ASTM D02.B0.07 Semi-Annual Report
Bench Test Monitoring

Elastomers
EOEC/LDEOC
(D7216)

October 2022 – March 31, 2023

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B0.07 Bench Testing Executive Summary

- D7216 (EOEC/LDOEC)
- Supply of 1006 Ref Oil has been completely exhausted. All tests now use Ref Oil SL-107. Surveillance Panel has agreed to resume Adjustment Factors for EOEC. Several labs participated in Round Robin tests of ACM1 batch 25 vs batch 26 to understand what would be the result of returning to a previous manufacturing method for the Polyacrylate elastomer. TMC will officially monitor the EOEC/LDEOC bench tests, adding a section to LTMS.

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Section	Topic		
Test Area Status (cont.)	TEST	LABS*	STANDS*
EOEC Elast. Compat.	D7216-E	6 (-2)	N/A
LDEOC Elast. Compat.	D7216-L	8 (+0)	N/A
* As of 3/31/2023			

D02.B0.07
TMC Monitored Tests

ASTM D 7216

Engine Oil Elastomer Compatibility (EOEC/HDEOC)

October 1, 2022 – March 31, 2023

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ASTM Reference Testing Semi-Annual Report D7216 EOEC

October 1, 2022 – March 31, 2023

ASTM D 7216

Engine Oil Elastomer Compatibility (EOEC/HDEOC)

OHT CURRENT ELASTOMER BATCH CODES FOR ASTM D7216

AS OF: 3/9/2023

EOEC (PC 9)	
OHT PART NUMBER	**BATCH CODE**
OHTPC9-NBR-1	29
OHTPC9-ACM-2	31
OHTPC9-FKM-1	30
OHTPC9-MAC-1	23

LDEOC (J2643)	
OHT PART NUMBER	**BATCH CODE**
OHTJ2643-HNBR-1	30
OHTJ2643-FKM-1	28
OHTJ2643-ACM-2	25
OHTJ2643-VMQ-1	40
OHTJ2643-AEM-2	30

Calibrated Labs and Stands*

(change shown in parentheses)

Test	Labs	Stands
D7216	6 (–2)	N/A
*As of 3/31/2023		

EOEC Test Activity*

Test Status		Fluoroelast.	Nitrile	Polyacrylate	Silicone	VAMAC	Total
Acceptable Calibration Test	AC	58	67	61	56	55	297
Failed Calibration Test	OC	0	0	0	0	2	2
Operationally Invalid, by lab	LC	0	4	0	0	0	4
Operationally Invalid, by TMC	RC	0	0	0	0	0	0
Aborted	XC	0	0	0	0	0	0
Total		**58**	**71**	**61**	**56**	**57**	**303**

*October 1, 2022 – March 31, 2023

EOEC Failed Calibration Tests*

Cause	Elastomer	No. of Tests
Tensile Strength Change (MILD)	EOECV	1
Volume Change (MILD)	EOECV	1
Total		**2**

*Two failing calibration tests, one (each) reported by two different labs

EOEC Lost Tests*

Validity	Cause	No. of Tests
LC	Wrong Temperature	1
LC	Wrong Elastomer Material	1
LC	Sample Lost	2
Total		**4**

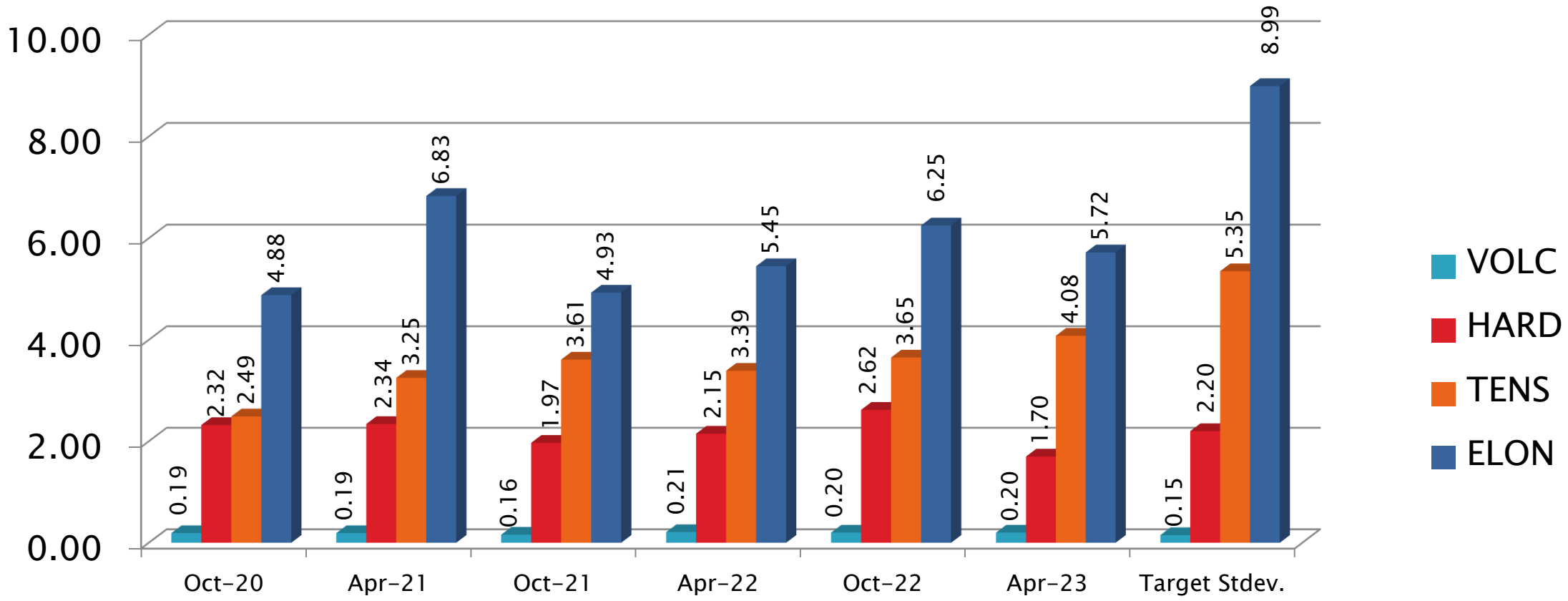
*Invalid and aborted calibration tests

EOEC Test Severity

Fluoroelastomer (FKM)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.04	On-Target
Points Hardness Change	0.00	On-Target
Tensile Strength Change	0.57	Severe
Elongation Change	-0.58	Mild

EOEC Precision (Pooled s) Estimates: Fluoroelastomer



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EOEC Precision Estimates by Lab: FKM

Test Parameter	Statistic	LTMS Lab				
		A	B	L	I	G
	n=	19	3	4	14	18
Volume	Mean	0.37	0.39	0.35	0.61	0.39
	Pooled s	0.10	0.08	0.05	0.30	0.14
	Mean /s	-0.46	-0.34	-0.61	1.12	-0.32
Hardness	Mean	8.89	9.67	8.25	7.71	7.06
	Pooled s	1.15	1.15	1.26	1.44	1.95
	Mean /s	0.39	0.74	0.1	-0.15	-0.45
Tensile Strength	Mean	-70.8	-72.3	-70.4	-65.4	-66.7
	Pooled s	1.93	2.14	1.78	0.69	4.44
	Mean /s	0.09	-0.19	0.17	1.10	0.87
Elongation	Mean	-67.8	-66.2	-68.1	-58.3	-62.3
	Pooled s	2.69	1.51	1.42	6.27	4.53
	Mean /s	-1.04	-0.86	-1.07	0.02	-0.42

EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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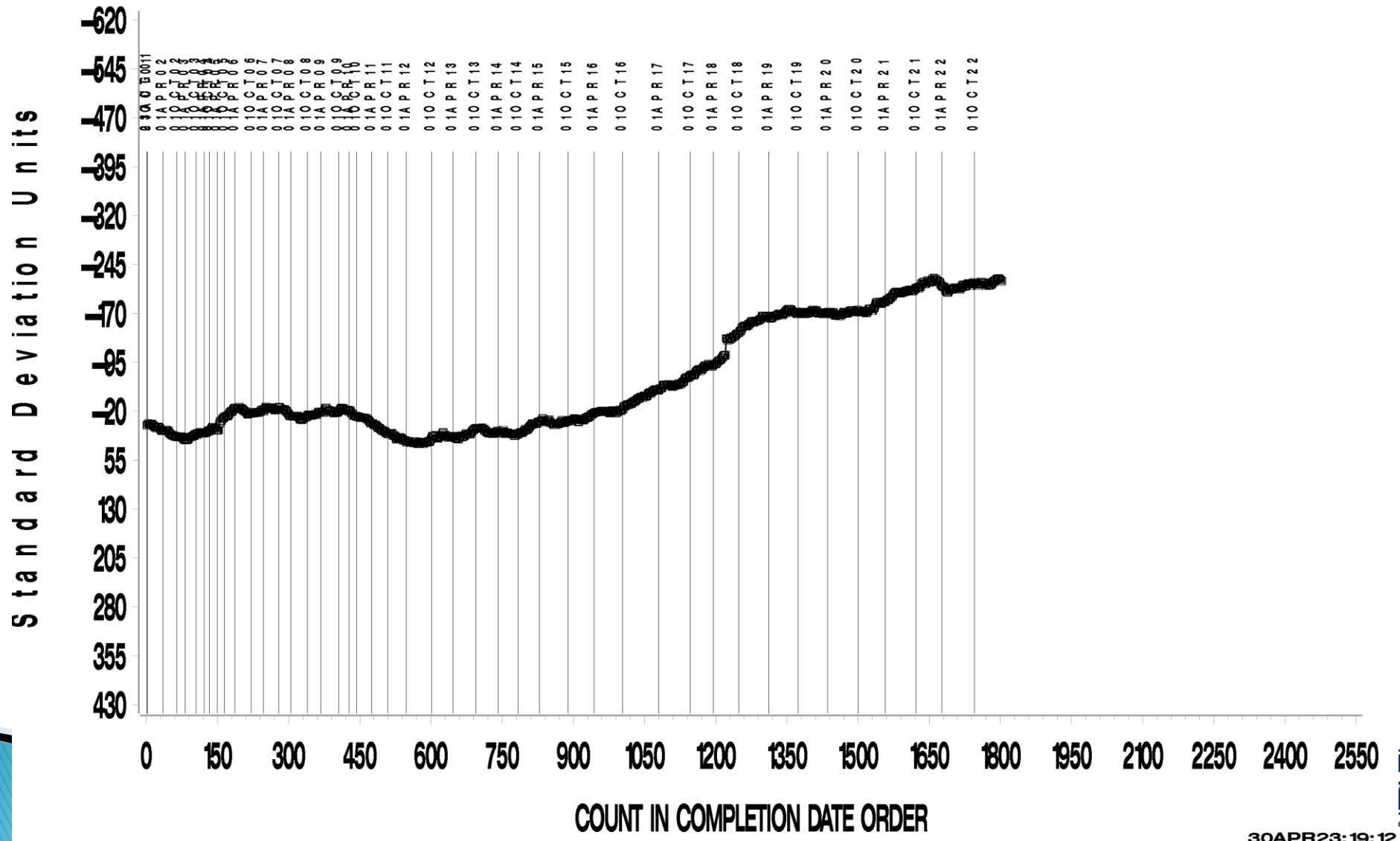
FLUOROELASTOMER VOLUME CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



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EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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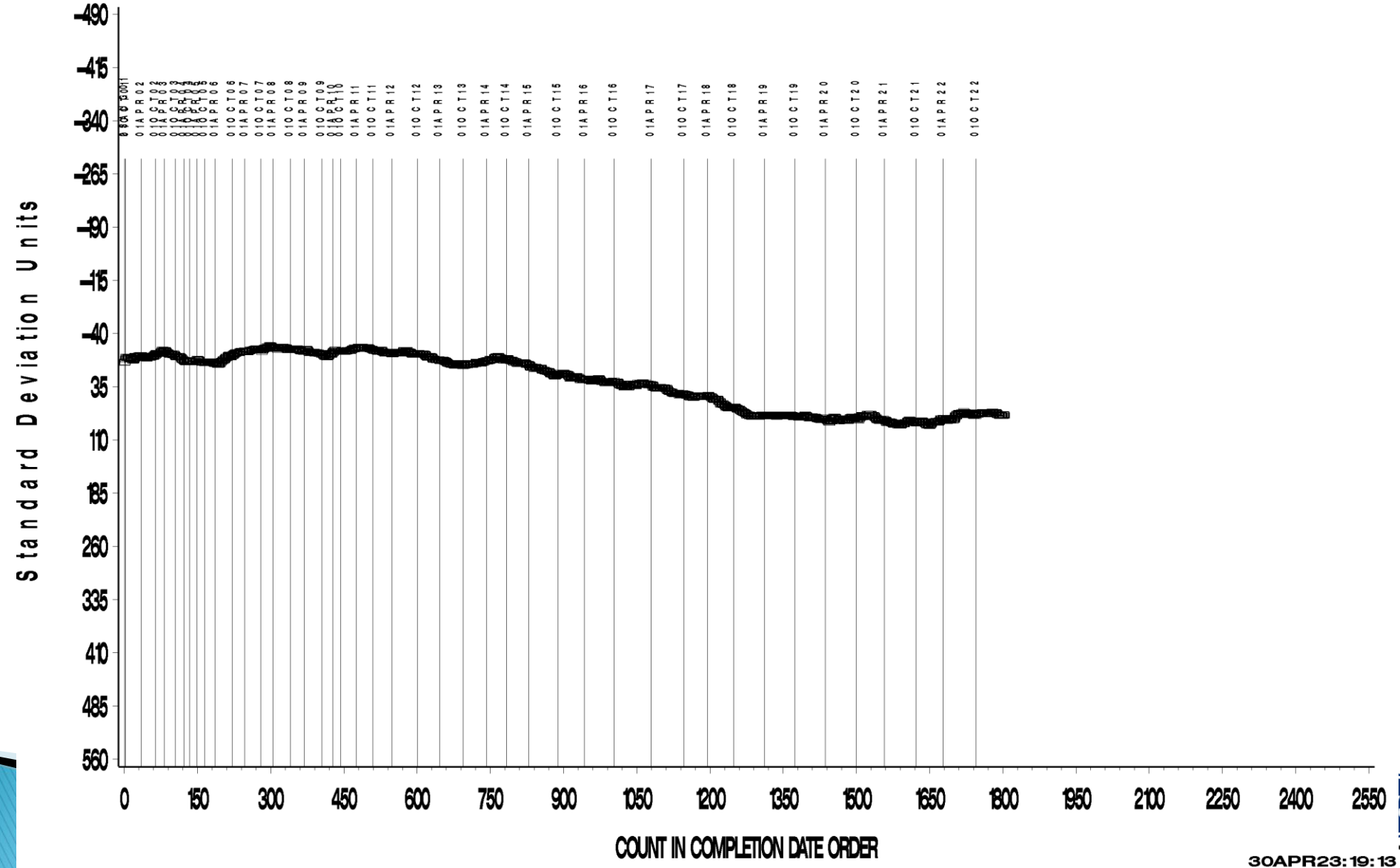
FLUOROELASTOMER PTS HARDNESS CHANGE CORRECTED AVG

CUSUM Severity Analysis



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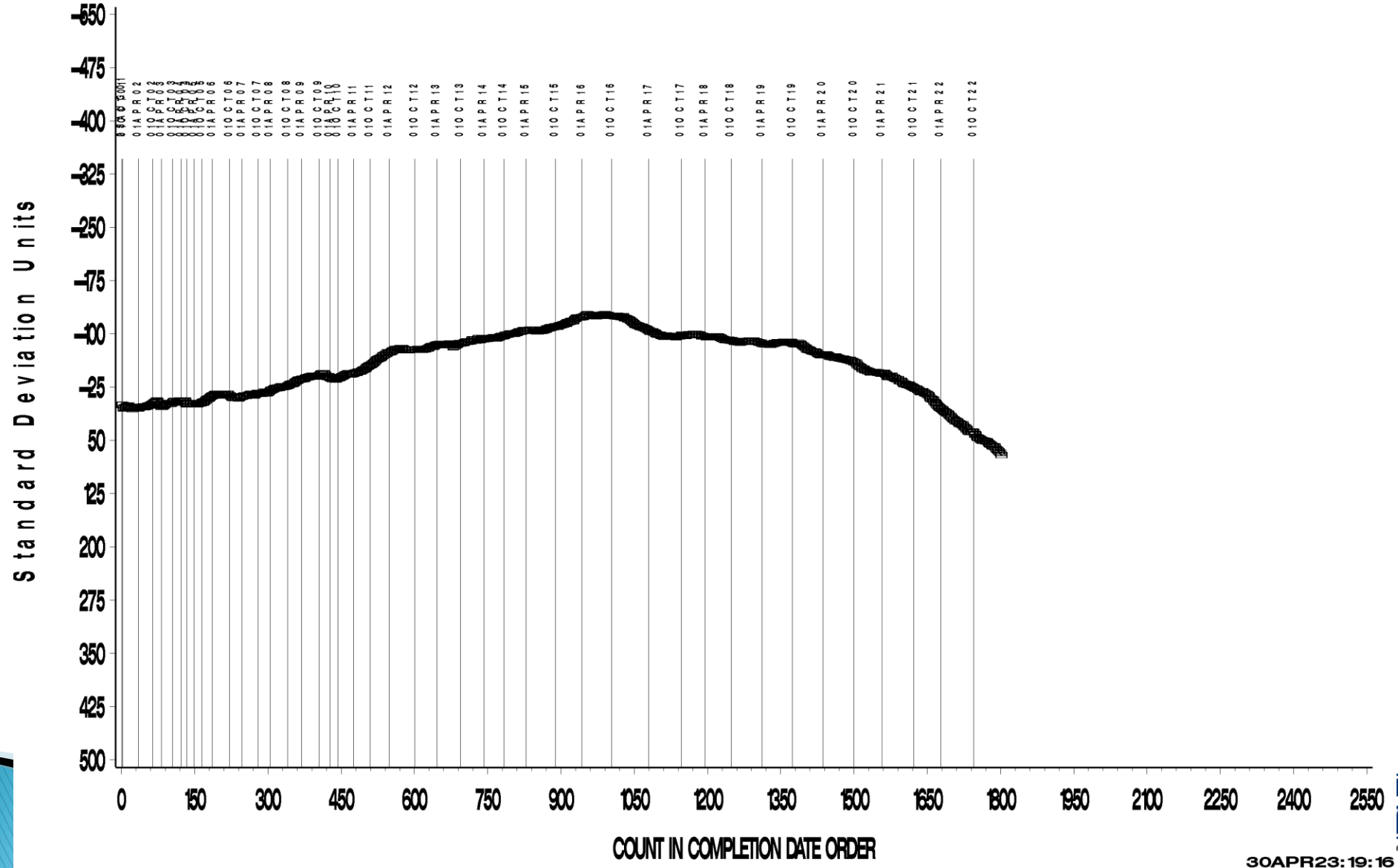
FLUOROELASTOMER TENS STRENGTH CHANGE CORRECTED AVG

CUSUM Severity Analysis



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EOEC — FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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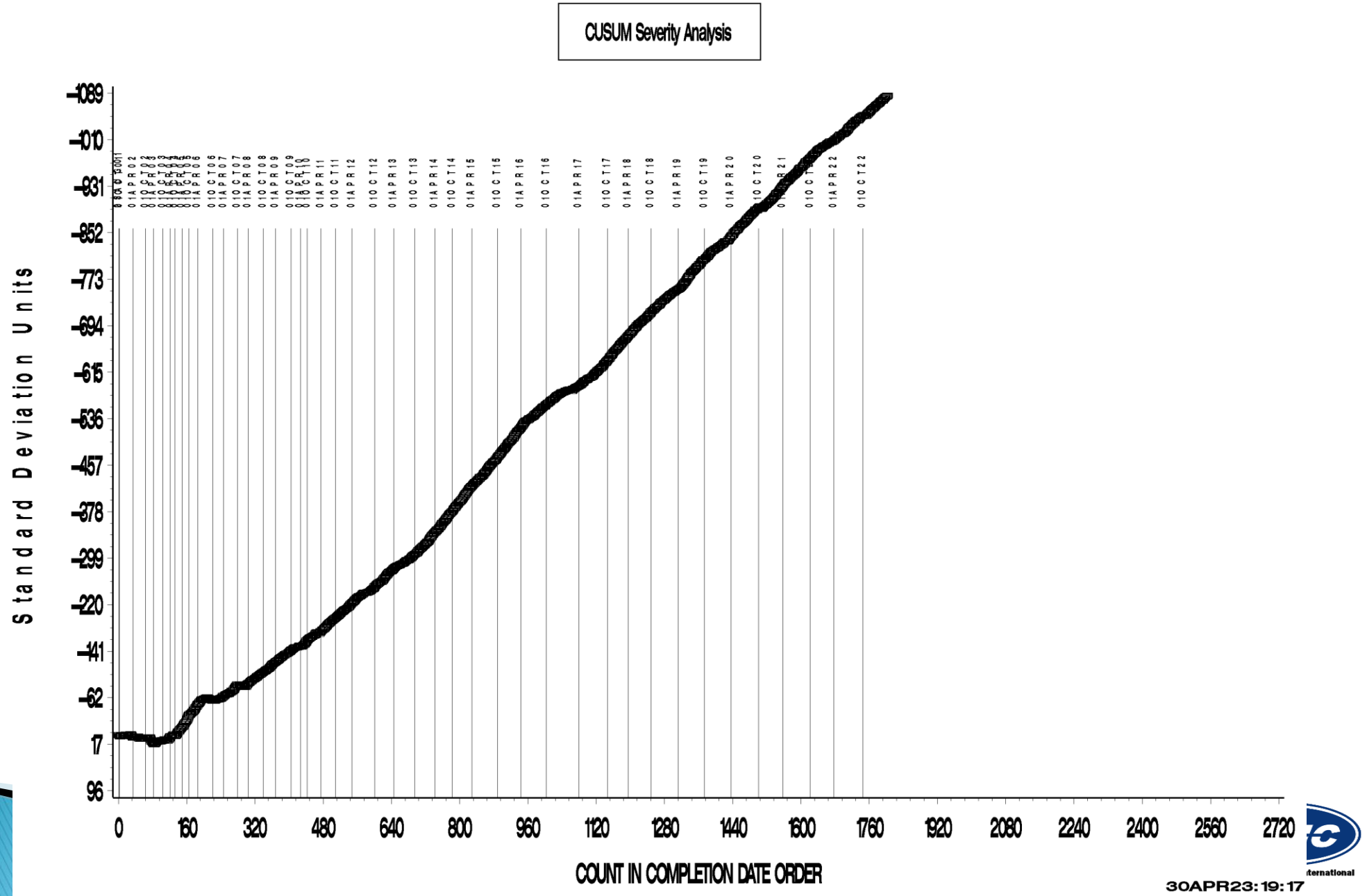
FLUOROELASTOMER ELONGATION CHANGE CORRECTED AVG



EOEC Test Severity

Nitrile (NBR)

Parameter	Period Mean Δ/s	Status
Volume Change	0.06	On-Target
Points Hardness Change	0.83	Severe
Tensile Strength Change	-0.68	Mild
Elongation Change	-0.15	Slightly Mild

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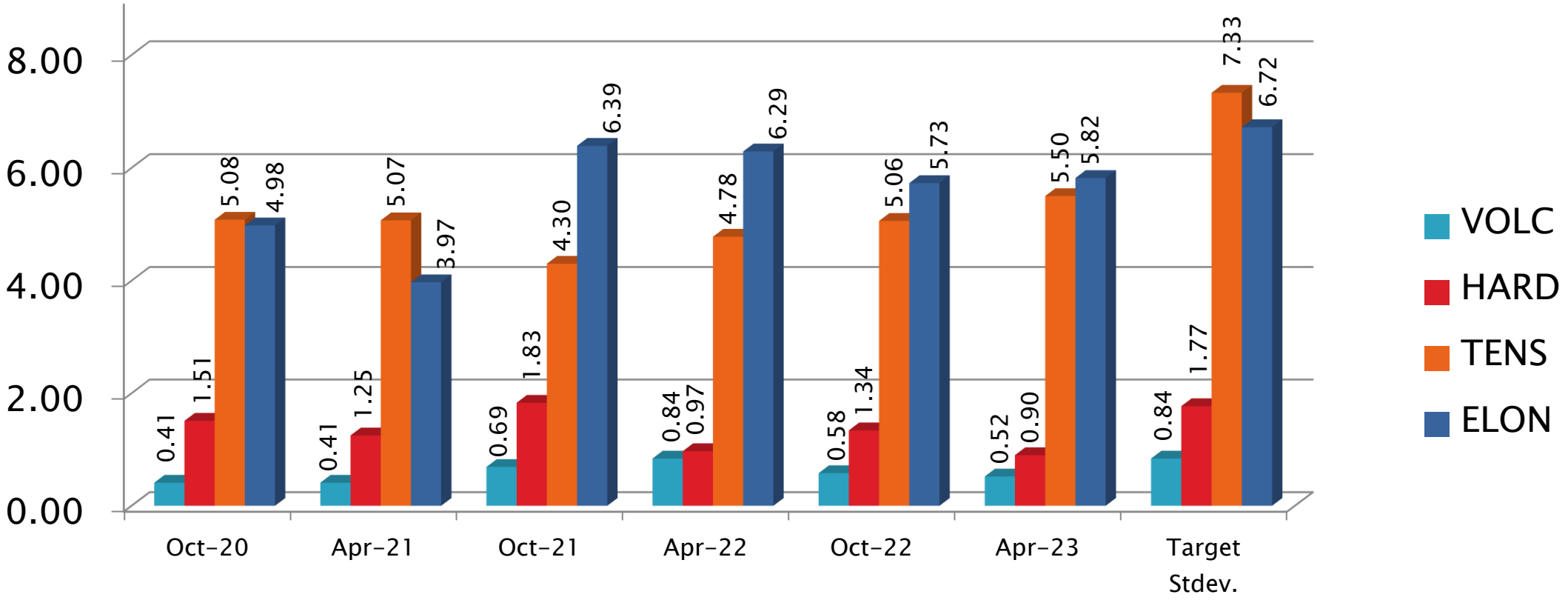
EOEC Precision Estimates – Nitrile



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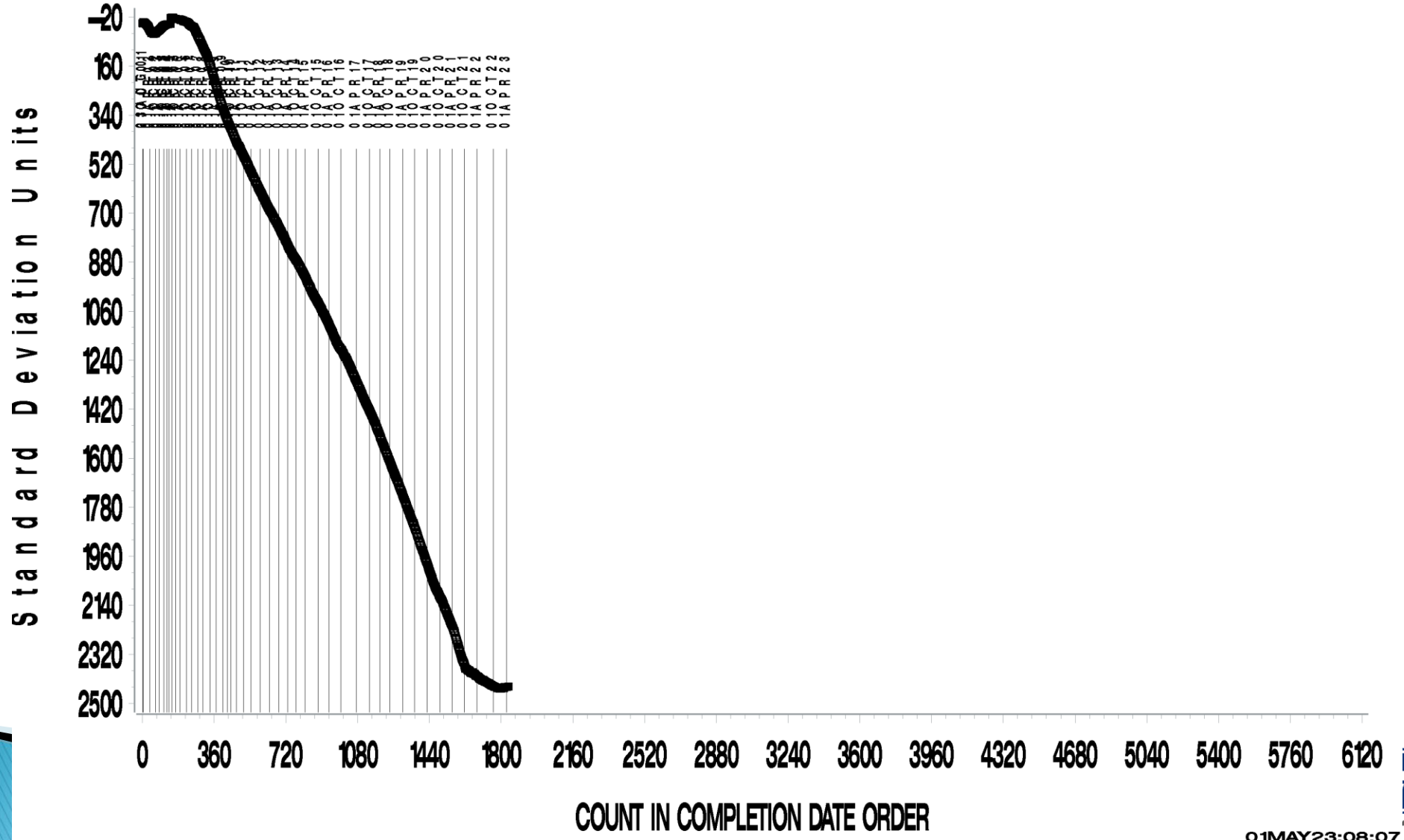
EOEC Precision Estimates by Lab: NBR

Test Parameter	Statistic	LTMS Lab				
		A	B	L	I	G
	n=	24	3	4	16	20
Volume	Mean	1.93	2.36	1.49	2.02	1.42
	Pooled s	0.31	0.27	0.09	0.51	0.56
	Mean /s	0.23	0.73	−0.30	0.33	−0.38
Hardness	Mean	3.08	3.67	3.00	3.12	3.70
	Pooled s	0.72	1.15	0.82	0.72	1.13
	Mean /s	0.71	1.04	0.66	0.73	1.06
Tensile Strength	Mean	−0.16	−7.43	2.12	−1.94	−4.76
	Pooled s	4.75	3.14	3.92	2.66	6.94
	Mean /s	−0.40	−1.40	−0.09	−0.64	−1.03
Elongation	Mean	−34.7	−37.6	−34.3	−37.5	−32.2
	Pooled s	4.19	0.44	1.64	3.43	8.50
	Mean /s	−0.15	−0.58	−0.91	−0.56	0.22

EOEC —NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE VOLUME CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



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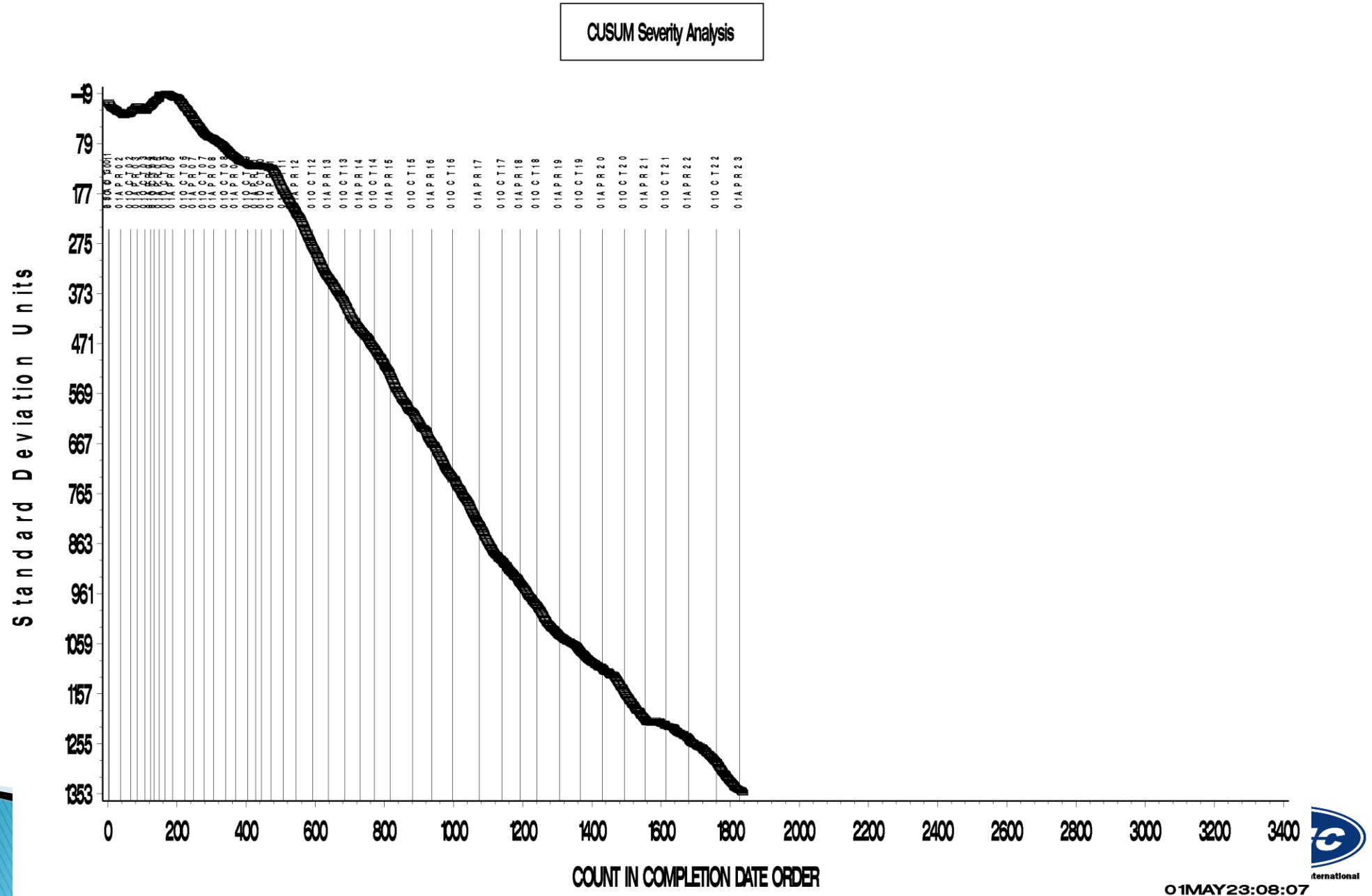

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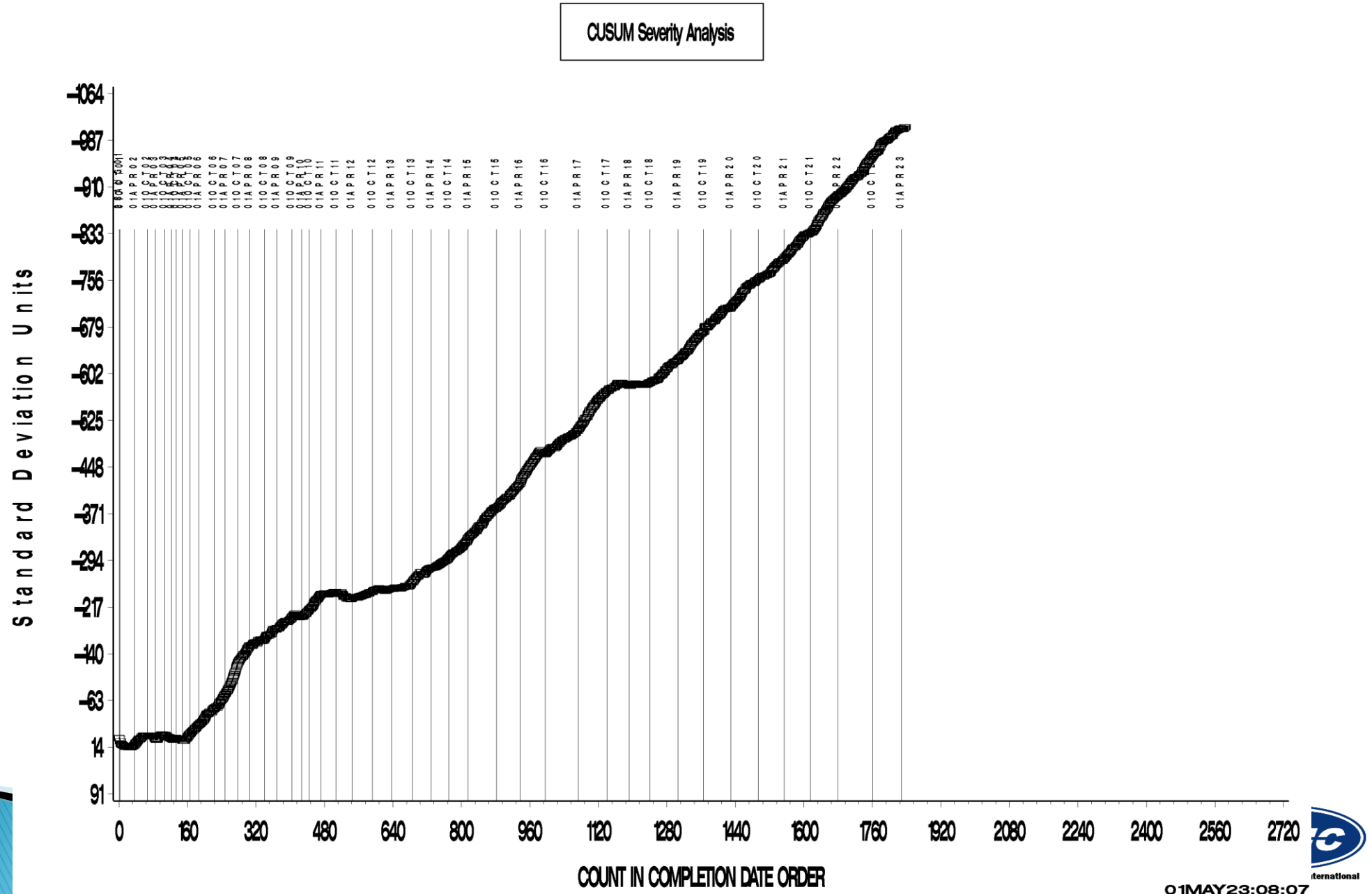
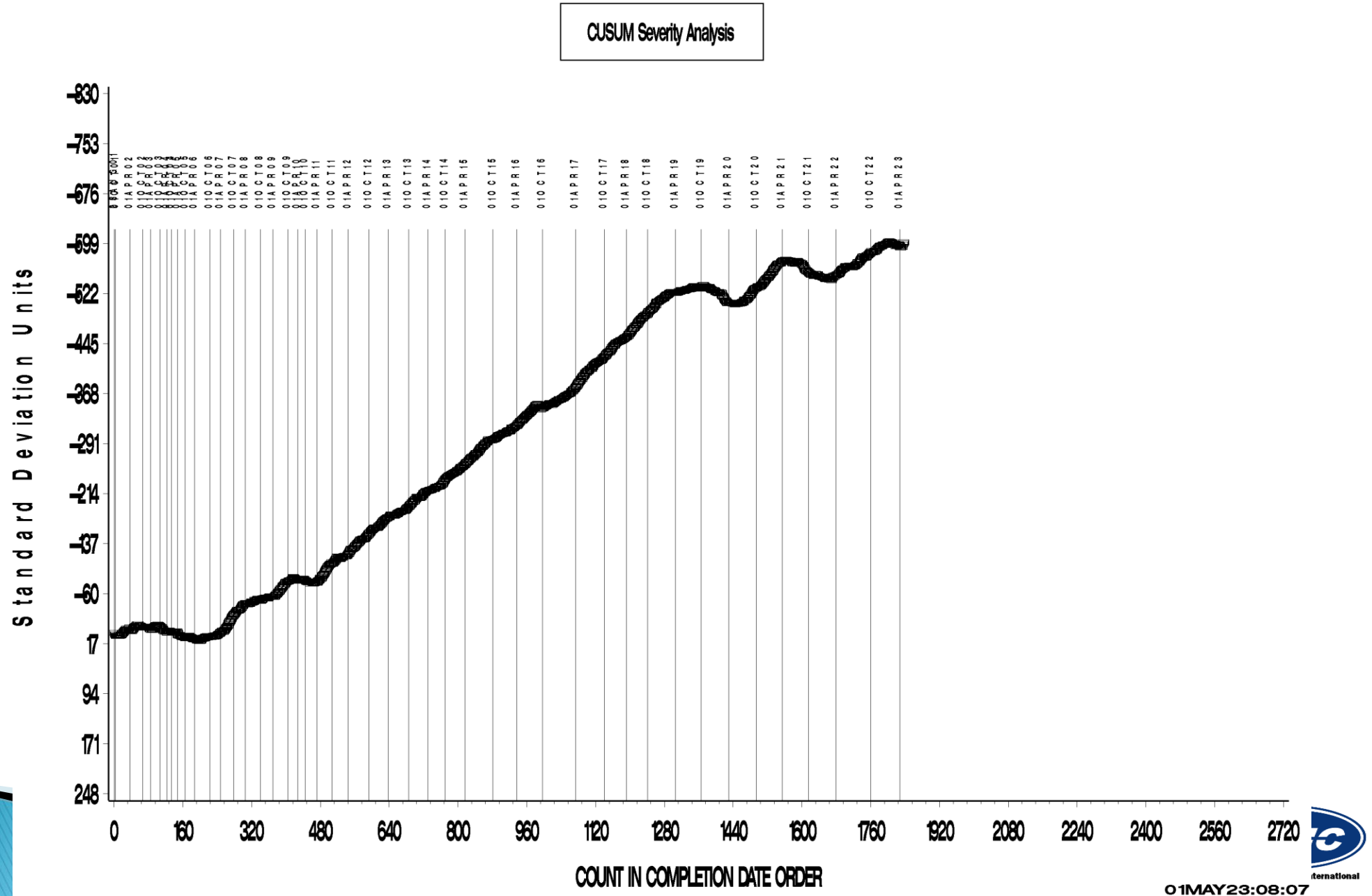
REF NITRILE TENS STRENGTH CHANGE CORRECTED AVG



EOEC —NITRILE INDUSTRY OPERATIONALLY VALID DATA

REF NITRILE ELONGATION CHANGE CORRECTED AVERAGE

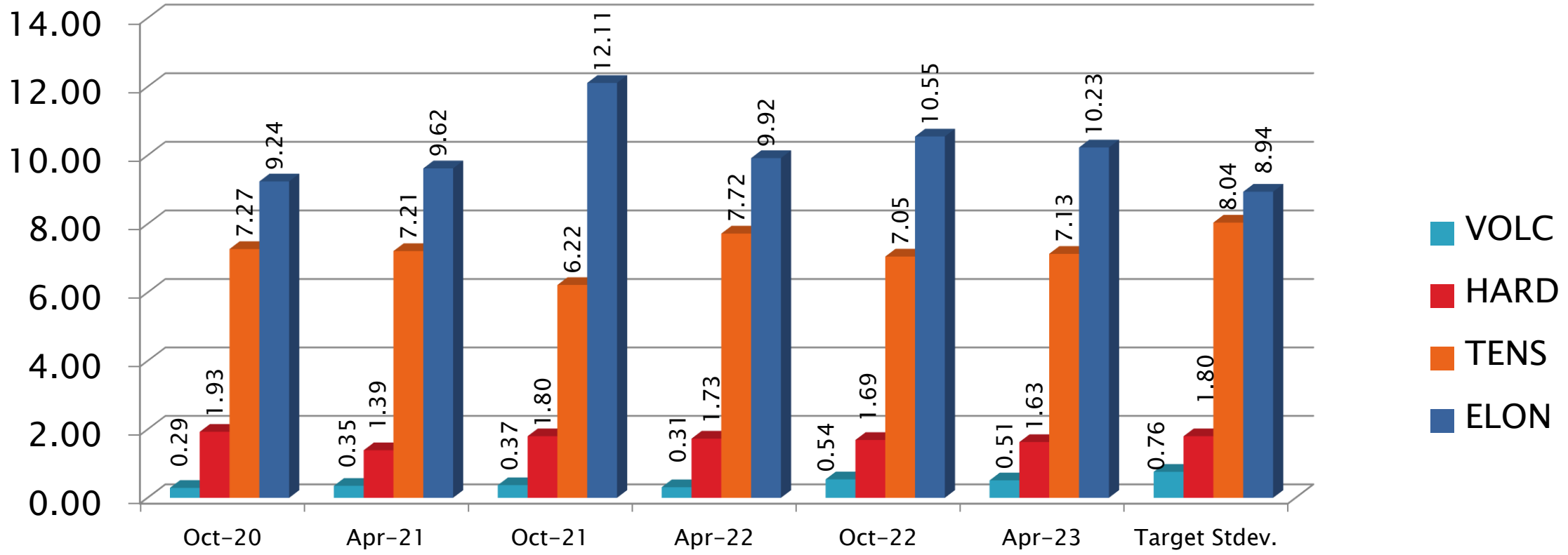


EOEC Test Severity

Polyacrylate (ACM)

Parameter	Period Mean Δ/s	Status
Volume Change	1.81	Severe
Points Hardness Change	-0.21	Mild
Tensile Strength Change	-0.26	Mild
Elongation Change	0.33	Severe

EOEC Precision Estimates – Polyacrylate



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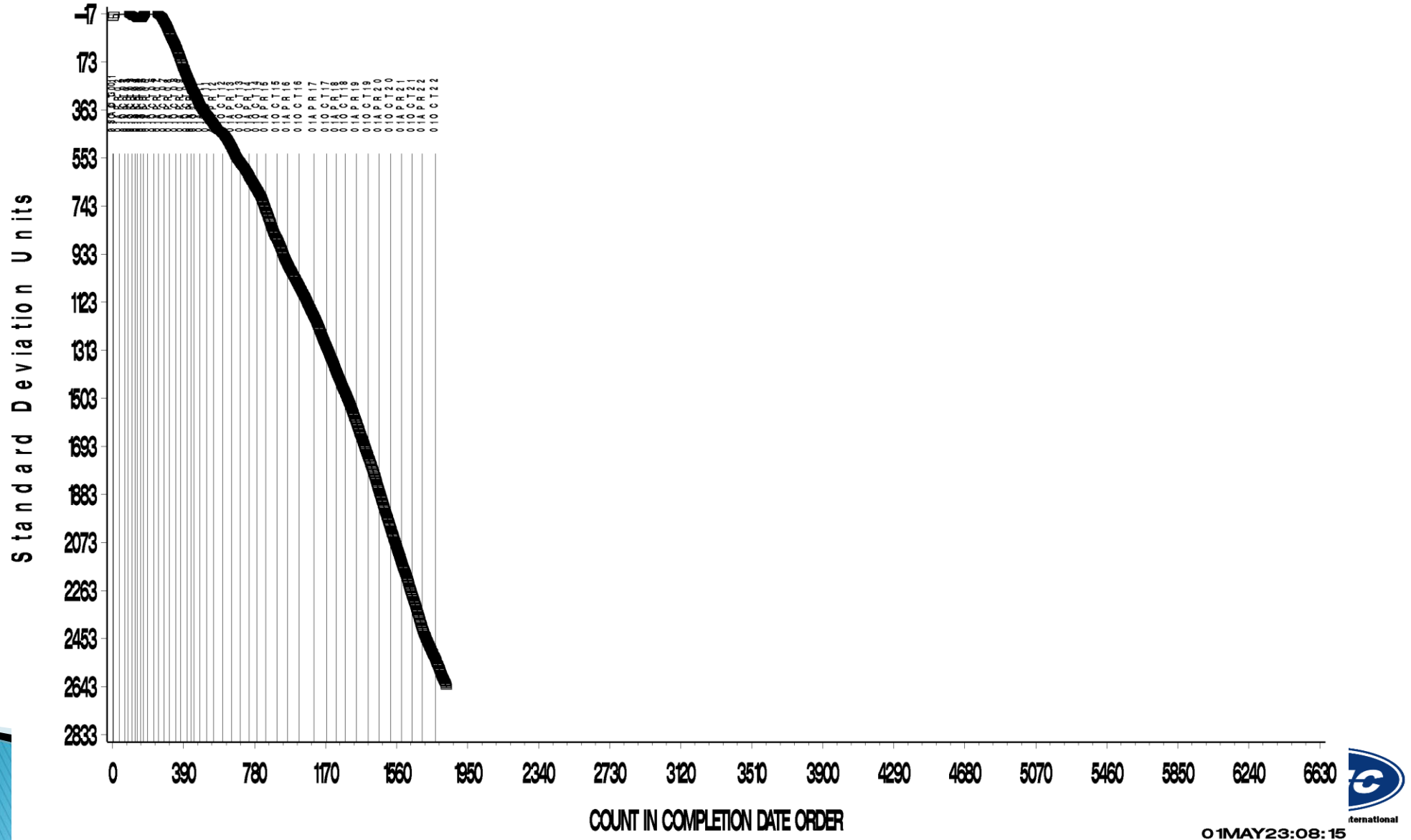
EOEC Precision Estimates by Lab: ACM

Test Parameter	Statistic	LTMS Lab				
		A	B	L	I	G
	n=	20	2	4	15	20
Volume	Mean	1.35	1.51	1.60	1.99	1.49
	Pooled s	0.21	0.20	0.48	0.66	0.46
	Mean /s	1.51	1.72	1.84	2.36	1.70
Hardness	Mean	-0.55	-1.00	-1.00	-0.67	-0.30
	Pooled s	1.15	1.41	0.82	1.10	2.39
	Mean /s	-0.30	-0.55	-0.55	-0.03	-0.16
Tensile Strength	Mean	-1.80	0.80	-3.50	-1.25	-1.84
	Pooled s	6.58	2.12	6.48	7.26	8.37
	Mean /s	-0.27	0.05	-0.48	-0.20	-0.27
Elongation	Mean	-21.8	-15.6	-13.5	-23.2	-16.3
	Pooled s	11.05	11.95	10.70	6.70	10.63
	Mean /s	0.08	0.79	1.01	-0.07	0.70

EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

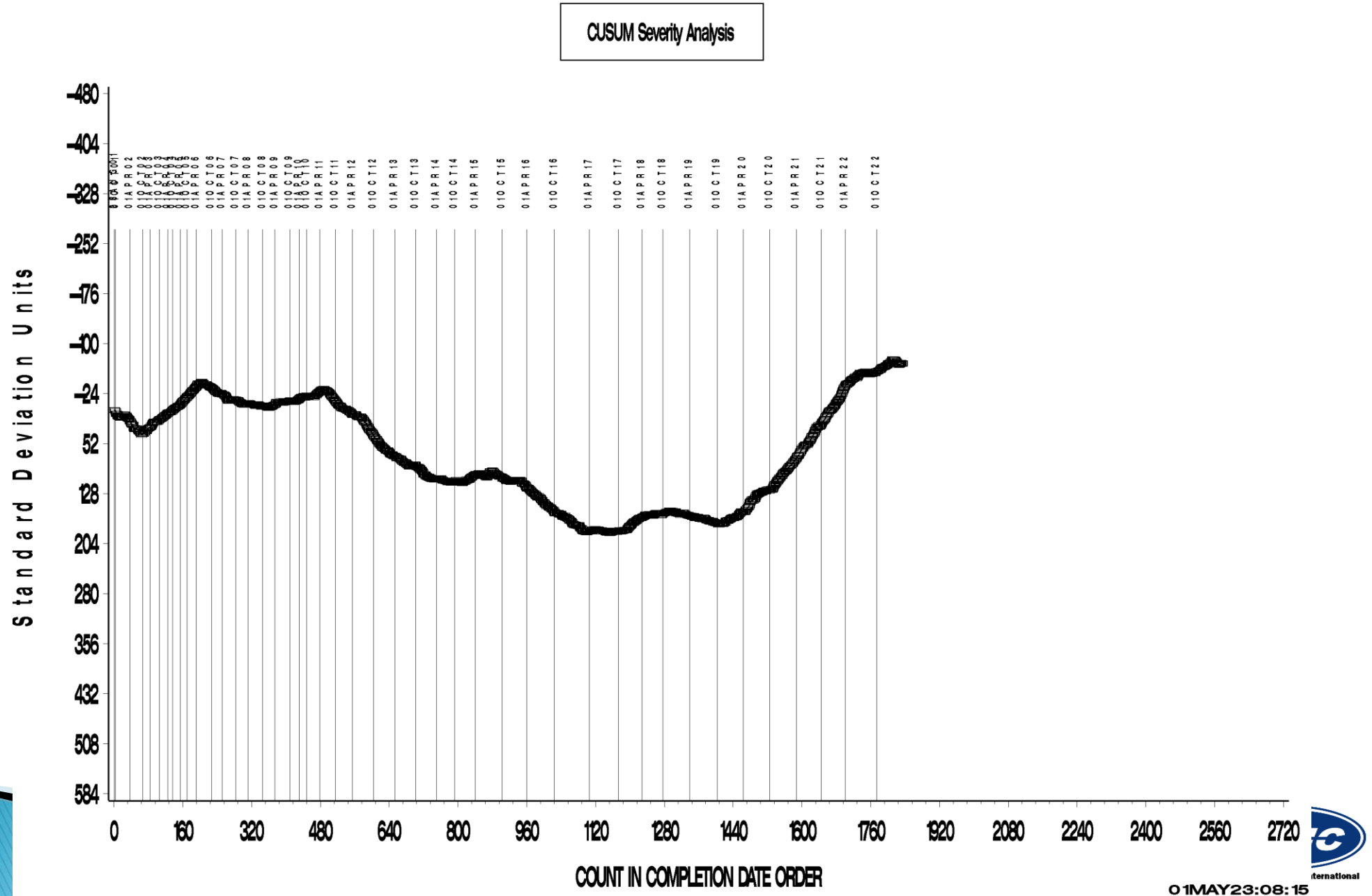
REFERENCE POLYACRYLATE VOLUME CHANGE CORRECTED AVG

CUSUM Severity Analysis



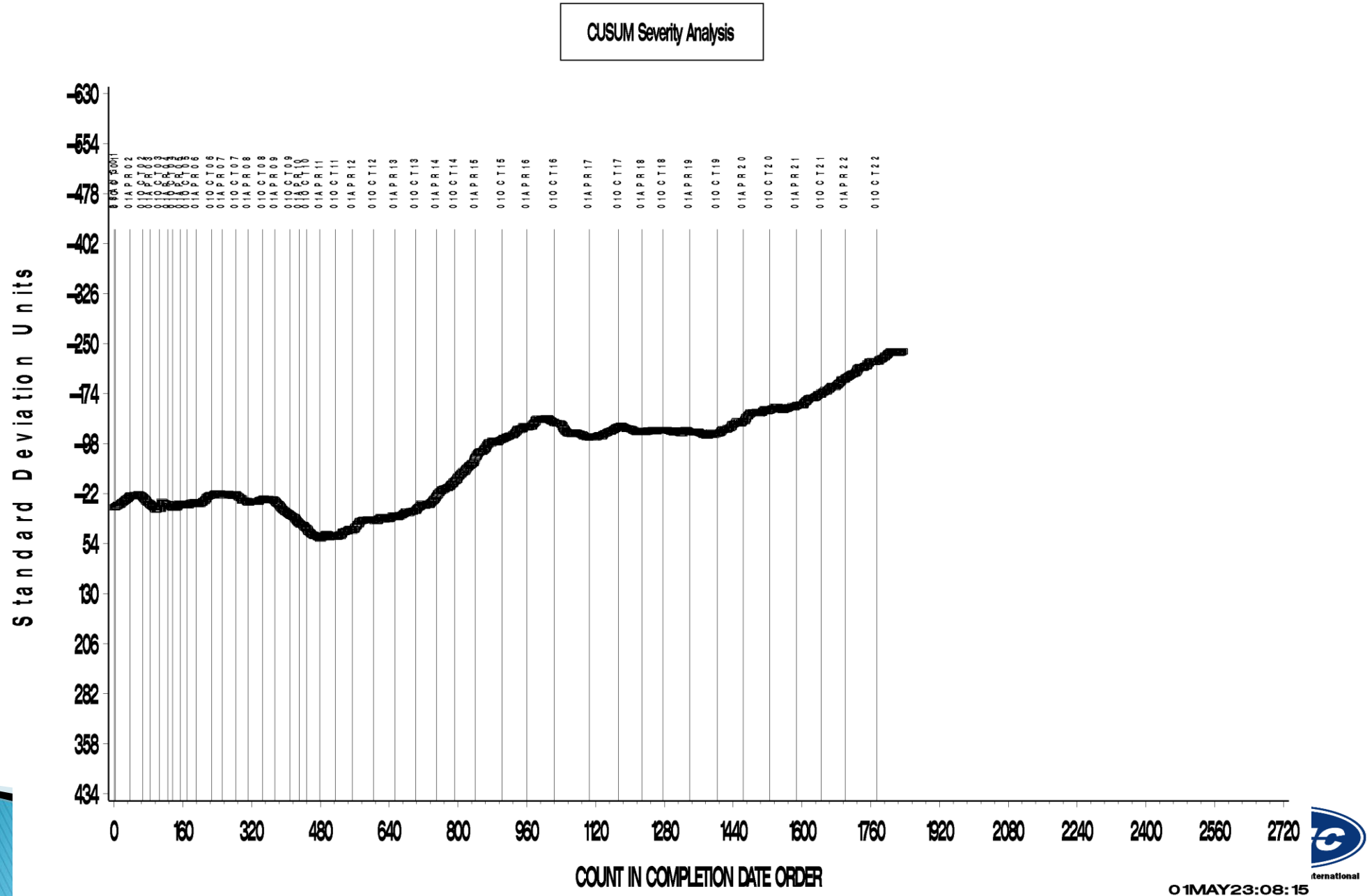
EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE PTS HARD CHANGE CORRECTED AVG



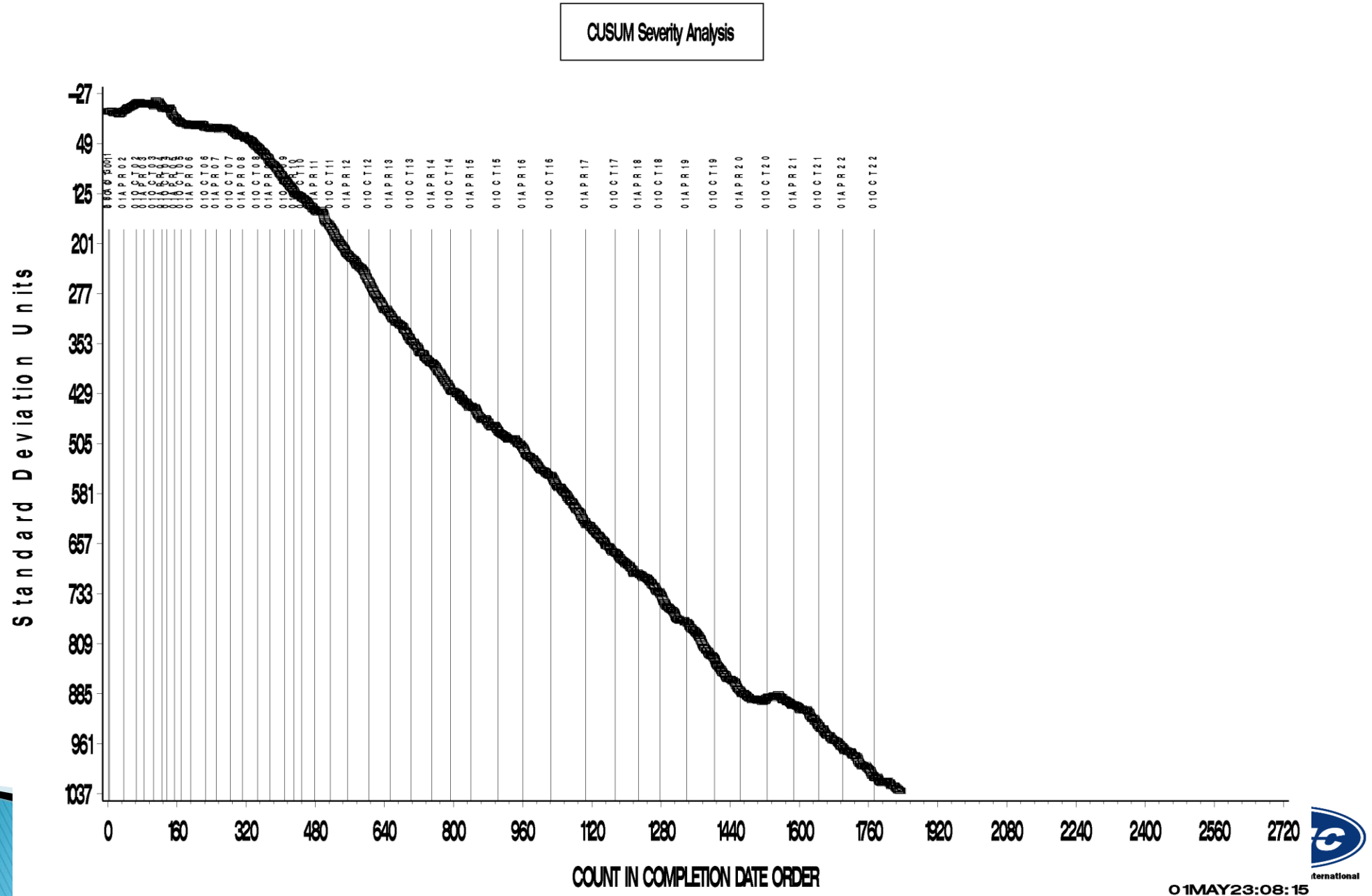
EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE TENS STRNGTH CHANGE CORRECTED AVG



EOEC —POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE ELONGATION CHANGE CORRECTED AVG

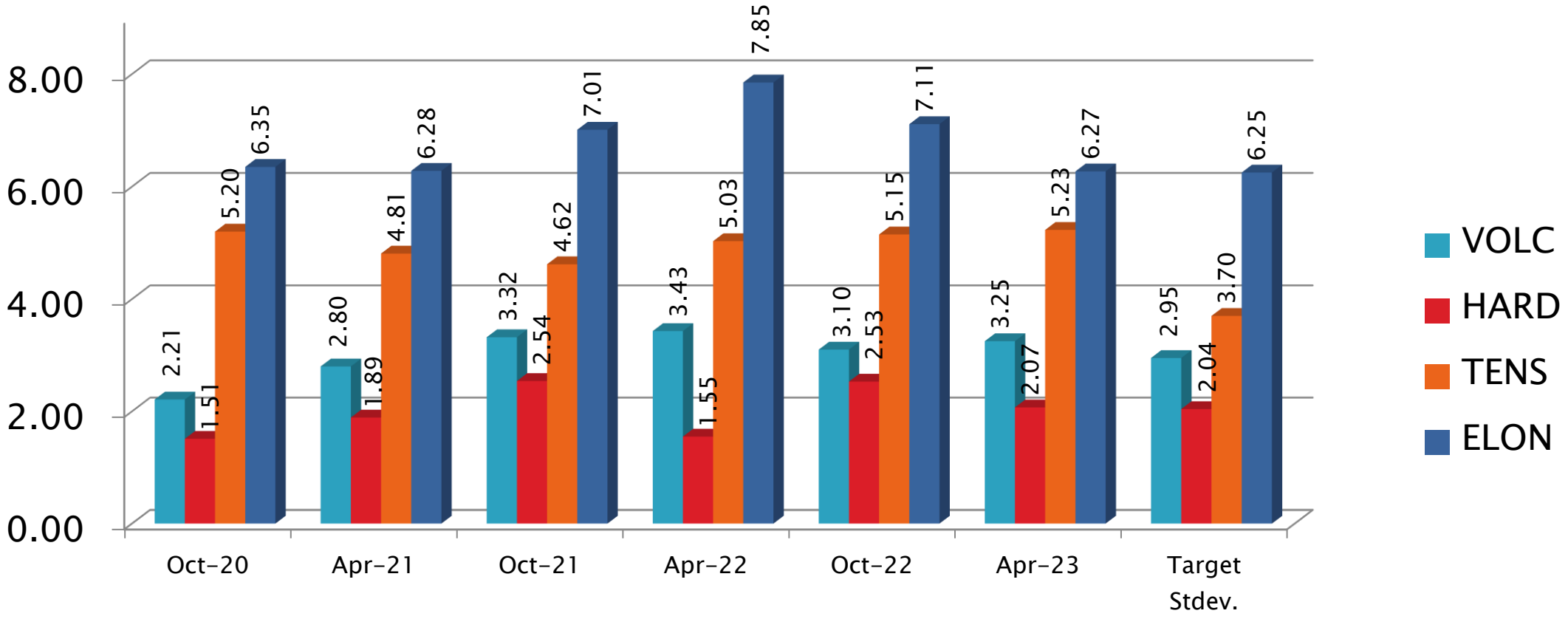


EOEC Test Severity

Silicone (VMQ)

Parameter	Period Mean Δ/s	Status
Volume Change	0.61	Severe
Points Hardness Change	-0.72	Mild
Tensile Strength Change	0.52	Severe
Elongation Change	0.22	Severe

EOEC Precision Estimates – Silicone



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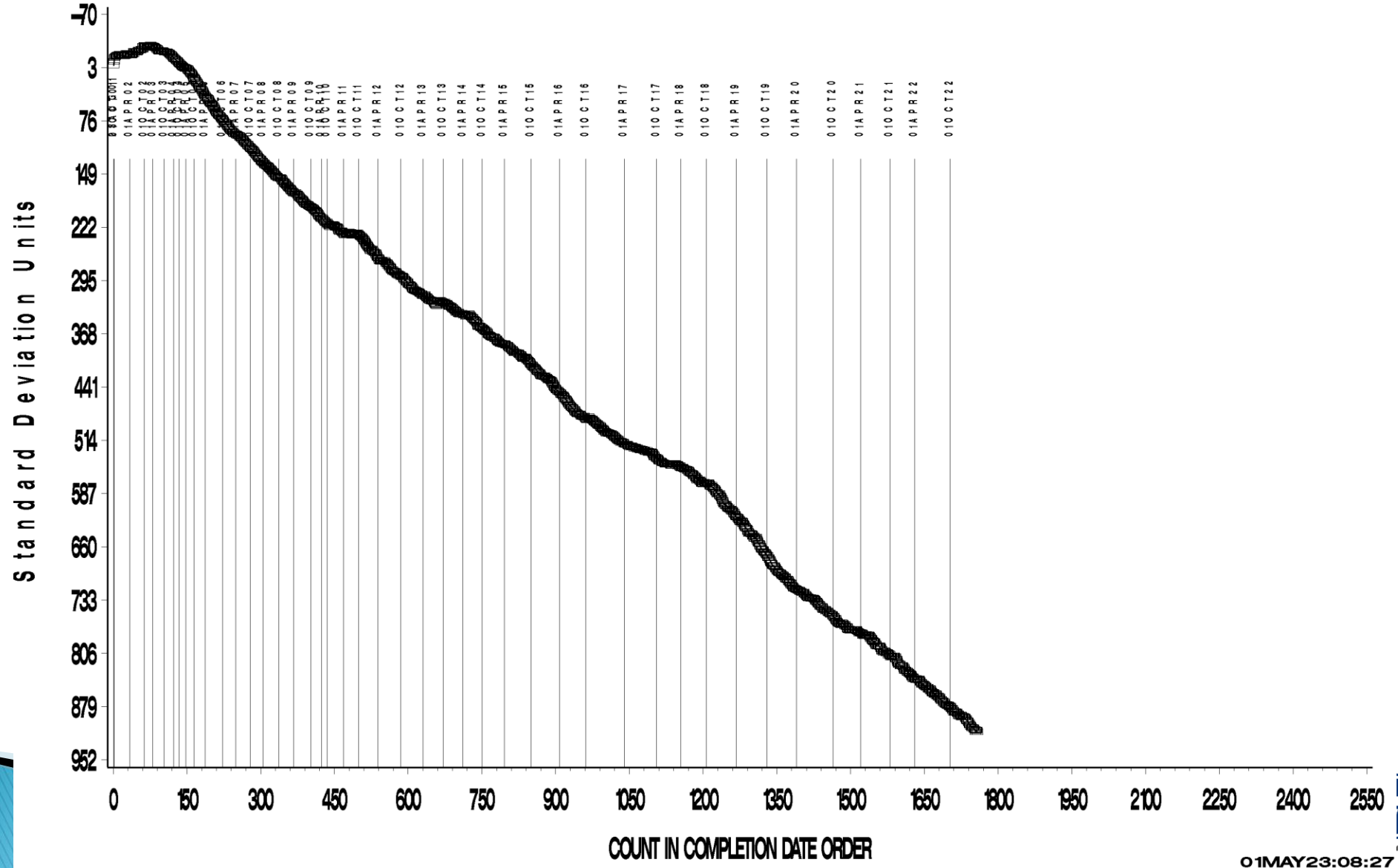
EOEC Precision Estimates by Lab: VMQ

Test Parameter	Statistic	LTMS Lab					
		A	B	L	I	G	V
	n=	17	3	4	14	16	2
Volume	Mean	33.3	33.2	29.2	31.6	38.3	32.4
	Pooled s	1.65	0.81	1.29	1.06	1.51	0.01
	Mean /s	0.40	0.36	-1.00	-0.20	2.07	0.06
Hardness	Mean	-24.5	-23.7	-18.8	-22.4	-23.2	-24.0
	Pooled s	1.33	1.15	0.50	1.65	1.84	0
	Mean /s	-1.37	-0.97	1.44	-0.37	-0.77	-1.14
Tensile Strength	Mean	-28.4	-27.8	-31.4	-37.3	-32.5	-24.0
	Pooled s	3.15	5.46	0.78	3.16	4.88	1.77
	Mean /s	1.44	1.60	0.64	-0.97	0.33	2.62
Elongation	Mean	-23.9	-17.1	-18.6	-24.0	-25.2	-21.7
	Pooled s	2.66	5.97	3.31	5.80	9.06	1.27
	Mean /s	0.15	1.23	1.00	0.13	-0.06	0.50

EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

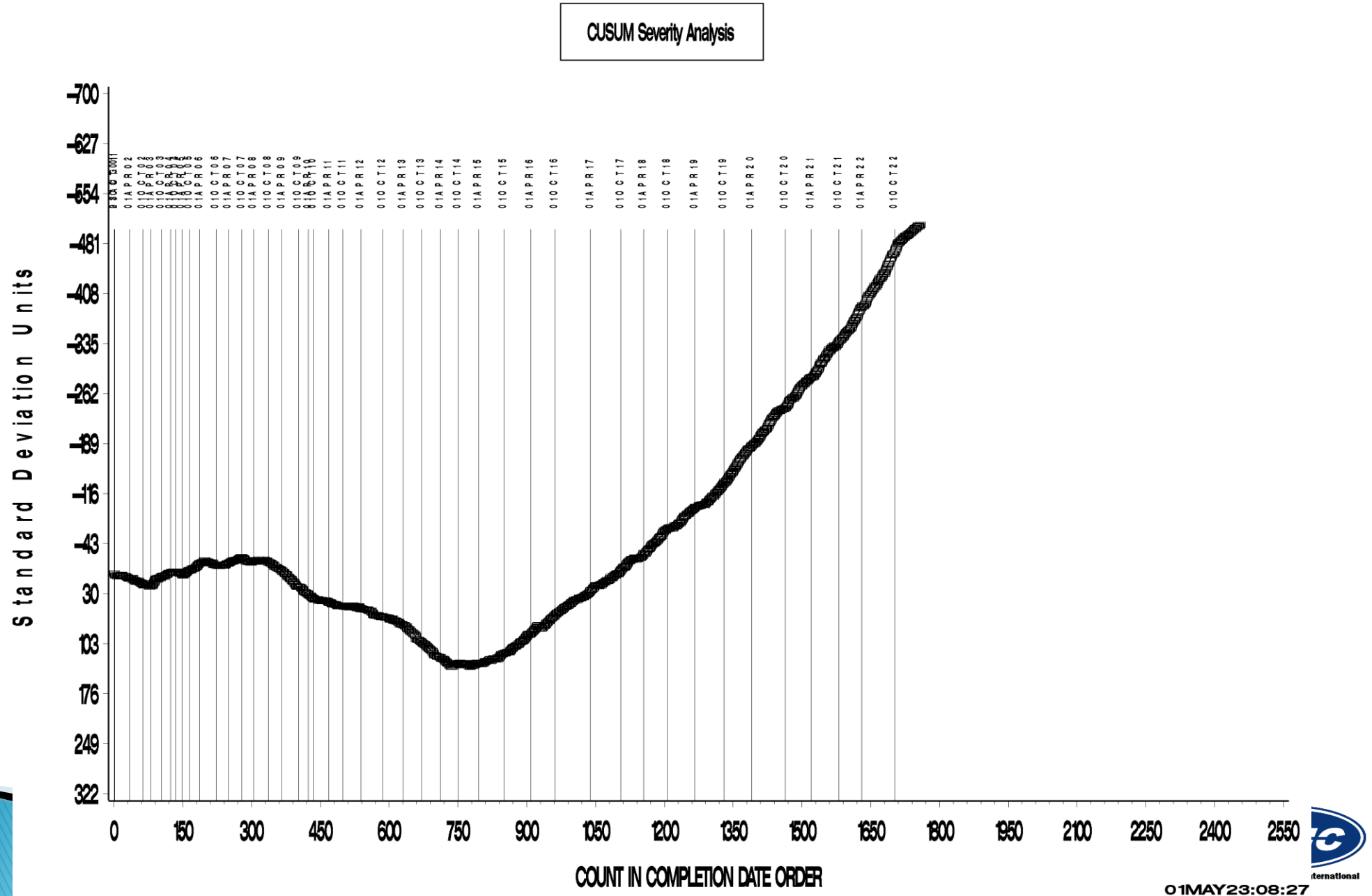
REFERENCE SILICON VOLUME CHANGE CORRECTED AVG

CUSUM Severity Analysis



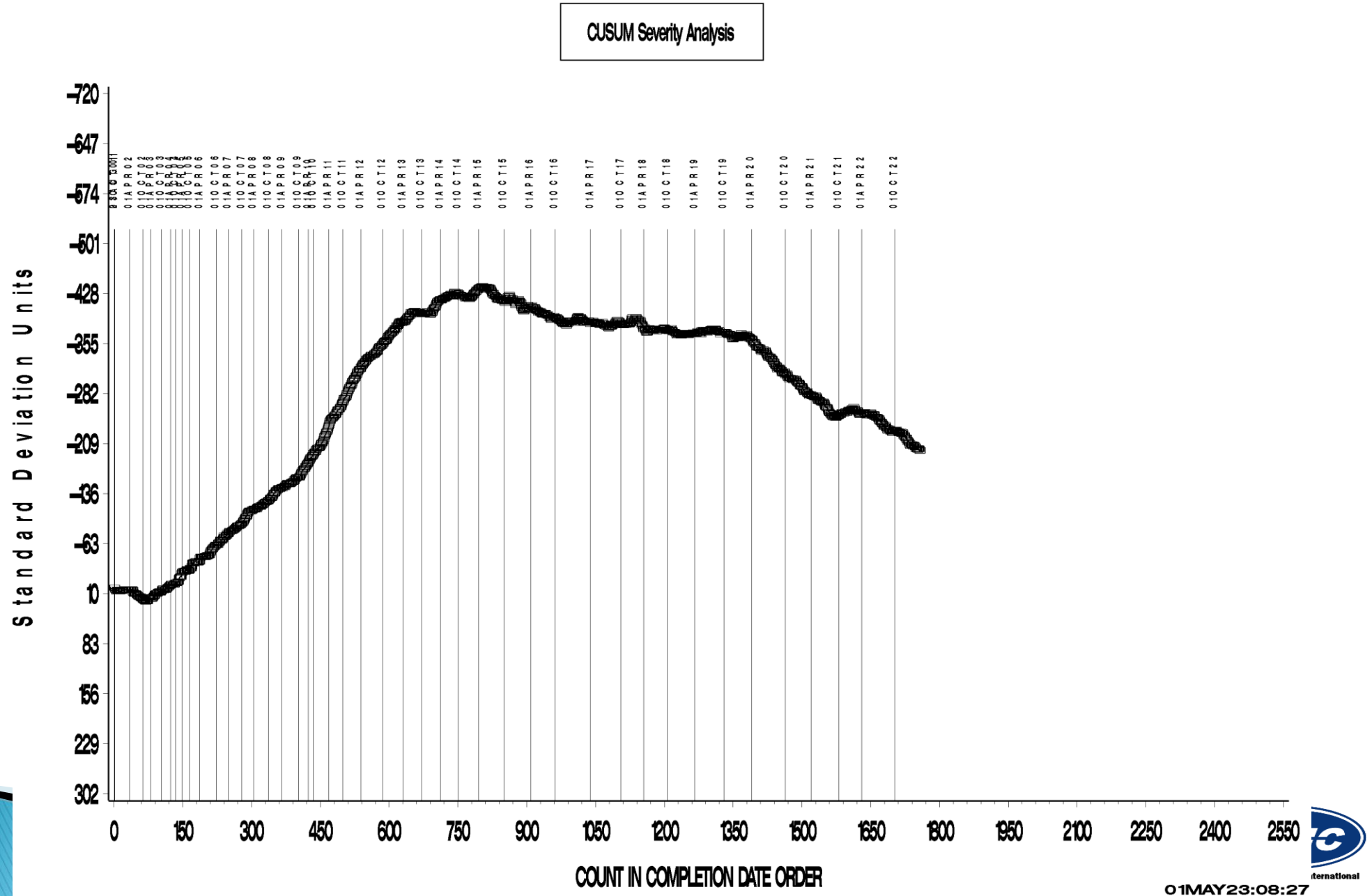
EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON PTS HARD CHANGE CORRECTED AVG



EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

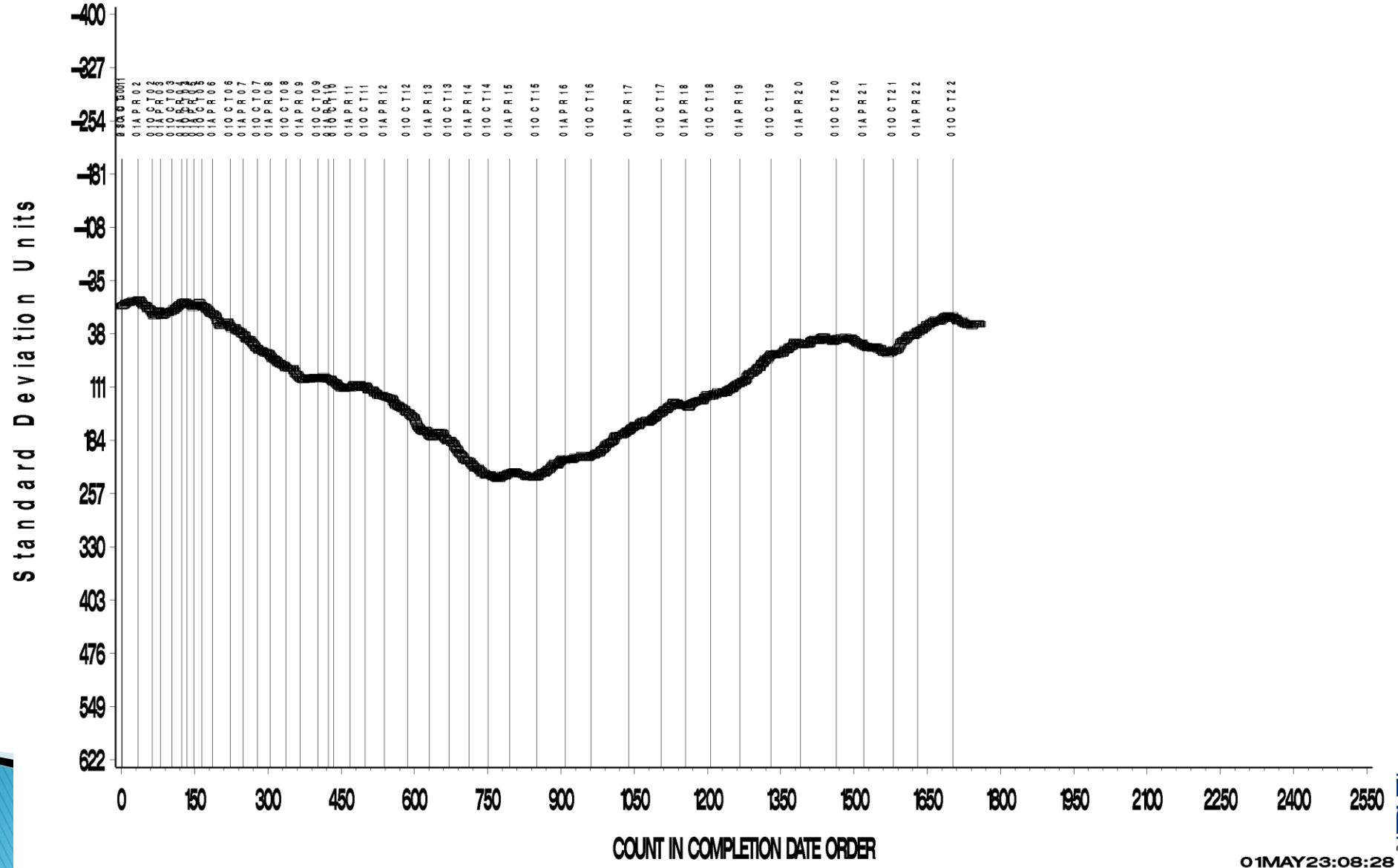
REF SILICON TENSILE STRENGTH CHANGE CORRECTED AVG



EOEC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

REF SILICON ELONGATION CHANGE CORRECTED AVG

CUSUM Severity Analysis

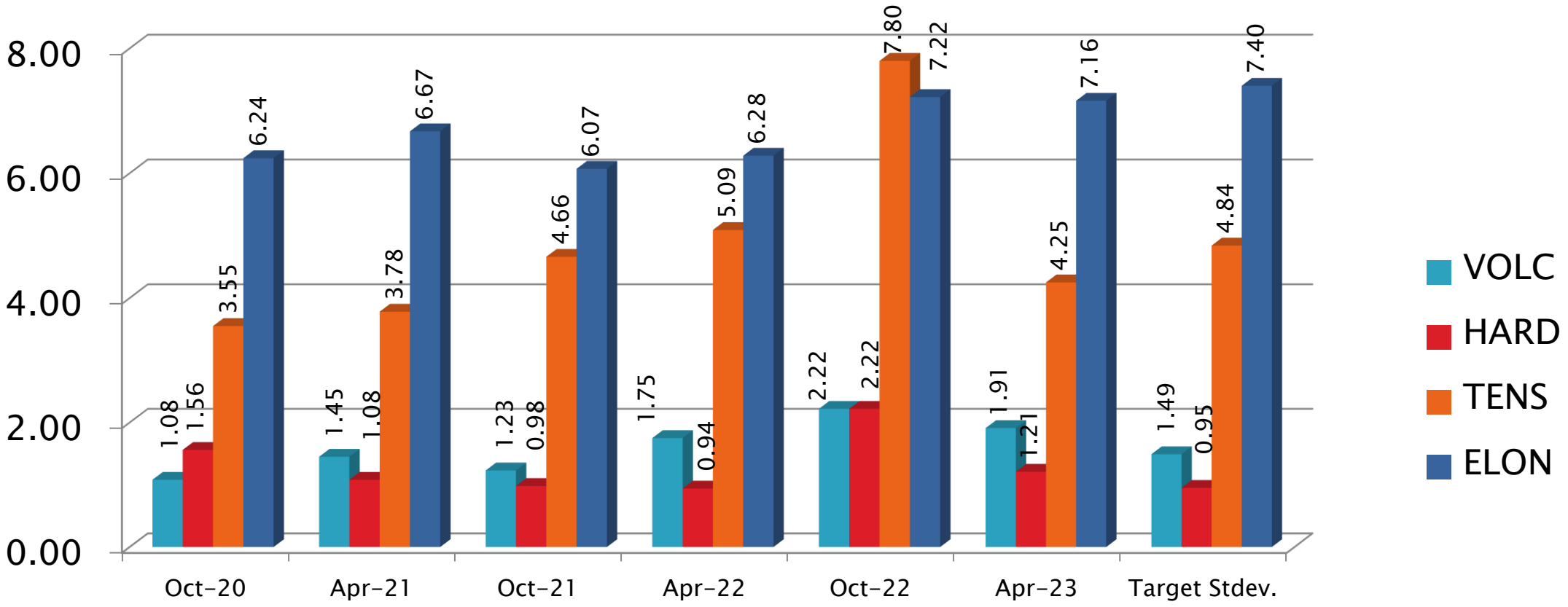


EOEC Test Severity

VAMAC (MAC)

Parameter	Period Mean Δ/s	Status
Volume Change	0.40	Severe
Points Hardness Change	-0.88	Mild
Tensile Strength Change	0.05	On-Target
Elongation Change	-0.40	Mild

EOEC Precision Estimates – VAMAC



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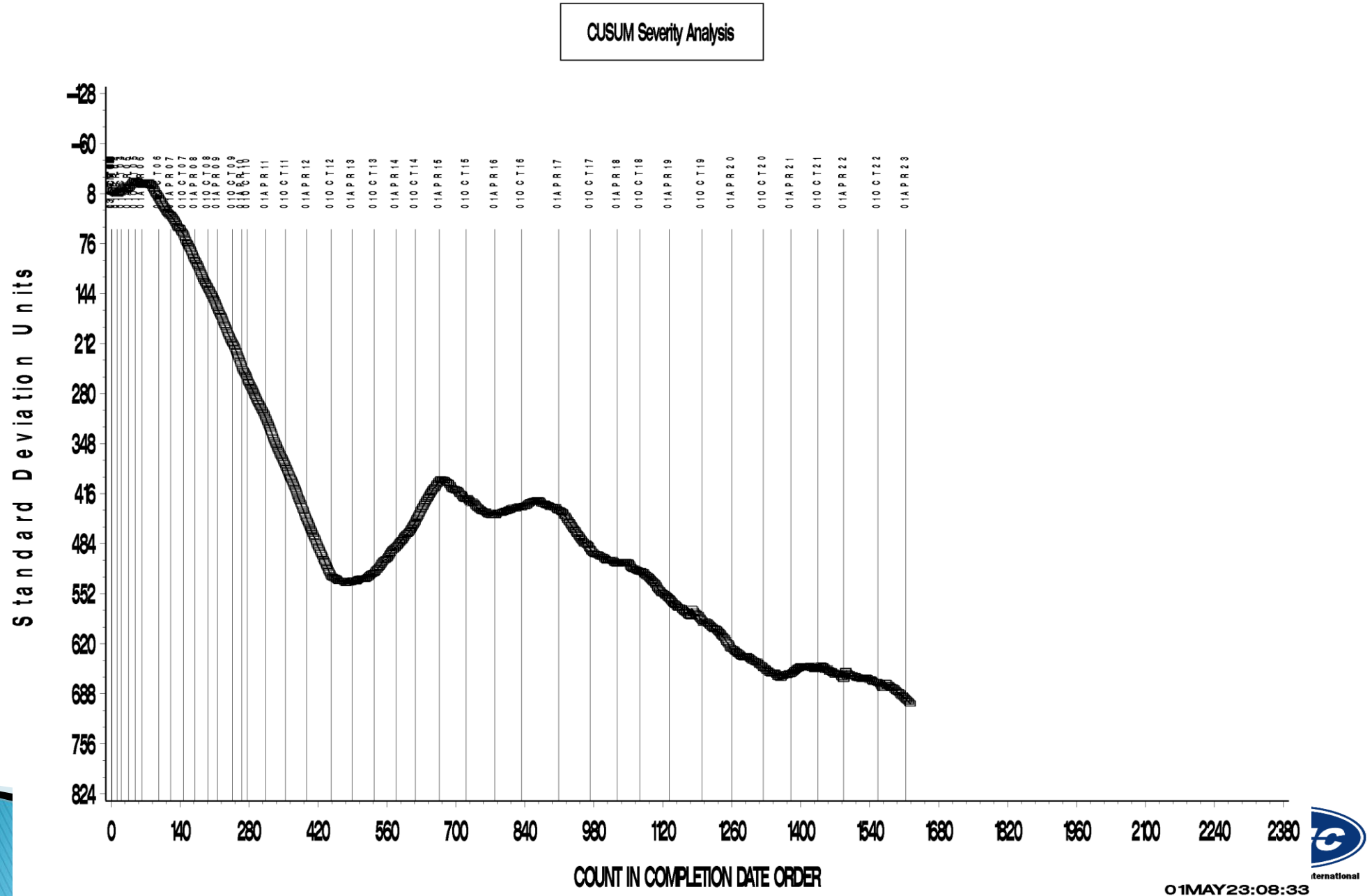
EOEC Precision Estimates by Lab: MAC

Test Parameter	Statistic	LTMS Lab				
		A	B	L	I	G
	n=	19	3	4	14	17
Volume	Mean	18.8	18.9	17.5	19.6	19.5
	Pooled s	0.41	0.39	0.40	0.77	3.31
	Mean /s	0.18	0.25	-0.67	0.71	0.66
Hardness	Mean	-8.79	-9.00	-6.50	-8.57	-7.88
	Pooled s	1.08	1.00	0.58	0.85	1.27
	Mean /s	-1.38	-1.60	1.03	-1.15	-0.42
Tensile Strength	Mean	-13.3	-16.4	-18.0	-14.8	-16.3
	Pooled s	5.08	4.24	2.34	3.28	3.81
	Mean /s	0.41	-0.23	-0.55	0.10	-0.20
Elongation	Mean	-38.3	0.88	-38.0	-41.9	-33.6
	Pooled s	4.98	-41.3	2.43	3.28	10.26
	Mean /s	-0.46	1.50	-0.40	-0.94	0.18

EOEC —VAMAC INDUSTRY OPERATIONALLY VALID DATA

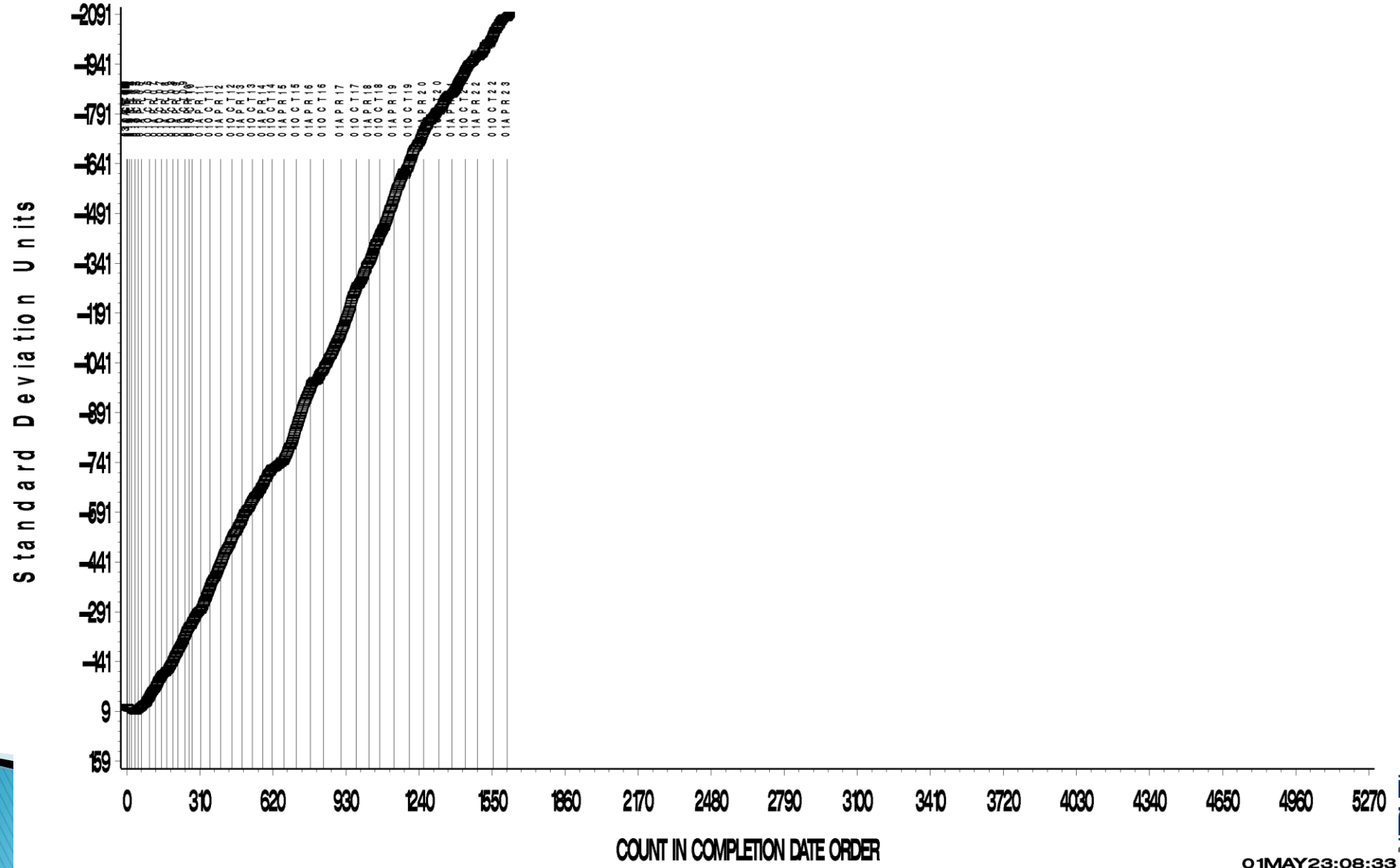
REFERENCE VAMAC G VOLUME CHANGE CORRECTED AVERAGE



EOEC —VAMAC INDUSTRY OPERATIONALLY VALID DATA

REF VAMAC G POINTS HARDNESS CHANGE CORRECTED AVG

CUSUM Severity Analysis



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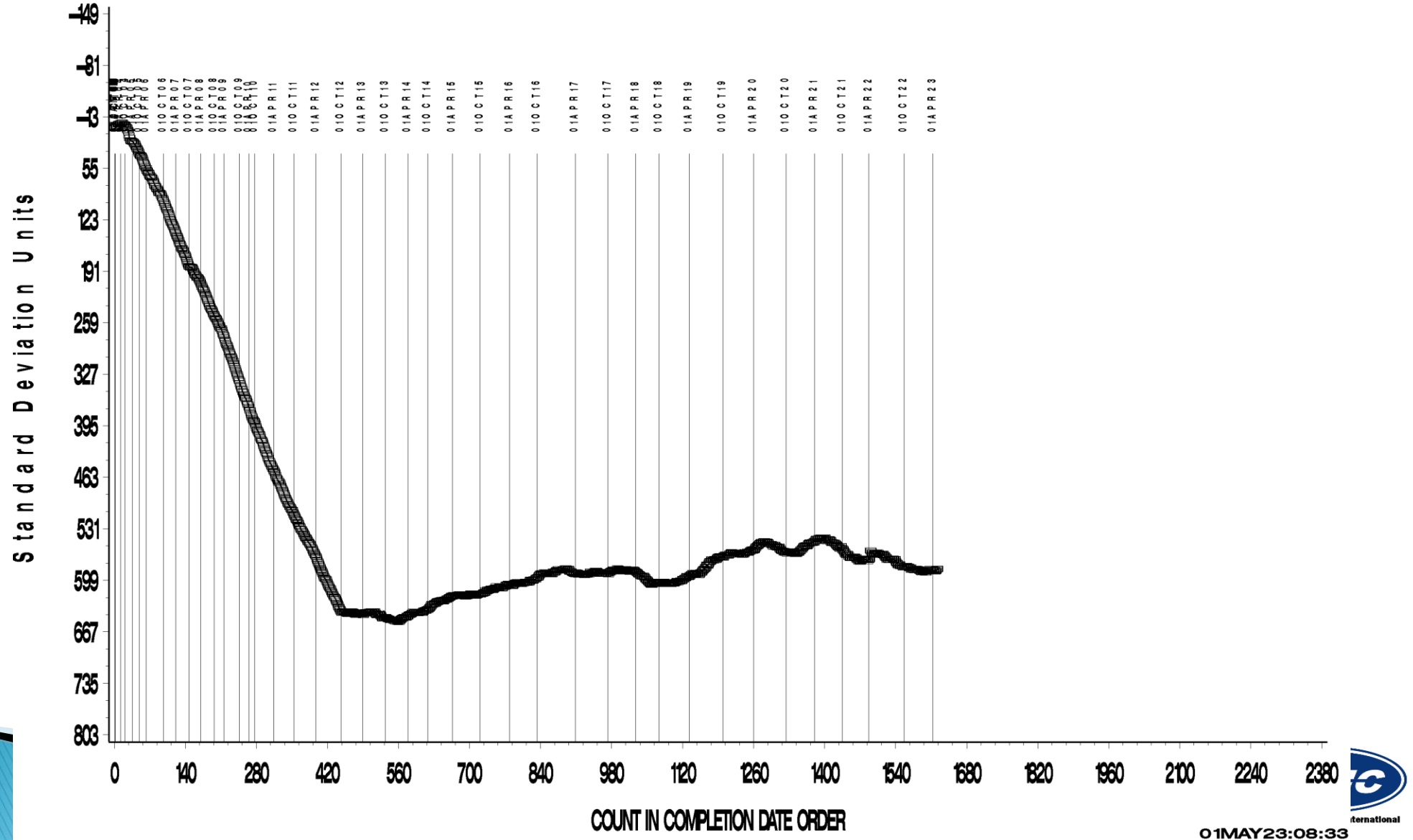
EOEC —VAMAC INDUSTRY OPERATIONALLY VALID DATA

REF VAMAC G TENSILE STRENGTH CHANGE CORRECTED AVG

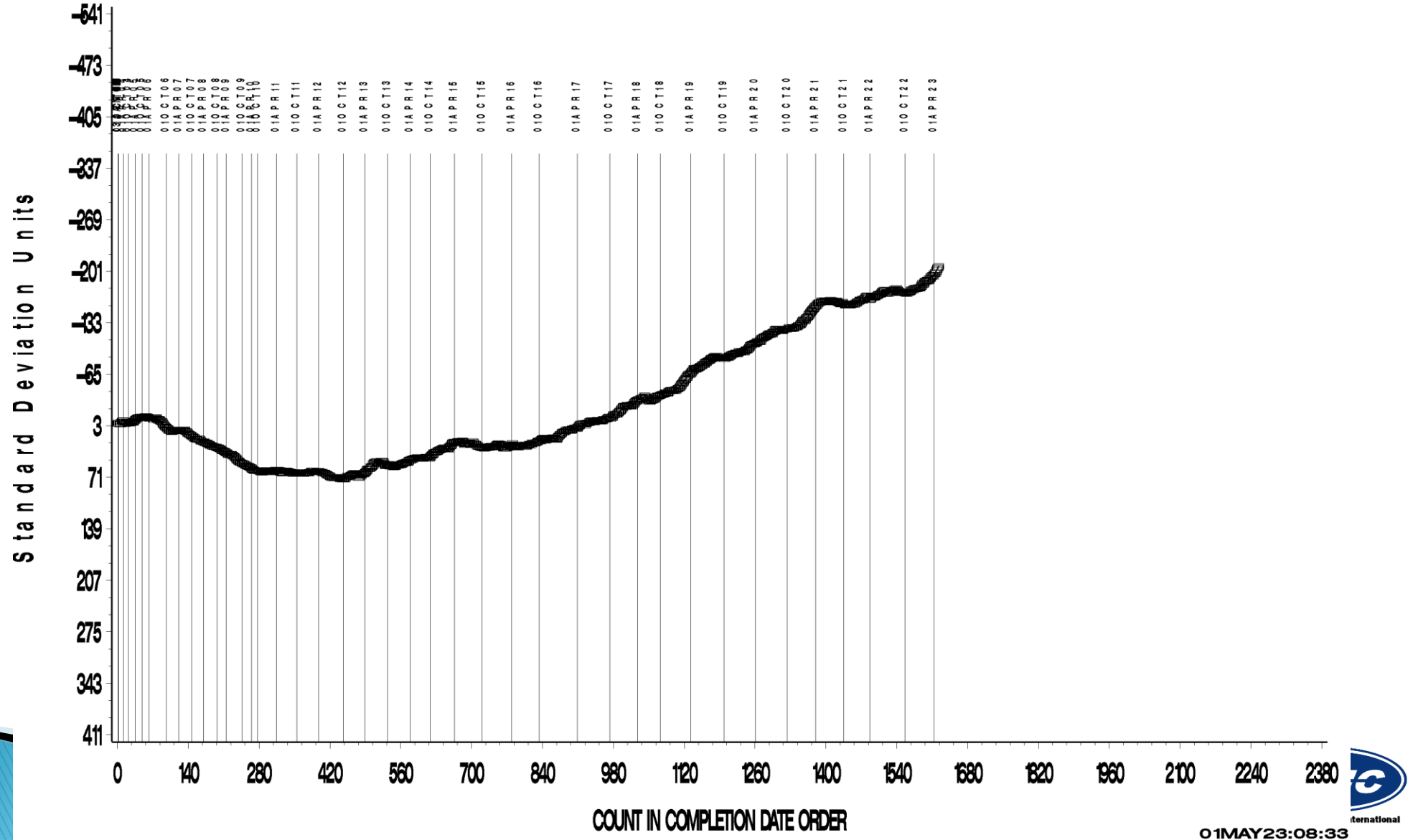
CUSUM Severity Analysis



EOEC —VAMAC INDUSTRY OPERATIONALLY VALID DATA

REF VAMAC G ELONGATION CHANGE CORRECTED AVG

CUSUM Severity Analysis



Information Letters & Technical Updates*

Test	Date	IL or Memo Number	Topic
EOEC	20230118	M23-002*	Elastomer SP Votes to Eliminate the use of 1006 Reference Oil

*Available from TMC Website

Reference Oil Inventory Estimated Life EOEC/LDEOC

Oil	TMC Inventory Gallons	Gallons Shipped Past 12 Months	Estimated Life
SL107[A, B]	2174	198	3.7 years

[A]TMC Inventory is used across several test methods
[B]SL107 has fully replaced oil 1006; Oil 1006 is no longer used as an EOEC Reference Fluid

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ASTM D 7216

Engine Oil Elastomer Compatibility (EOEC/HDEOC)

OHT CURRENT ELASTOMER BATCH CODES FOR ASTM D7216

AS OF: 3/9/2023

EOEC (PC 9)	
OHT PART NUMBER	**BATCH CODE**
OHTPC9-NBR-1	29
OHTPC9-ACM-2	31
OHTPC9-FKM-1	30
OHTPC9-MAC-1	23

LDEOC (J2643)	
OHT PART NUMBER	**BATCH CODE**
OHTJ2643-HNBR-1	30
OHTJ2643-FKM-1	28
OHTJ2643-ACM-2	25
OHTJ2643-VMQ-1	40
OHTJ2643-AEM-2	30

LDEOC Test Activity*

Test Status		Ethylene Acrylate	Fluoroelast.	Nitrile	Polyacrylate	Silicone	Total
Acceptable Calibration Test	AC	66	63	68	76	75	**348**
Failed Calibration Test	OC	0	0	0	0	0	**0**
Operationally Invalid, by lab	LC	0	0	0	1	1	**2**
Operationally Invalid, by TMC	RC	0	0	0	0	0	**0**
Aborted	XC	0	0	0	0	0	**0**
Industry Information Runs	NI	0	0	0	10	0	**10**
Total		**66**	**63**	**68**	**87**	**76**	**360**

*October 1, 2022 – March 31, 2023

Calibrated Labs and Stands*

(change shown in parentheses)

Test	Labs	Stands
D7216	8 (+0)	N/A
*As of 3/31/2023		

LDEOC Failing Calibration (OC) Tests*

Validity	Cause	#
OC		
OC		
OC		
Total		**0**

*Invalid and aborted calibration tests

No Failing LDEOC Calibration Tests were reported this period.

LDEOC Lost Tests*

Validity	Cause	No. of Tests
LC	Sample Lost	1
LC	Heating Bath Failure	1
Total		**2**

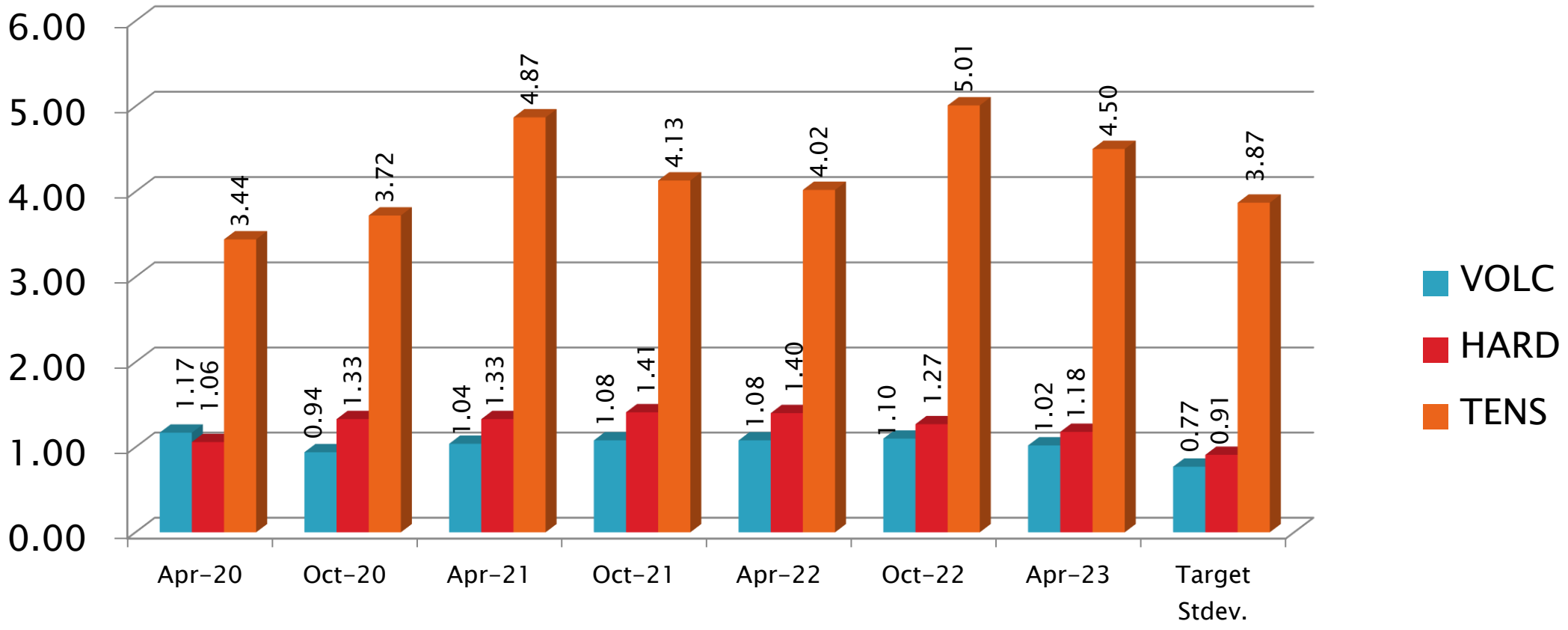
*Invalid and aborted calibration tests

LDEOC Test Severity

Ethylene Acrylate (AEM1)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.39	Mild
Points Hardness Change	0.14	Severe
Tensile Strength Change	-0.38	Mild

LDEOC Precision Estimates – Ethylene Acrylate



October 1, 2022 – March 31, 2023

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LDEOC Precision Estimates by Lab: AEM1

Test Parameter	Statistic	LTMS Lab					
		A	B	L	I	P	G
	n=	23	5	3	10	3	22
Volume	Mean	23.2	23.7	22.4	24.6	23.4	24.6
	Pooled s	0.36	0.56	0.28	1.11	0.64	0.91
	Mean /s	-1.27	-0.63	-2.29	0.50	-1.10	0.52
Hardness	Mean	-13.1	-13.4	-11.7	-12.0	-12.3	-12.3
	Pooled s	0.97	0.55	1.15	1.05	1.53	1.25
	Mean /s	-0.44	-0.73	1.17	0.80	0.44	0.45
Tensile Strength	Mean	-18.2	-18.9	-10.5	-19.9	-22.5	-18.2
	Pooled s	3.25	2.43	5.05	4.34	5.01	4.99
	Mean /s	-0.34	-0.54	1.64	-0.79	-1.47	-0.34

LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA

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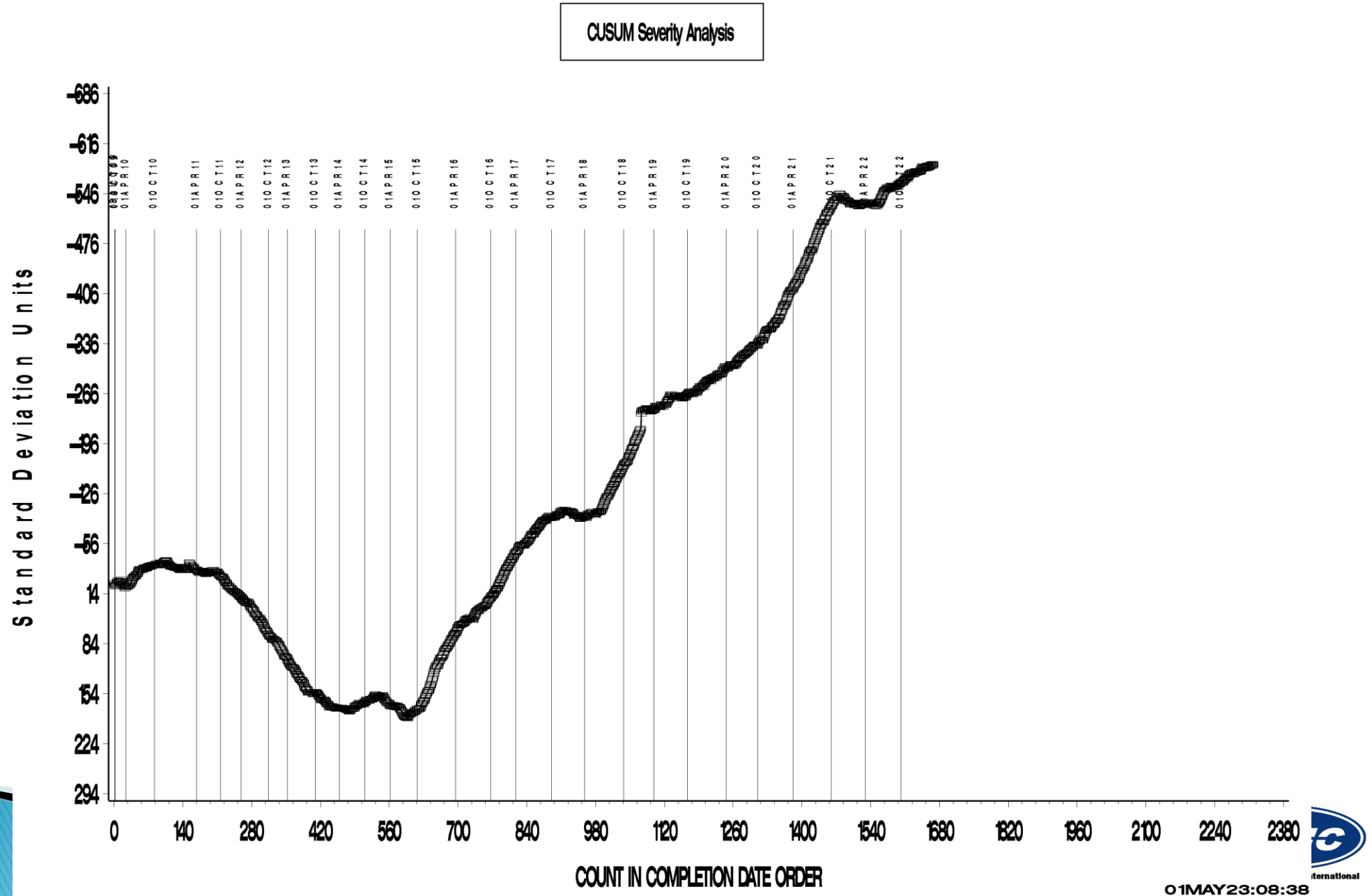
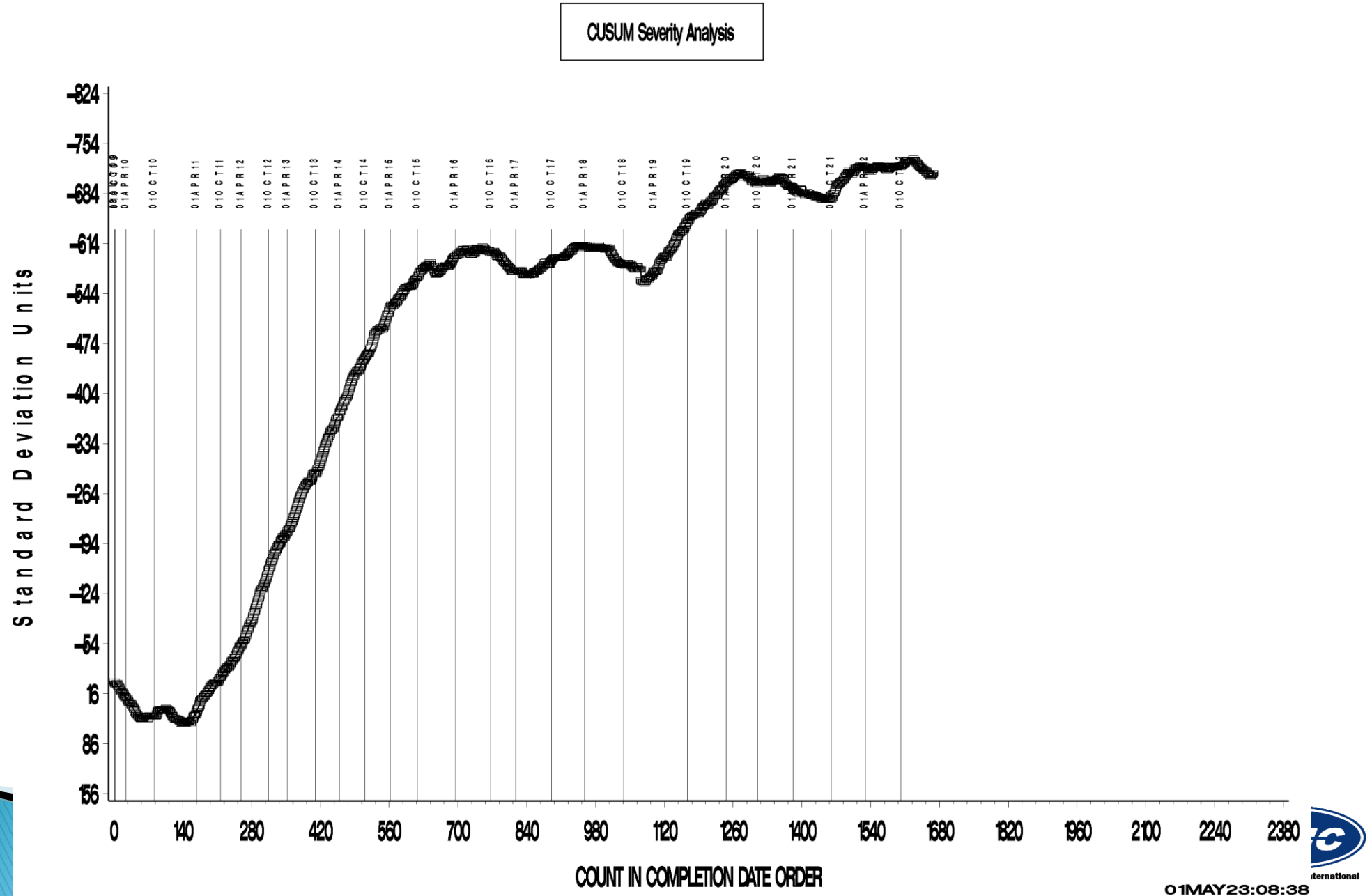
REF ETH ACRYLATE VOLUME CHANGE FINAL



LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF ETH ACRYLATE POINTS HARDNESS CHANGE FINAL



LDEOC —ETHYLENE ACRYLATE INDUSTRY OPERATIONALLY VALID DATA

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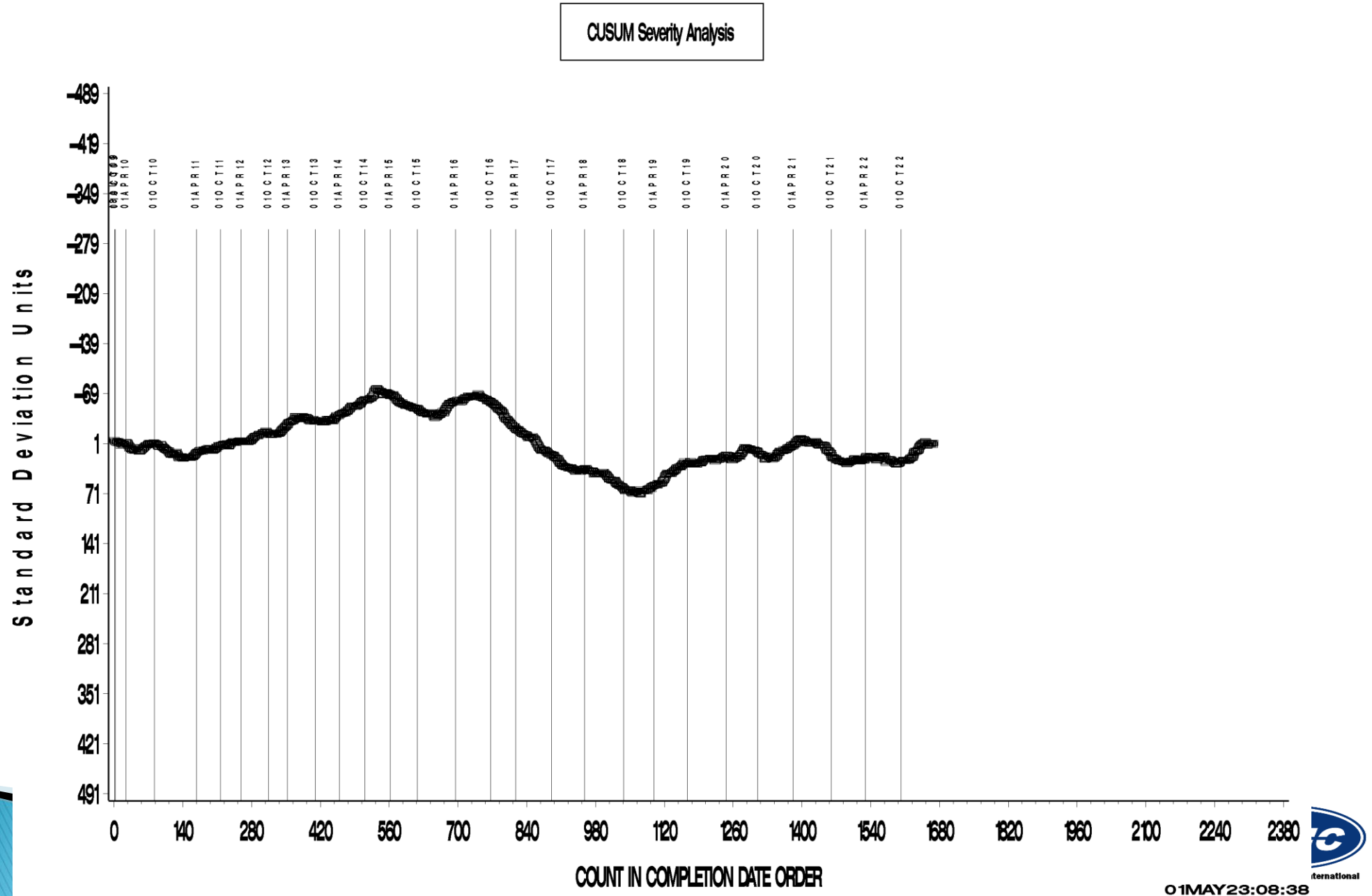
REF ETH ACRYLATE TENSILE STRENGTH CHANGE FINAL

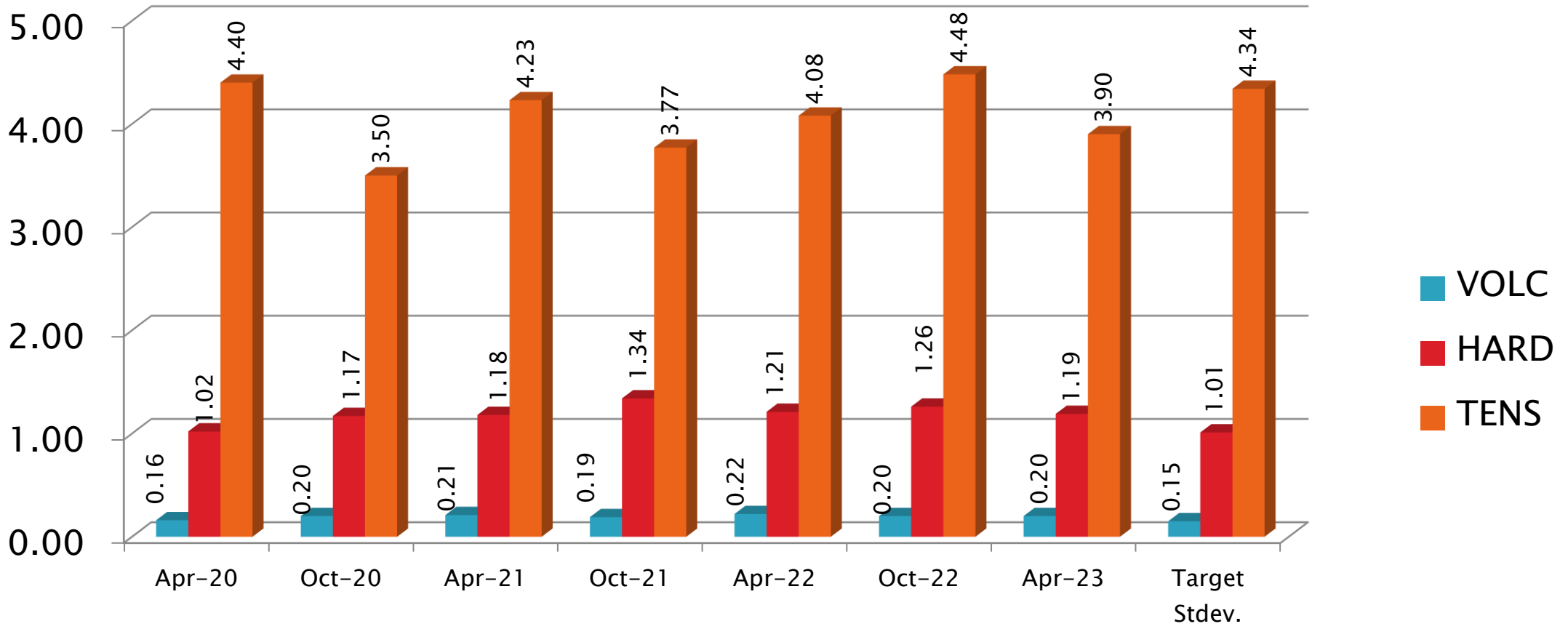


LDEOC Test Severity

Fluoroelastomer (FKM1)

Parameter	Period Mean Δ/s	Status
Volume Change	-0.75	Mild
Points Hardness Change	0.06	On-target
Tensile Strength Change	0.31	Severe

LDEOC Precision Estimates – Fluoroelastomer



*One 1006 reference oil result not included in this table

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LDEOC Precision Estimates by Lab: FKM1

Test Parameter	Statistic	LTMS Lab					
		A	B	L	I	P	G
	n=	20	6	3	10	3	21
Volume	Mean	0.48	0.51	0.41	0.71	0.50	0.63
	Pooled s	0.13	0.02	0.04	0.26	0.04	0.22
	Mean /s	-1.31	-1.13	-1.82	0.21	-1.18	-0.36
Hardness	Mean	4.65	4.17	4.00	4.50	5.00	3.43
	Pooled s	0.81	0.41	1.00	1.08	1.00	1.43
	Mean /s	0.54	0.07	-0.10	0.40	0.89	-0.66
Tensile Strength	Mean	-58.6	-58.8	-58.9	-51.9	-57.0	-54.3
	Pooled s	2.27	1.66	1.04	1.93	0.91	4.24
	Mean /s	-0.27	-0.31	-0.35	1.27	0.08	0.71

LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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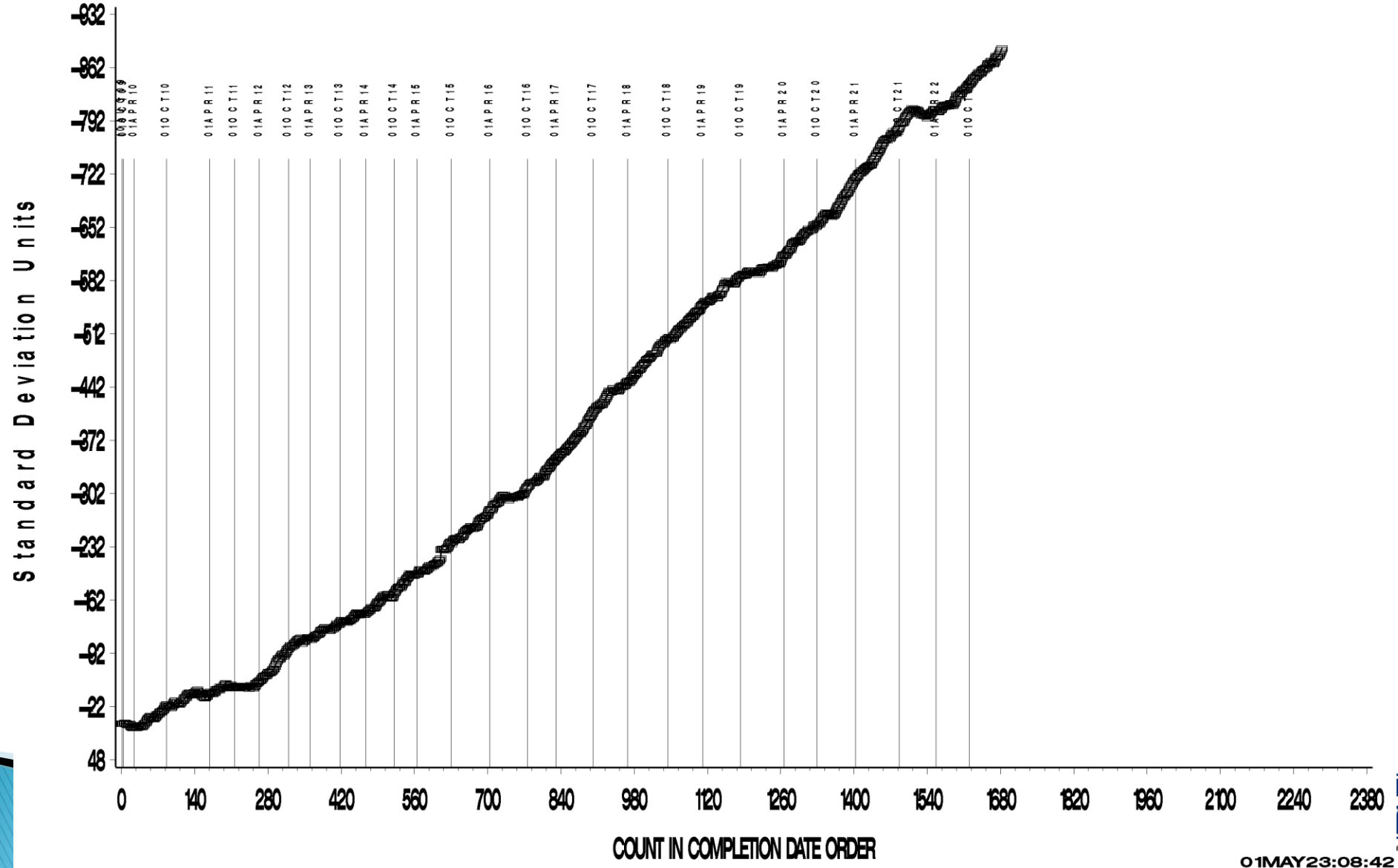
REF FLUOROELASTOMER VOLUME CHANGE FINAL

CUSUM Severity Analysis



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LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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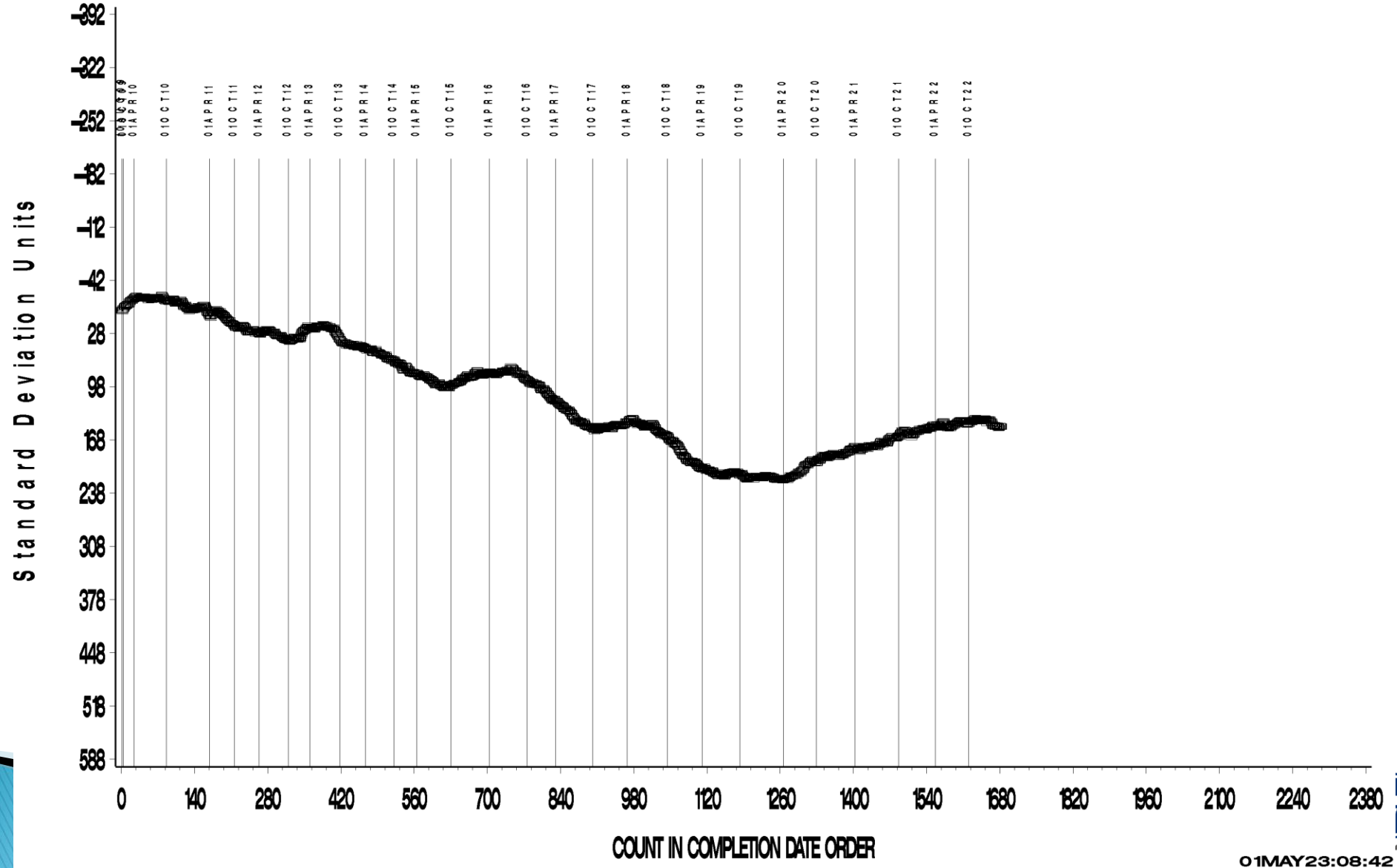
REF FLUORO POINTS HARDNESS CHANGE FINAL

CUSUM Severity Analysis



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LDEOC —FLUOROELASTOMER INDUSTRY OPERATIONALLY VALID DATA

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REF FLUORO TENSILE STRENGTH CHANGE AVERAGE

CUSUM Severity Analysis

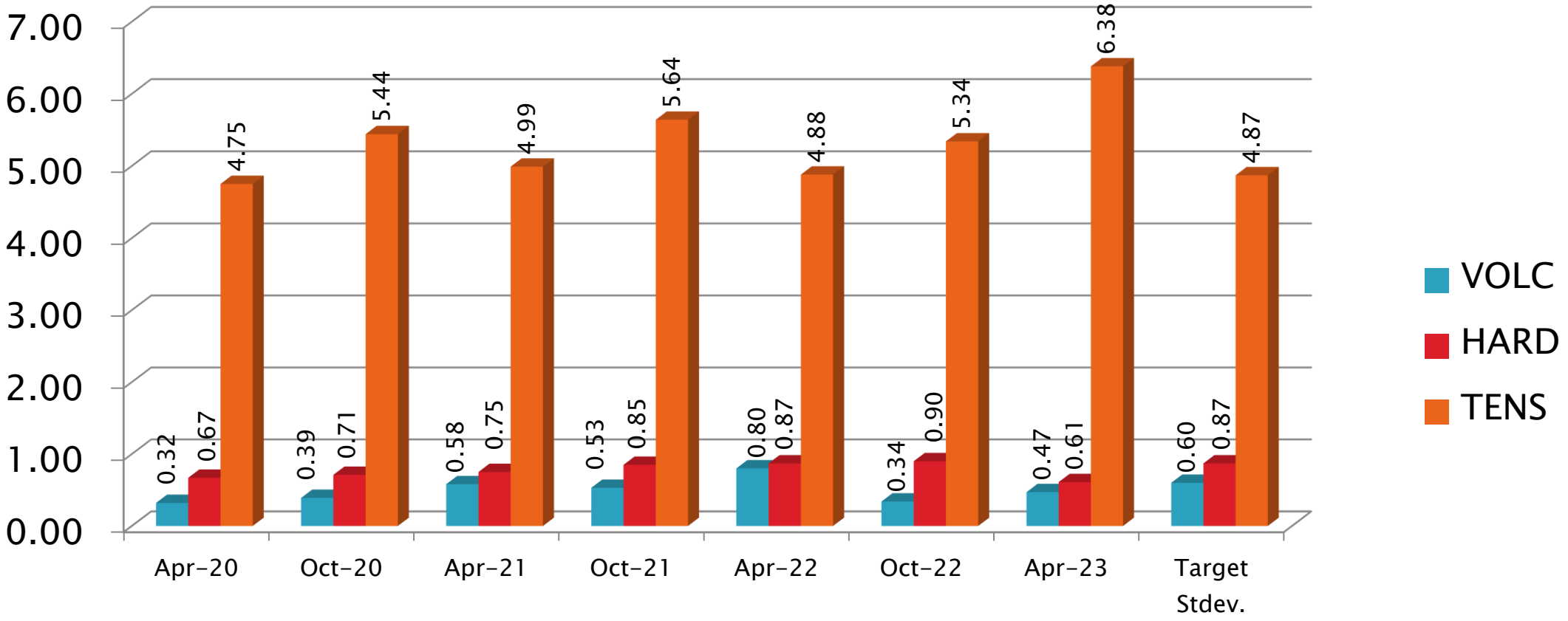
01MAY23:08:42

LDEOC Test Severity

Nitrile (NBR1)

Parameter	Period Mean Δ/s	Status
Volume Change	1.55	Severe
Points Hardness Change	-0.42	Mild
Tensile Strength Change	-0.75	Mild

LDEOC Precision Estimates – Nitrile



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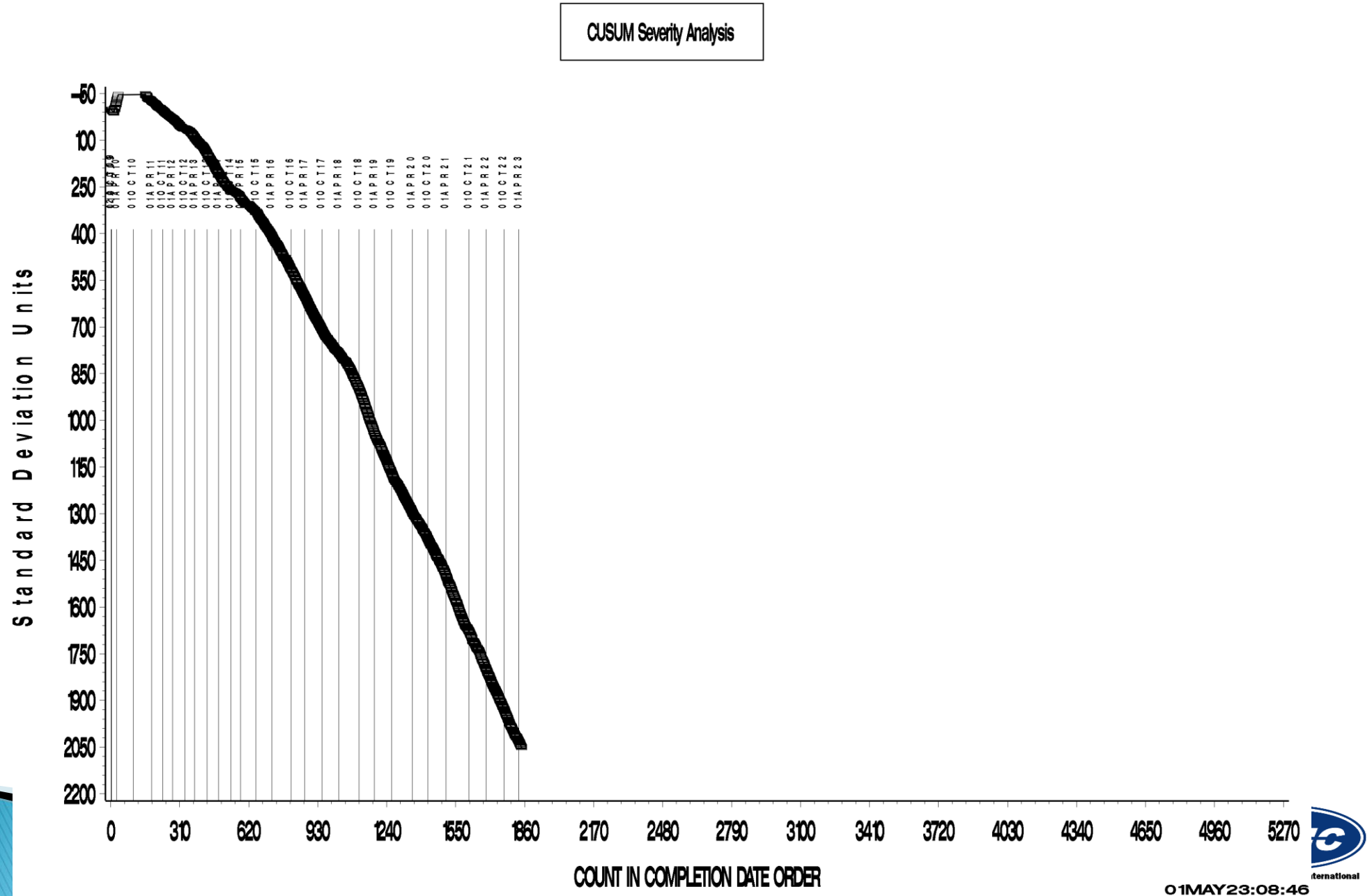
LDEOC Precision Estimates by Lab: NBR1

Test Parameter	Statistic	LTMS Lab						
		V	A	B	L	I	P	G
	n=	2	23	5	3	10	3	22
Volume	Mean	1.51	1.26	1.27	1.28	1.56	1.14	1.08
	Pooled s	0	0.18	0.22	0.13	0.66	0.09	0.63
	Mean /s	1.98	1.58	1.58	1.60	2.06	1.37	1.26
Hardness	Mean	-2.00	-1.65	-1.80	-1.33	-1.10	-1.33	-1.59
	Pooled s	0	0.57	0.45	0.58	0.74	0.58	0.59
	Mean /s	-0.94	-0.54	-0.71	-0.18	0.92	-0.18	-0.47
Tensile Strength	Mean	-0.70	0.64	0.52	-3.53	2.96	-0.17	5.59
	Pooled s	8.77	4.63	3.02	0.21	3.63	1.85	8.60
	Mean /s	-1.37	-1.09	-1.12	-1.95	-0.62	-1.26	-0.08

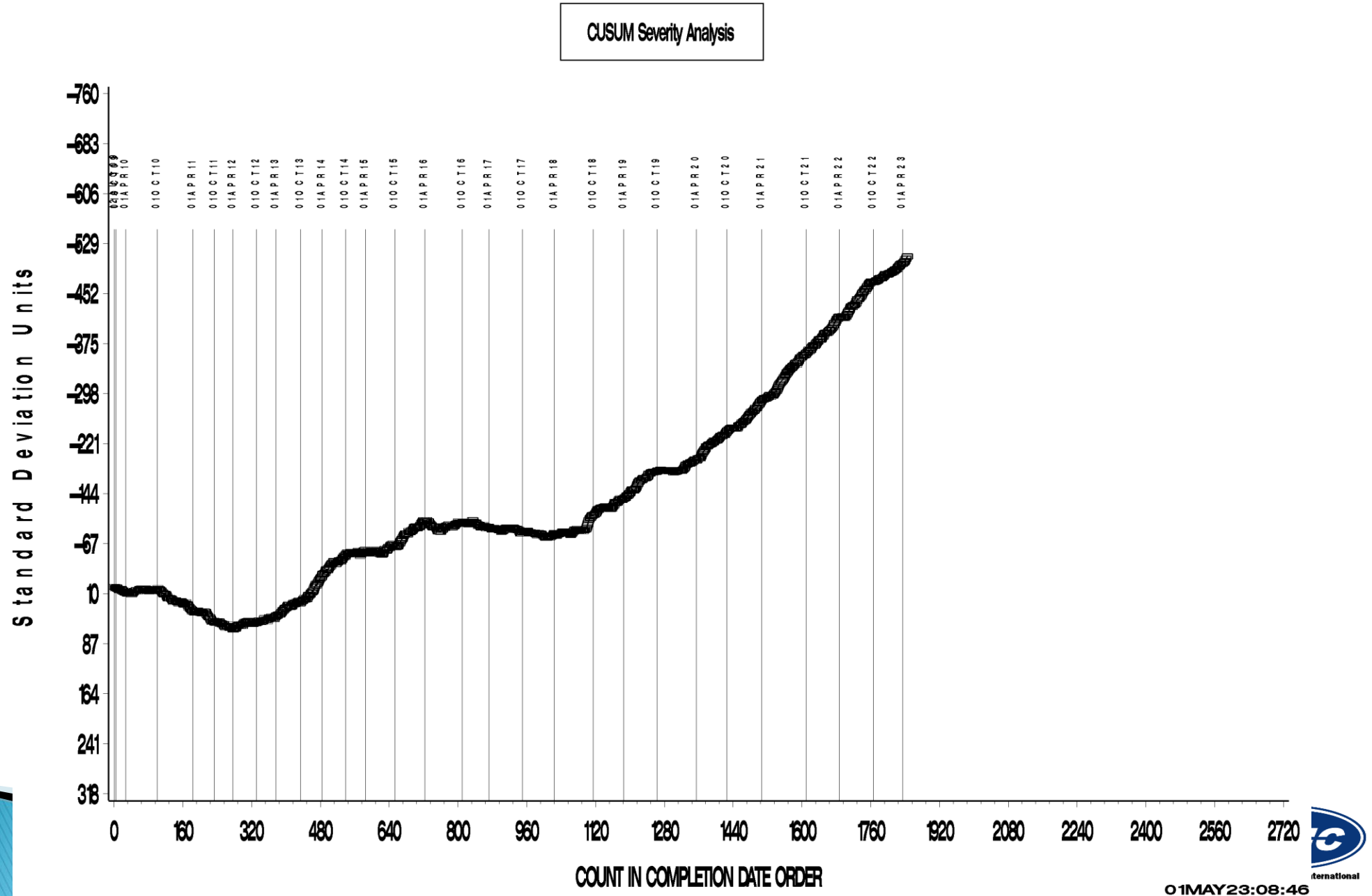
LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE NITRILE VOLUME CHANGE FINAL



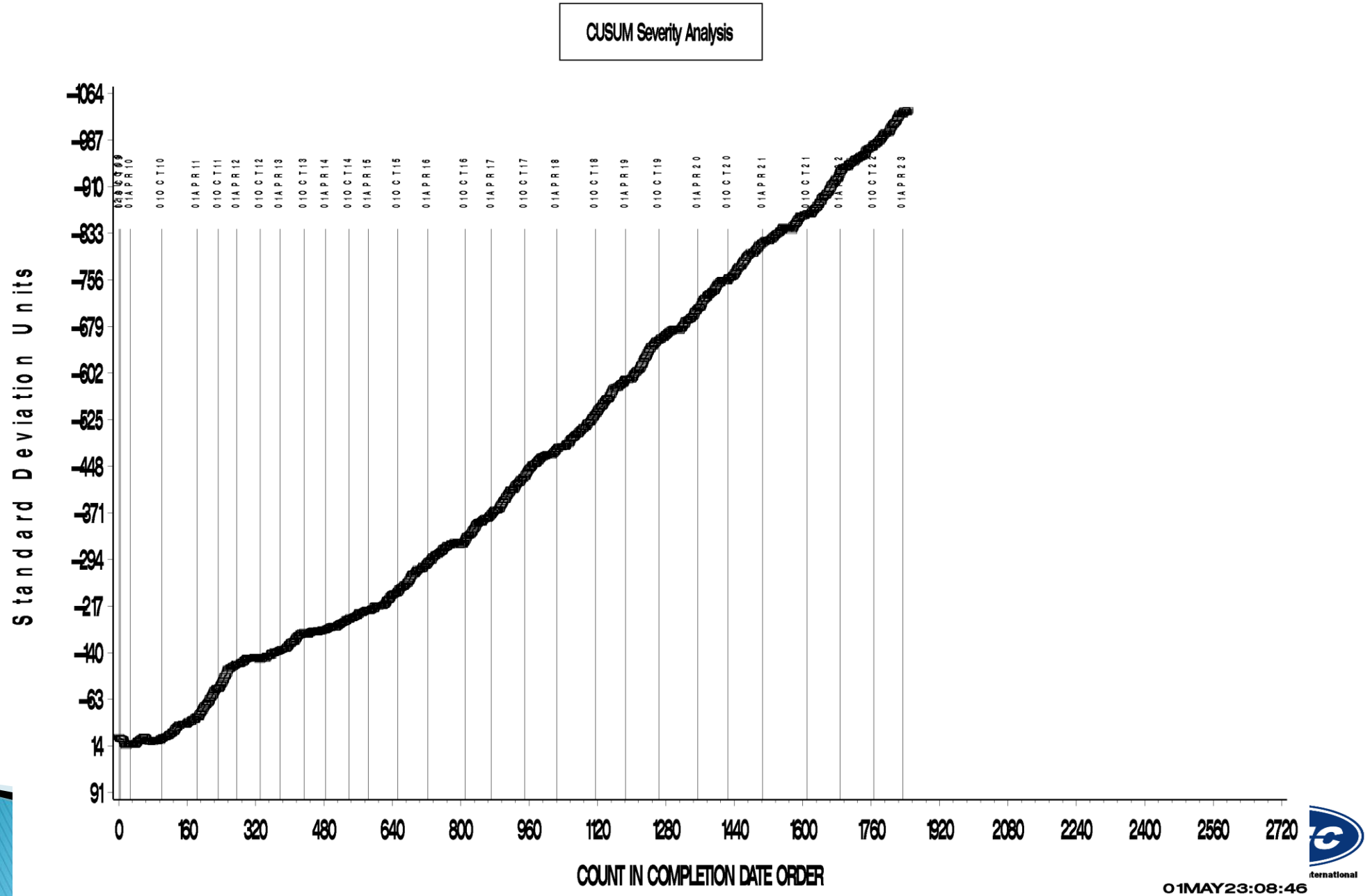
LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA

REF NITRILE POINTS HARDNESS CHANGE AVERAGE



LDEOC —NITRILE INDUSTRY OPERATIONALLY VALID DATA

REF NITRILE TENSILE STRENGTH CHANGE FINAL

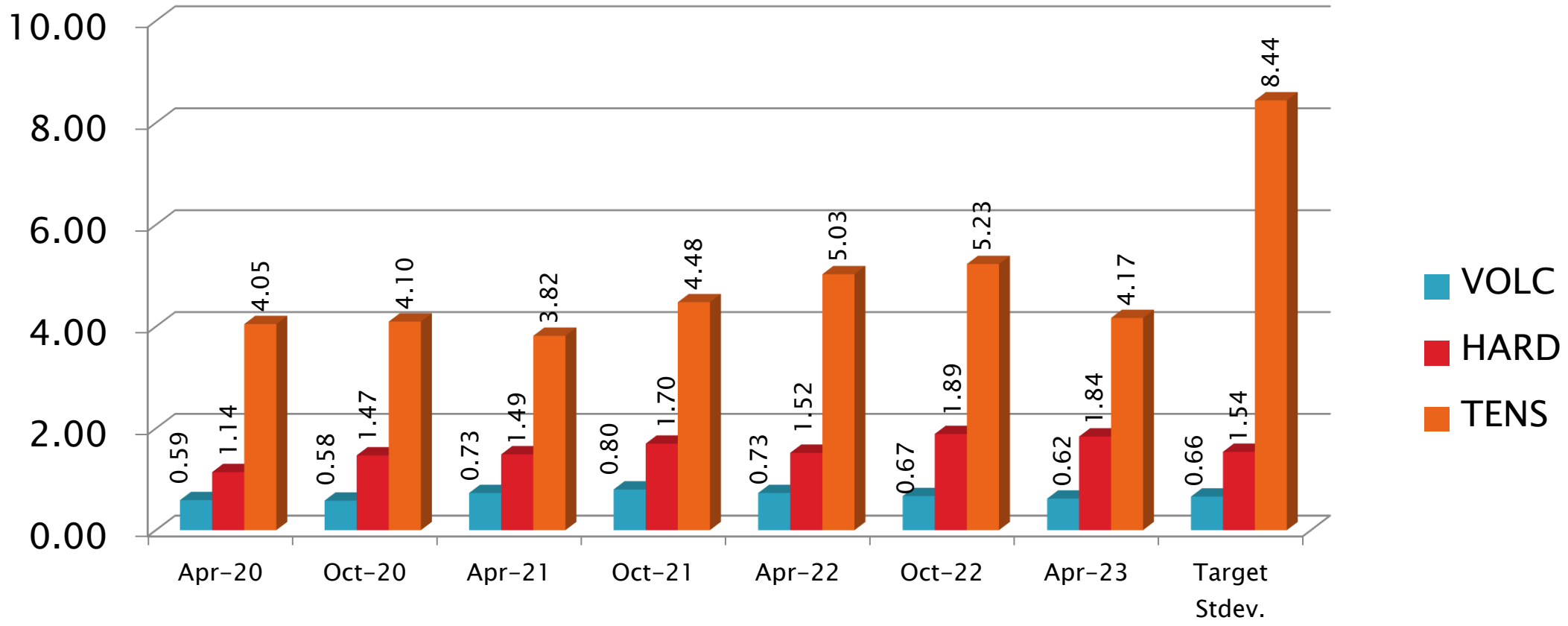


LDEOC Test Severity

Polyacrylate (ACM1)

Parameter	Period Mean Δ/s	Status
Volume Change	0.68	Severe
Points Hardness Change	-0.76	Mild
Tensile Strength Change	-0.64	Mild

LDEOC Precision Estimates – Polyacrylate



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LDEOC Precision Estimates by Lab: ACM1

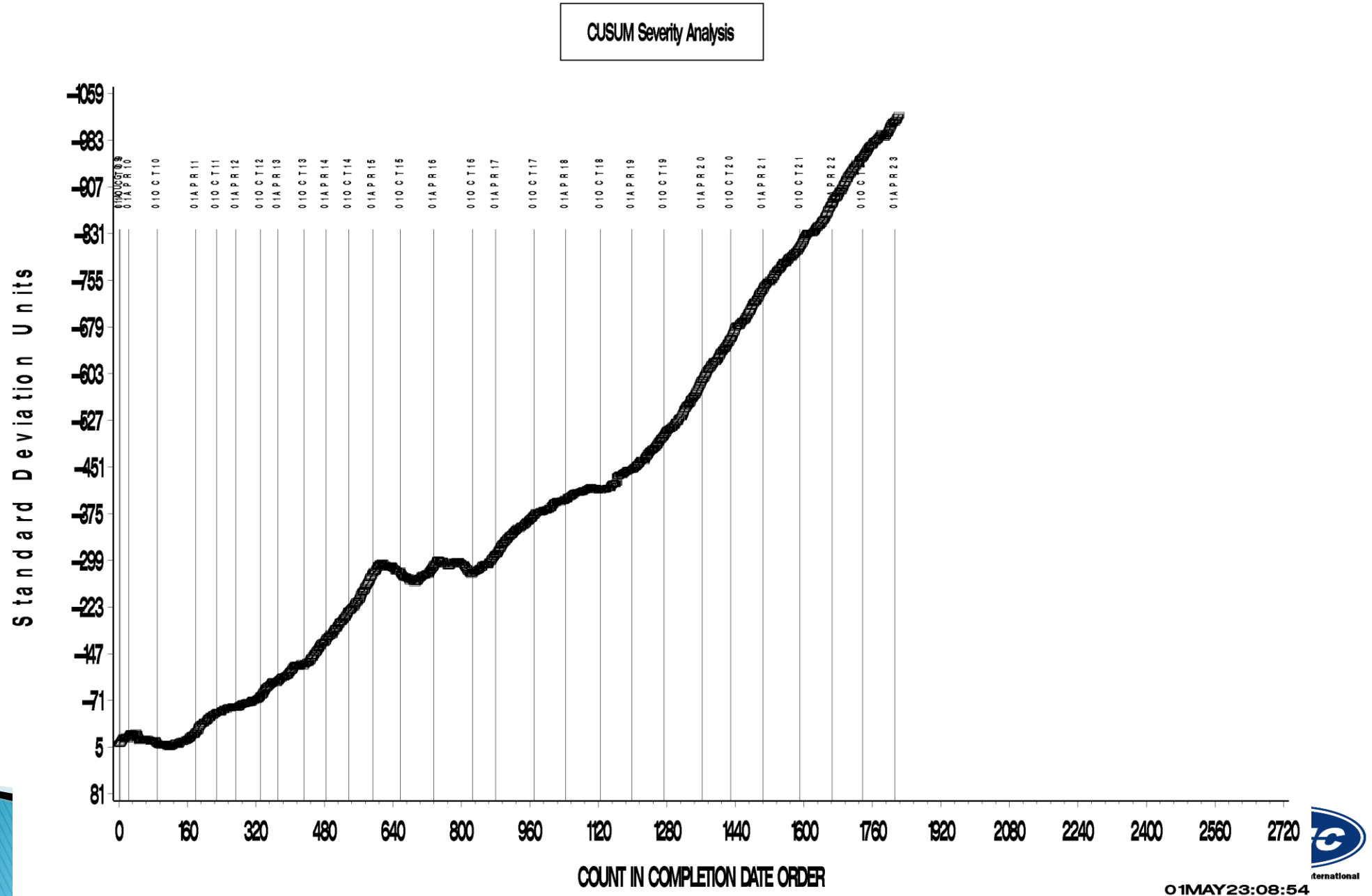
Test Parameter	Statistic	LTMS Lab							
		E	V	A	B	L	I	P	G
	n=	2	2	23	7	3	12	3	24
Volume	Mean	2.47	1.76	2.42	2.07	2.07	3.35	2.50	2.39
	Pooled s	0.04	0.24	0.26	0.56	0.16	0.72	0.39	0.58
	Mean /s	0.64	-0.44	0.56	0.03	0.02	1.97	0.69	0.51
Hardness	Mean	-1.50	-2.50	-2.39	-2.86	-2.00	-0.50	0.33	-0.46
	Pooled s	0.71	0.71	0.94	0.90	1.00	1.57	1.53	2.22
	Mean /s	-0.84	-1.49	-1.41	-1.72	-1.16	-0.19	0.35	-0.16
Tensile Strength	Mean	0.35	0.40	-2.68	-1.77	-2.60	-3.66	-4.53	-3.23
	Pooled s	1.91	0.57	3.68	1.74	3.27	2.88	2.37	5.86
	Mean /s	-0.26	-0.26	-0.62	-0.52	-0.61	-0.74	-0.84	-0.69

LDEOC — POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE VOLUME CHANGE FINAL

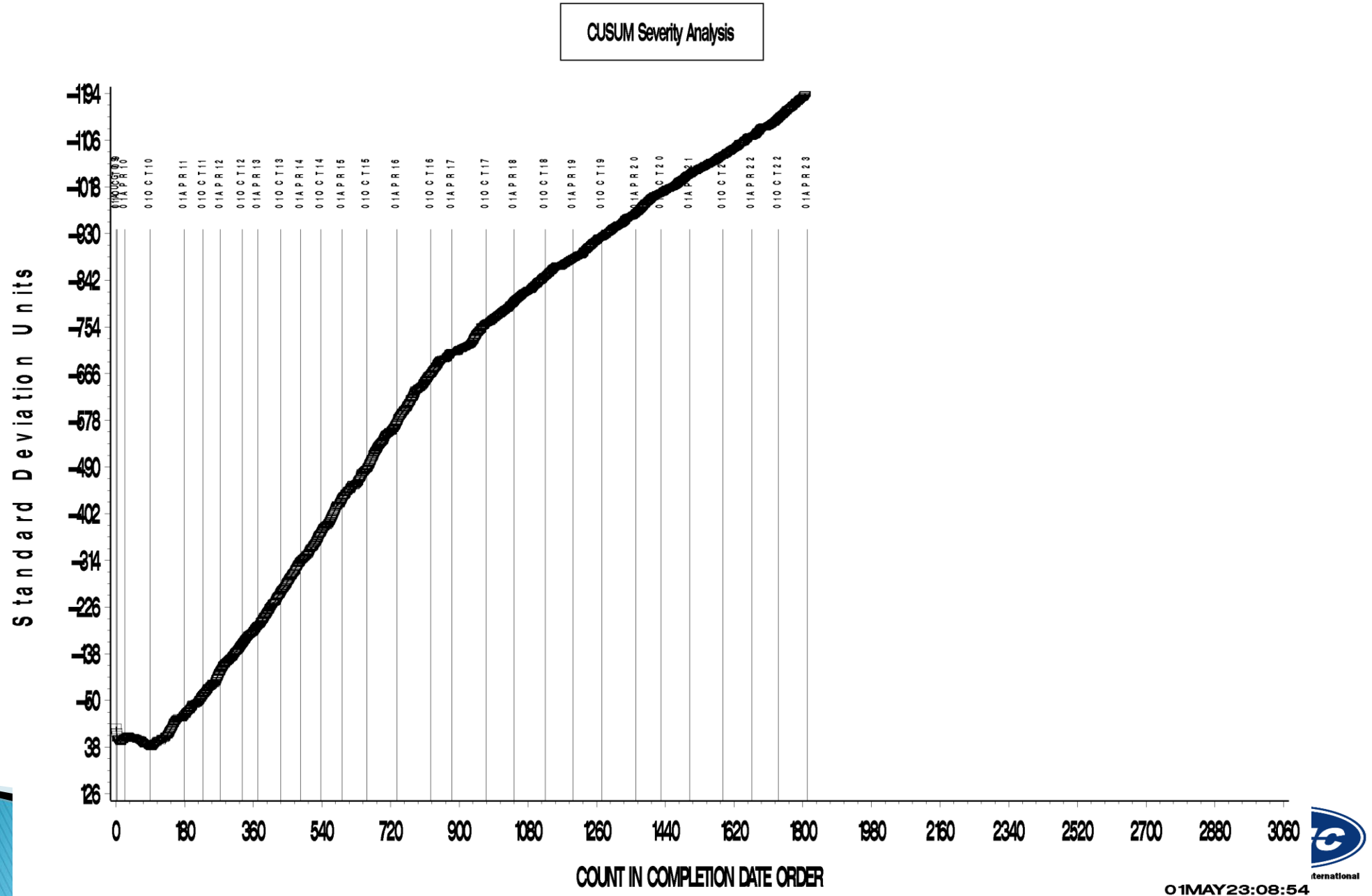
LDEOC — POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE POINTS HARDNESS CHG FINAL



LDEOC — POLYACRYLATE INDUSTRY OPERATIONALLY VALID DATA

REF POLYACRYLATE TENSILE STRENGTH CHG FINAL

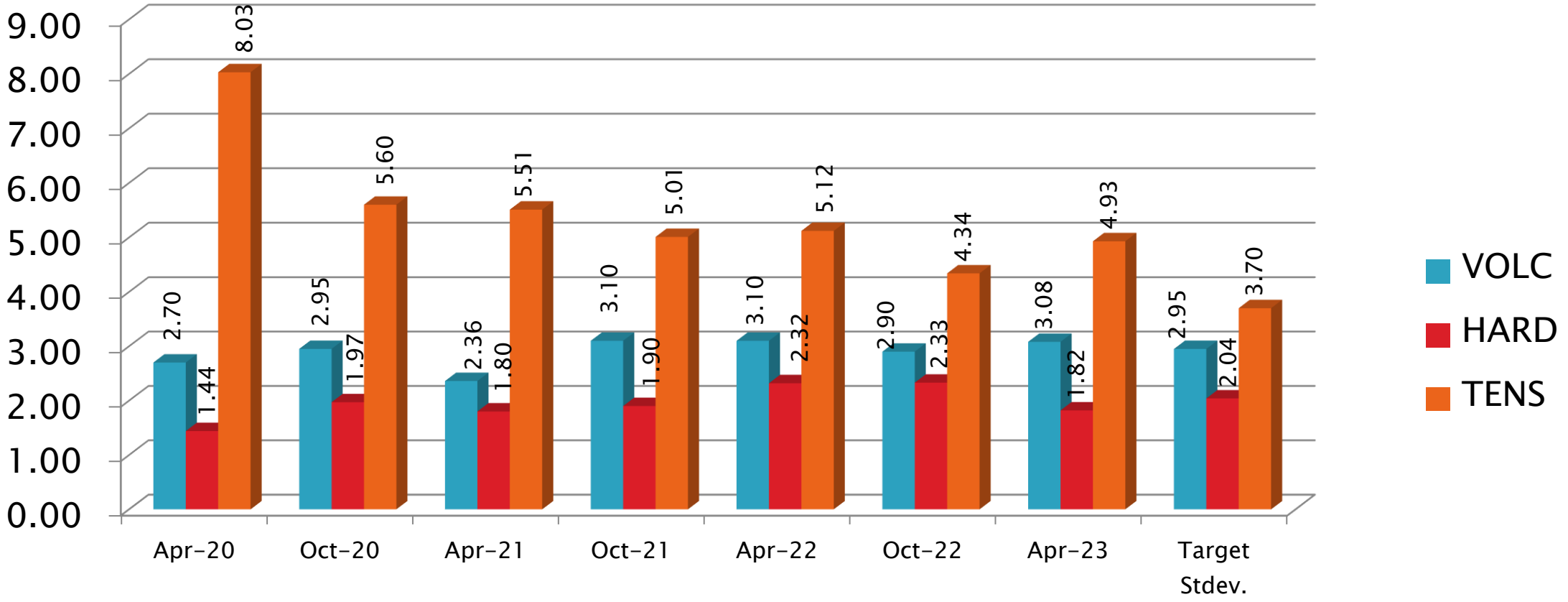


LDEOC Test Severity

Silicone (VMQ1)

Parameter	Period Mean Δ/s	Status
Volume Change	0.58	Severe
Points Hardness Change	-0.84	Mild
Tensile Strength Change	0.73	Severe

LDEOC Precision Estimates – Silicone



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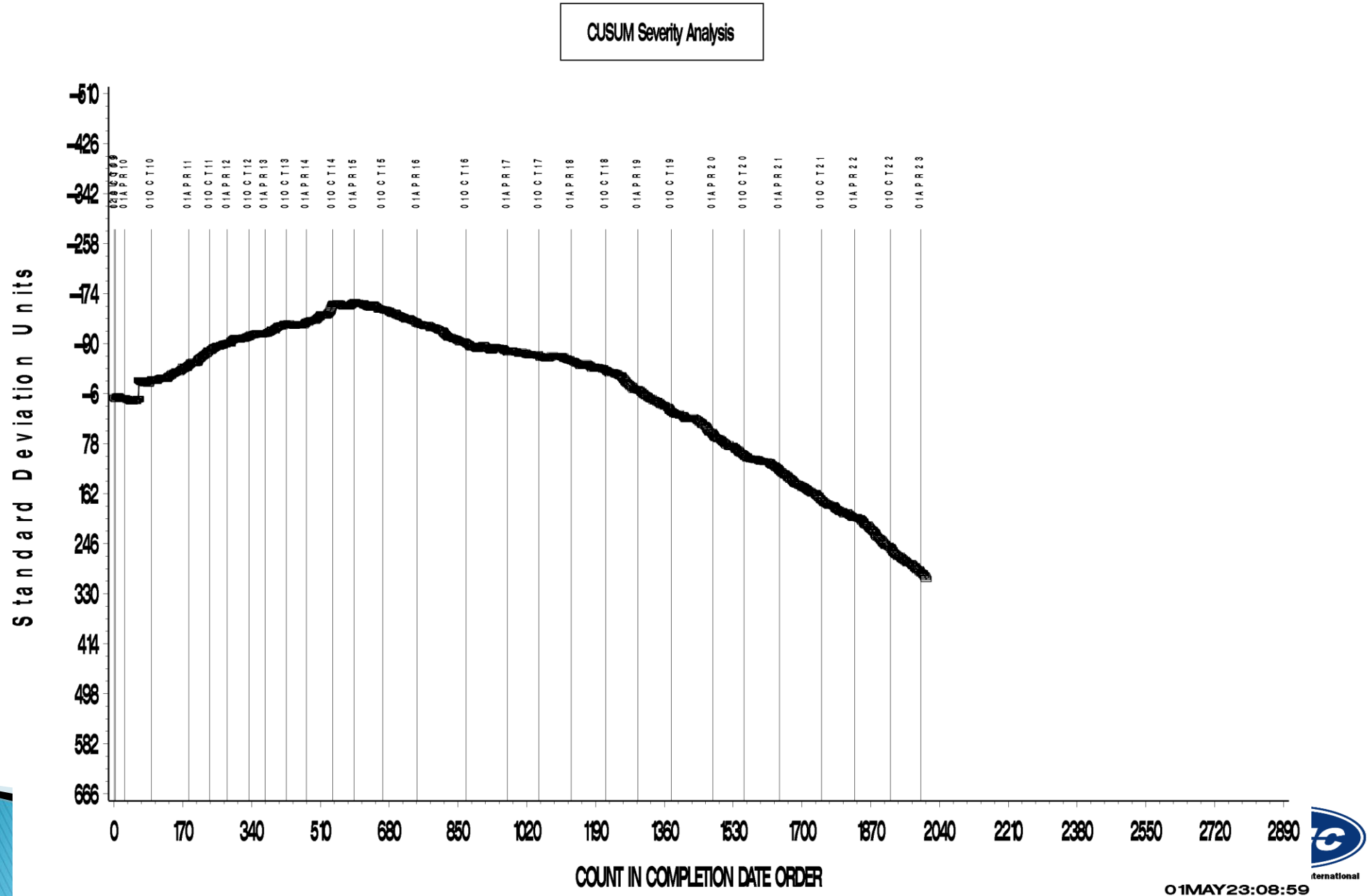
LDEOC Precision Estimates by Lab: VQM1

Test Parameter	Statistic	LTMS Lab						
		V	A	B	L	I	P	G
	n=	5	28	5	3	10	3	21
Volume	Mean	33.2	33.3	32.7	30.0	30.6	33.2	37.3
	Pooled s	0.43	1.32	0.78	0.50	1.49	0.09	3.15
	Mean /s	0.35	0.37	0.19	-0.73	-0.55	0.37	1.75
Hardness	Mean	-24.8	-24.4	-23.2	-18.7	-21.6	-23.7	-23.3
	Pooled s	0.45	1.34	1.10	0.58	1.17	1.55	1.42
	Mean /s	-1.53	-1.31	-0.74	1.48	0.04	-0.97	-0.79
Tensile Strength	Mean	-29.9	-28.2	-27.7	-30.4	-34.2	-34.6	-34.1
	Pooled s	8.09	2.80	2.01	3.11	4.04	3.96	4.92
	Mean /s	1.03	1.51	1.64	0.91	-0.12	-0.23	-0.09

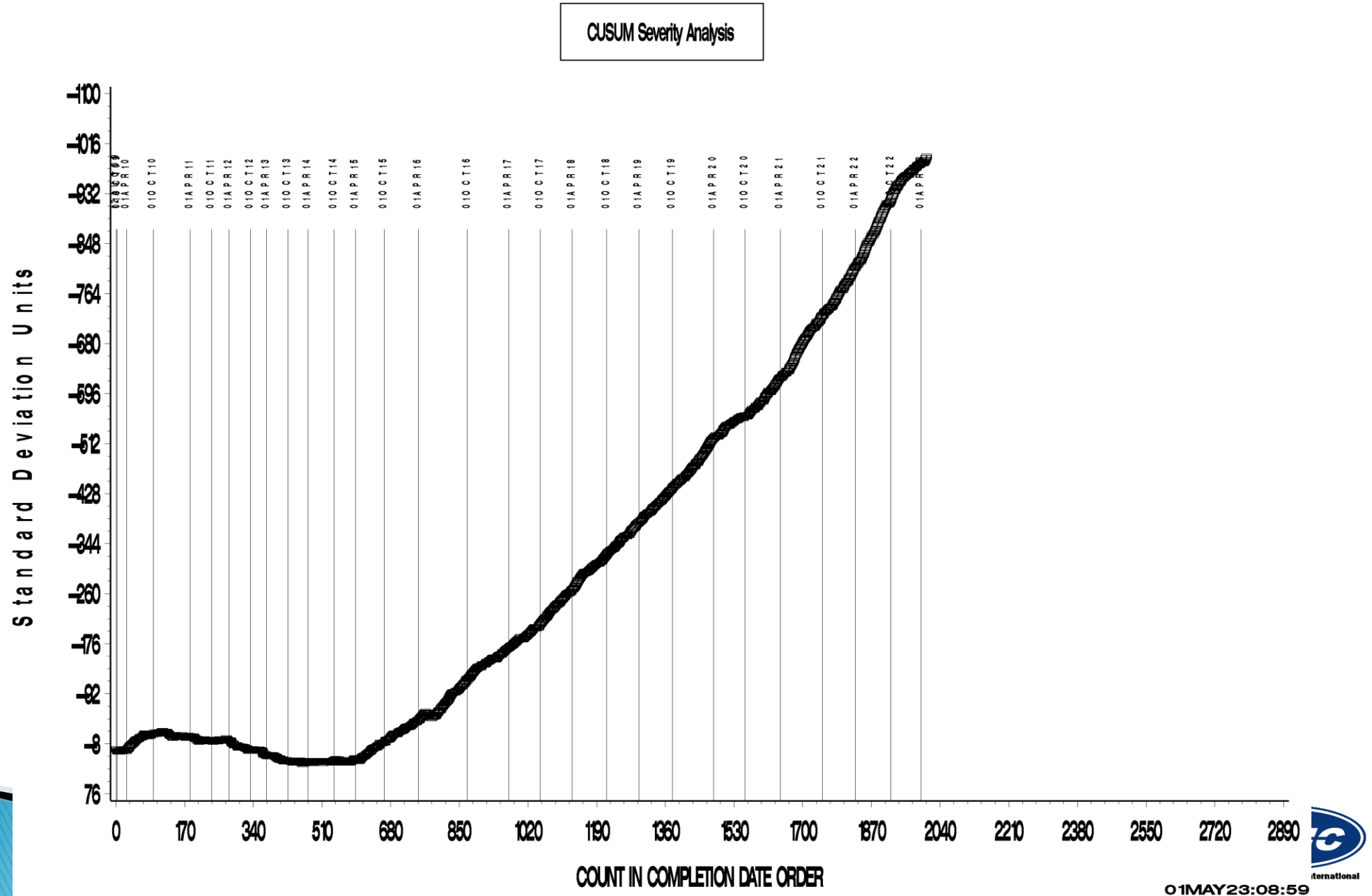
LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON VOLUME CHANGE FINAL



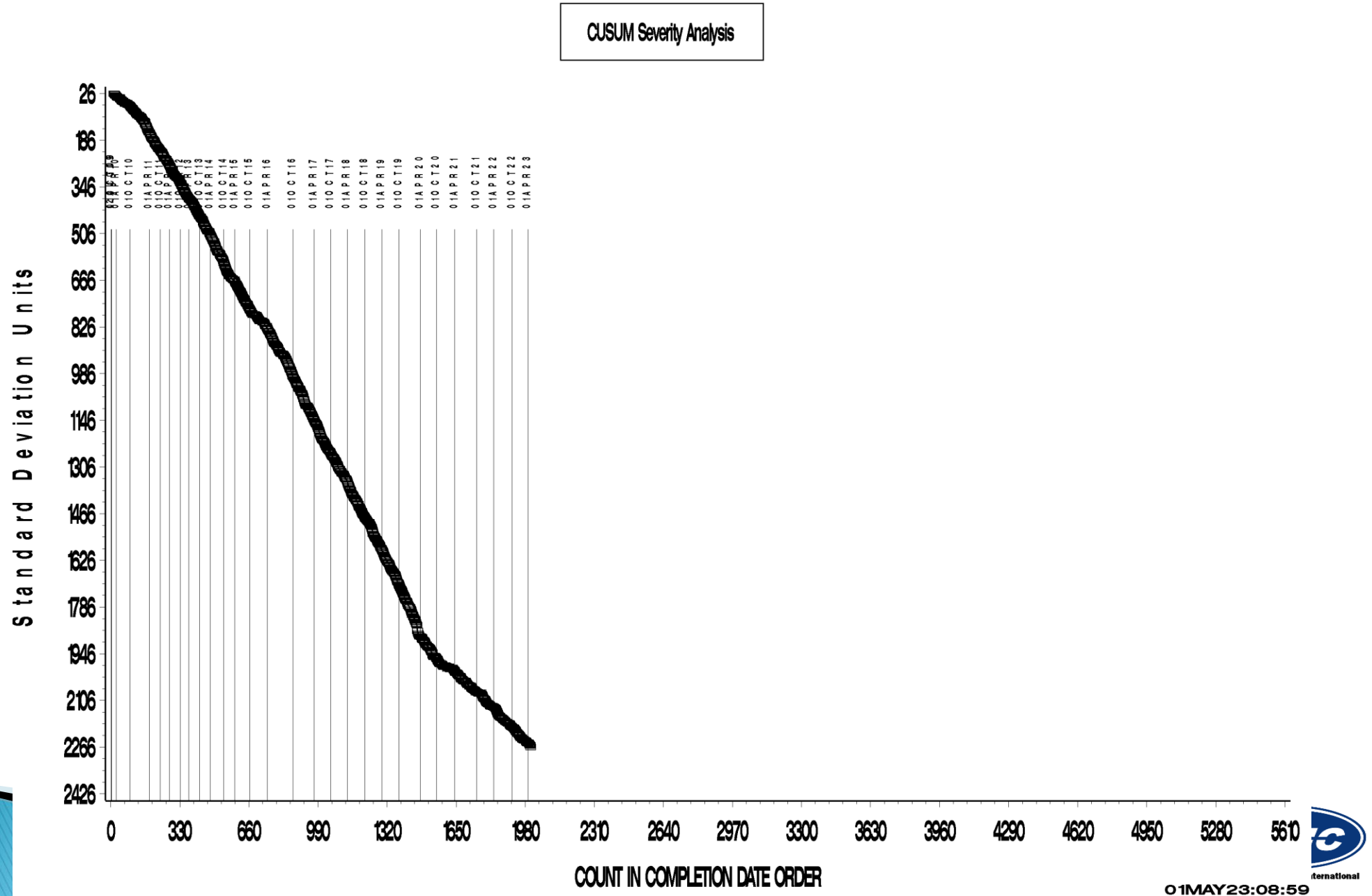
LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

REFERENCE SILICON POINTS HARDNESS FINAL



LDEOC —SILICONE INDUSTRY OPERATIONALLY VALID DATA

REF SILICON TENSILE STRENGTH CHANGE FINAL



Information Letters & Technical Updates*

Test	Date	IL or Memo Number	Topic
LDEOC	20230118	M23-002*	Elastomer SP Votes to Eliminate the use of 1006 Reference Oil

*Available from TMC Website

Reference Oil Inventory Estimated Life EOEC/LDEOC

Oil	TMC Inventory Gallons	Gallons Shipped Past 12 Months	Estimated Life
SL107[A, B]	2174	198	3.7 years

[A]TMC Inventory is used across several test methods
[B]SL107 has fully replaced oil 1006; Oil 1006 is no longer used as an EOEC Reference Fluid

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Reference Oil Inventory

As of 3/31/2023

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Reference Oil Inventory Estimated Life EOEC/LDEOC

Oil	TMC Inventory Gallons	Gallons Shipped Past 12 Months	Estimated Life
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Additional Information

Additional Information

- Available on the TMC's Website:
  - Lubricant Test Monitoring System (LTMS) Document
  - CUSUM Severity Plots
  - Reference Data, Period Statistics and Timelines
  - Information Letters and Technical Memos
  - Report Forms & Data Dictionaries
  - Online Store, and more…

- www.astmtmc.org

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