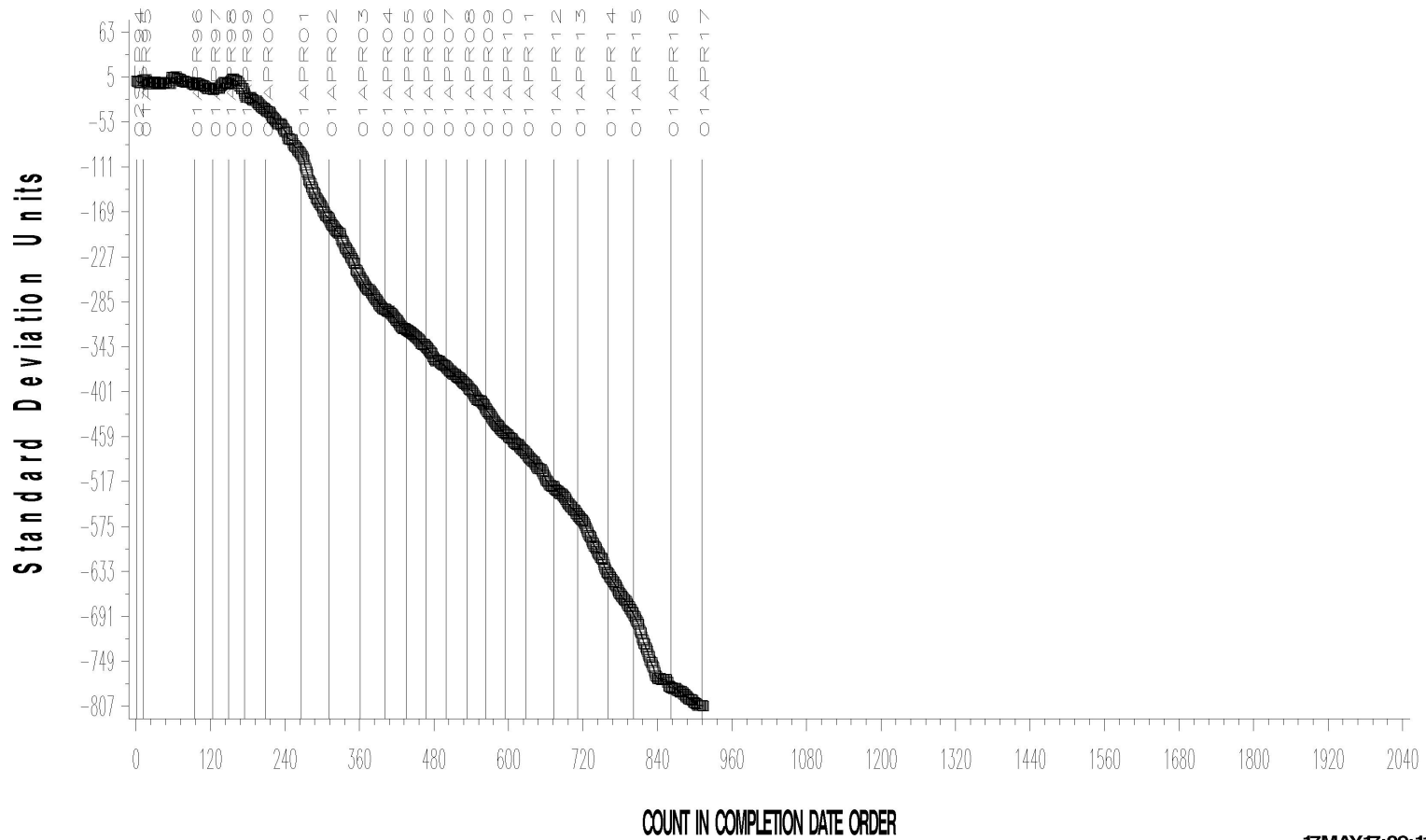
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

CUSUM Severity Analysis



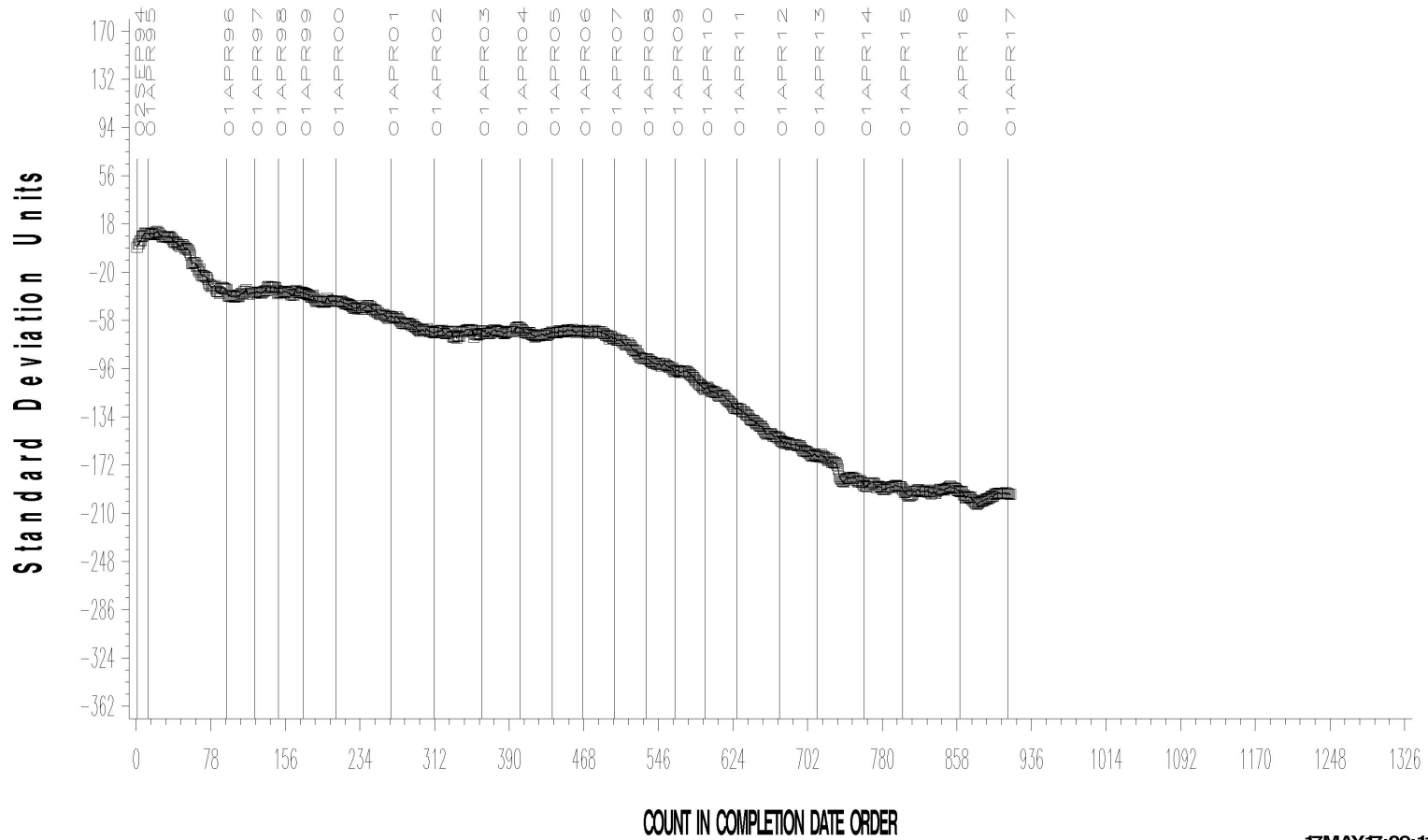
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

CUSUM Severity Analysis



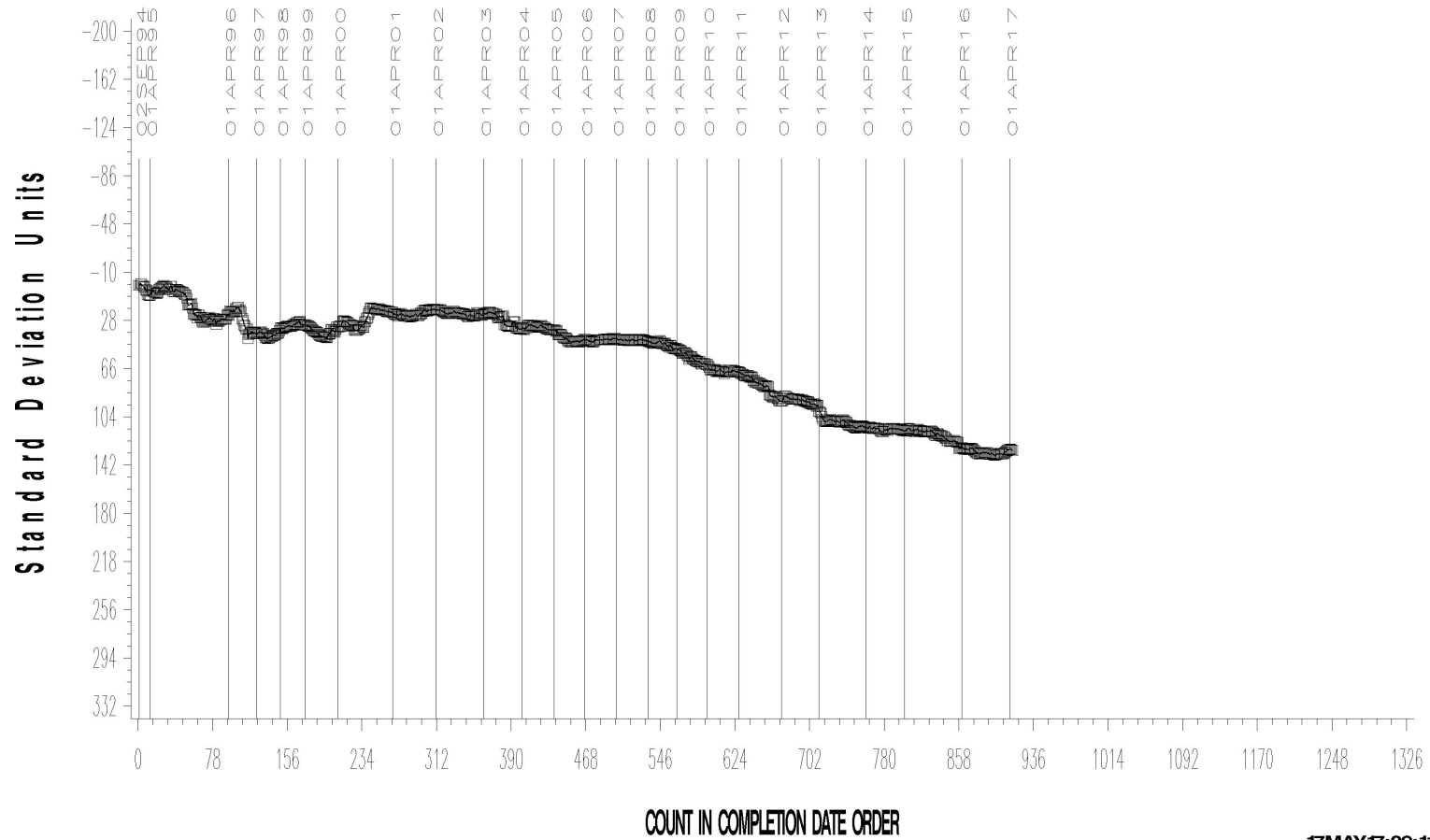
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

CUSUM Severity Analysis



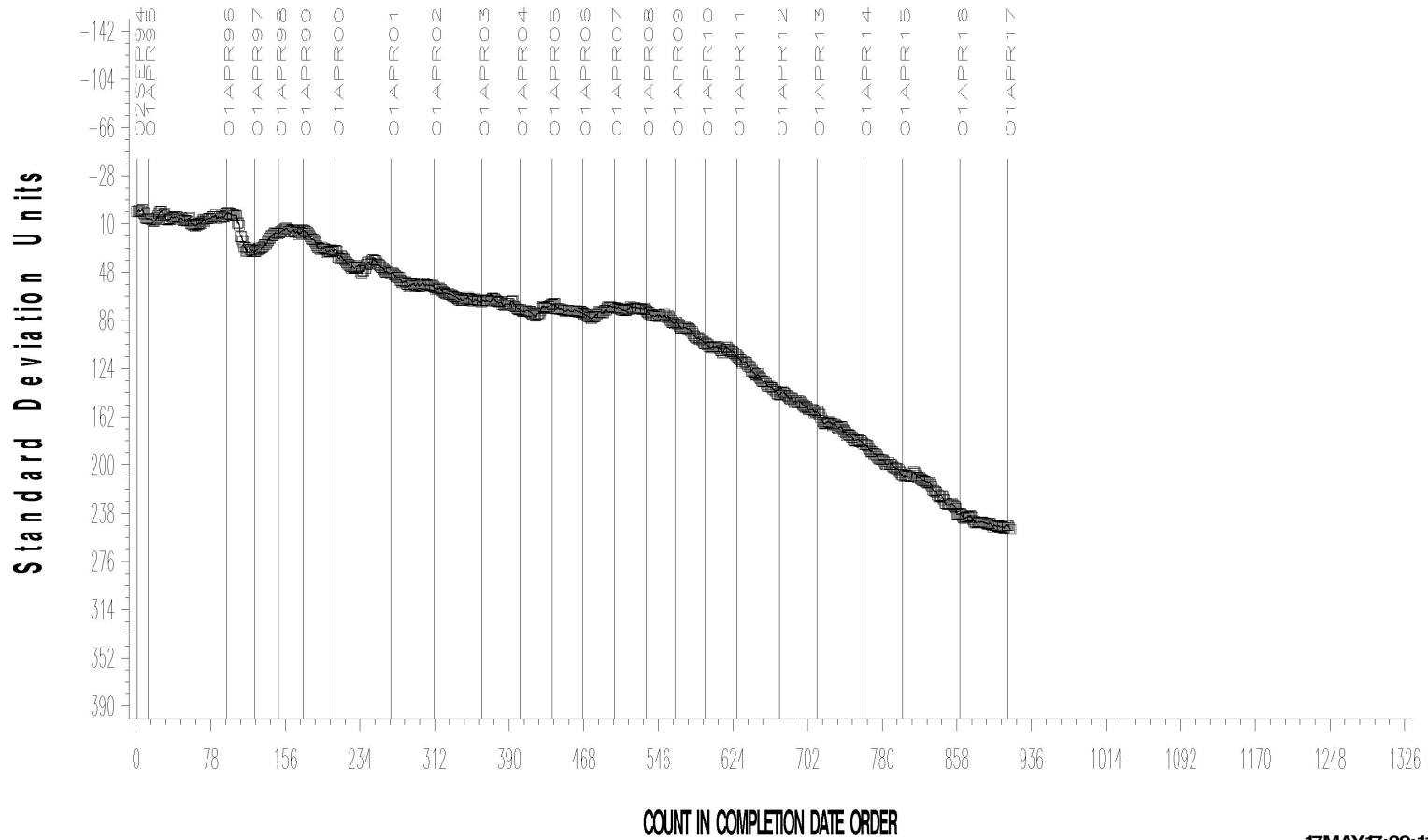
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

CUSUM Severity Analysis



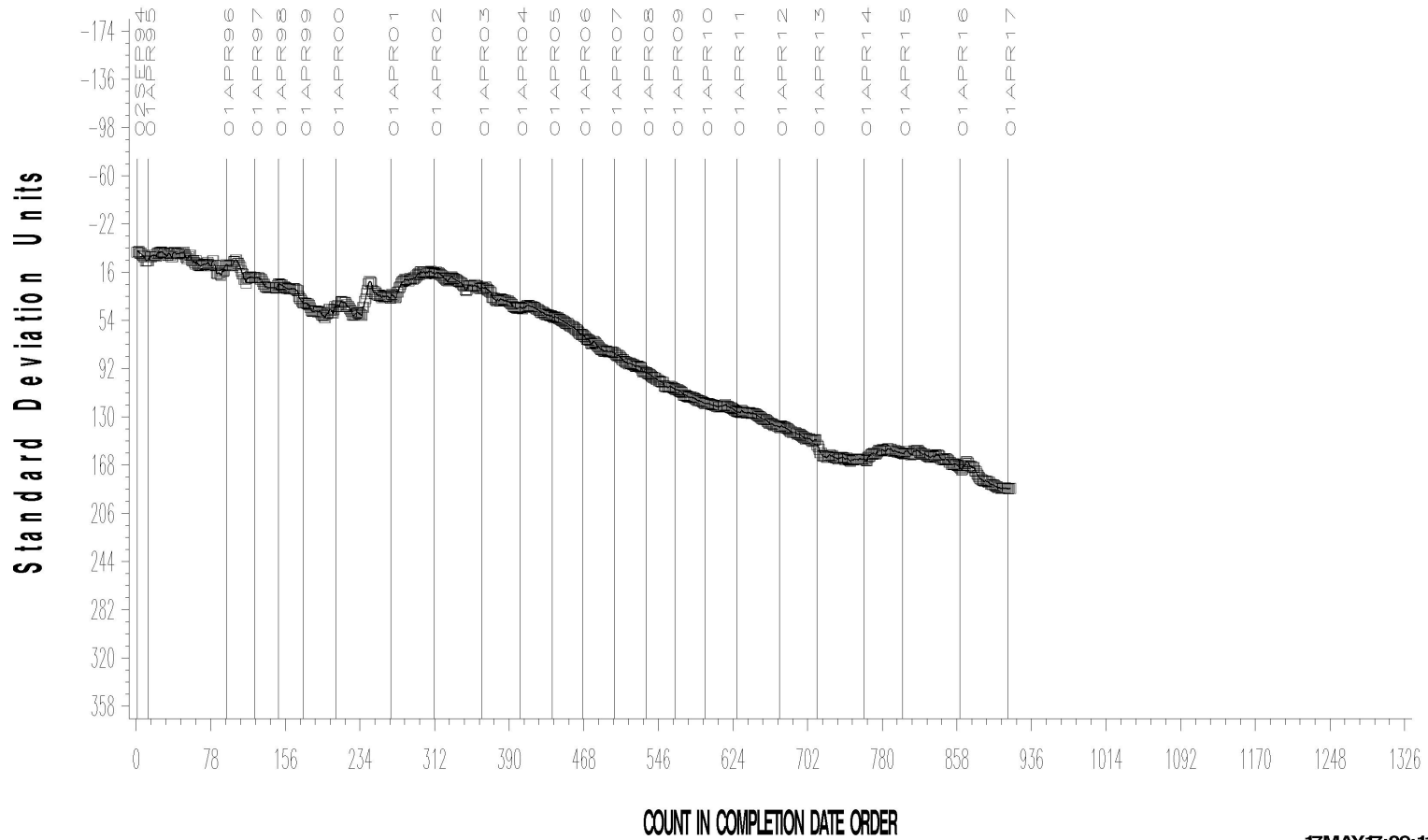
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

CUSUM Severity Analysis



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L-60-1 (D5704)

TIMELINE ADDITIONS

Effective Date	Information Letter	Event
		No timeline additions were made this period.

L-60-1 (D5704)

LAB VISITS

One L-60-1 lab visit was conducted this period. The alternator installed in one stand was not from the serialized 2012 industry batch purchase. The stand was not a calibrated stand and the alternator was replaced with a correct serialized alternator prior to calibration.

INFORMATION LETTERS

No information letters were issued this period.

L-60-1 (D5704)

STATUS OF REFERENCE OIL SUPPLY

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
148-1	22	420	26.3
151-2	0	0	0.0
155-1	25	618	38.6
Total	47	1038	64.9

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 186 gallons is available for use in other gear testing.

Four hundred and twenty tests of oil 148-1 remain in TMC inventory; however, this is only 26 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.