



Test Monitoring Center


@ Carnegie Mellon University
6555 Penn Avenue, Pittsburgh, PA 15206, USA

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

MEMORANDUM: 13-054

DATE: October 16, 2013

TO: Larry Hamilton, Chairman, L-60-1 Surveillance Panel

FROM: Scott Parke 

SUBJECT: L-60-1 Reference Oil Testing from April 1, 2013 through September 30, 2013

Please find attached a summary of testing activity this period.

SDP/sdp/mem13-054.sdp.doc

cc: Frank Farber
Jeff Clark

L-60-1 Surveillance Panel

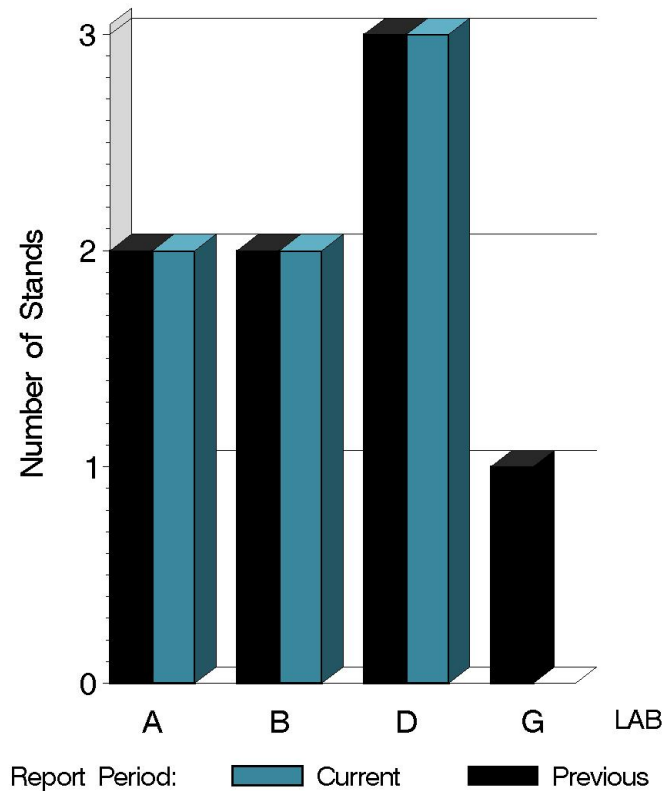
<ftp://ftp.astmtmc.cmu.edu/docs/gear/l601/semiannualreports/l601-10-2013.pdf>

Distribution: email

L-60-1 (D5704)

	Reporting Data	Calibrated on 9-30-13
Number of Labs	3	3
Number of Stands	7	7

BY-LAB STAND
DISTRIBUTION



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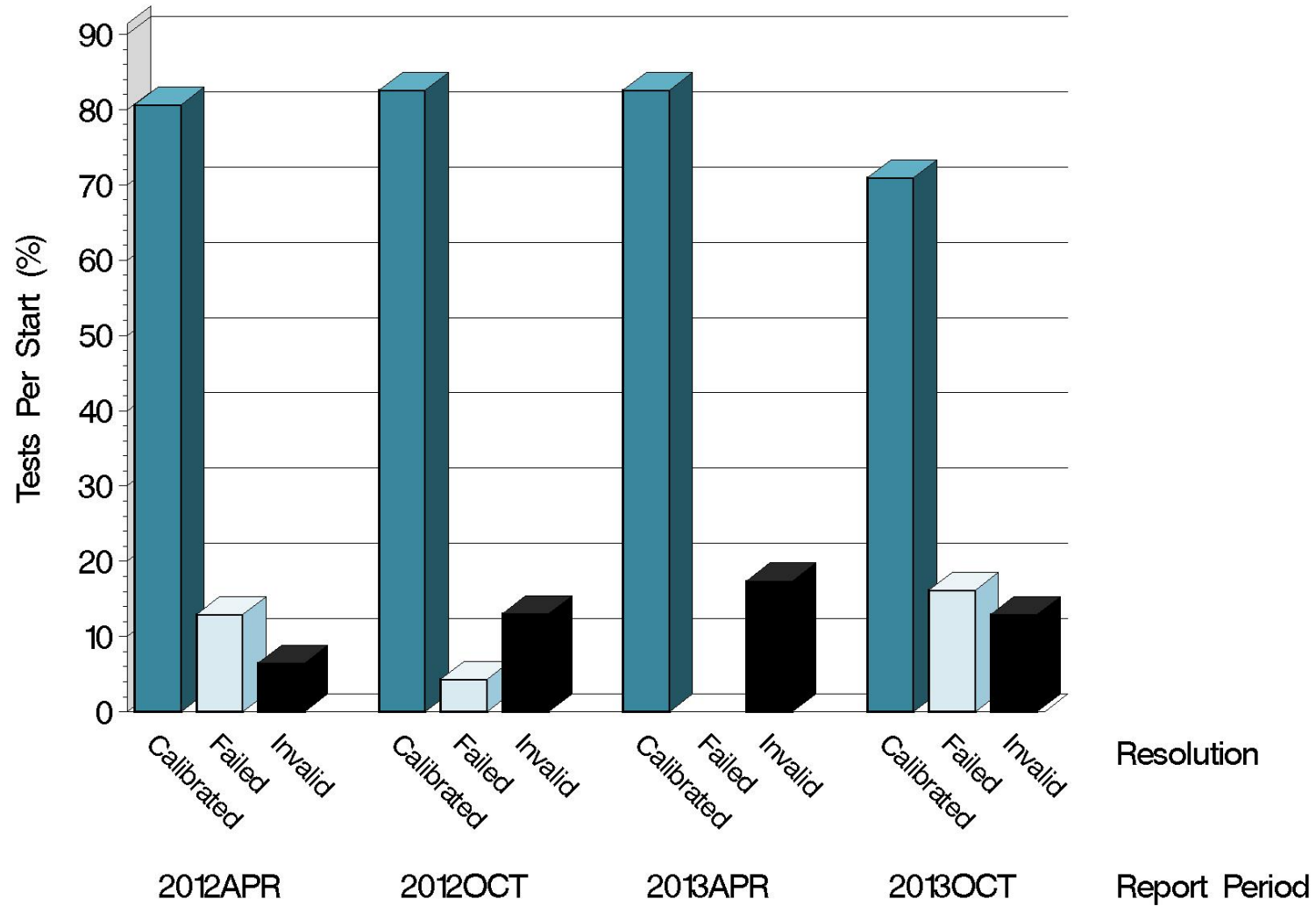
L-60-1 (D5704)

Test Distribution by Oil and Validity

		Totals			
		148-1	151-2	Last Period	This Period
Accepted for calibration	AC	9	13	19	22
Rejected (Mild)	OC	0	0	0	0
Rejected (Severe)	OC	4	1	0	5
Rejected (Precision)	OC	0	0	0	0
Invalidated calibration	LC	2	1	2	3
Hardware approval	NI	0	0	1	0
Operationally invalid	RC	0	0	0	0
Aborted	XC	0	1	2	1
Total		15	16	24	31

L-60-1 (D5704)

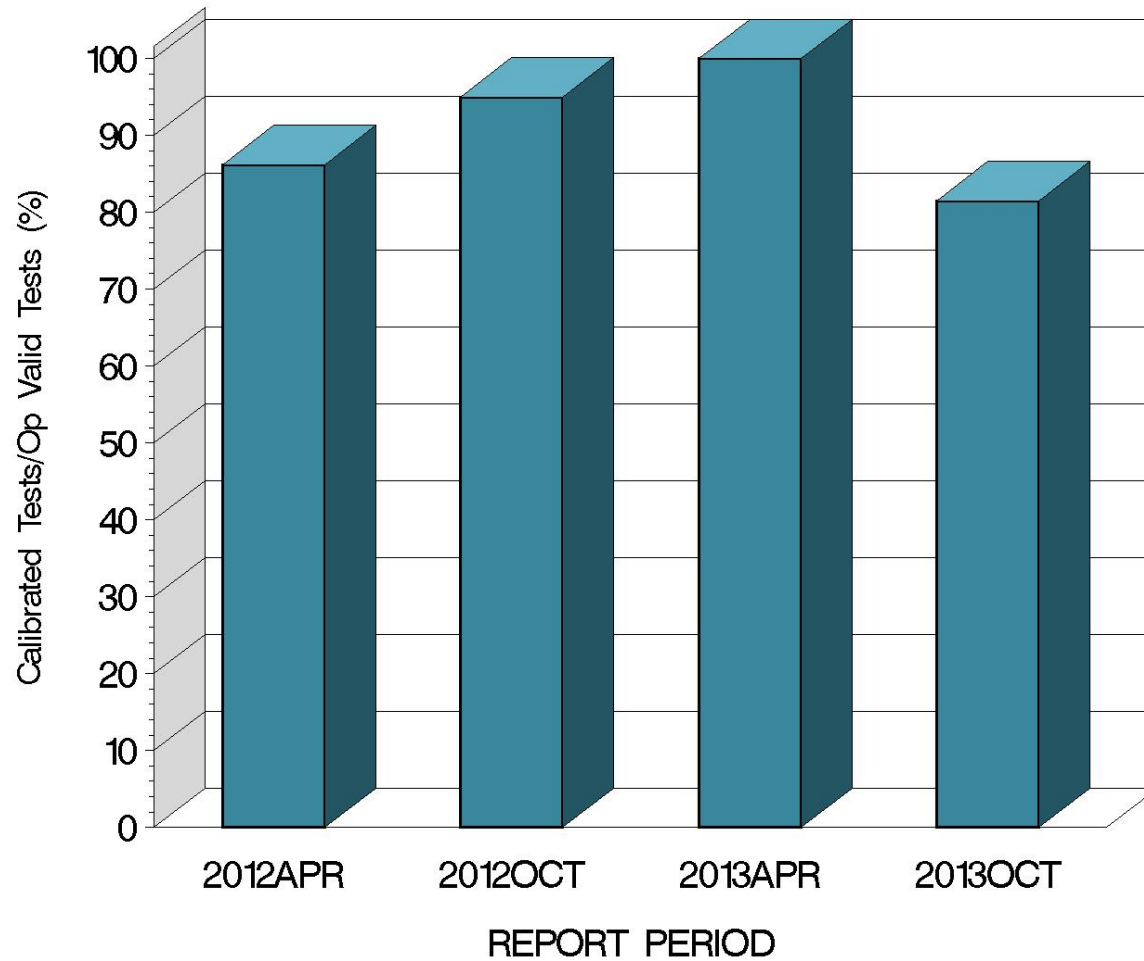
CALIBRATION ATTEMPT SUMMARY



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L-60-1 (D5704)

OPERATIONALLY VALID TESTS
MEETING ACCEPTANCE CRITERIA



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L-60-1 (D5704)

CAUSES FOR LOST TESTS

		Oil		Validity			Loss Rate		
Lab	Cause	148-1	151-2	RC	LC	XC	Lost	Starts	%
B	Oil loss > 20%	•			•		2	11	18%
	Oil loss > 20%		•		•				
D	Alternator failure resulting in low load	•			•		2	15	13%
	Warmup <45 min & oil temp control problems		•			•			
Lost		2	2	0	3	1			
Starts		15	16	31	31	31			
%		13%	13%	0%	10%	3%			

L-60-1 (D5704)

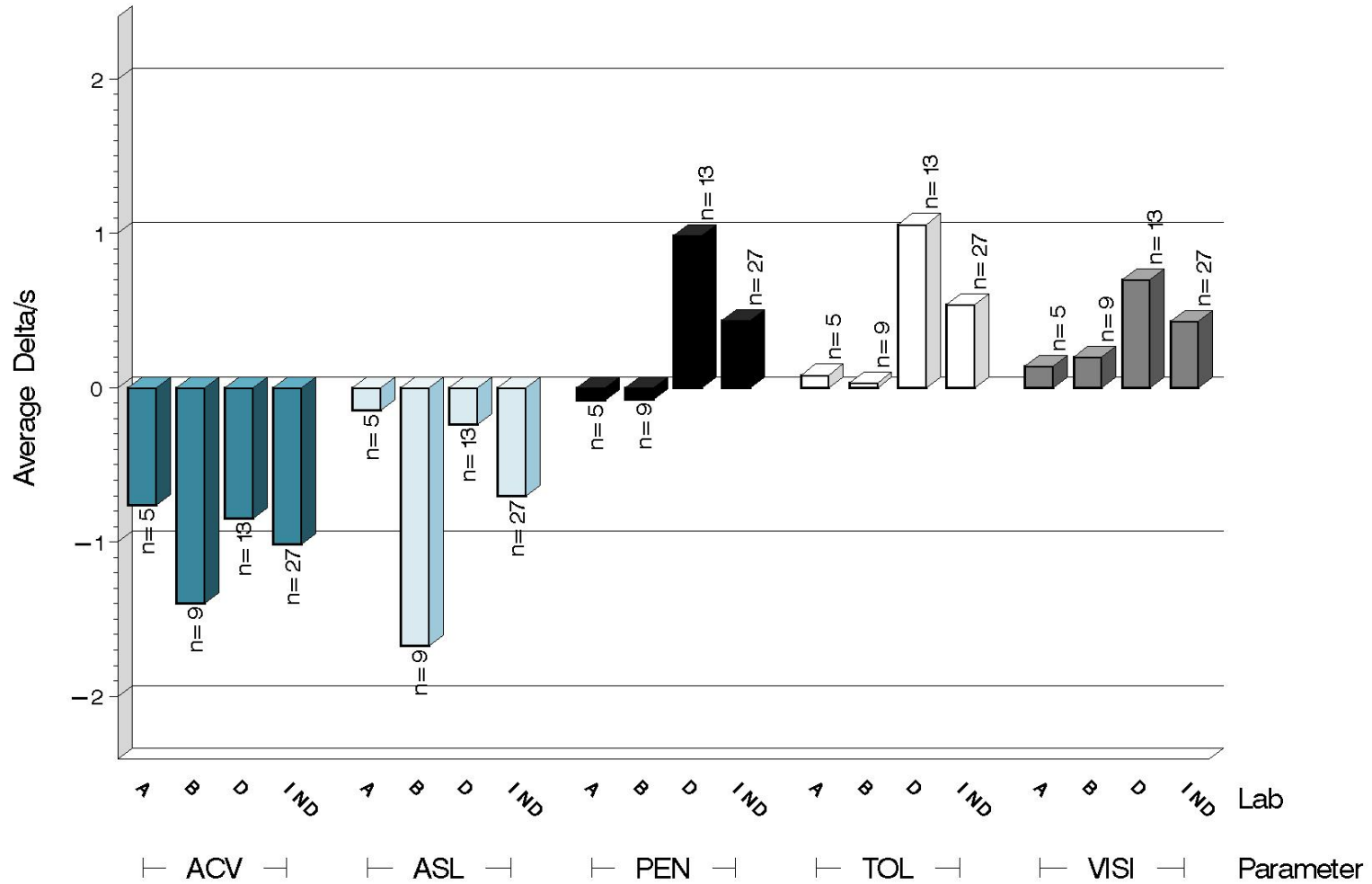
Average Δ /s by Lab						
Lab	n	VISI	PEN	TOL	ACV	ASL
A	5	0.138	-0.085	0.082	-0.761	-0.149
B	9	0.198	-0.077	0.032	-1.396	-1.673
D	13	0.701	0.987	1.058	-0.847	-0.238
Industry	27	0.429	0.434	0.535	-1.014	-0.700
Shift*	27	3.491%	0.272%	0.399%	-0.924 merits	-0.071 merits

*computed using severity adjustment standard deviation

L-60-1 (D5704)

TEST SEVERITY

DELTA/S BY LAB

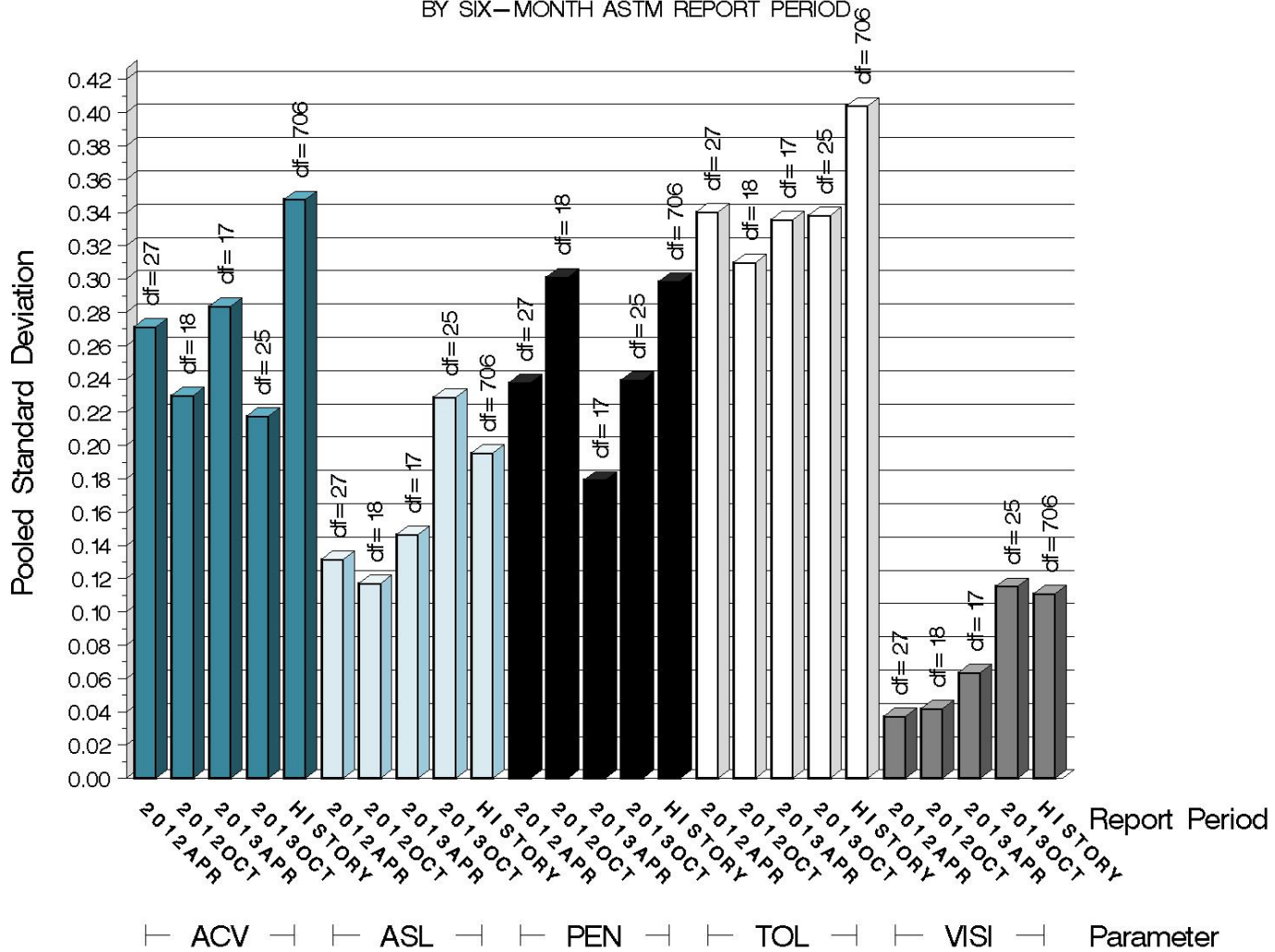


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L-60-1 (D5704)

TEST PRECISION

POOLED STANDARD DEVIATION
BY SIX-MONTH ASTM REPORT PERIOD



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L-60-1 (D5704)

SUMMARY OF SEVERITY & PRECISION

Severity

All parameters continue to be more or less severe of target. ACV and ASL currently exceed the control chart action limit. The test targets in use for the currently used oil blends may not accurately reflect the true performance of those oils. The 148-1 targets were a carryover from 148 targets set in 1994. The 151-2 targets were set on the first 9 tests of that oil in 2000. In several discussions, first during a May 9, 2012 meeting and a few other times since, the surveillance panel chose to retain the present targets.

Precision

Precision for all parameters continues to be good.

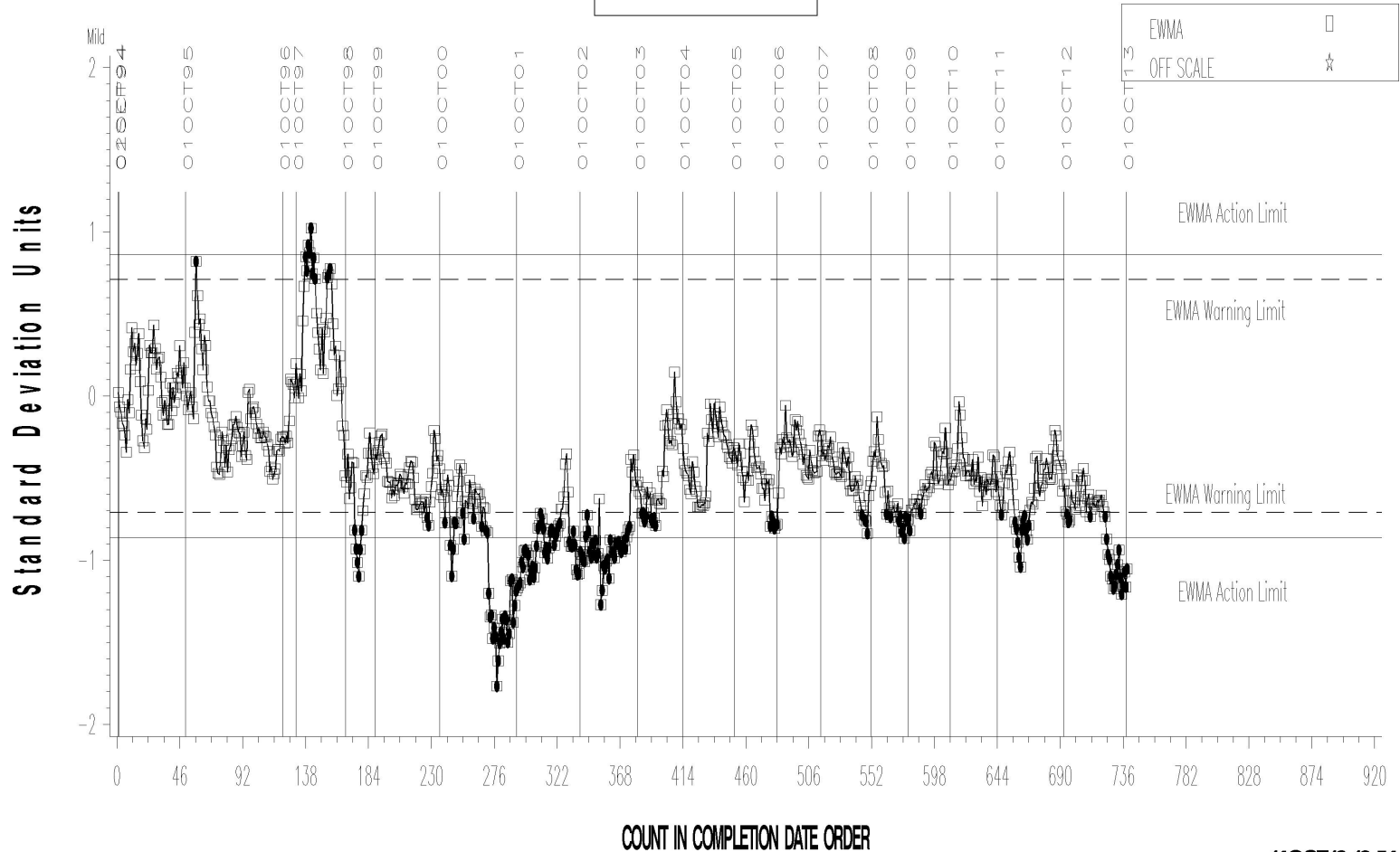
Industry control charts follow.

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Severity Analysis



Severe

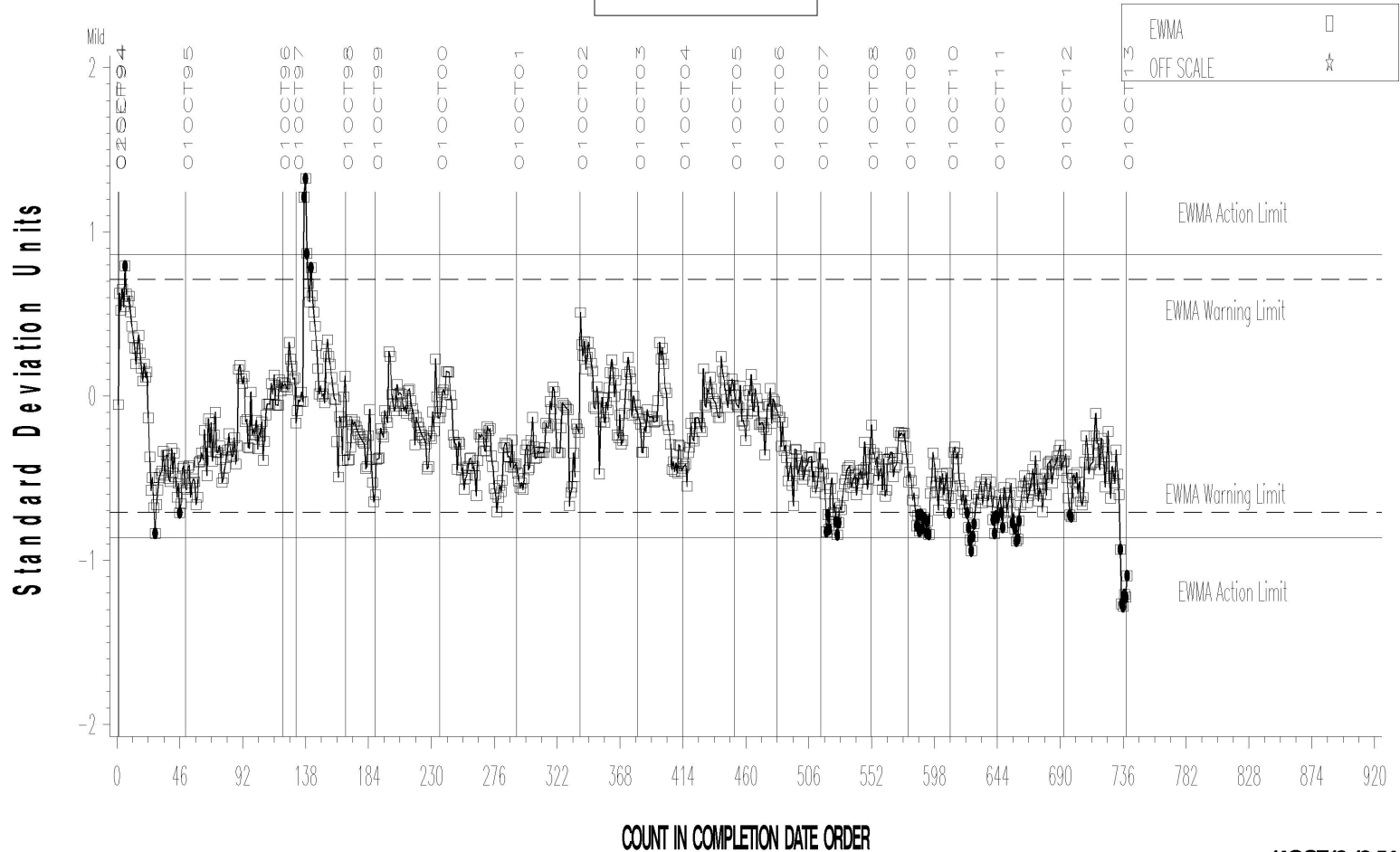
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Severity Analysis



Severe

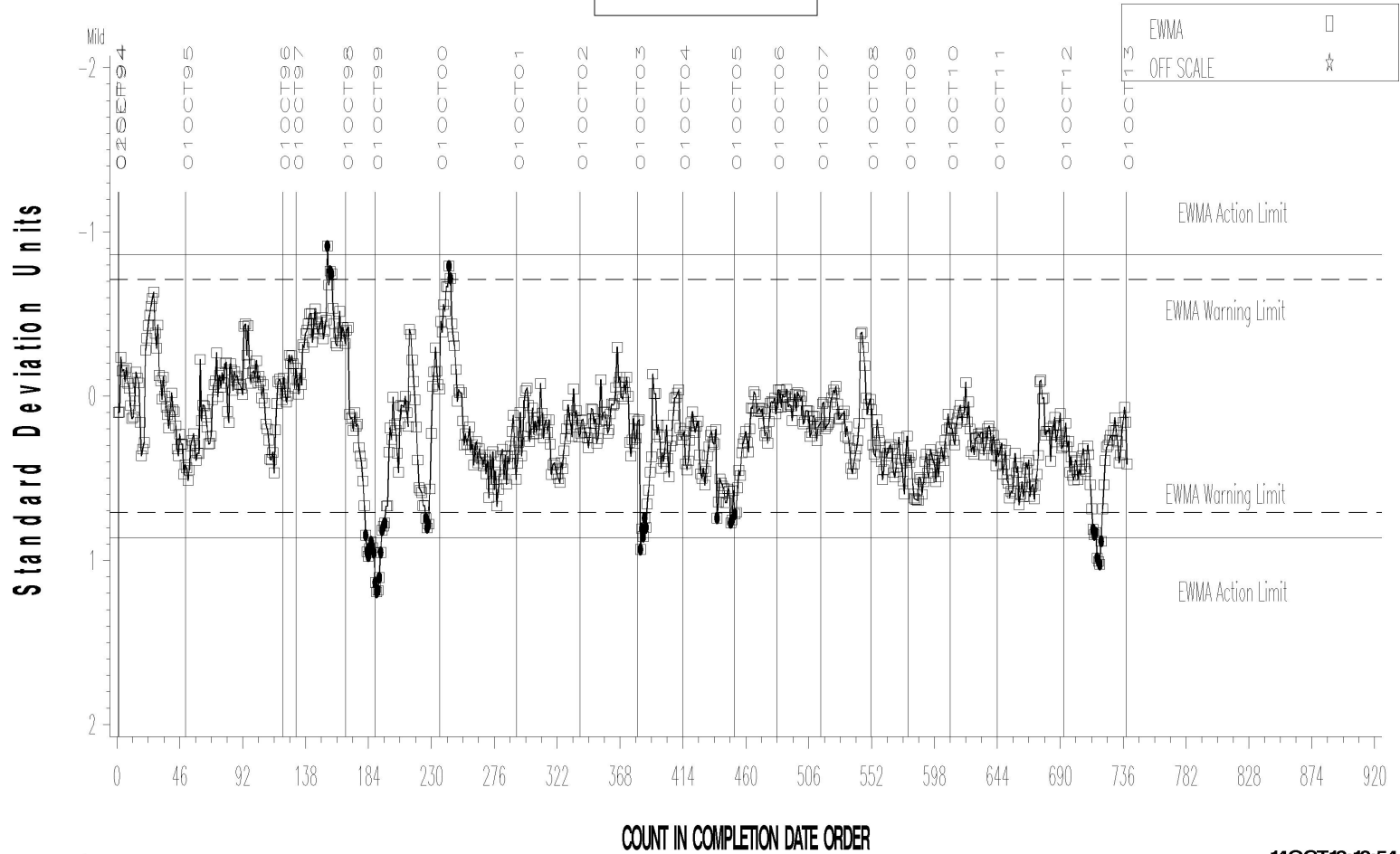
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Severity Analysis



Severe

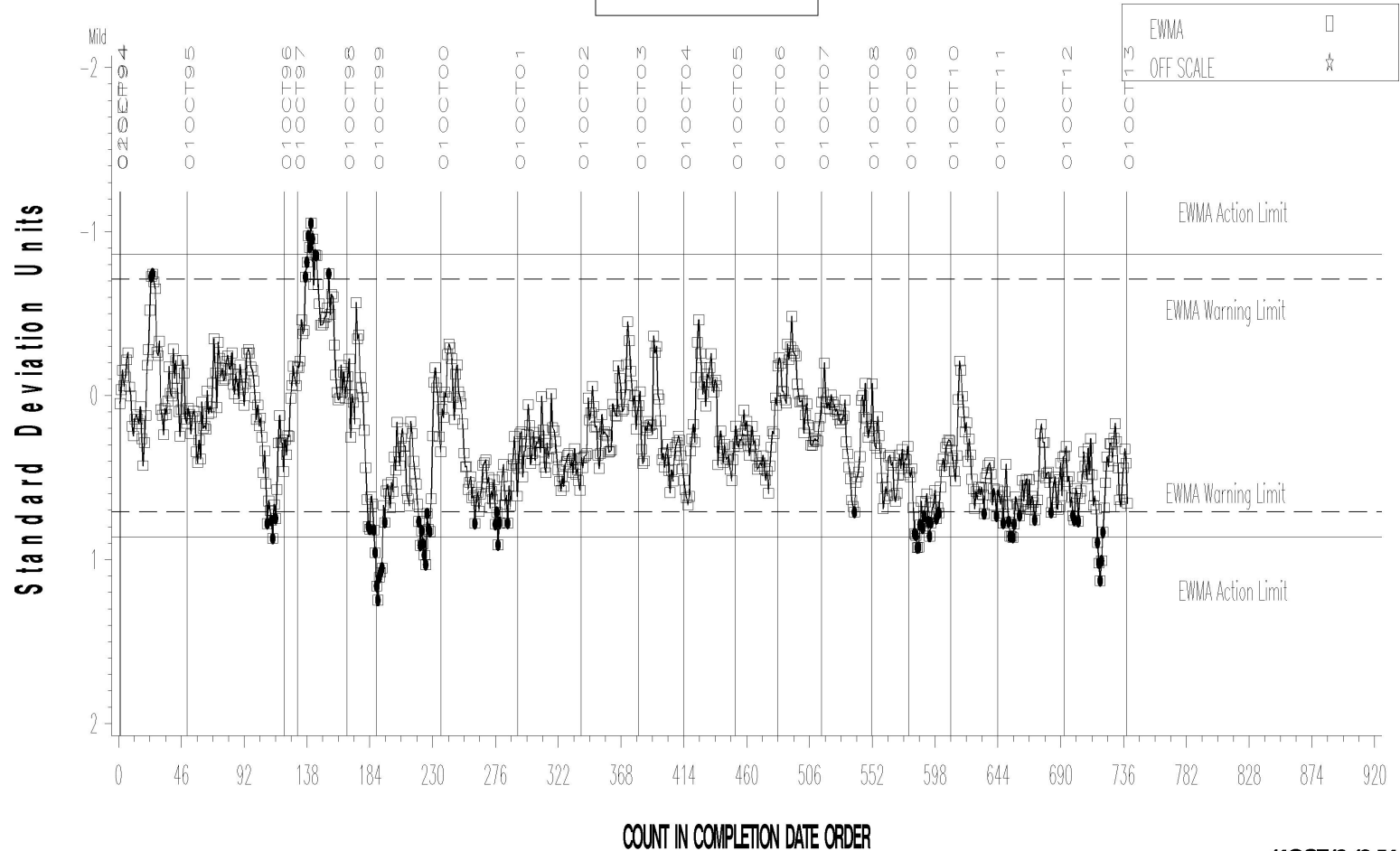
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Severity Analysis



Severe

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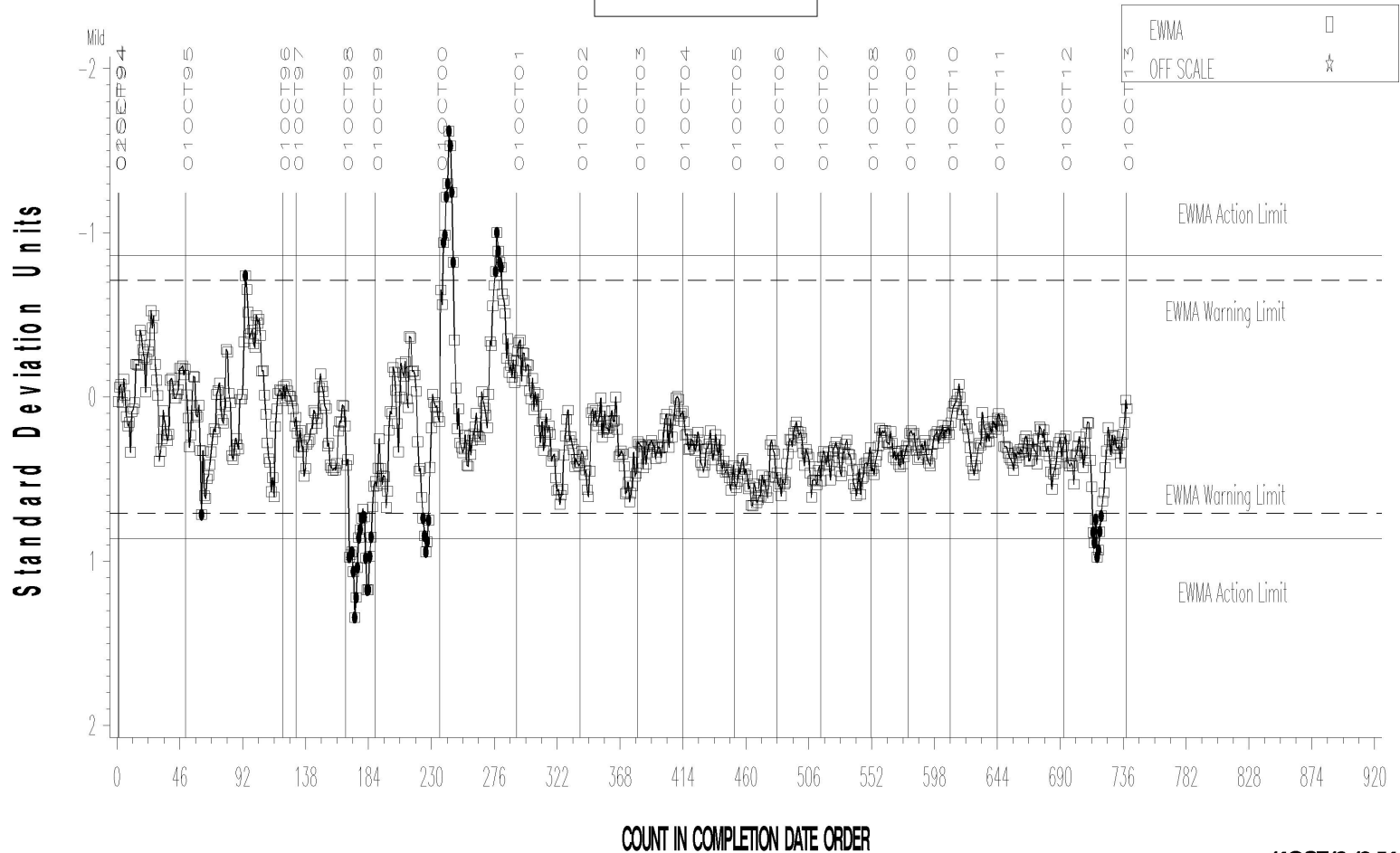
A Program of ASTM International

L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL VISCOSITY INCREASE

LTMS Severity Analysis



Severe

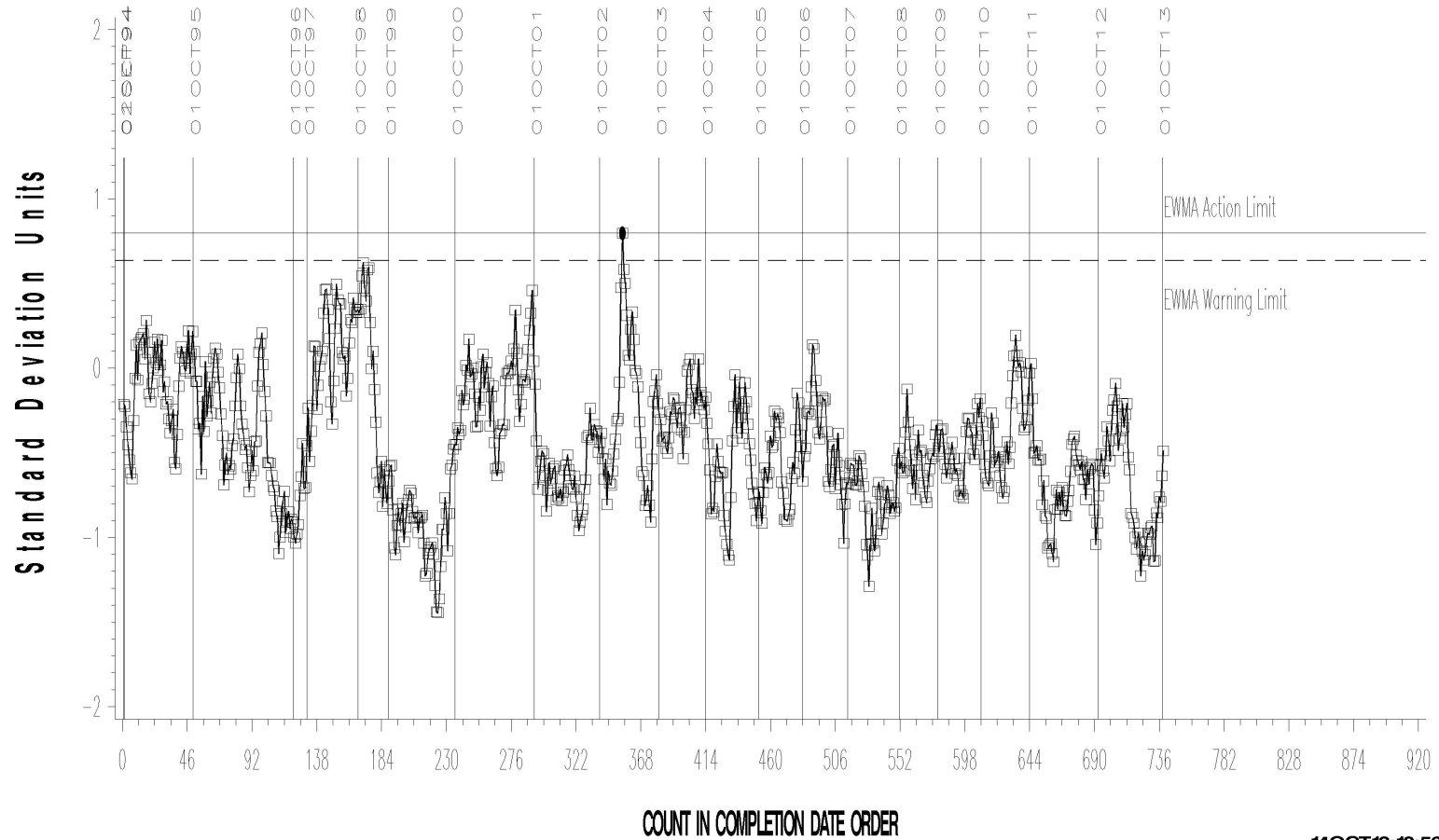
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE CARBON/ VARNISH

LTMS Precision Analysis



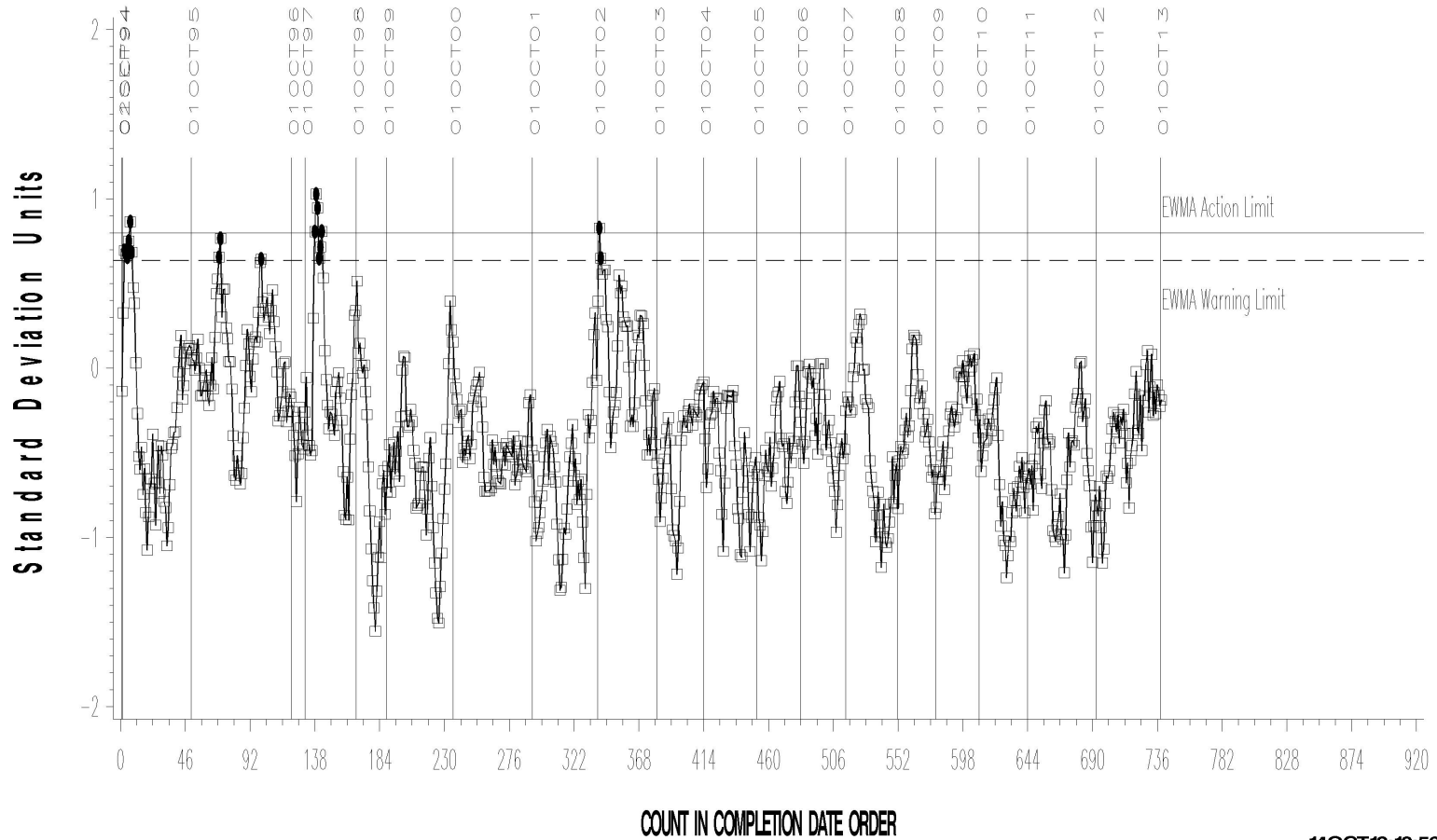
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL AVERAGE SLUDGE

LTMS Precision Analysis



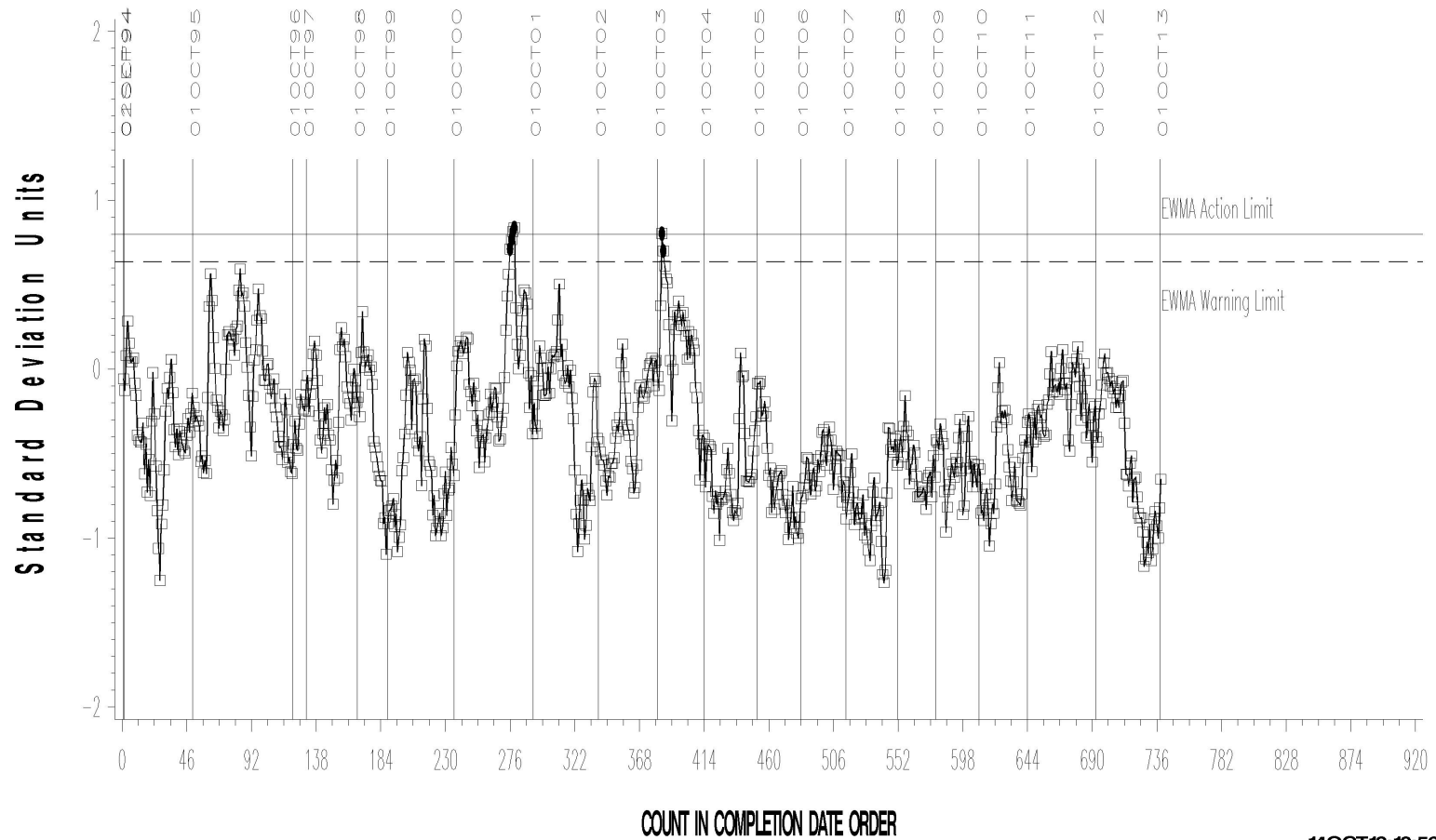
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL PENTANE INSOLUBLES

LTMS Precision Analysis



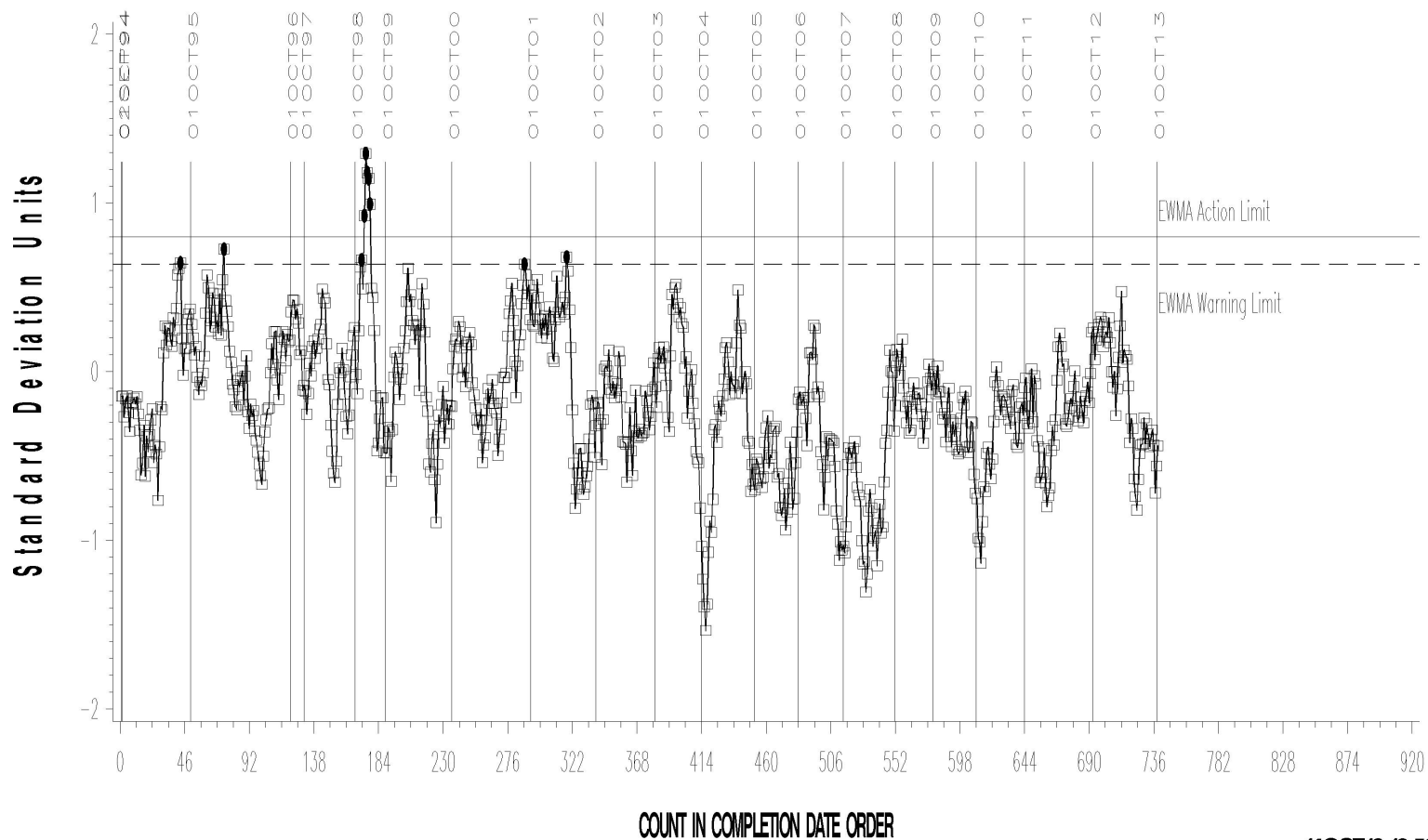
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

LTMS Precision Analysis



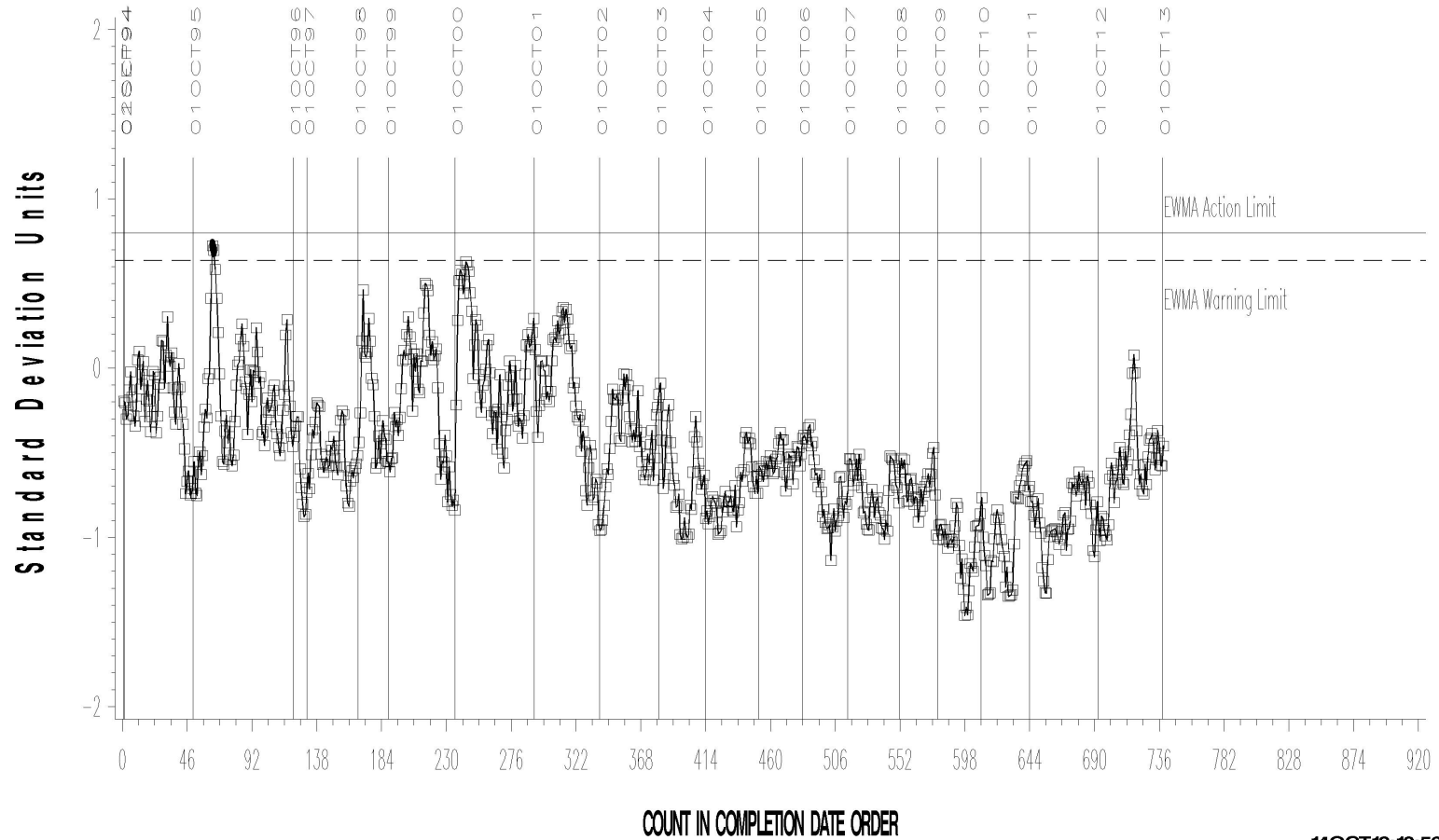
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L-60-1 (D5704)

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



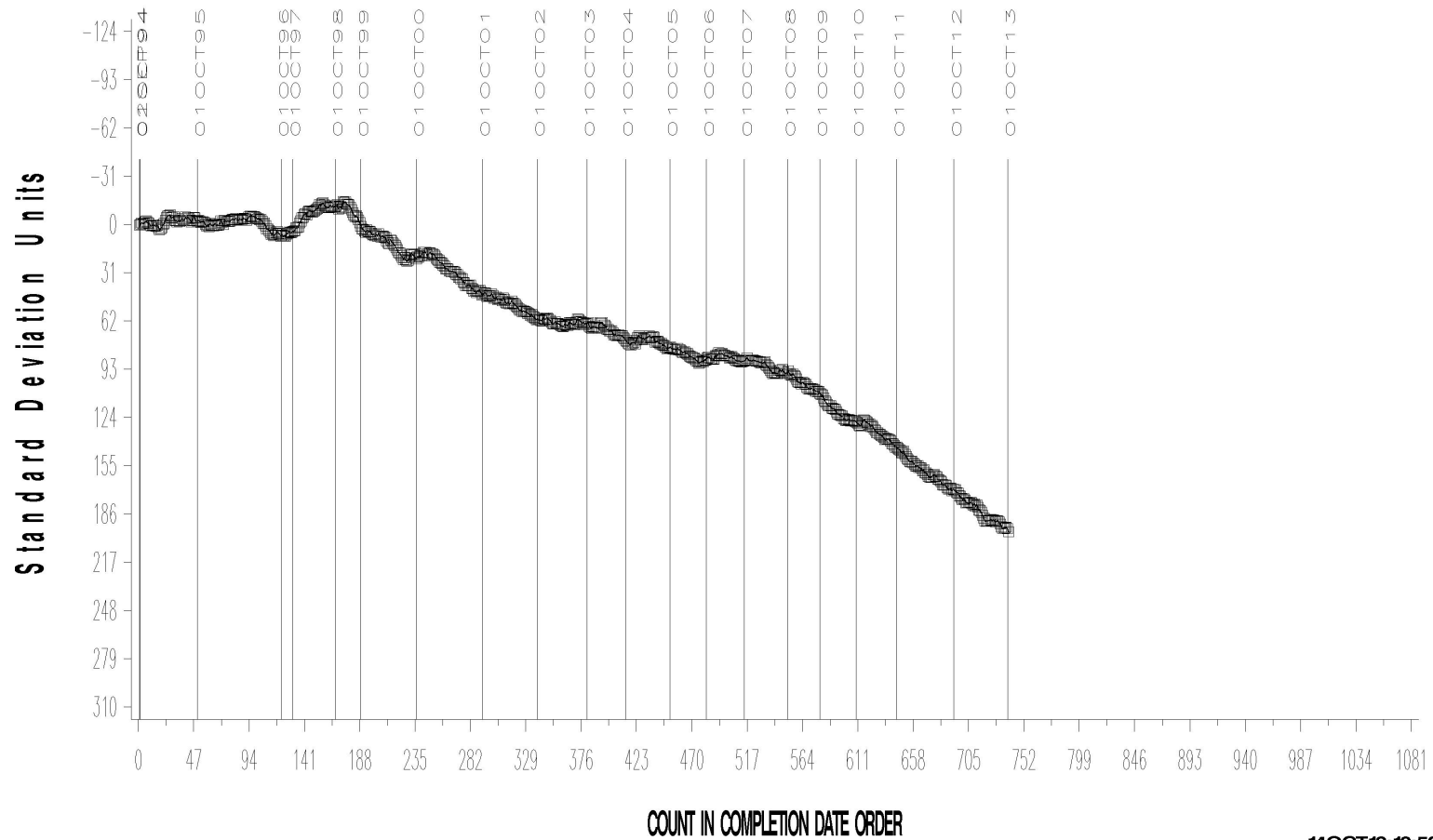
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L-60-1 (D5704)

L-60-1 INDUSTRY OPERATIONALLY VALID DATA

REF. FINAL TOLUENE INSOLUBLES

CUSUM Severity Analysis



14OCT13:10:58

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
20130903	13-2	Revision to model number for Sierra Top Trak airflow meter.

L-60-1 (D5704)

LAB VISITS

Lab visits were made to all 4 L-60-1 testing labs to verify that all revisions to the D893 insolubles procedure had been implemented. One lab was found to be using additional solvent to balance tubes for centrifuging, covering tubes in the drying oven to prevent spatter, and using an equation for final insoluble % other than that in the procedure.

INFORMATION LETTERS

Information Letter 13-2 was issued on September 3, 2013 to revise the model number specified for the Sierra Top Trak airflow meter. The manufacturer has revised the coding scheme for the available options.

L-60-1 (D5704)

STATUS OF REFERENCE OIL SUPPLY

Oil	Cans @ Labs	@ TMC	
		Cans	Gallons
133	5	1693	105.8
148-1	23	525	32.8
151-2	24	38	2.4
Total	52	2256	141.0

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 nearly depleted. A 155 reblend (155-1) is on hand at TMC and will be available for L-60-1 testing when the need arises. TMC inventory records indicate that 2.4 gallons of 151-2 remain. While this does provide oil for 38 tests, be advised that quantities that low can unexpectedly be depleted by even minor spills or transfer losses. The panel is advised to begin thinking about an introduction plan for 155-1. Five hundred and twenty five tests of oil 148-1 remain in TMC inventory; however, this is only 32.8 gallons. When the need arises, it will not be possible to obtain a reblend of this oil. The panel may also want to begin considering a possible replacement for this oil.