A Program of ASTM International

Test Monitoring Center

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

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

MEMORANDUM: 14-019

DATE: June 12, 2014

TO: Don Bell, Chairman, OSCT Surveillance Panel

FROM: Scott Parke

SUBJECT: OSCT Reference oil testing from October 1, 2013 through March 31, 2014

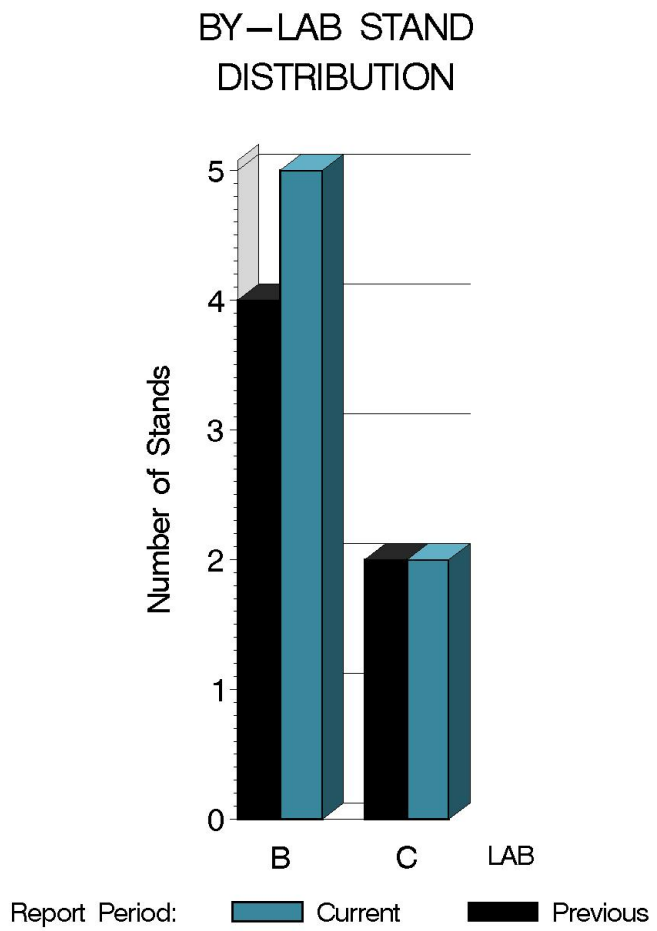
Please find attached a summary of reference oil testing activity this period.

SDP/sdp/mem14-019.sdp.doc
cc: Frank Farber
Jeff Clark
OSCT Surveillance Panel
ftp://ftp.astmtmc.cmu.edu/docs/gear/osct/semiannualreports/osct-04-2014.pdf

Distribution: email

OSCT (D5662)

	Reporting Data	Calibrated on 3-31-14
Number of Labs	2	2
Number of Stands	7	7



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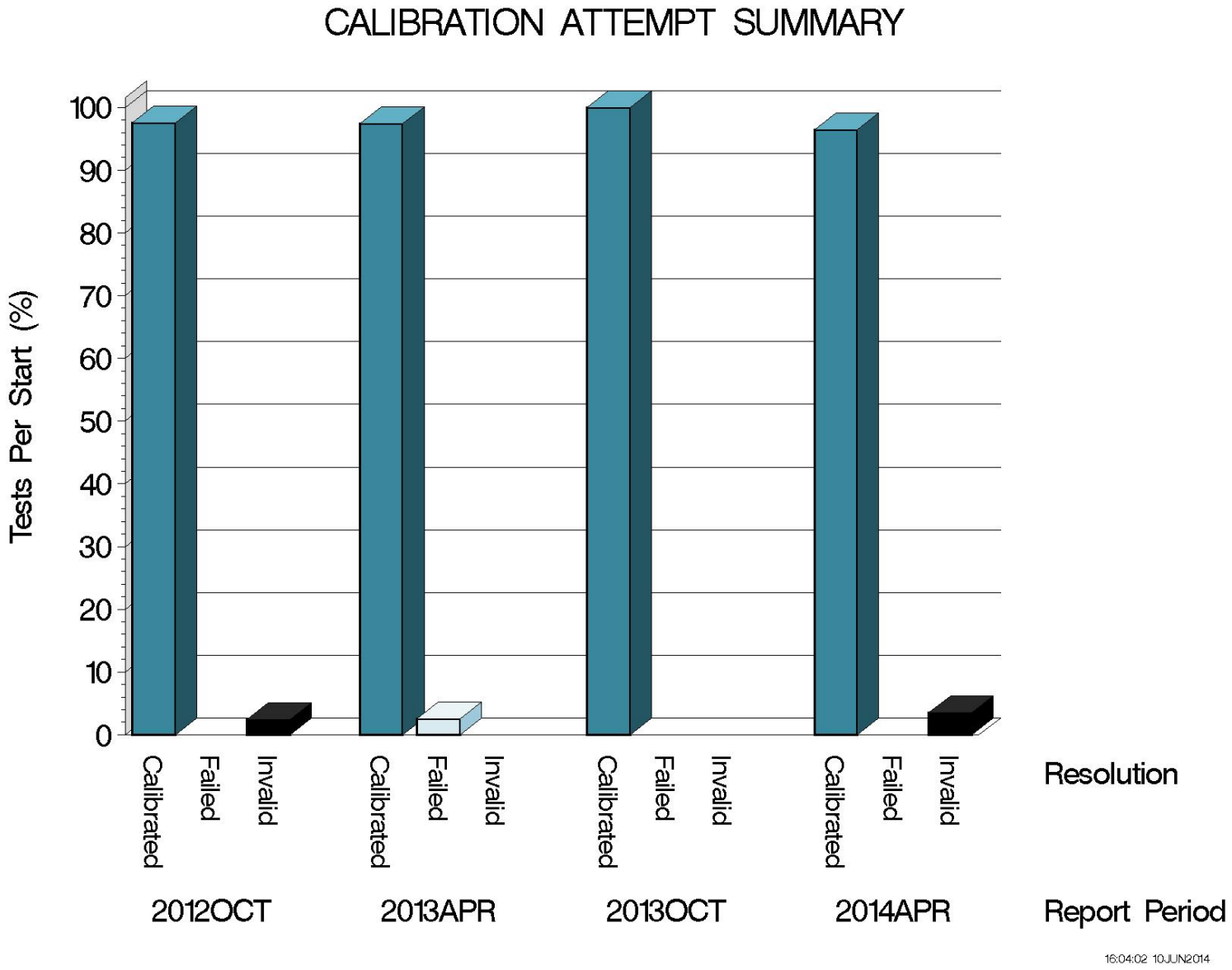
OSCT (D5662)

Test Distribution by Oil and Validity

		FL	NI	PA	Totals	
					Last Period	This Period
Accepted for calibration	AC	9	9	9	37	27
Rejected (low result)	OC	0	0	0	0	0
Rejected (high result)	OC	0	0	0	0	0
Invalidated	LC	0	1	0	0	1
Aborted	XC	0	0	0	0	0
Elastomer approval run	NI	4	0	0	10	4
Unacceptable approval run	MI	1	0	0	2	1
Total		14	10	9	49	33

OSCT (D5662)


CALIBRATION ATTEMPT SUMMARY
Tests Per Start (%)
100
90
80
70
60
50
40
30
20
10
0
Calibrated
Failed
Invalid
Calibrated
Failed
Invalid
Calibrated
Failed
Invalid
Calibrated
Failed
Invalid
Resolution
2012OCT
2013APR
2013OCT
2014APR
Report Period
16:04:02 10JUN2014

OSCT (D5662)

CAUSES FOR LOST TESTS

		Oil			Validity			Loss Rate		
Lab	Cause	FL	NI	PA	LC	RC	XC	Lost	Starts	%
B	Ran in wrong bath temp.		●		●			1	33	3%
	Lost	0	1	0	1	0	0			
	Starts	14	10	9	33	33	33			
	%	0%	10%	0%	3%	0%	0%			

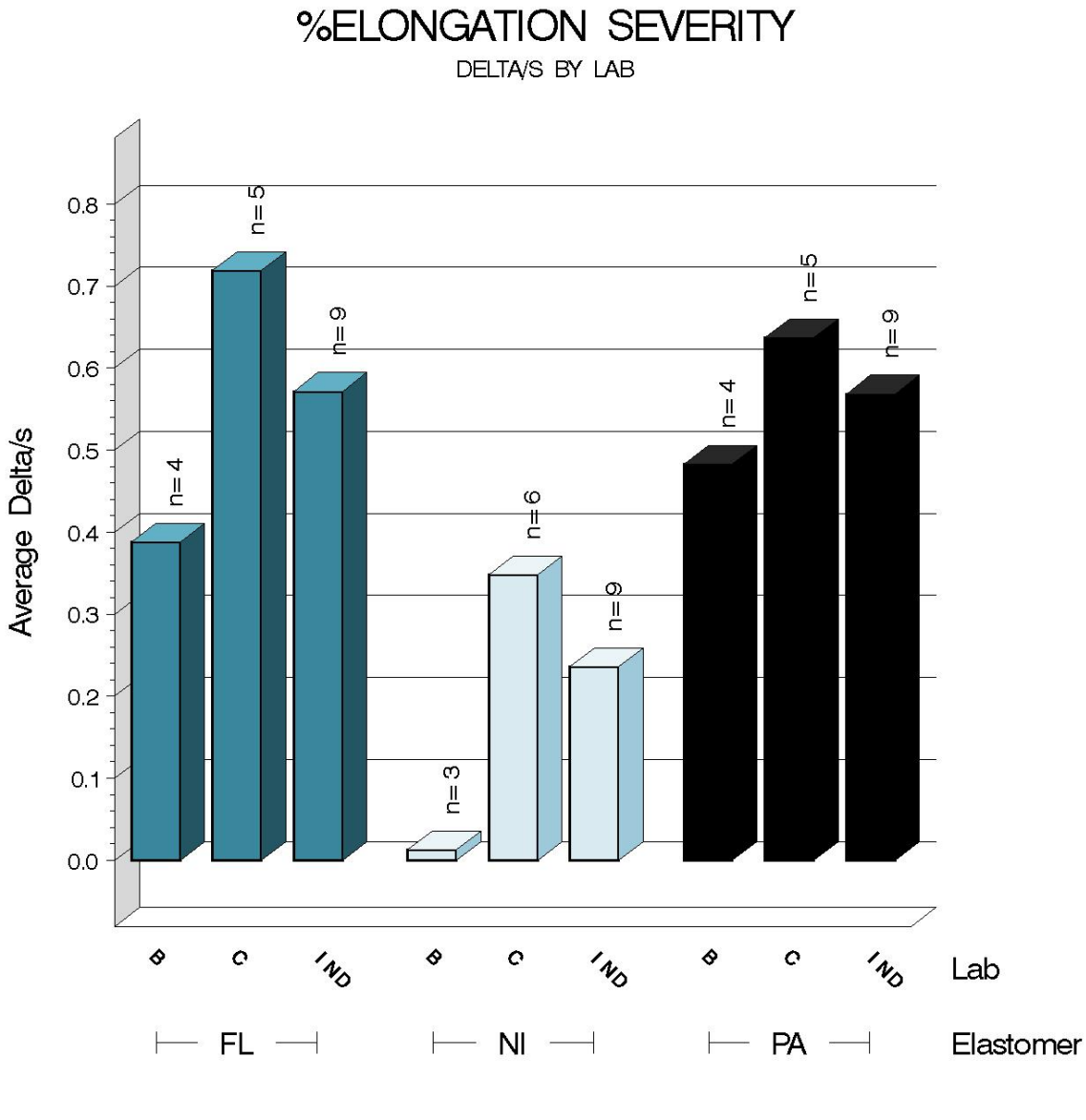
Lost tests are calibration attempts that were either aborted or operationally invalid

OSCT (D5662)

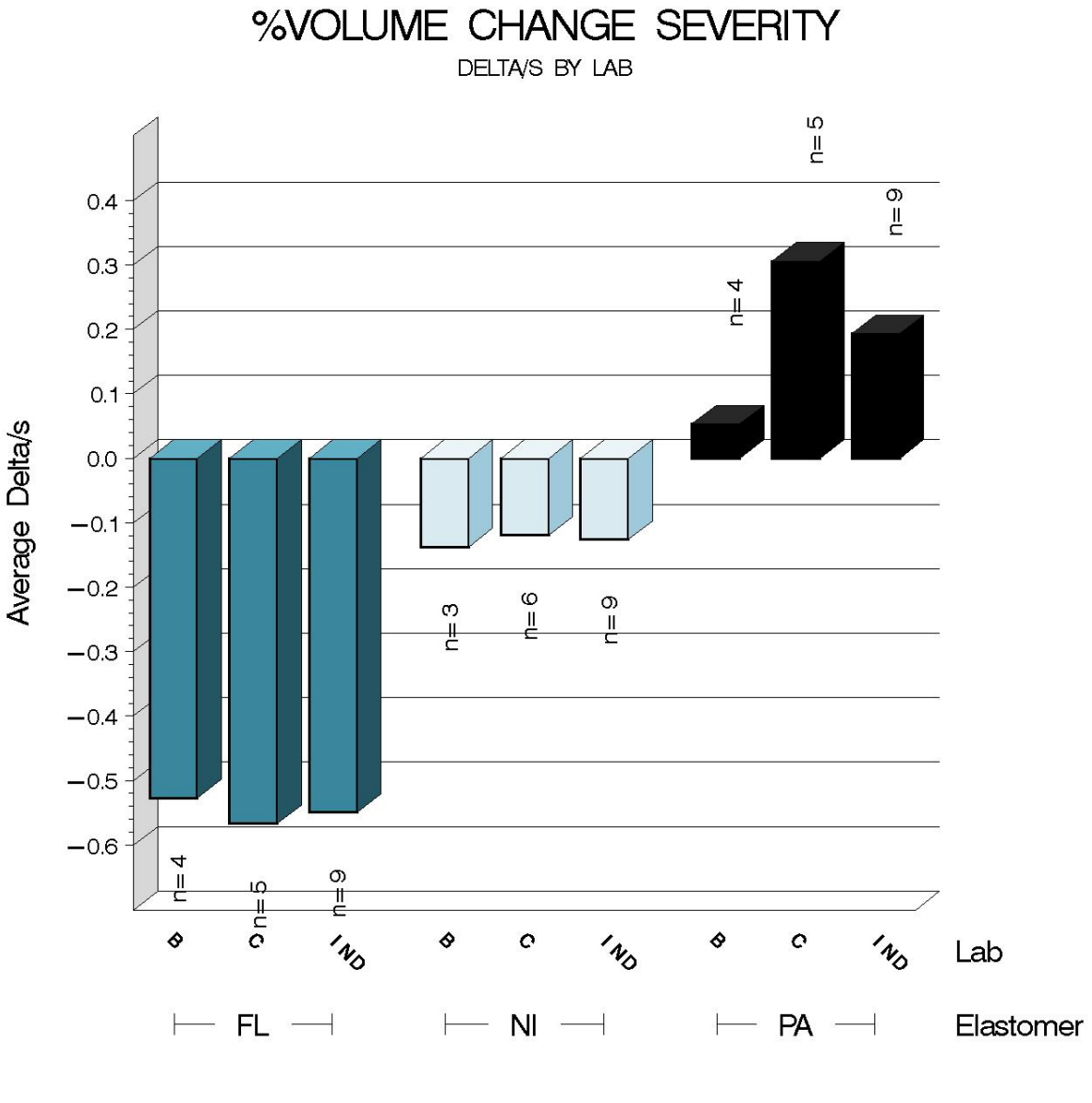
Average Δ/s by Lab					
Elastomer	**Lab**	**n**	**PELA**	**PVCA**	**SAHA**
FL	B	4	0.388	-0.527	-1.286
	C	5	0.719	-0.567	0.066
	Industry	9	0.572	-0.549	-0.535
	Shift*	9	4.318%	-0.300%	-0.747 pts
NI	B	3	0.012	-0.137	-0.038
	C	6	0.348	-0.120	-0.548
	Industry	9	0.236	-0.126	-0.378
	Shift*	9	1.321%	-0.073%	-0.485 pts
PA	B	4	0.483	0.054	-0.688
	C	5	0.637	0.306	-0.138
	Industry	9	0.569	0.194	-0.382
	Shift*	9	12.431%	0.297%	-0.981 pts

*computed using historic pooled s

OSCT (D5662)


%ELONGATION SEVERITY
DELTA/S BY LAB
Average Delta/s
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
n=4
n=5
n=9
n=3
n=6
n=9
n=4
n=5
n=9
B
C
IND
B
C
IND
B
C
IND
Lab
FL
NI
PA
Elastomer
16:04:02 10JUN2014

OSCT (D5662)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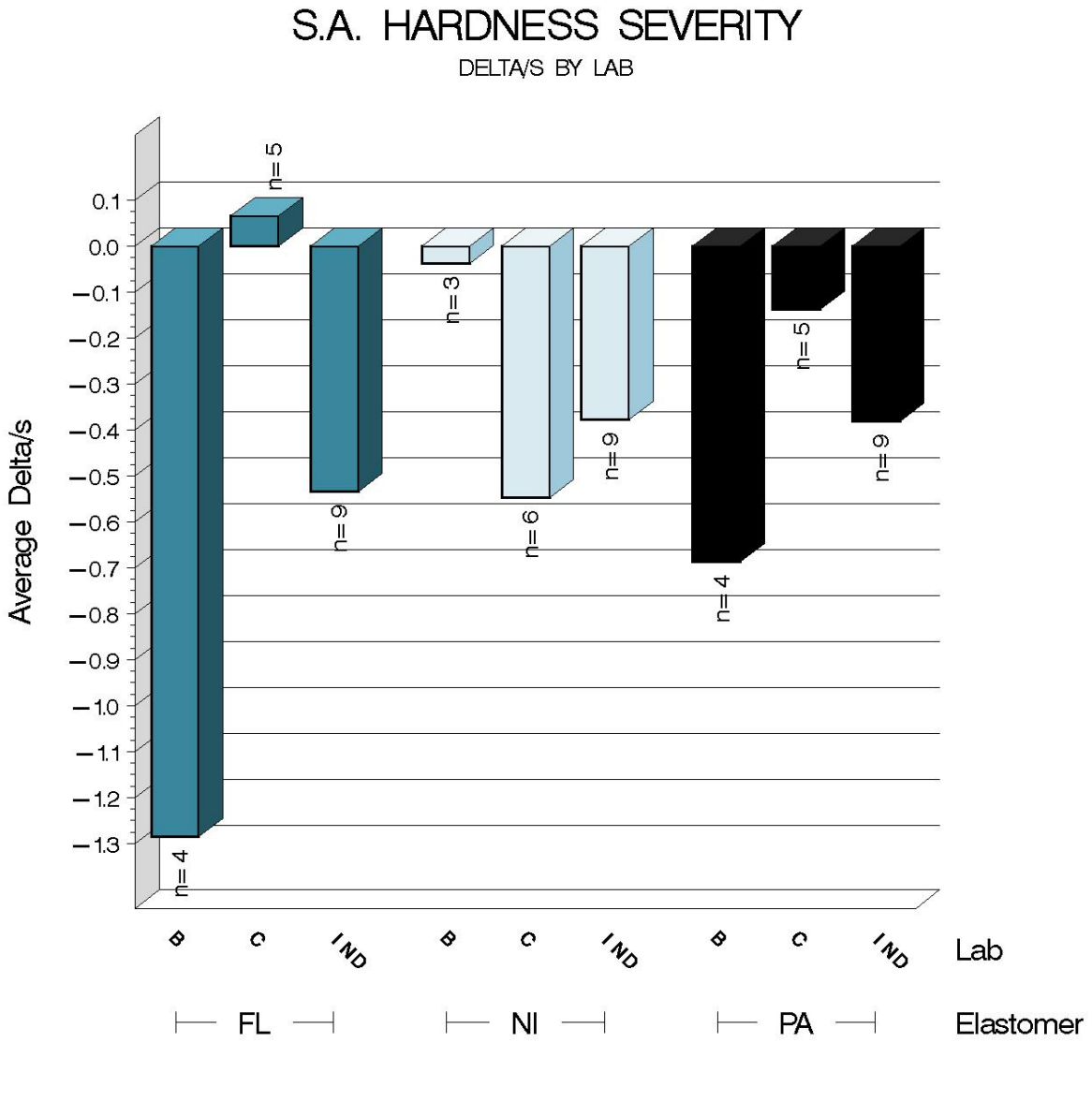
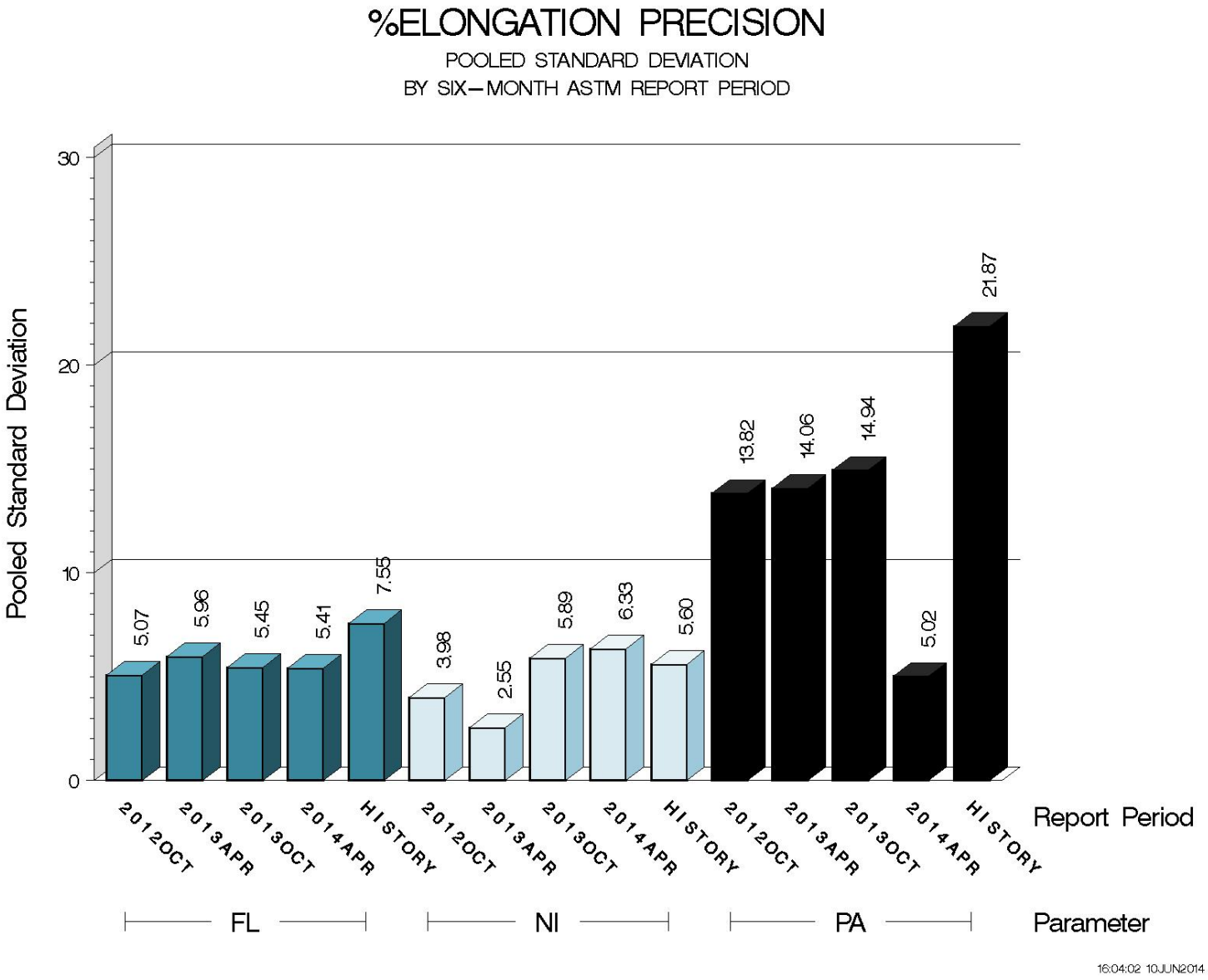
DELTA/S BY LAB
Average Delta/s
0.4
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
n= 4
n= 5
n=9
n= 3
n= 6
n= 9
n= 4
n= 5
n= 9
B
C
IND
B
C
IND
B
C
IND
Lab
FL
NI
PA
Elastomer
16:04:02 10JUN2014

OSCT (D5662)


S.A. HARDNESS SEVERITY
DELTA/S BY LAB
Average Delta/s
0.1
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
−1.0
−1.1
−1.2
−1.3
n= 4
n= 5
n= 9
n= 3
n= 6
n= 9
n= 4
n= 5
n= 9
B
C
IND
B
C
IND
B
C
IND
Lab
FL
NI
PA
Elastomer
16:04:02 10JUN2014

OSCT (D5662)



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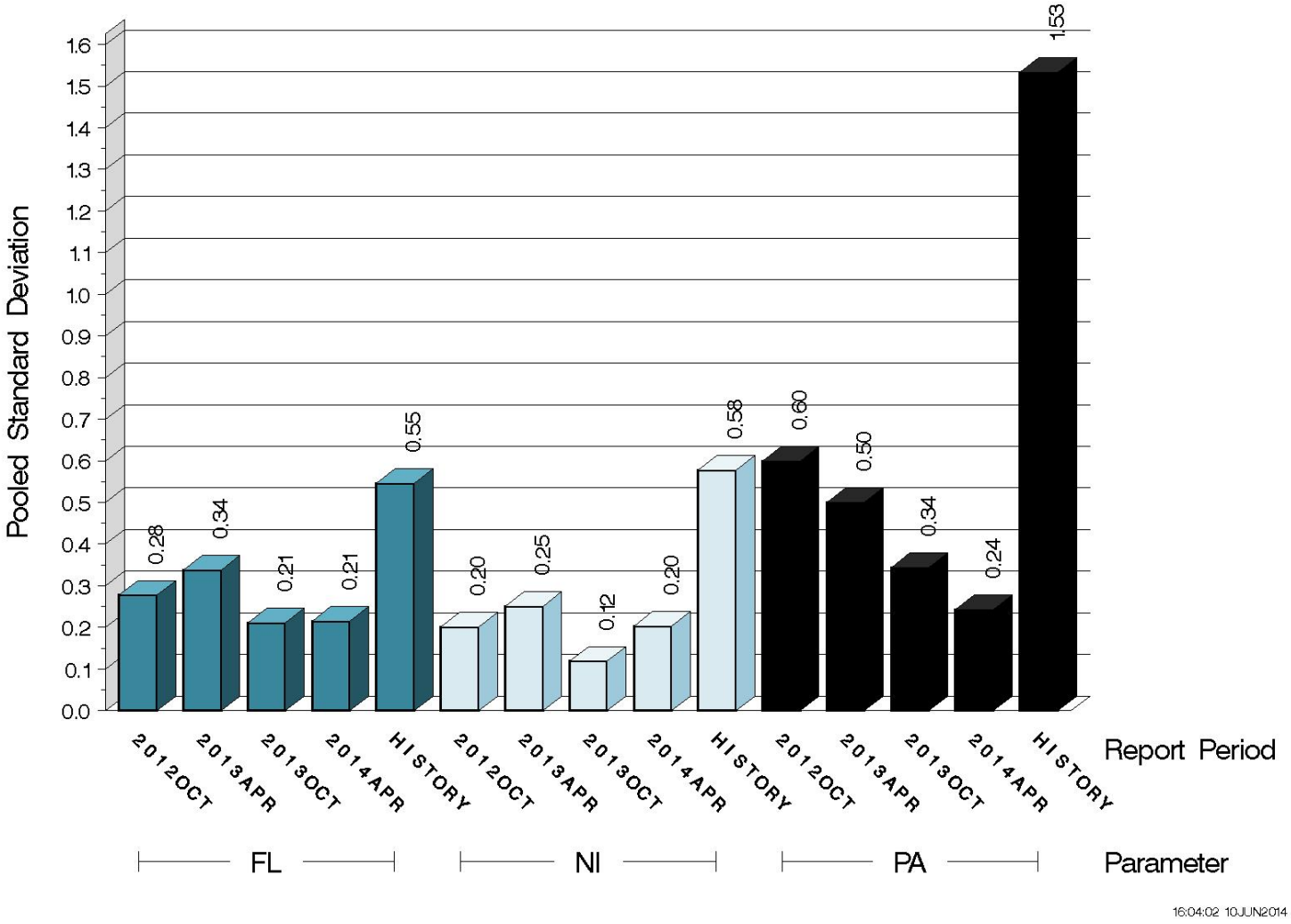
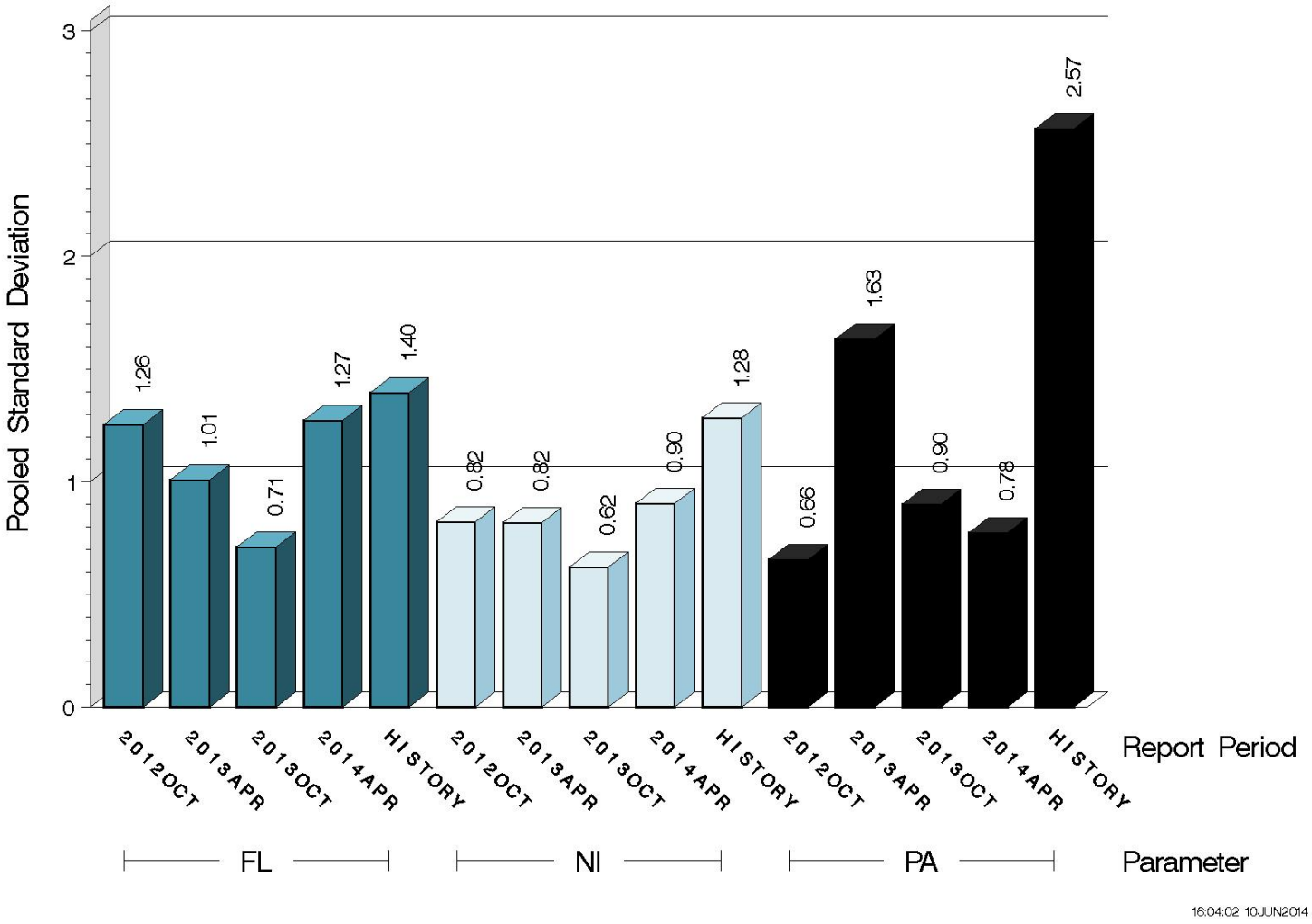
OSCT (D5662)


%VOLUME CHANGE PRECISION
POOLED STANDARD DEVIATION
BY SIX–MONTH ASTM REPORT PERIOD
Pooled Standard Deviation
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.28
0.34
0.21
0.21
0.55
0.20
0.25
0.12
0.20
0.58
0.60
0.50
0.34
0.24
1.53
2012OCT
2013APR
2013OCT
2014APR
HISTORY
Report Period
FL
NI
PA
Parameter
16:04:02 10JUN2014

OSCT (D5662)


S.A. HARDNESS PRECISION
POOLED STANDARD DEVIATION
BY SIX–MONTH ASTM REPORT PERIOD
Pooled Standard Deviation
0
1
2
3
1.26
1.01
0.71
1.27
1.40
0.82
0.82
0.62
0.90
1.28
0.66
1.63
0.90
0.78
2.57
2012OCT
2013APR
2013OCT
2014APR
HISTORY
Report Period
FL
NI
PA
Parameter
16:04:02 10JUN2014

OSCT (D5662)

SUMMARY OF SEVERITY & PRECISION

Severity
The combined-elastomer industry PELA chart shows performance returning to target this period. However, as shown in the by-elastomer charts, fluoroelastomer performance continues to be high of target. This is not attributable to any one FL elastomer batch. Two of the by-elastomer charts, polyacrylate PELA and fluoroelastomer PVCA, indicate long-standing off target performance. Polyacrylate PELA results are generally higher than target; fluoroelastomer PVCA results are generally lower. In 2011, the surveillance panel briefly discussed the appropriateness of industry correction factors or revised targets for these two elastomer/parameter combinations but took no action.

OSCT (D5662)

SUMMARY OF SEVERITY & PRECISION (continued)

Precision
Precision for all parameters continues to be good.

Industry control charts follow.

OSCT (D5662)

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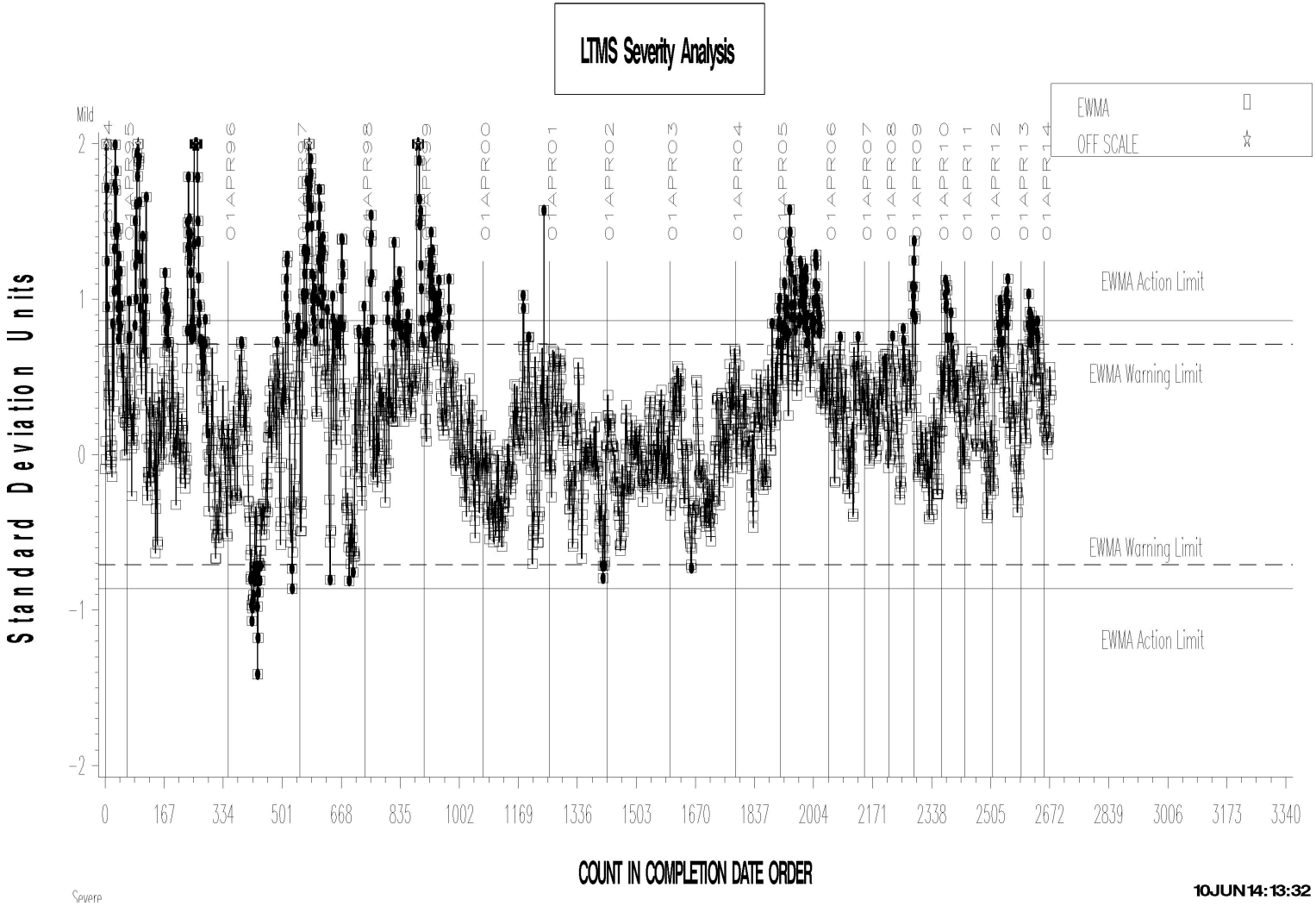
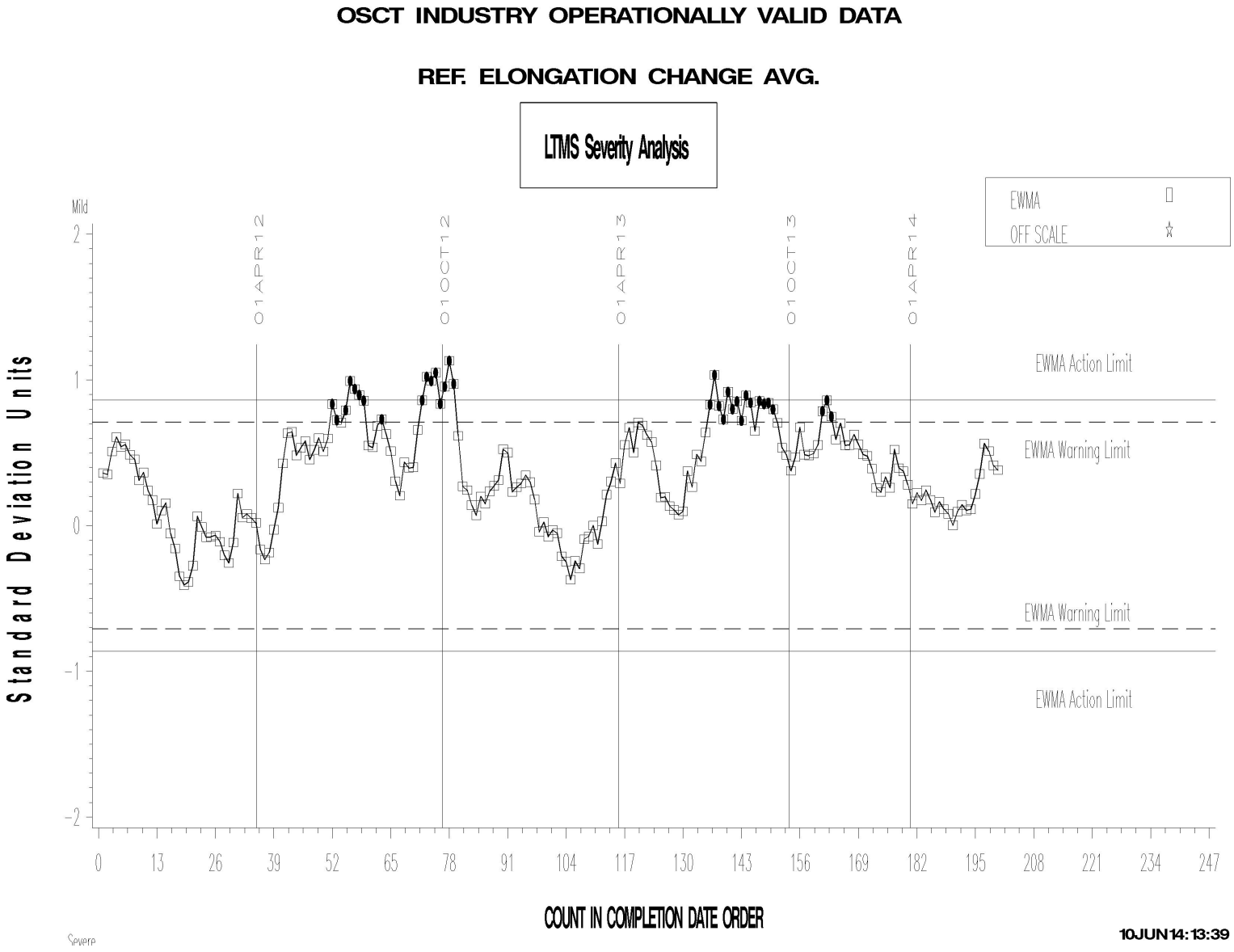


OSCT (D5662)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REF. ELONGATION CHANGE AVG.
LTMS Severity Analysis
EWMA
OFF SCALE
Mild
2
1
0
-1
-2
01APR12
01OCT12
01APR13
01OCT13
01APR14
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
Standard Deviation Units
0
13
26
39
52
65
78
91
104
117
130
143
156
169
182
195
208
221
234
247
COUNT IN COMPLETION DATE ORDER
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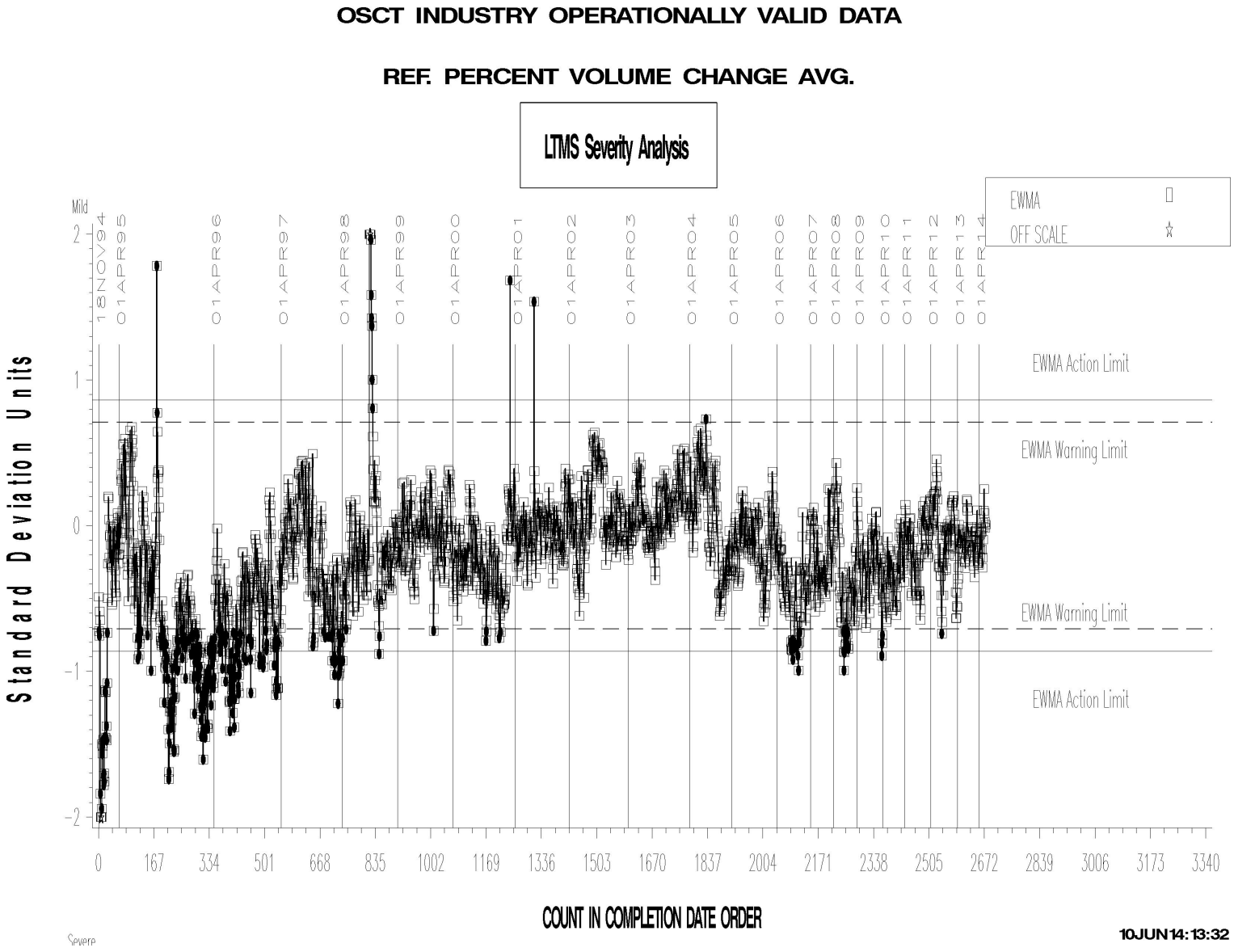
OSCT INDUSTRY OPERATIONALLY VALID DATA
REF. PERCENT VOLUME CHANGE AVG.
LTMS Severity Analysis
Mild
Standard Deviation Units
2
1
0
-1
-2
18NOV94
01APR95
01APR96
01APR97
01APR98
01APR99
01APR00
01APR01
01APR02
01APR03
01APR04
01APR05
01APR06
01APR07
01APR08
01APR09
01APR10
01APR11
01APR12
01APR13
01APR14
EWMA
OFF SCALE
EWMA Action Limit
EWMA Warning Limit
EWMA Warning Limit
EWMA Action Limit
0
167
334
501
668
835
1002
1169
1336
1503
1670
1837
2004
2171
2338
2505
2672
2839
3006
3173
3340
COUNT IN COMPLETION DATE ORDER
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OSCT (D5662)

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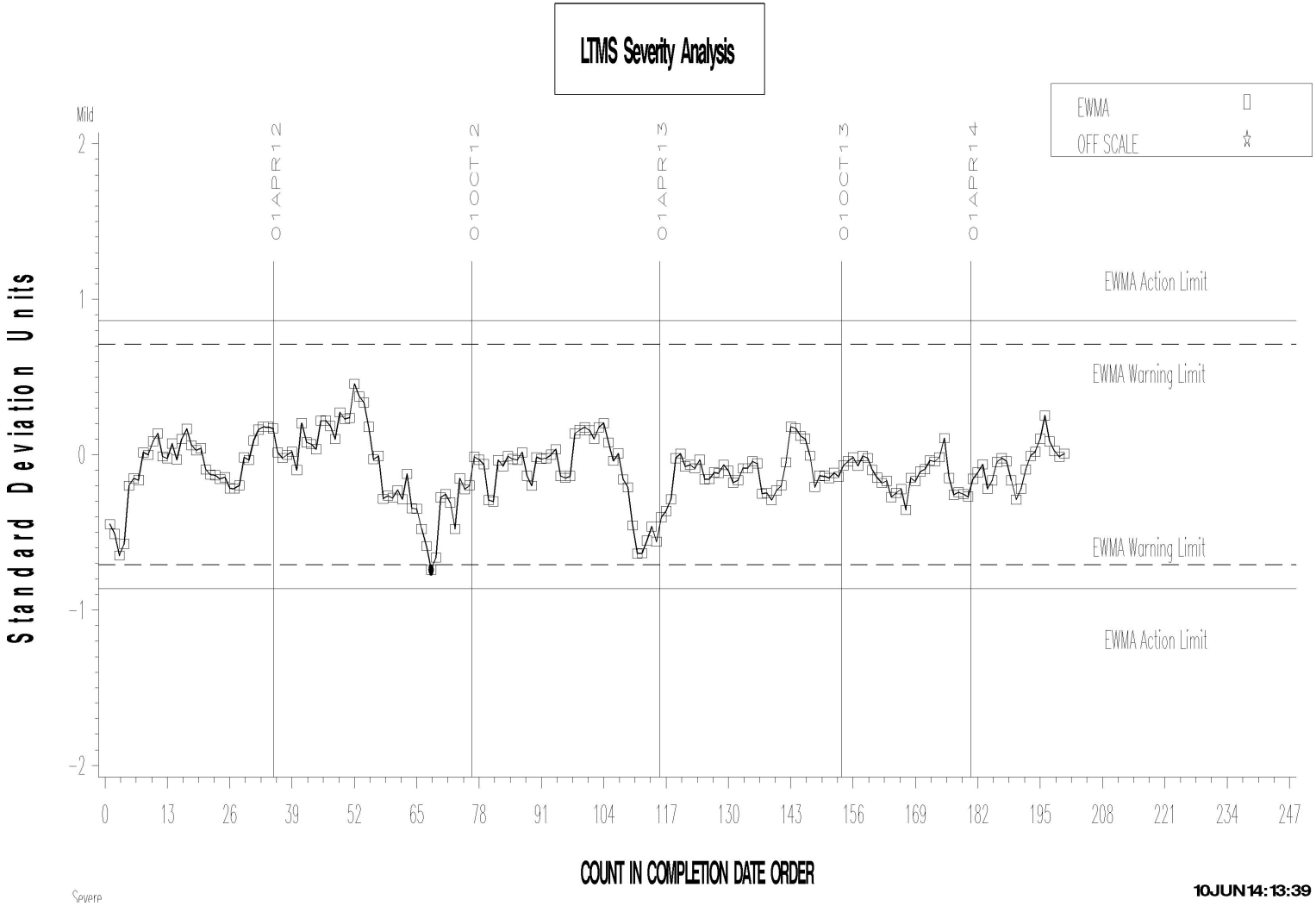

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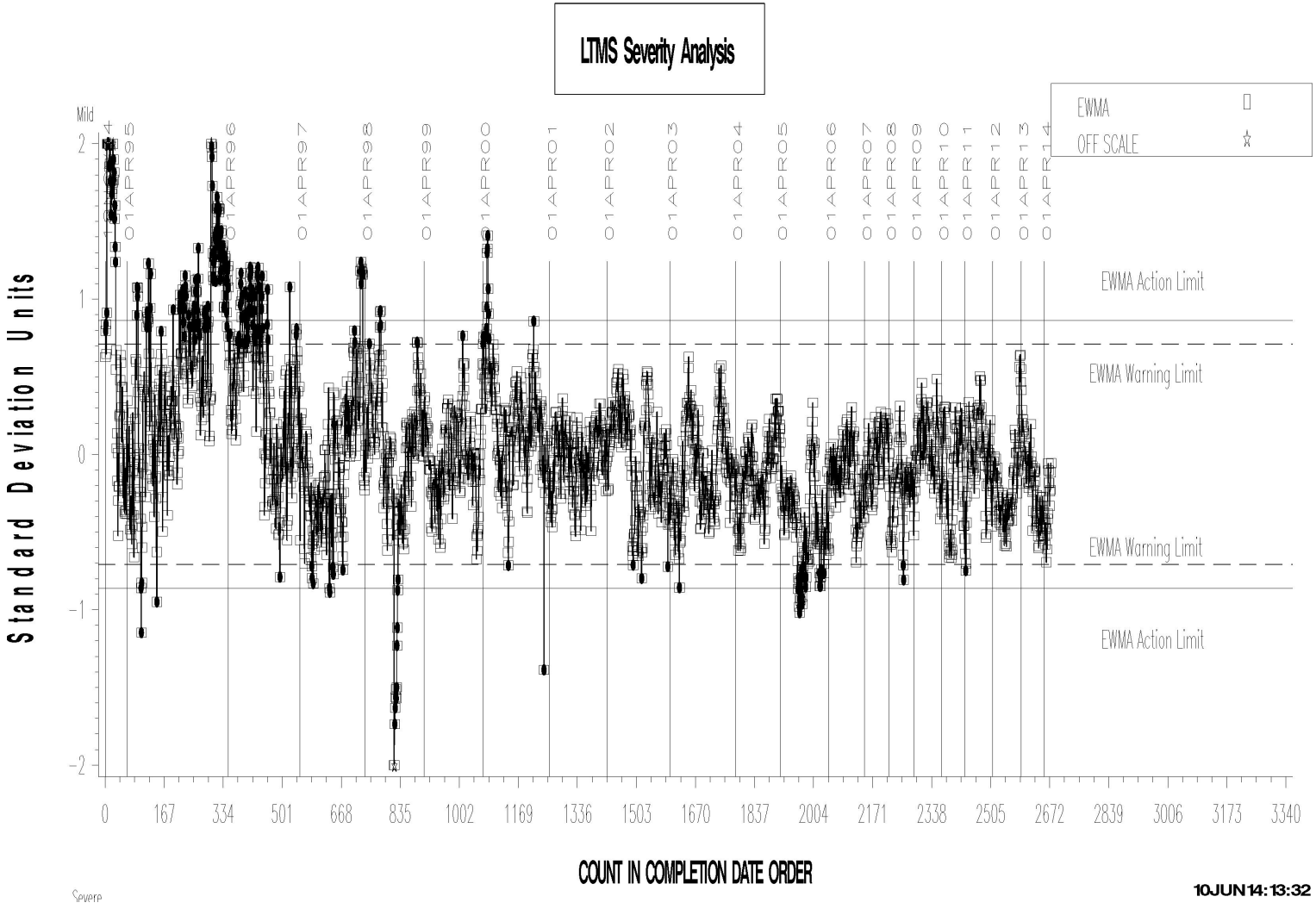

OSCT (D5662)

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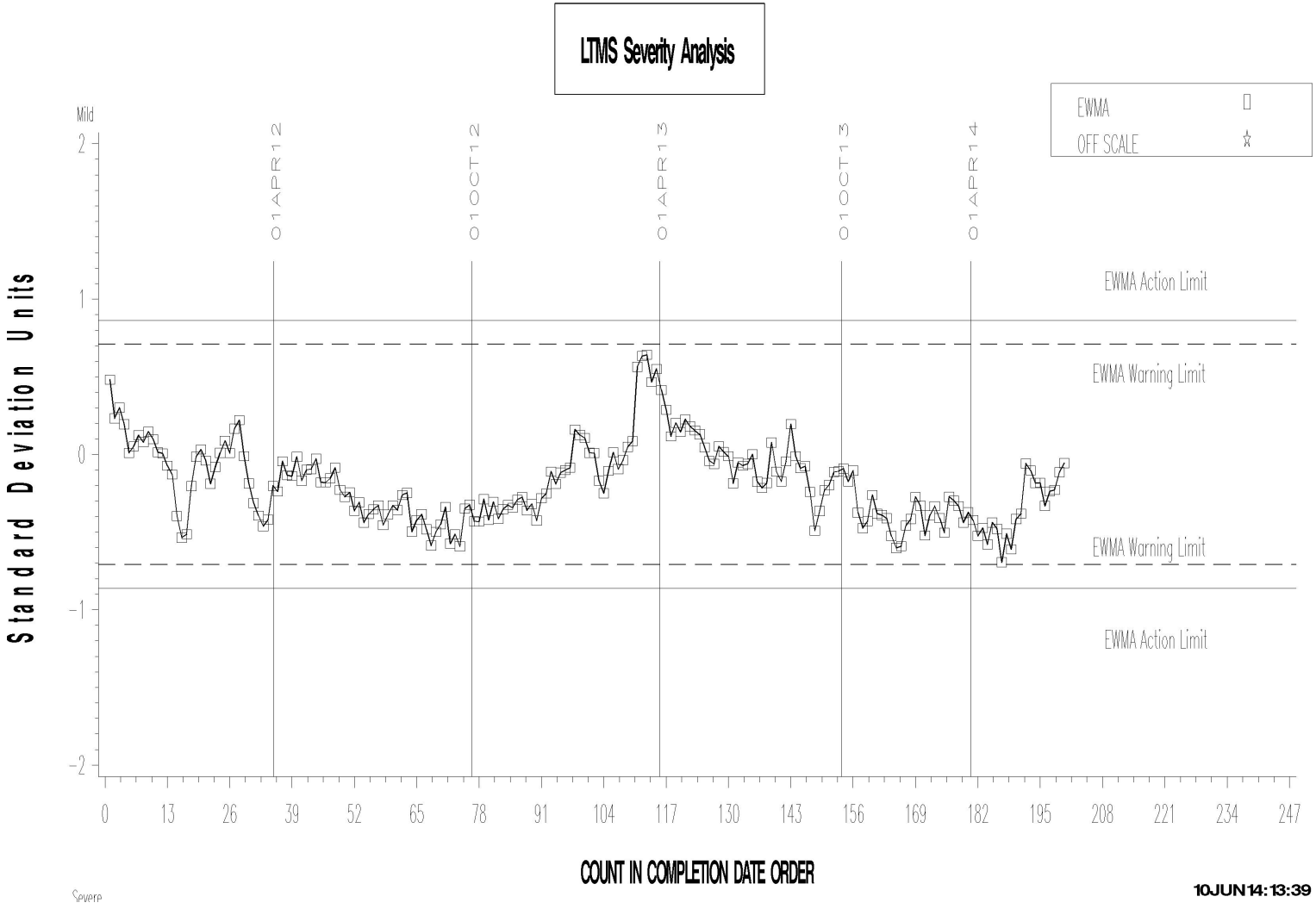

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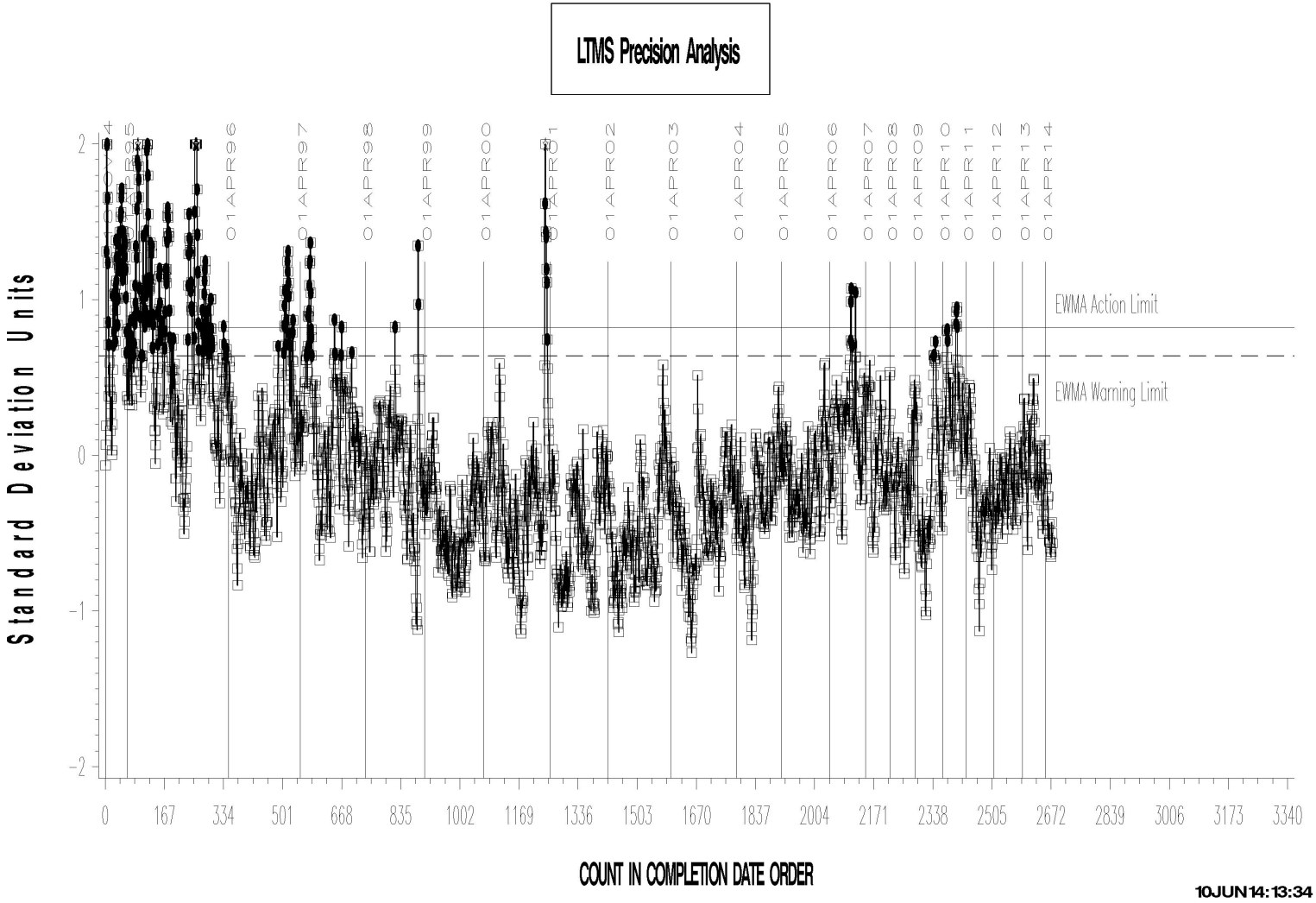

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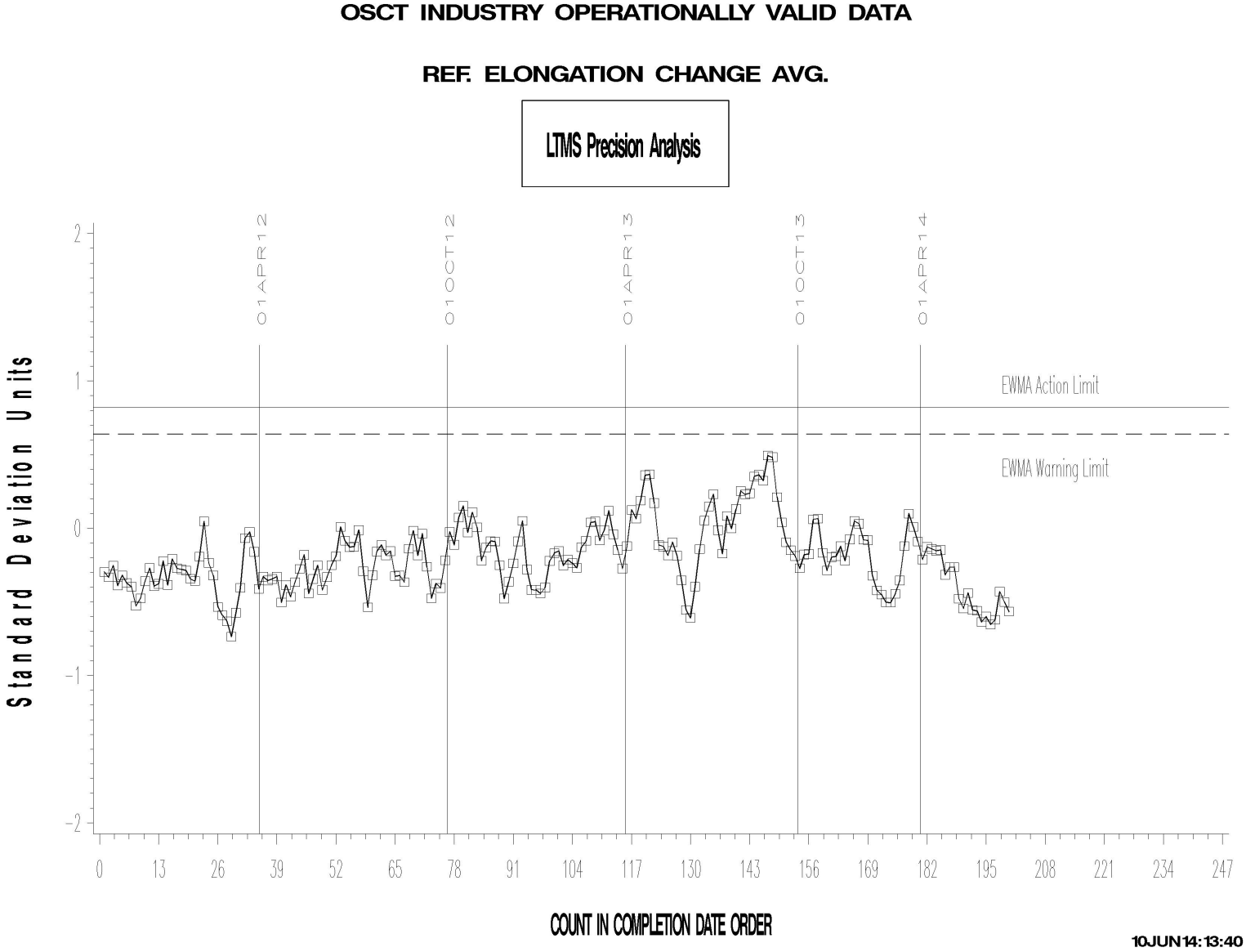
OSCT INDUSTRY OPERATIONALLY VALID DATA
REF. ELONGATION CHANGE AVG.
LTMS Precision Analysis
01APR12
01OCT12
01APR13
01OCT13
01APR14
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
2
1
0
-1
-2
0
13
26
39
52
65
78
91
104
117
130
143
156
169
182
195
208
221
234
247
COUNT IN COMPLETION DATE ORDER
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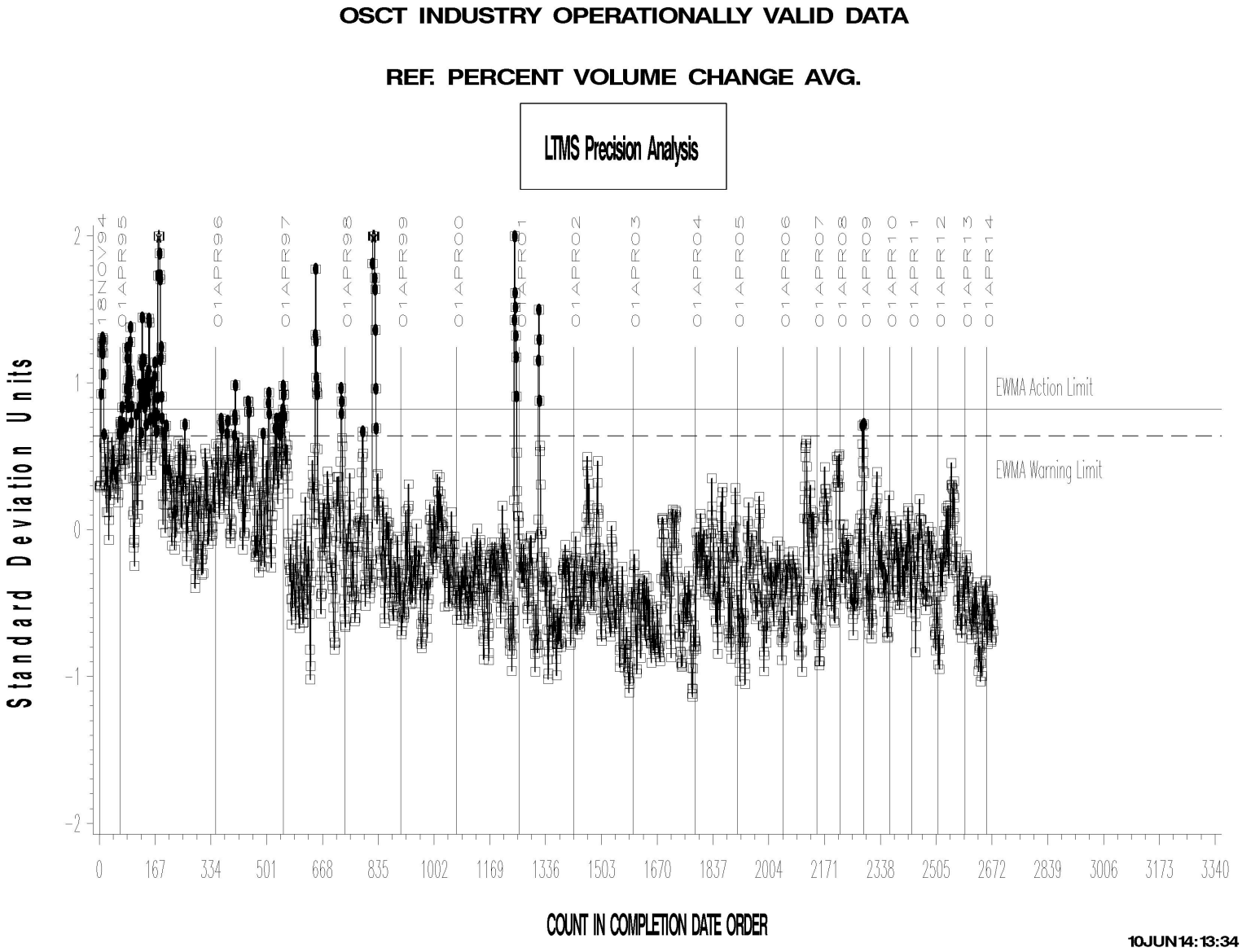
OSCT INDUSTRY OPERATIONALLY VALID DATA
REF. PERCENT VOLUME CHANGE AVG.
LTMS Precision Analysis
Standard Deviation Units
2
1
0
-1
-2
18NOV94
01APR95
01APR96
01APR97
01APR98
01APR99
01APR00
01APR01
01APR02
01APR03
01APR04
01APR05
01APR06
01APR07
01APR08
01APR09
01APR10
01APR11
01APR12
01APR13
01APR14
EWMA Action Limit
EWMA Warning Limit
0
167
334
501
668
835
1002
1169
1336
1503
1670
1837
2004
2171
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3340
COUNT IN COMPLETION DATE ORDER
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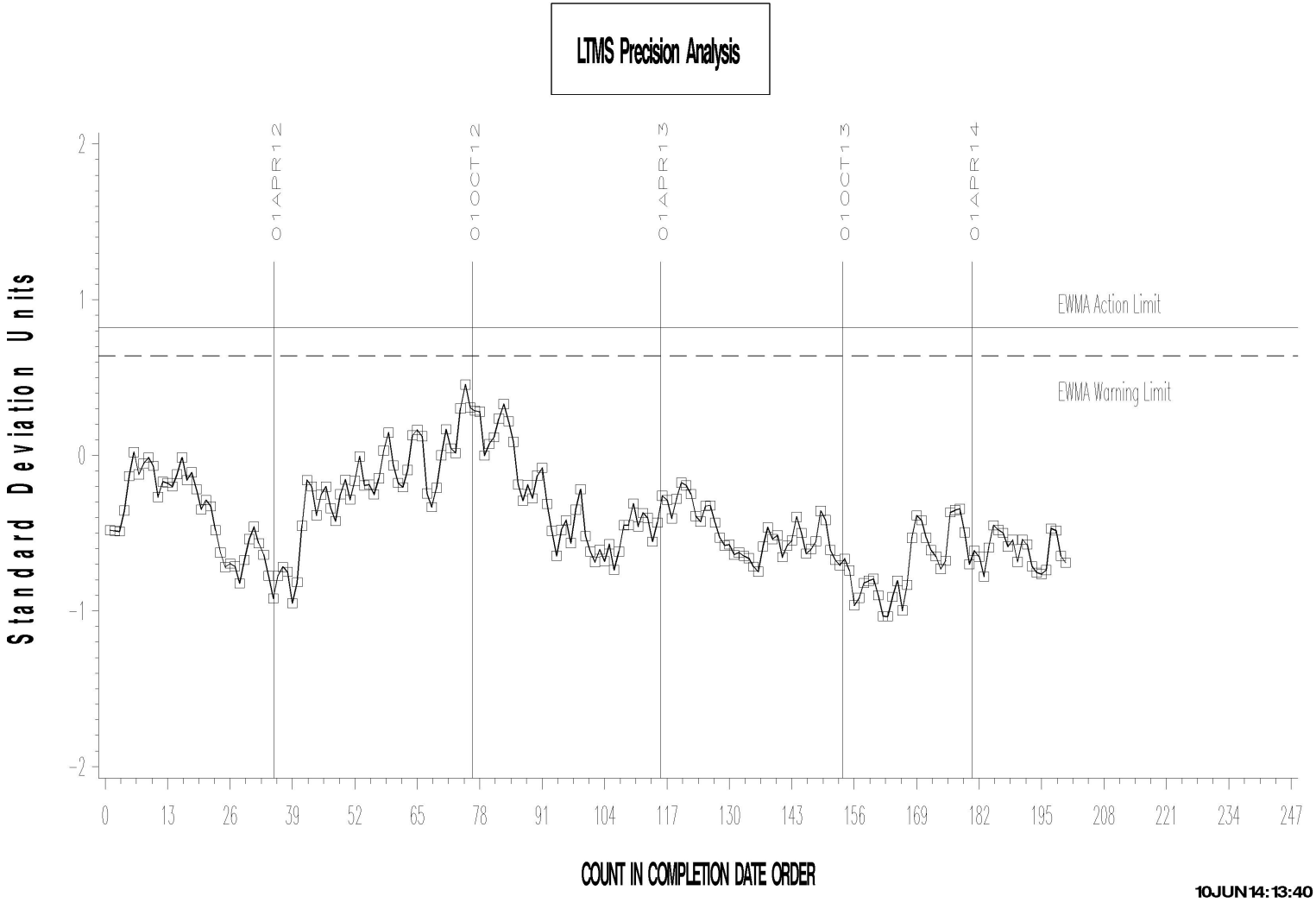
OSCT (D5662)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REF. PERCENT VOLUME CHANGE AVG.
LTMS Precision Analysis
01APR12
01OCT12
01APR13
01OCT13
01APR14
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
2
1
0
-1
-2
0
13
26
39
52
65
78
91
104
117
130
143
156
169
182
195
208
221
234
247
COUNT IN COMPLETION DATE ORDER
10JUN14:13:40

OSCT (D5662)

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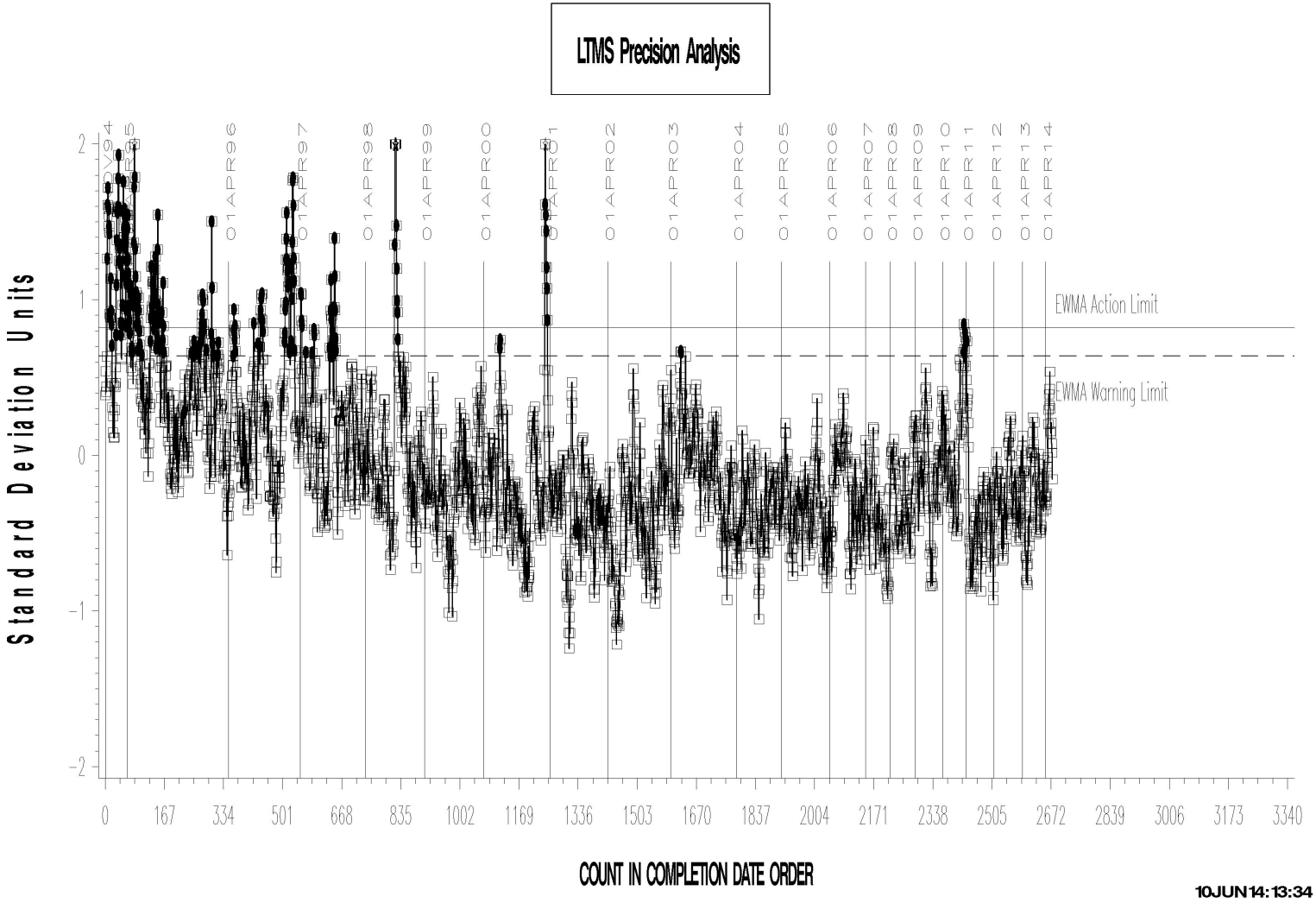
REF. SHORE A HARDNESS CHANGE AVG.



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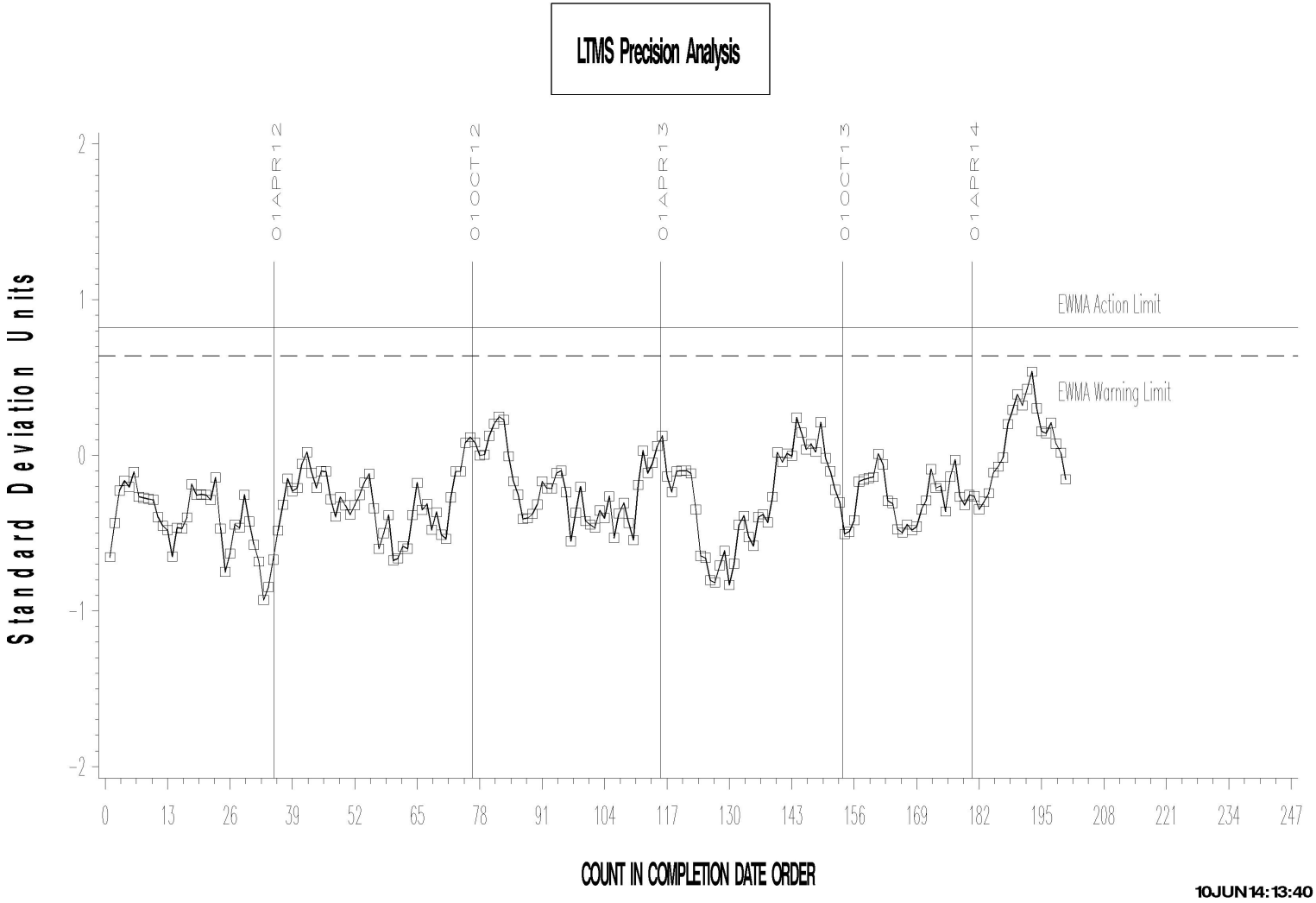
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REF. SHORE A HARDNESS CHANGE AVG.
LTMS Precision Analysis
01APR12
01OCT12
01APR13
01OCT13
01APR14
EWMA Action Limit
EWMA Warning Limit
Standard Deviation Units
2
1
0
-1
-2
0
13
26
39
52
65
78
91
104
117
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156
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182
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221
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COUNT IN COMPLETION DATE ORDER
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OSCT (D5662)

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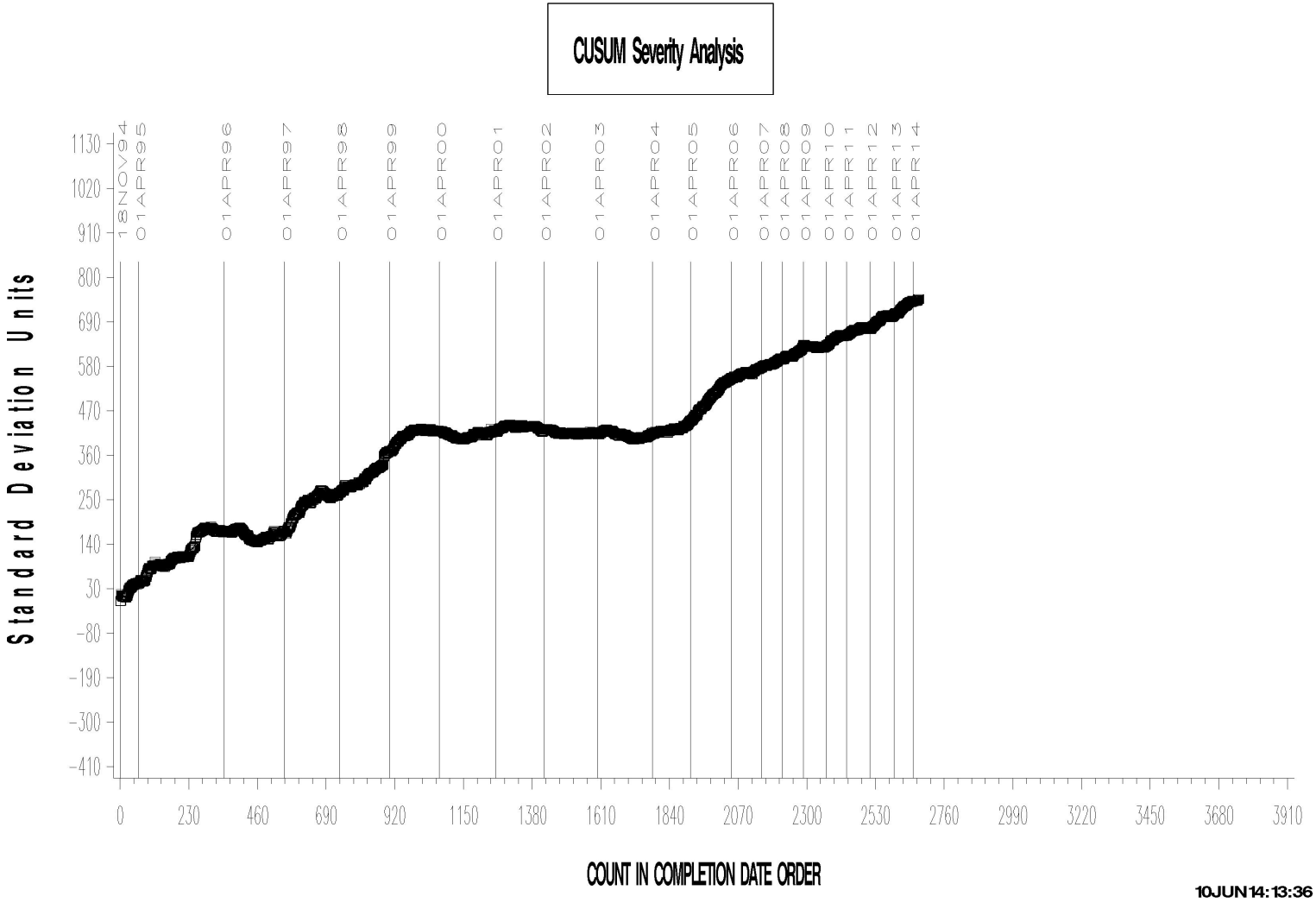

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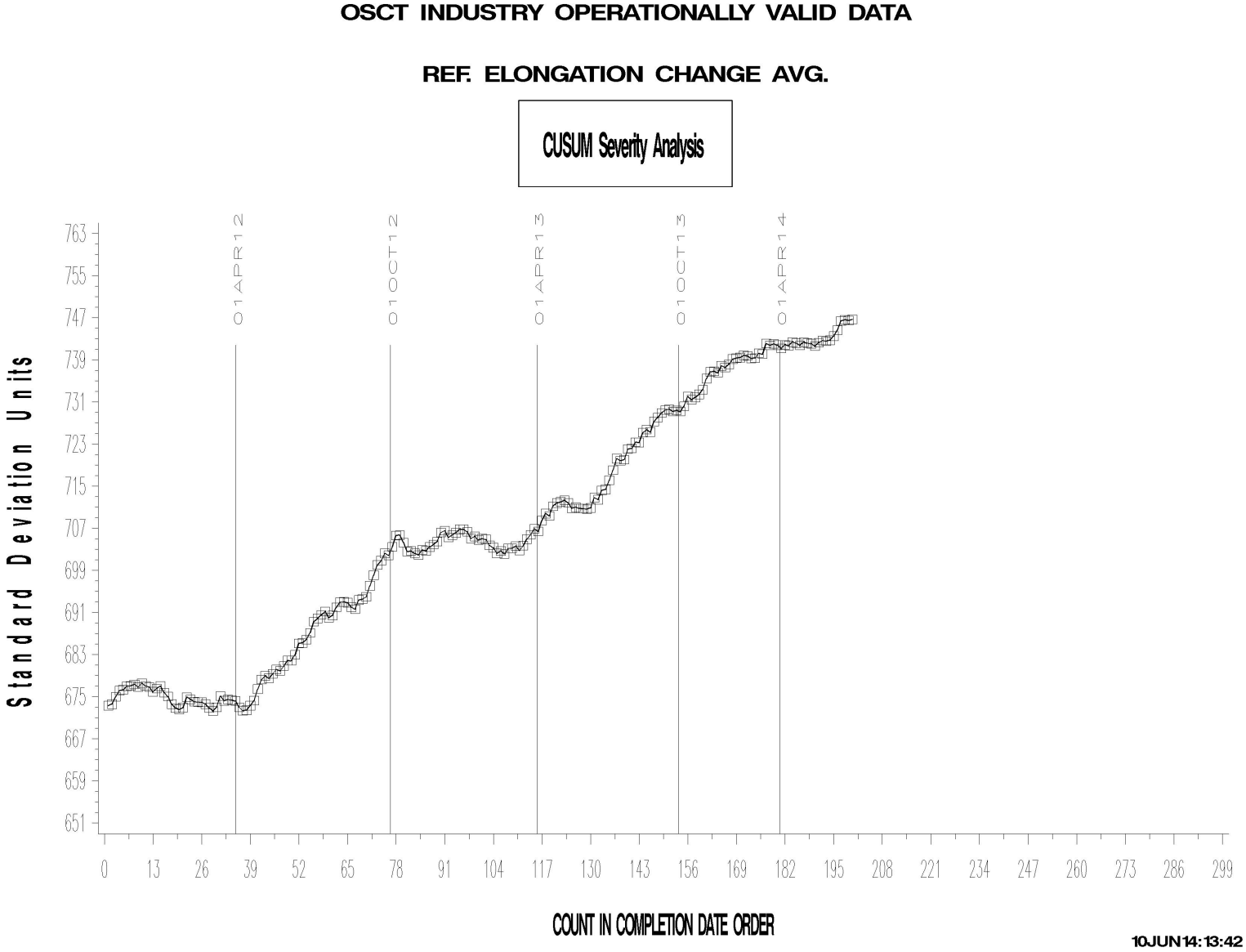
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CUSUM Severity Analysis
01APR12
01OCT12
01APR13
01OCT13
01APR14
Standard Deviation Units
763
755
747
739
731
723
715
707
699
691
683
675
667
659
651
0
13
26
39
52
65
78
91
104
117
130
143
156
169
182
195
208
221
234
247
260
273
286
299
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10JUN14:13:42

OSCT (D5662)

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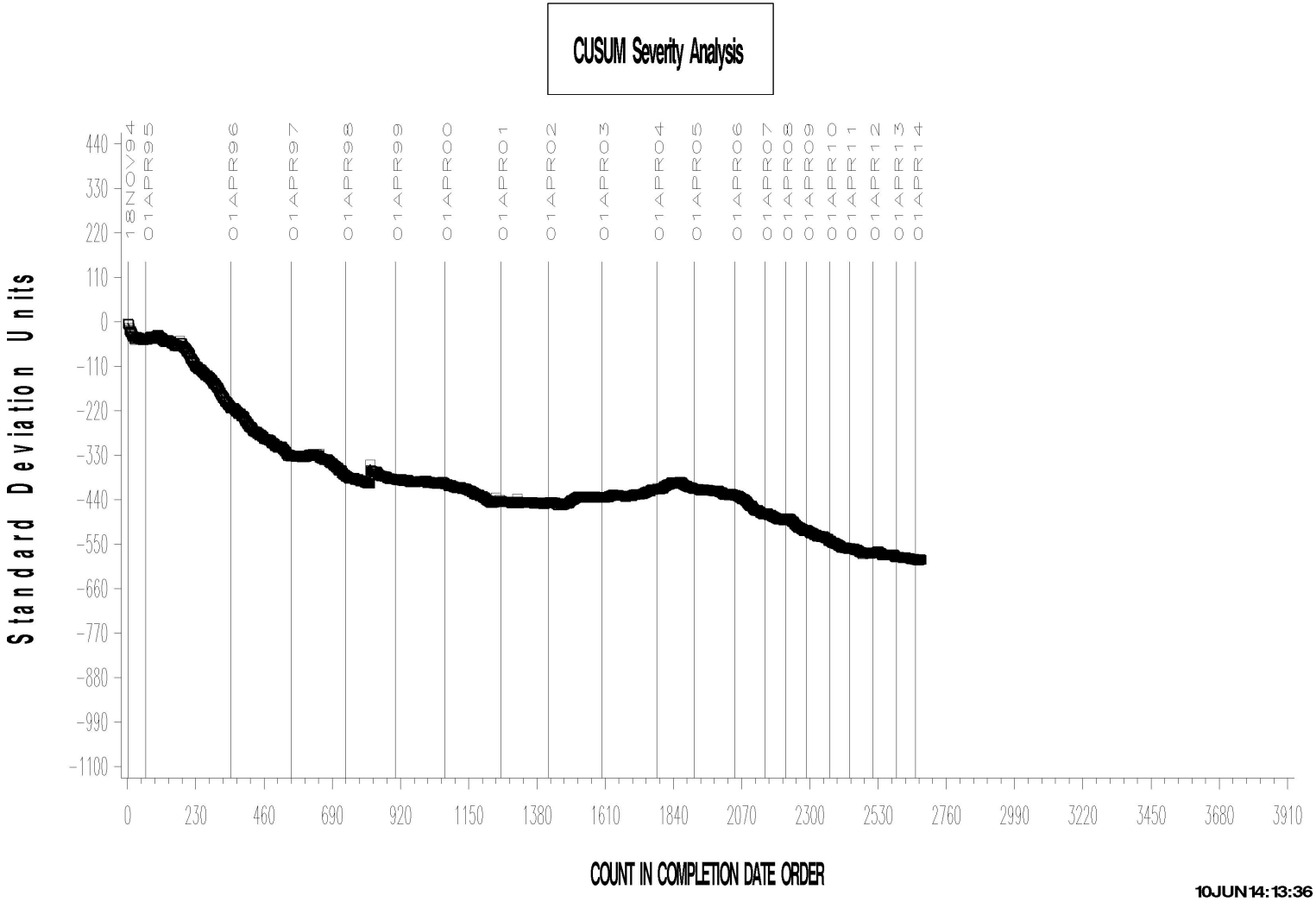

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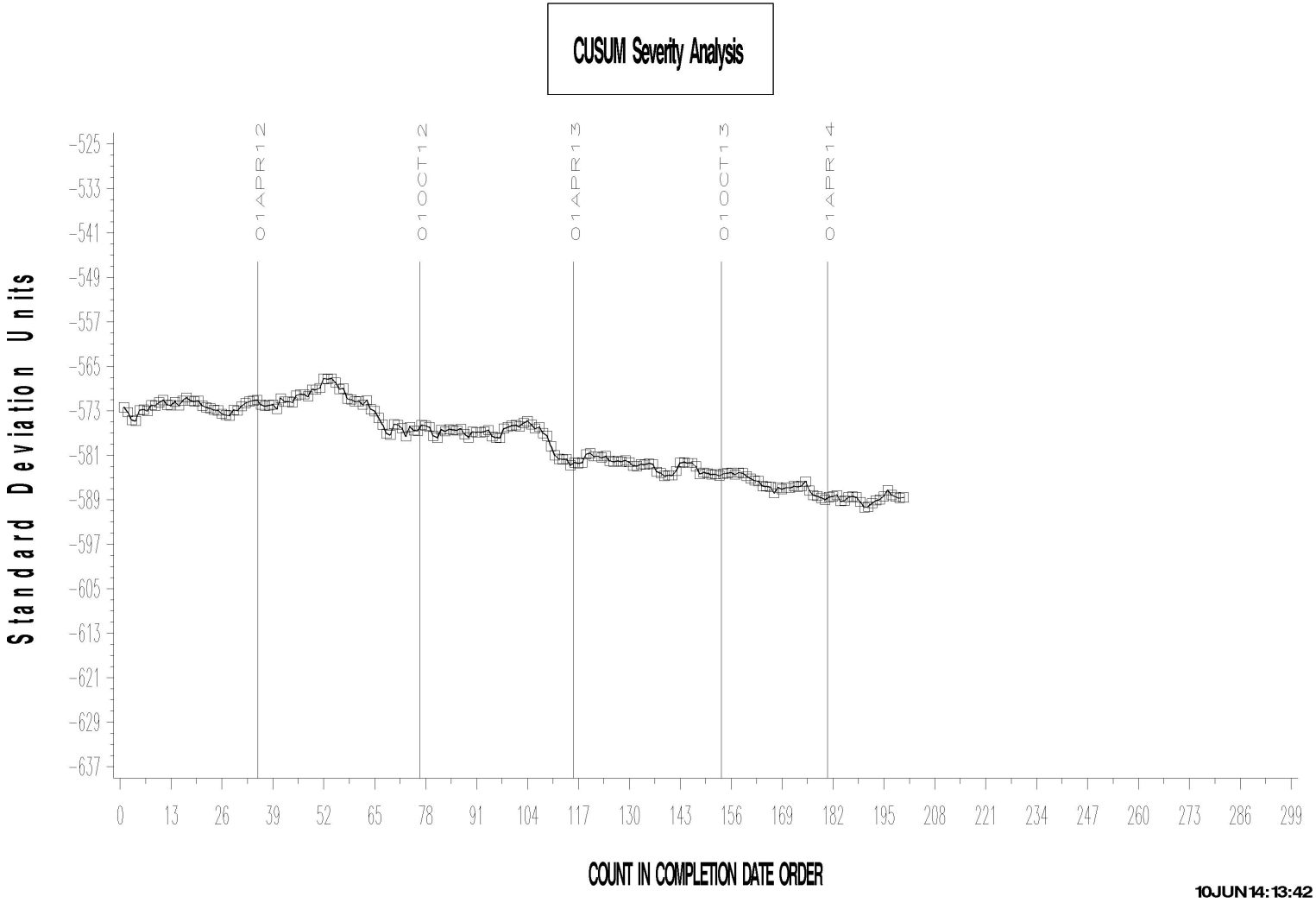

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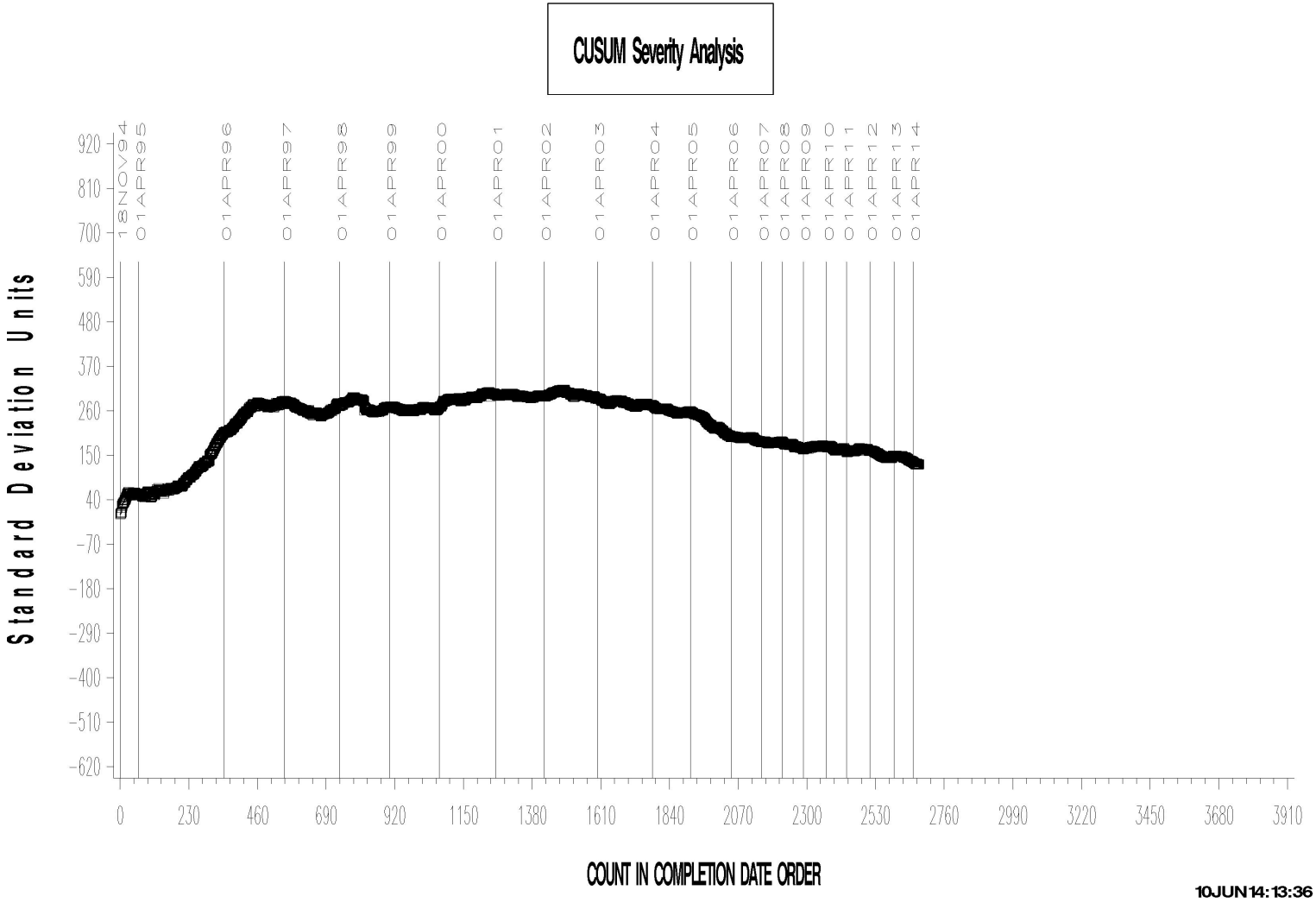

OSCT (D5662)

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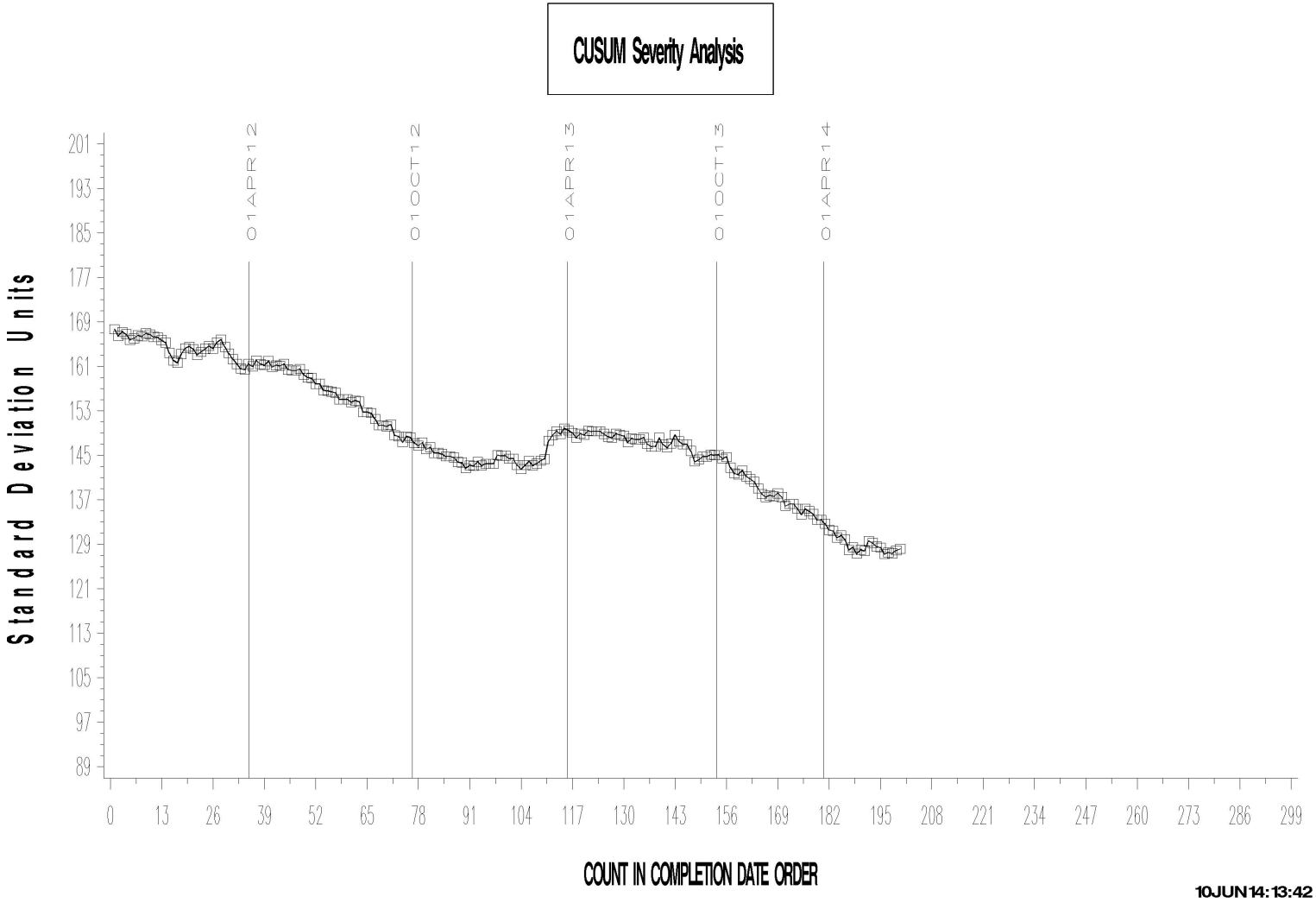

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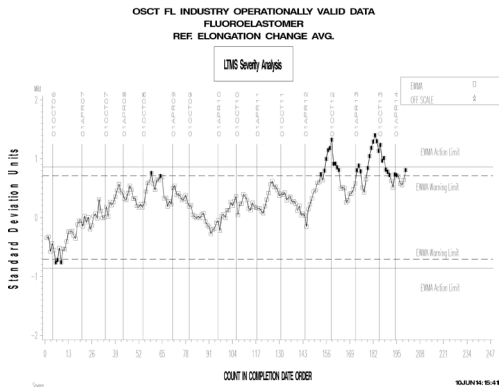
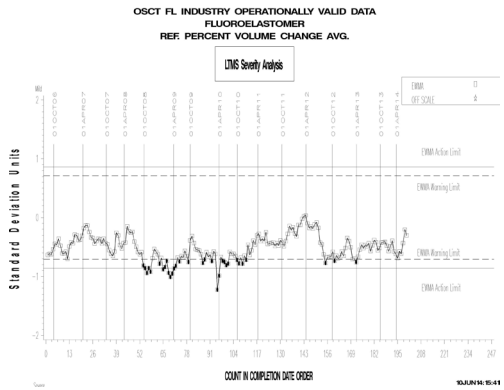
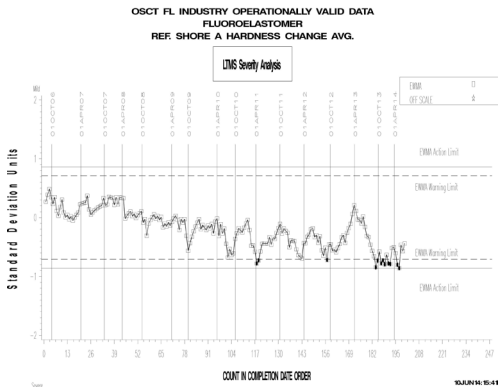
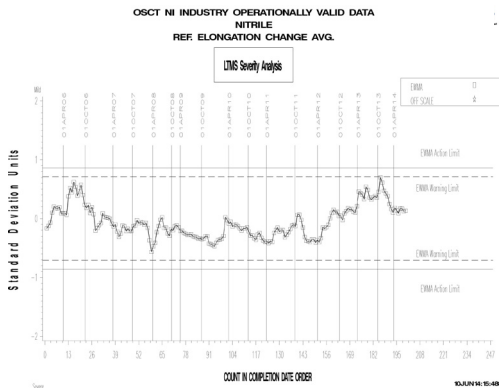
OSCT (D5662)

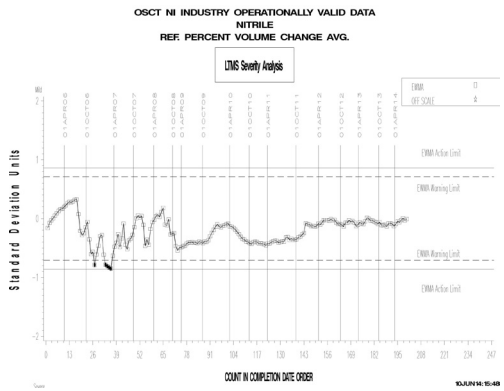
BY-ELASTOMER SEVERITY

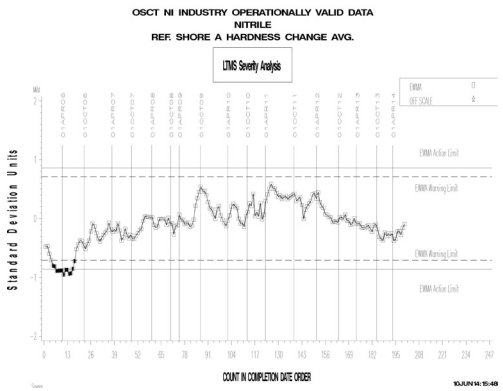


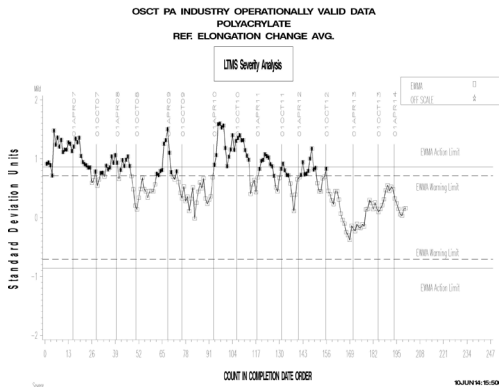


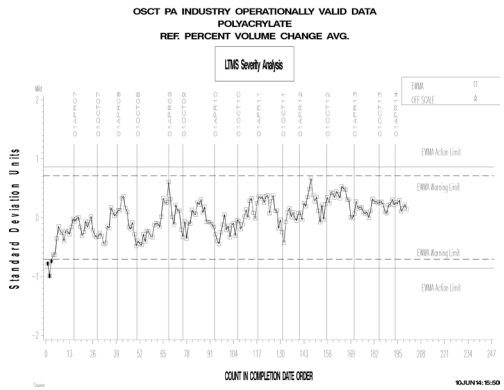


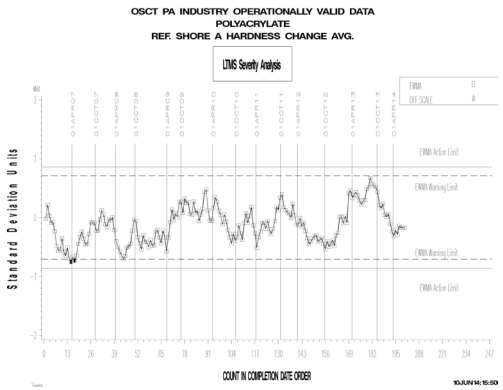












OSCT (D5662)

TIMELINE ADDITIONS

Effective Date	Information Letter	Event
20140305	14-1	Bluehill 3 Instron calibration permitted.

OSCT (D5662)

LAB VISITS

One OSCT lab visit was conducted during this period. No procedural non-conformances were found.

INFORMATION LETTERS

Information Letter 14-1 was issued March 5, 2014 to permit the use of Bluehill 3 Instron calibration.

OSCT (D5662)

STATUS OF REFERENCE OIL SUPPLY

		@ TMC	
Oil	Cans @ Labs	Cans	Gallons
160-1	42	265	52.6
161-1	4	0	0.0
168	41	45	9.0
169	39	1183	234.6
Total	126	1493	296.2

Oil 161-1 has been depleted from TMC inventory. A reblend is not available. Oil 169 has been introduced as a replacement. Oil 168 is nearing depletion and is not re-blendable.