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Test Monitoring Center

<http://astmtmc.cmu.edu>

ASTM Reference Testing Semi-Annual Report D7216 EOEC

Spring 2021

EOEC Test Activity*

Test Status		Fluoroelast.	Nitrile	Polyacrylate	Silicone	VAMAC	Total
Acceptable Calibration Test	AC	56	59	59	56	51	281
Failed Calibration Test	OC	2	0	0	0	0	2
Operationally Invalid, by lab	LC	1	0	1	0	0	2
Operationally Invalid, by TMC	RC	1	0	0	0	0	1
Aborted	XC	5	5	4	4	3	21
Total		65	64	64	60	54	307

*October 1, 2020 – March 31, 2021

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EOEC Lost Tests*

Validity	Cause	#
XC	Corrupted Data	3
XC	Power Failure (mostly weather related)	15
XC	Bath Temperature Off-Spec	1
XC	Test Sample Spilled	1
RC, LC, XC	Wrong Material Run (lab ran LDEOC elastomers in EOEC tests)	4
	Total	24

*Invalid and aborted calibration tests

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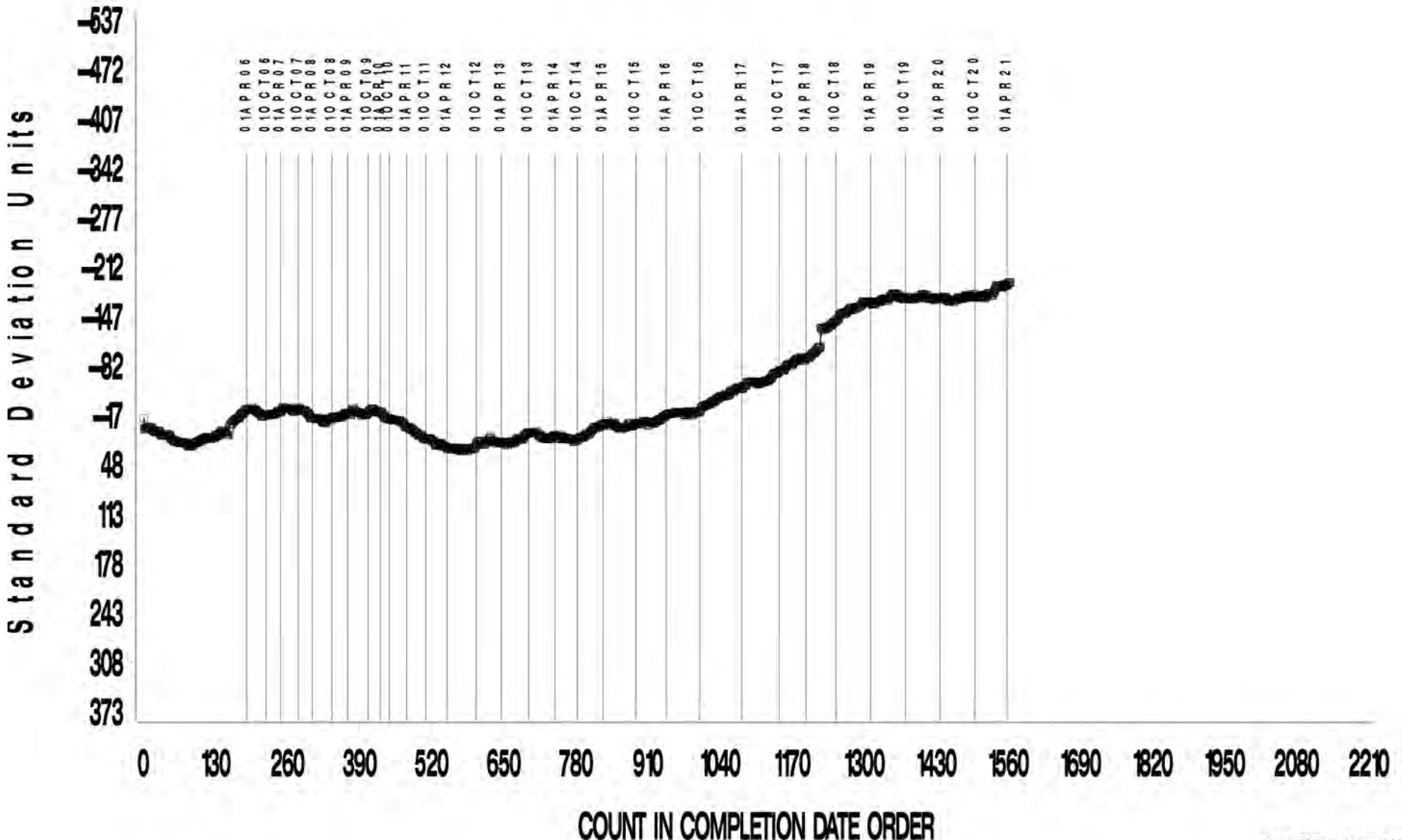
EOEC Test Severity

▶ Fluoroelastomer (FKM)

Parameter	Period Mean Δ /s	Status
Volume Change	-0.24	Mild
Points Hardness Change	0.02	On-target
Tensile Strength Change	0.28	Severe
Elongation Change	-0.65	Mild

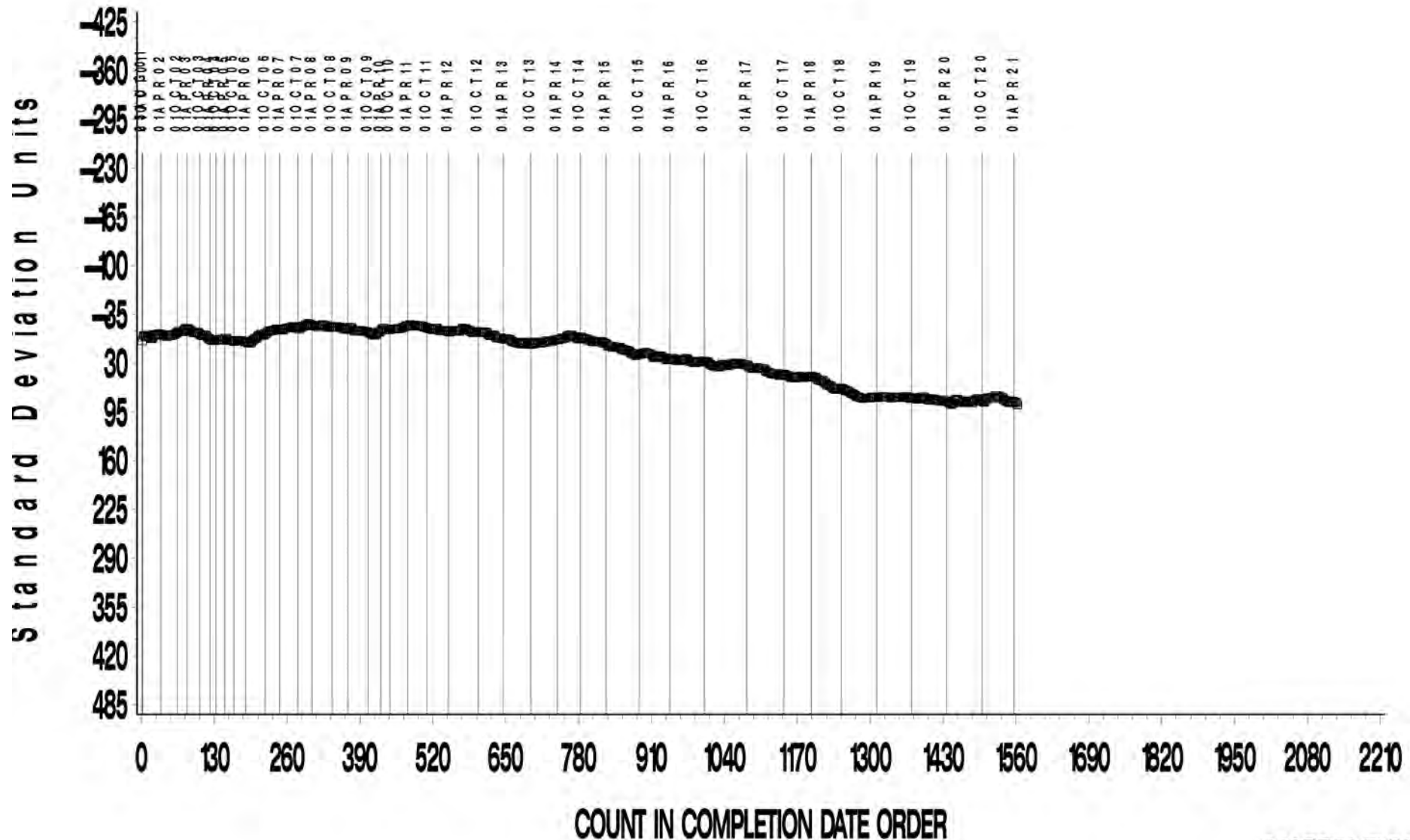
FLUROELASTOMER VOLUME CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



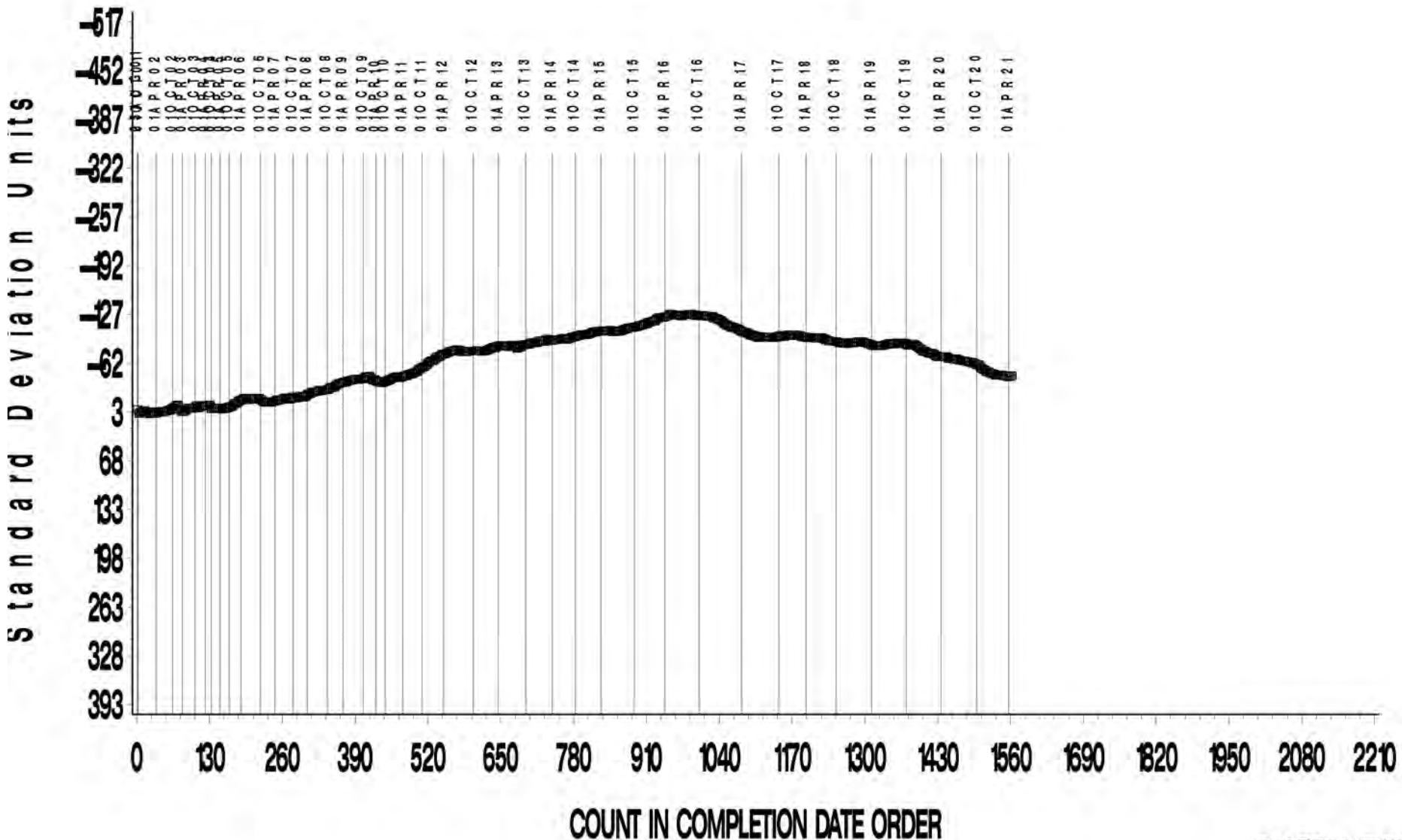
FLUOROELASTOMER PTS HARDNESS CHANGE CORRECTED AVG

CUSUM Severity Analysis



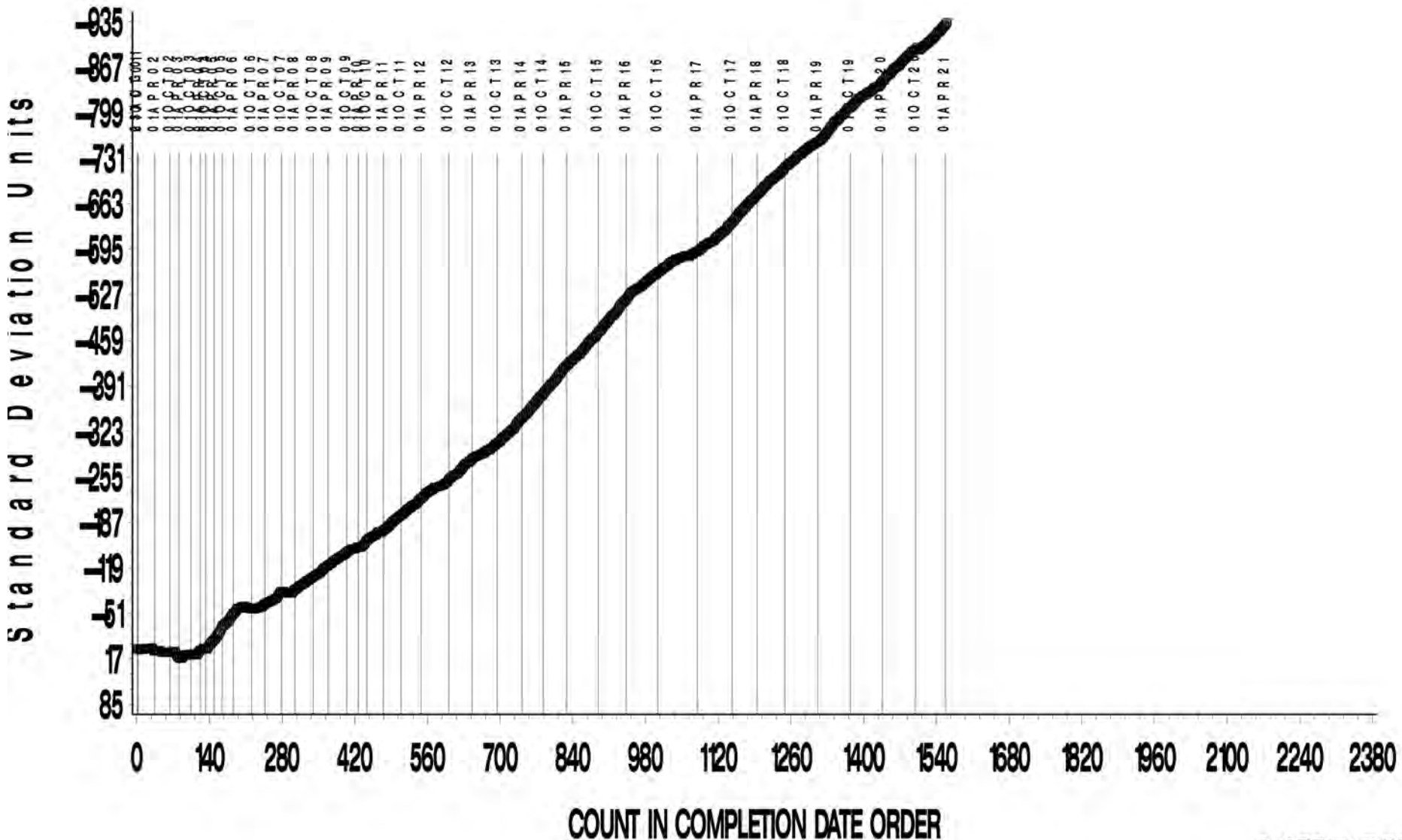
FLUROELASTOMER TENS STRENGTH CHANGE CORRECTED AVG

CUSUM Severity Analysis



FLUROELASTOMER ELONGATION CHANGE CORRECTED AVG

CUSUM Severity Analysis



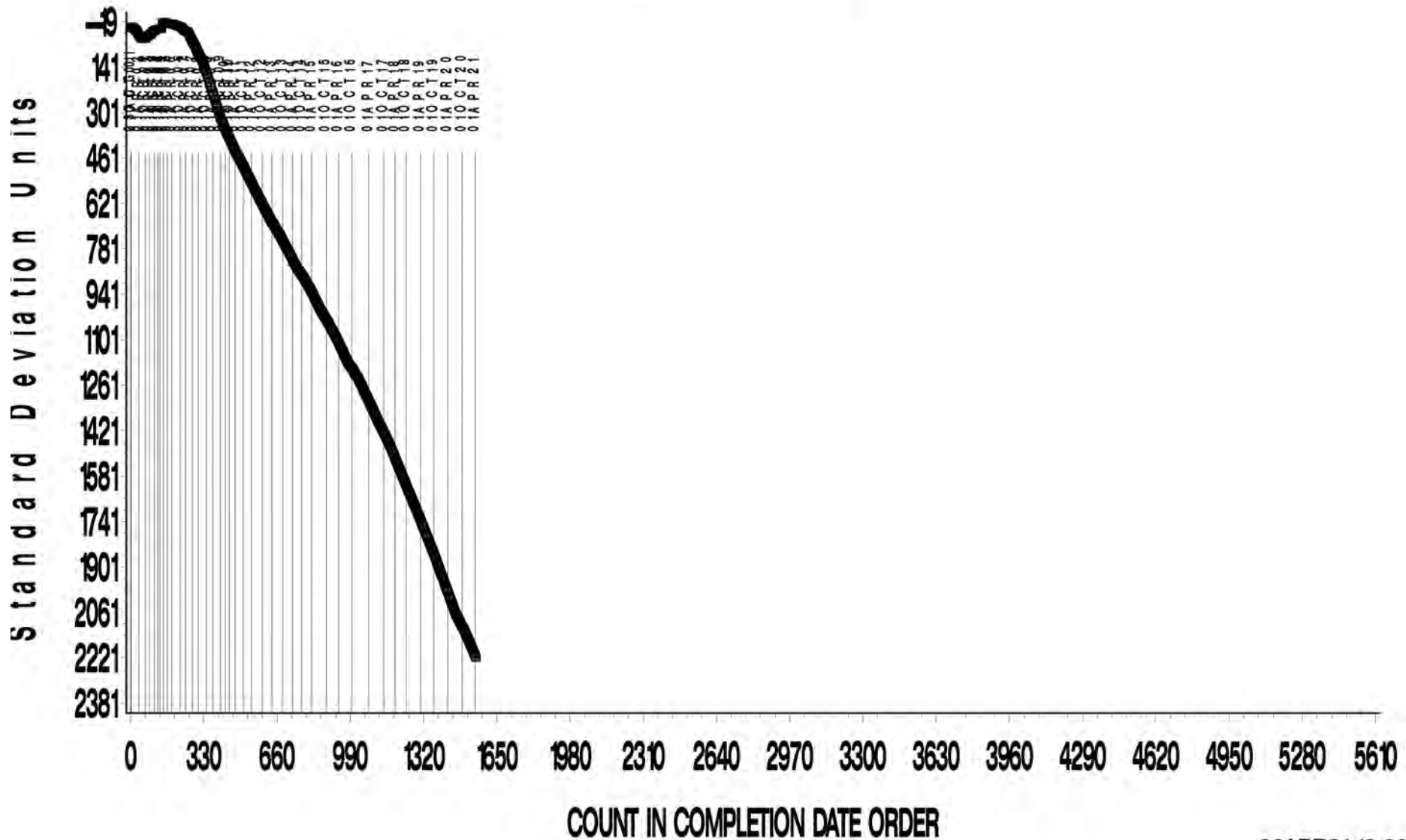
EOEC Test Severity

▶ Nitrile (NBR)

Parameter	Period Mean Δ/s	Status
Volume Change	1.72	Severe
Points Hardness Change	0.89	Severe
Tensile Strength Change	-0.60	Mild
Elongation Change	-0.70	Mild

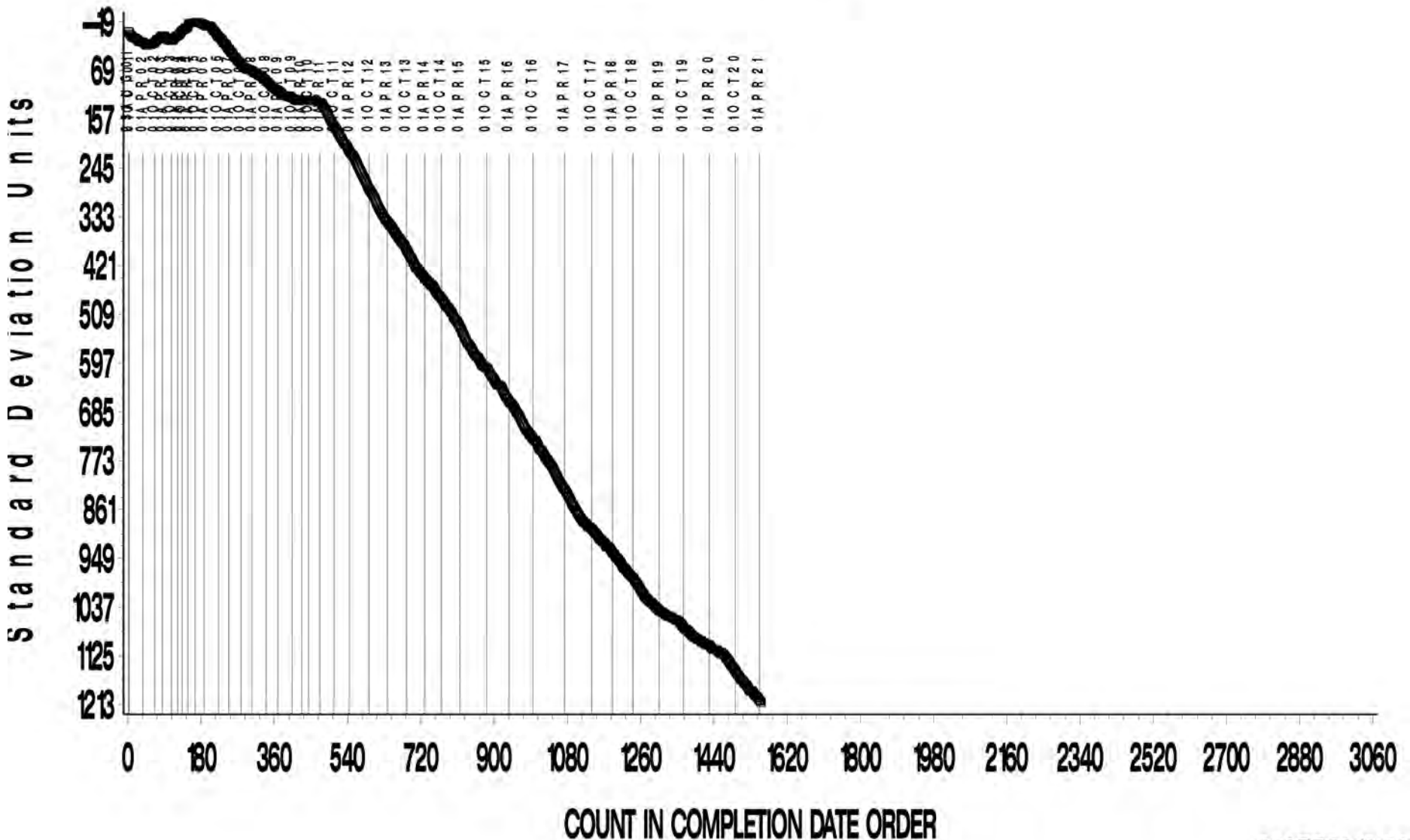
REFERENCE NITRILE VOLUME CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



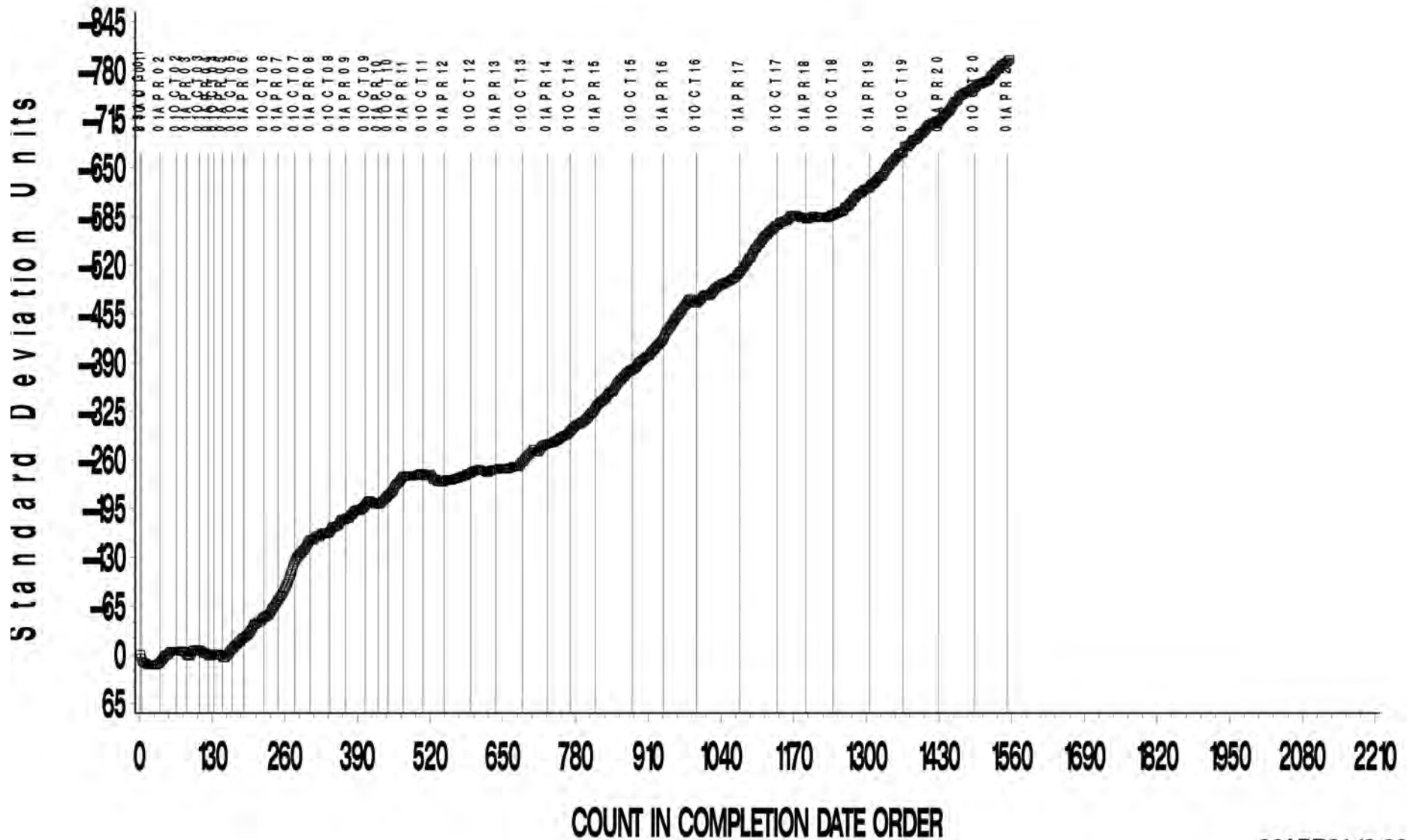
REFERENCE NITRILE PTS HARD CHANGE CORRECTED AVG

CUSUM Severity Analysis



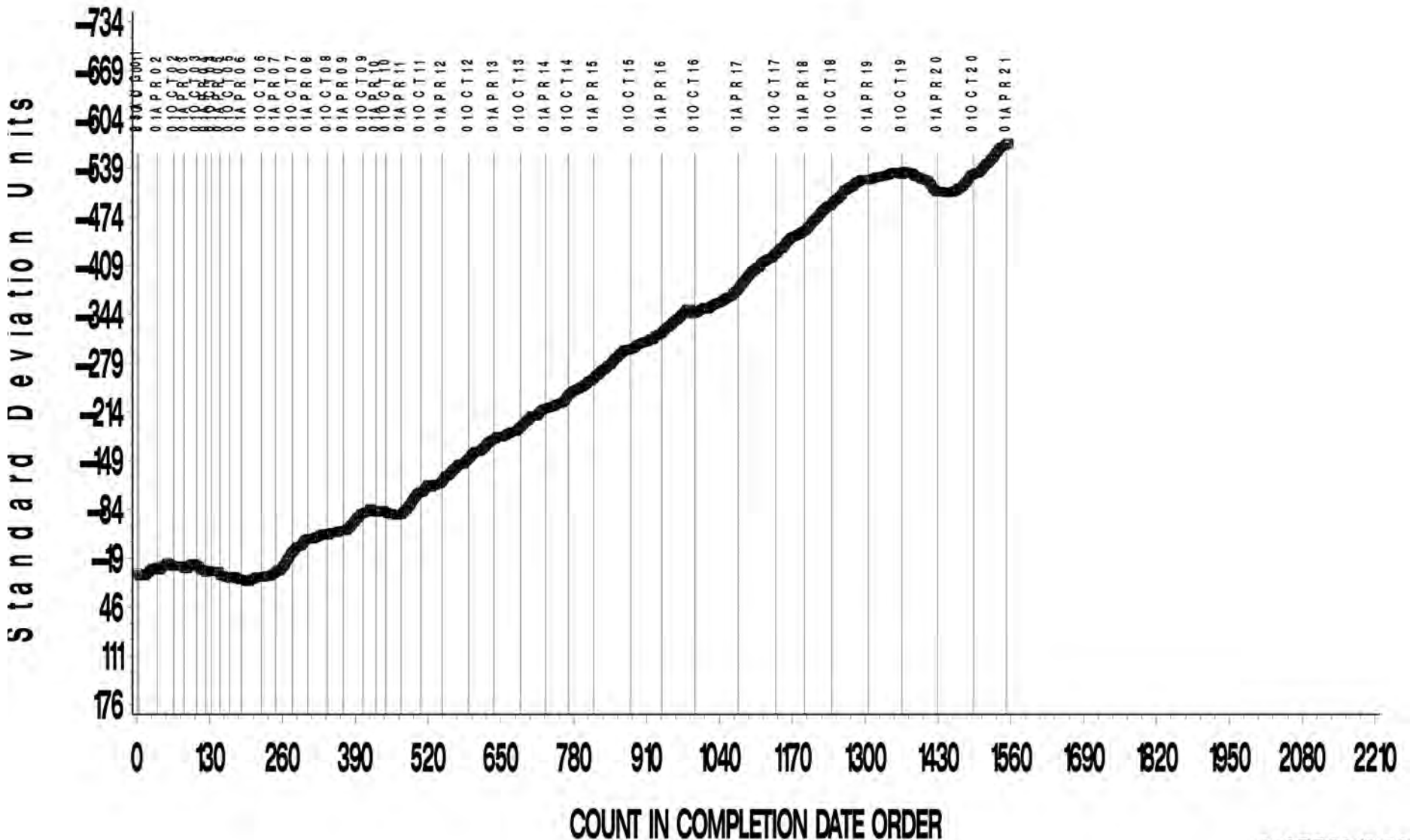
REF NITRILE TENS STRENGTH CHANGE CORRECTED AVG

CUSUM Severity Analysis



REF NITRILE ELONGATION CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



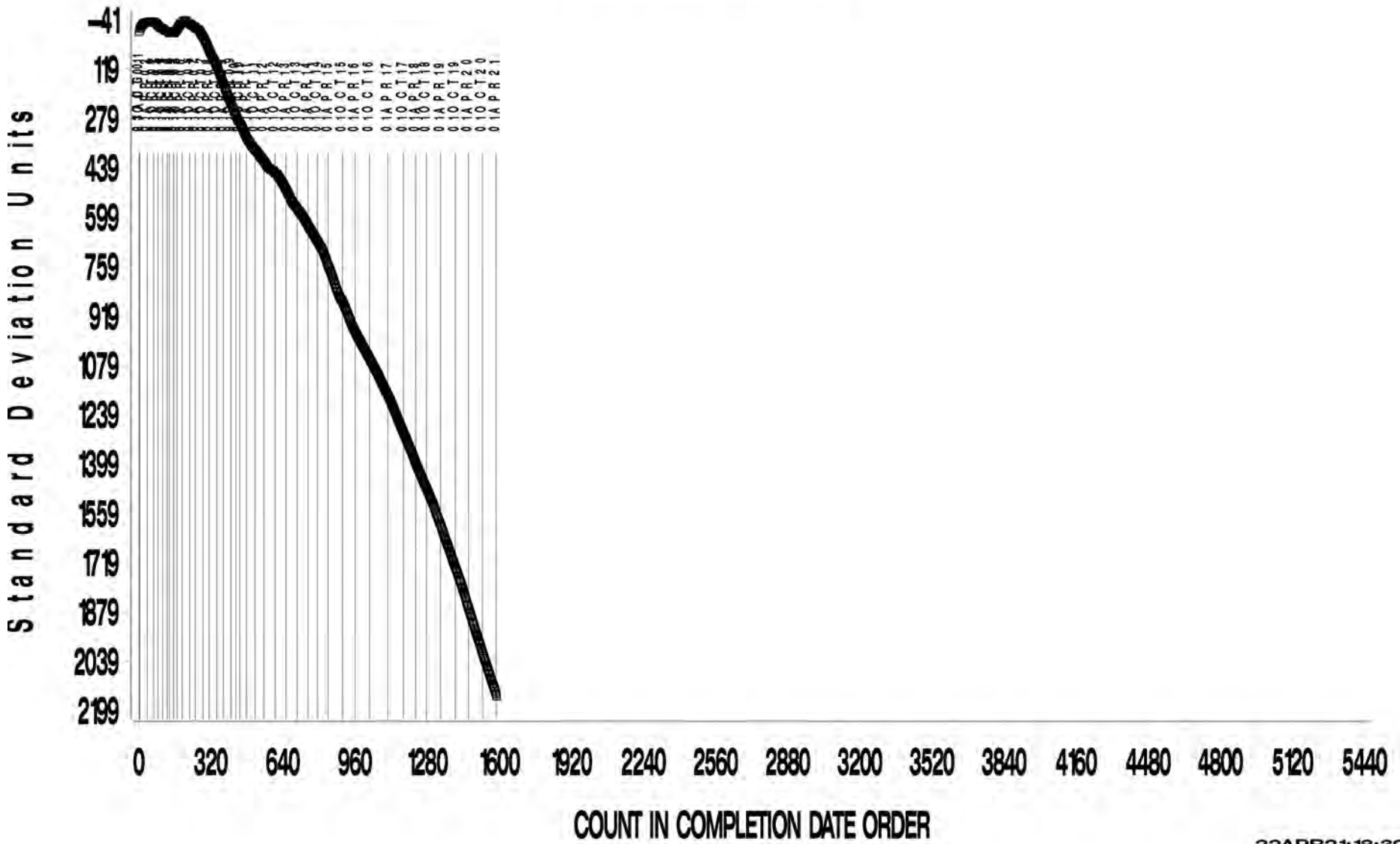
EOEC Test Severity

▶ Polyacrylate (ACM)

Parameter	Period Mean Δ/s	Status
Volume Change	2.23	Severe
Points Hardness Change	-0.78	Mild
Tensile Strength Change	-0.08	On-target
Elongation Change	0.21	Severe

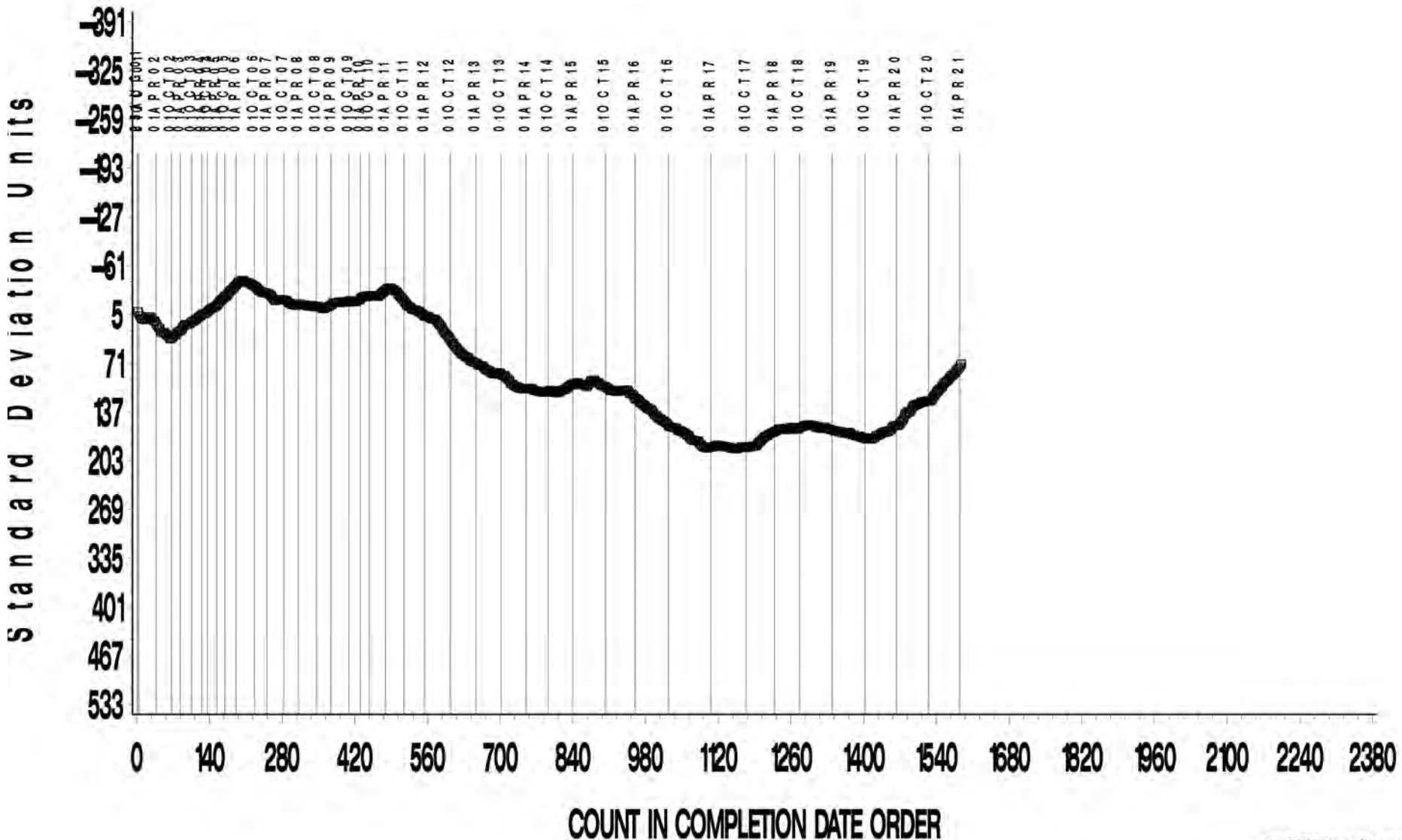
REFERENCE POLYACRYLATE VOLUME CHANGE CORRECTED AVG

CUSUM Severity Analysis

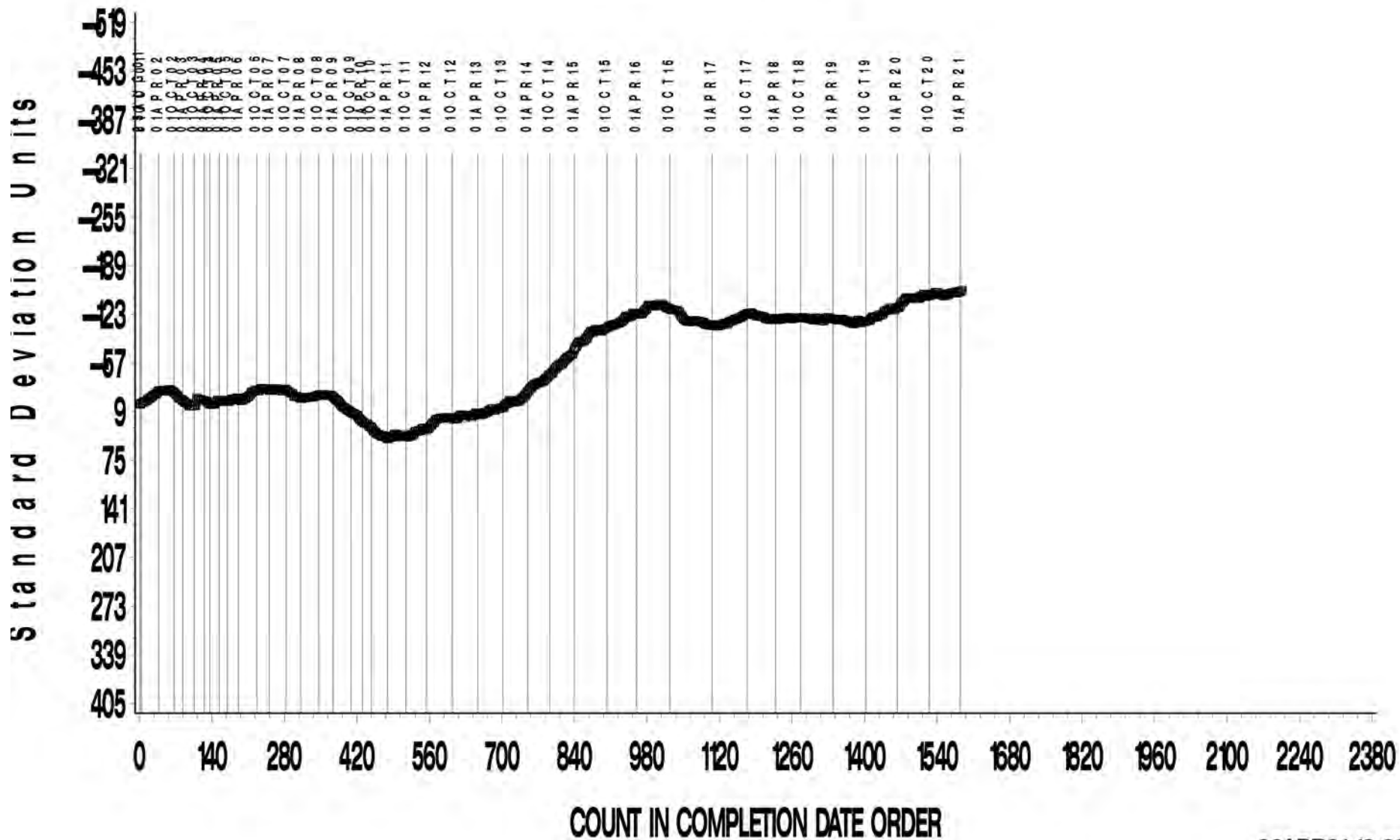


REF POLYACRYLATE PTS HARD CHANGE CORRECTED AVG

CUSUM Severity Analysis

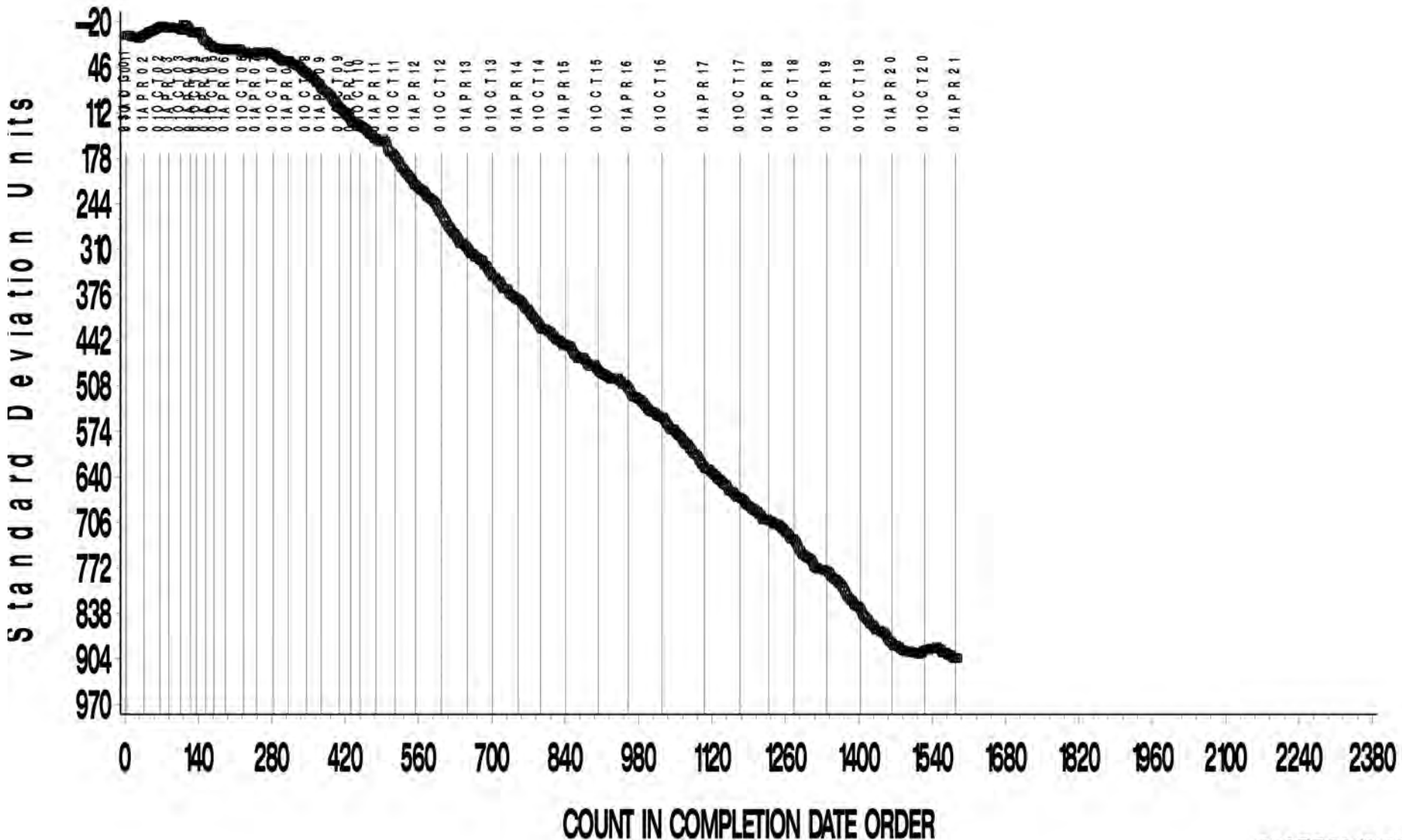


CUSUM Severity Analysis



REF POLYACRYLATE ELONGATION CHANGE CORRECTED AVG

CUSUM Severity Analysis



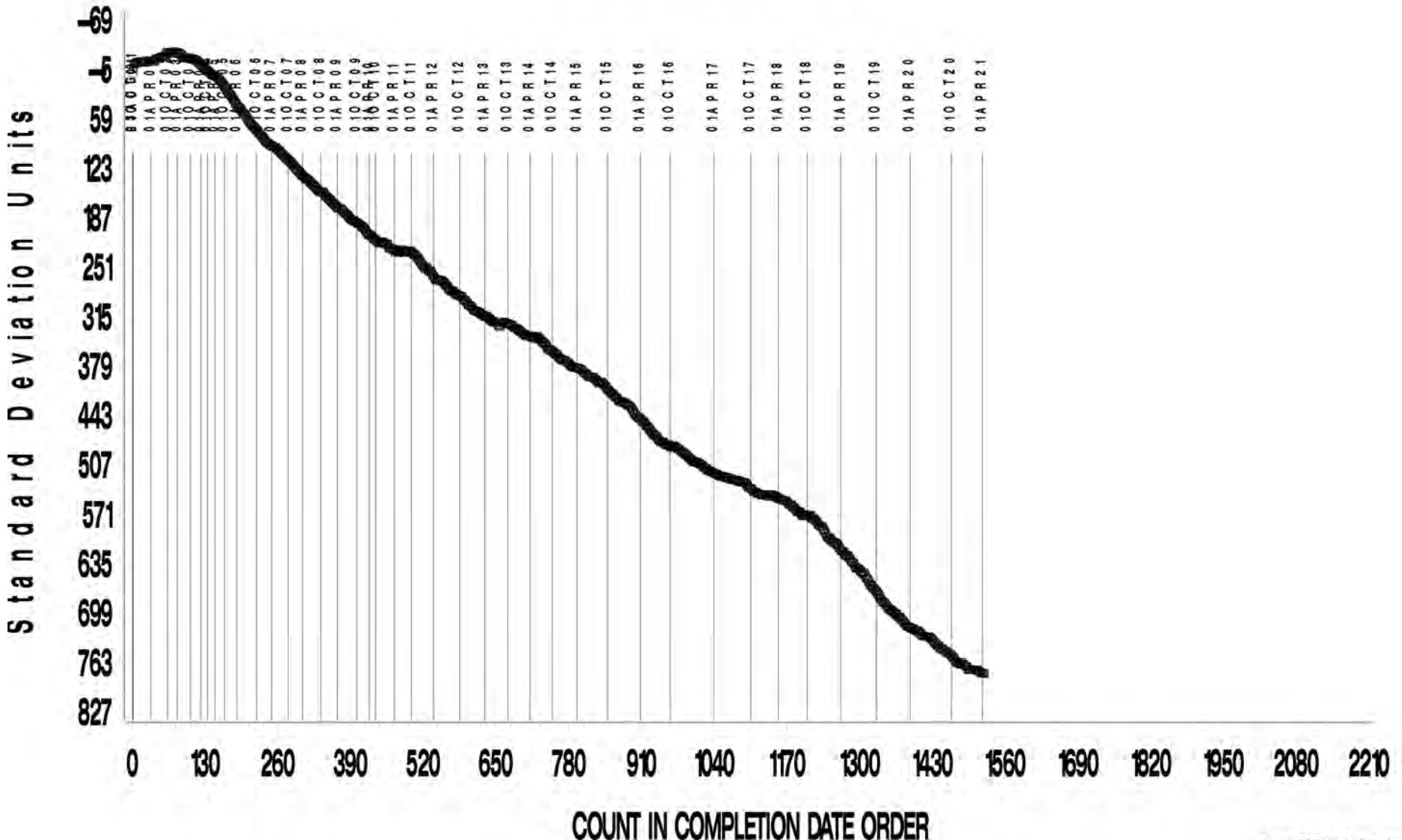
EOEC Test Severity

▶ Silicone (VMQ)

Parameter	Period Mean Δ /s	Status
Volume Change	0.44	Severe
Points Hardness Change	-0.77	Mild
Tensile Strength Change	0.59	Severe
Elongation Change	0.11	Severe

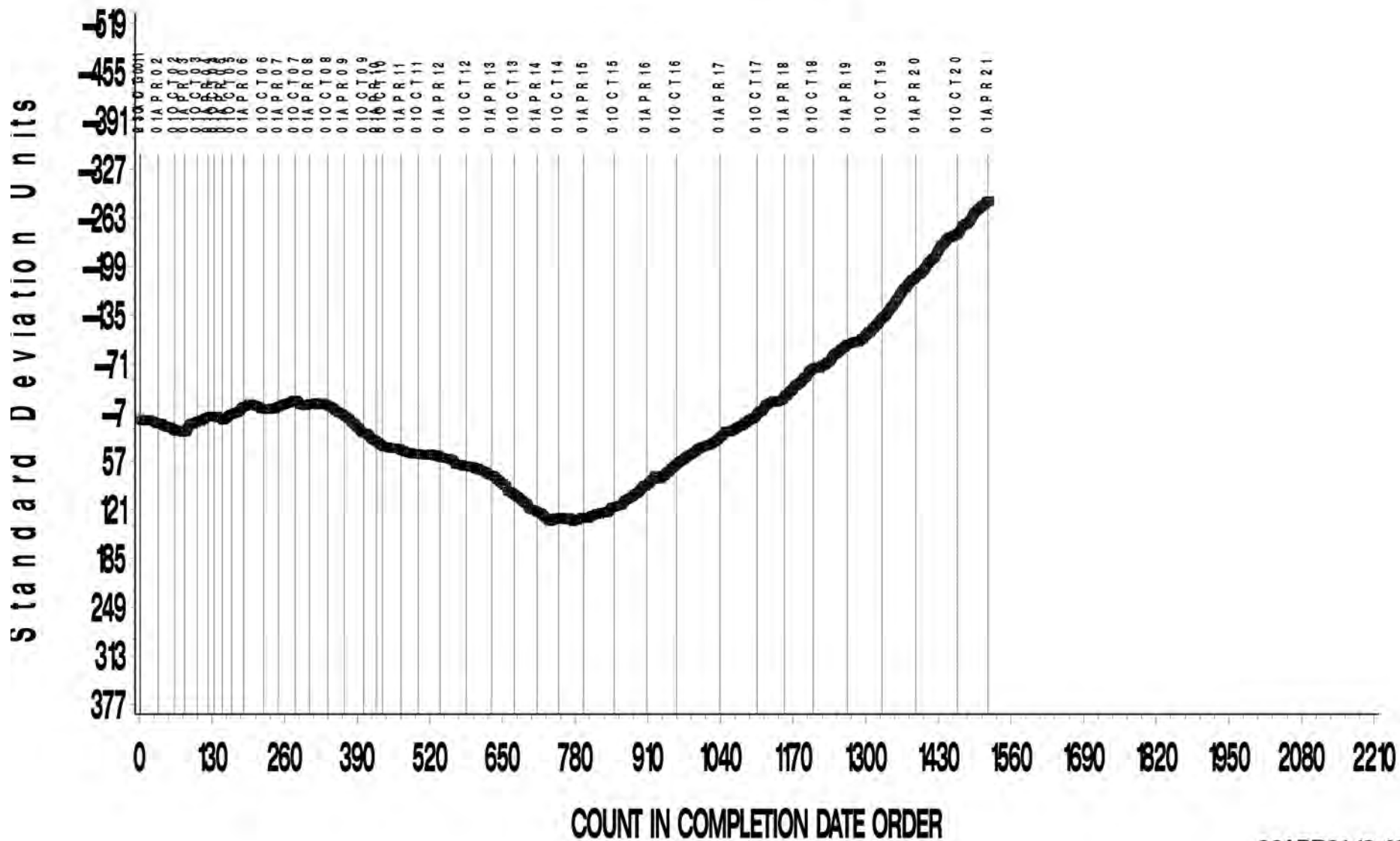
REFERENCE SILICON VOLUME CHANGE CORRECTED AVG

CUSUM Severity Analysis



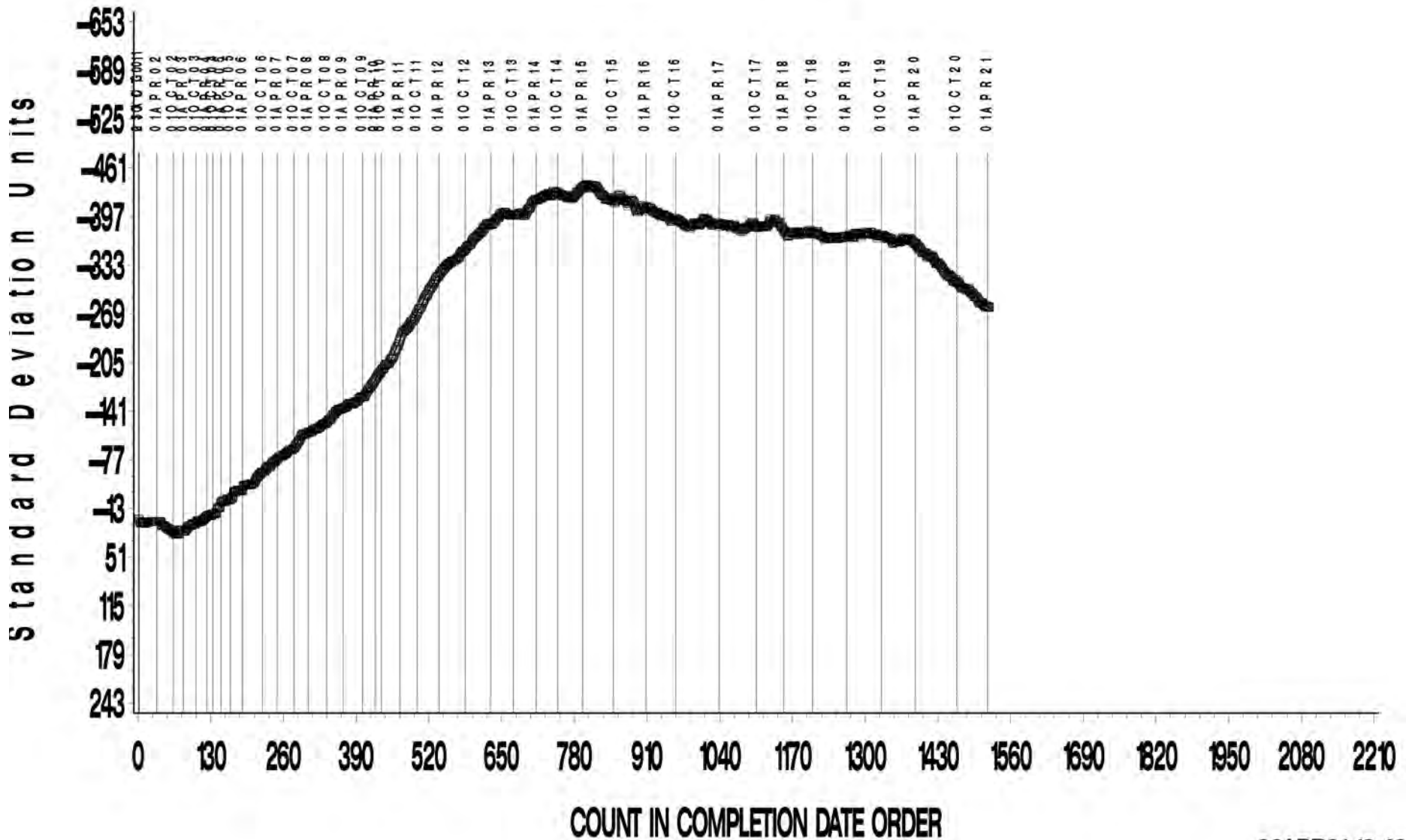
REFERENCE SILICON PTS HARD CHANGE CORRECTED AVG

CUSUM Severity Analysis



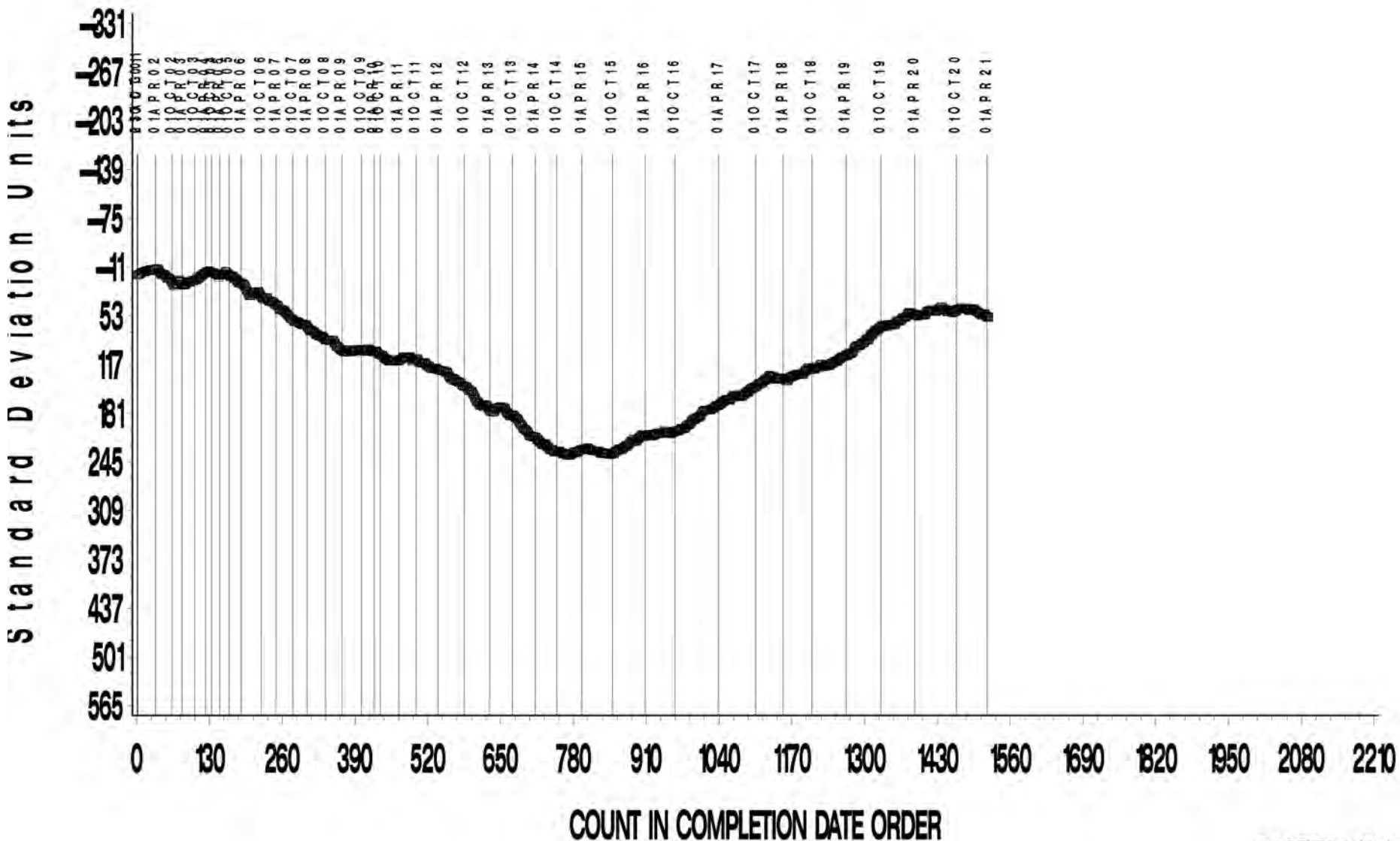
REF SILICON TENSILE STRENGTH CHANGE CORRECTED AVG

CUSUM Severity Analysis



REF SILICON ELONGATION CHANGE CORRECTED AVG

CUSUM Severity Analysis



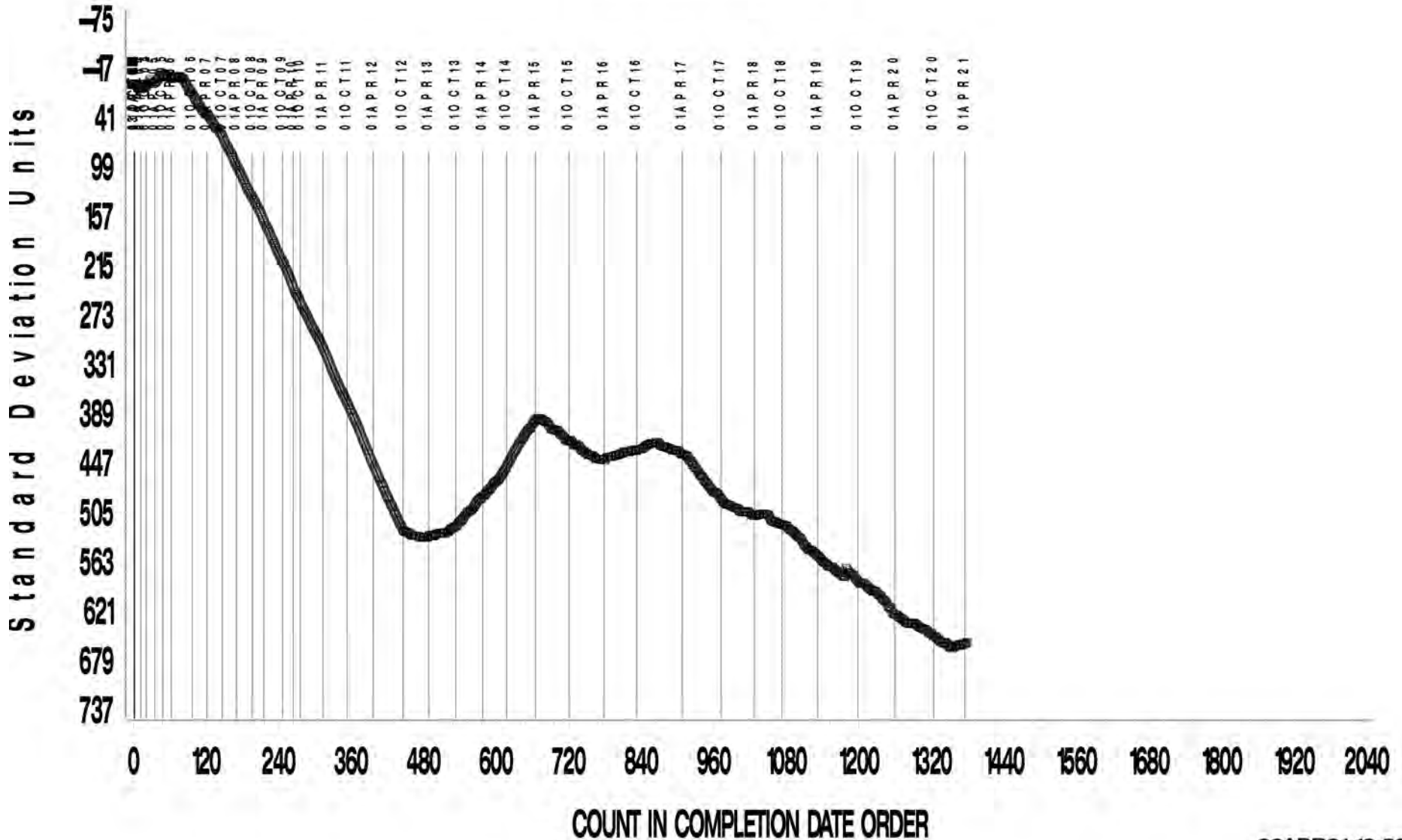
EOEC Test Severity

▶ VAMAC (MAC)

Parameter	Period Mean Δ/s	Status
Volume Change	0.18	Severe
Points Hardness Change	-0.91	Mild
Tensile Strength Change	-0.24	Mild
Elongation Change	-0.51	Mild

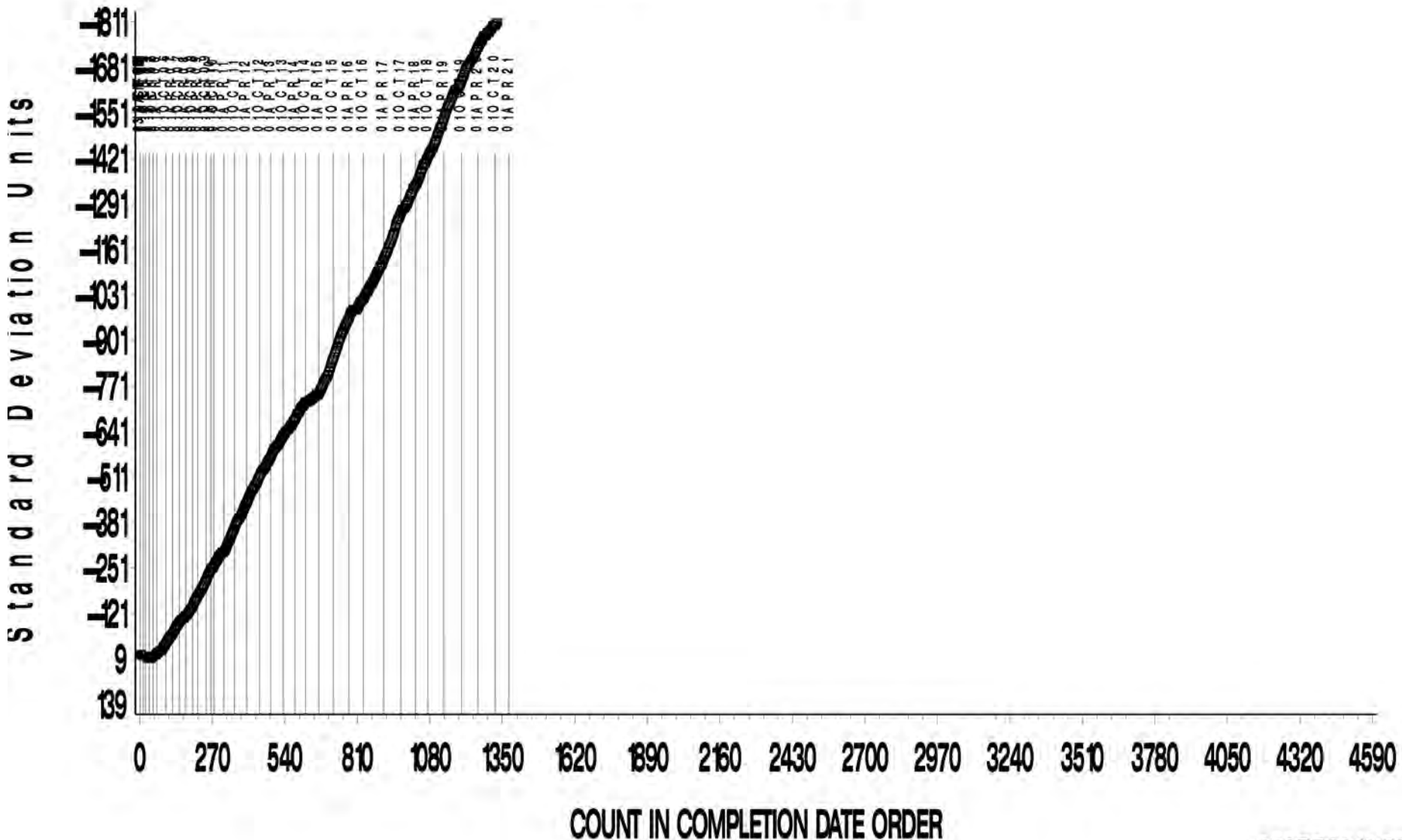
REFERENCE VAMAC G VOLUME CHANGE CORRECTED AVERAGE

CUSUM Severity Analysis



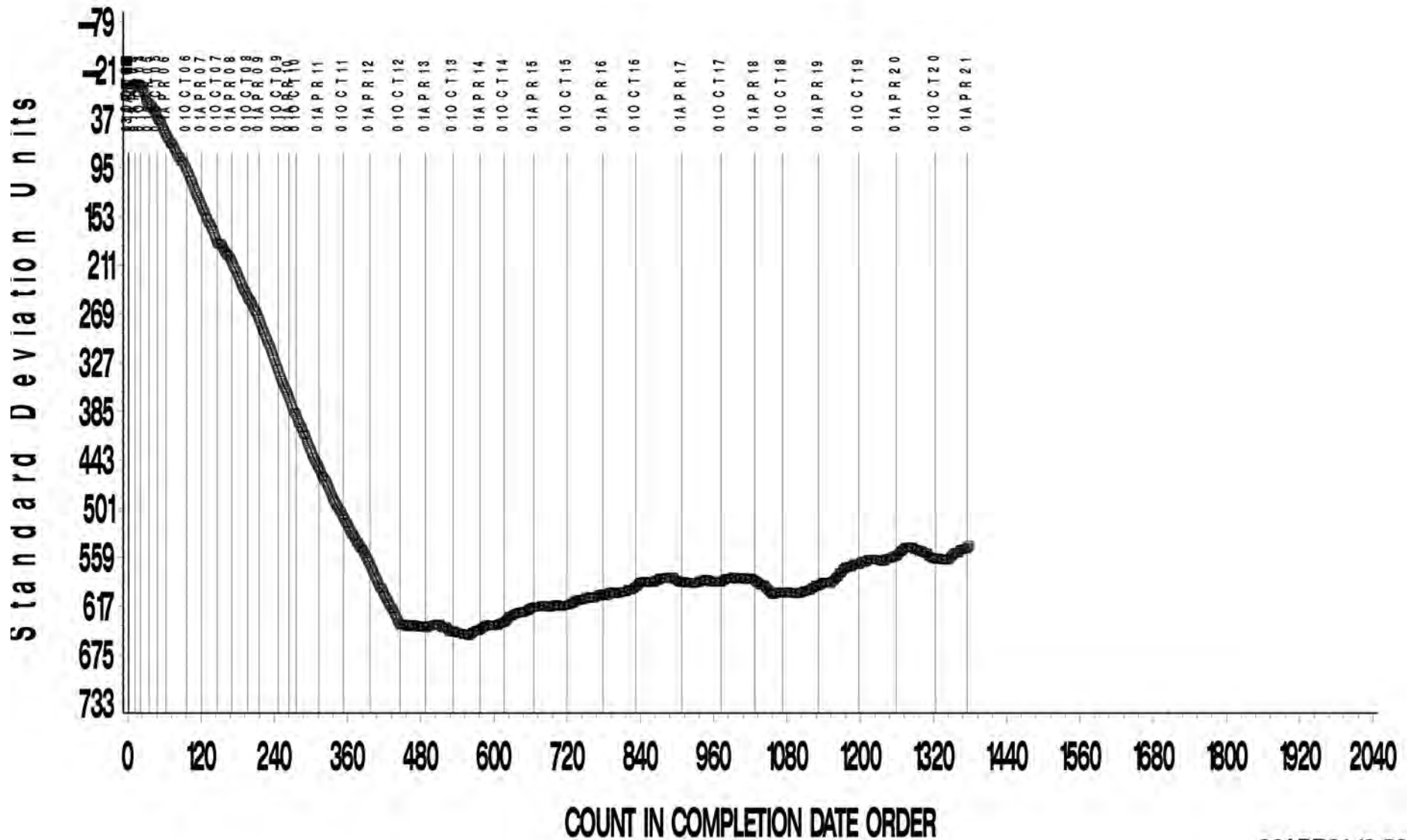
REF VAMAC G POINTS HARDNESS CHANGE CORRECTED AVG

CUSUM Severity Analysis



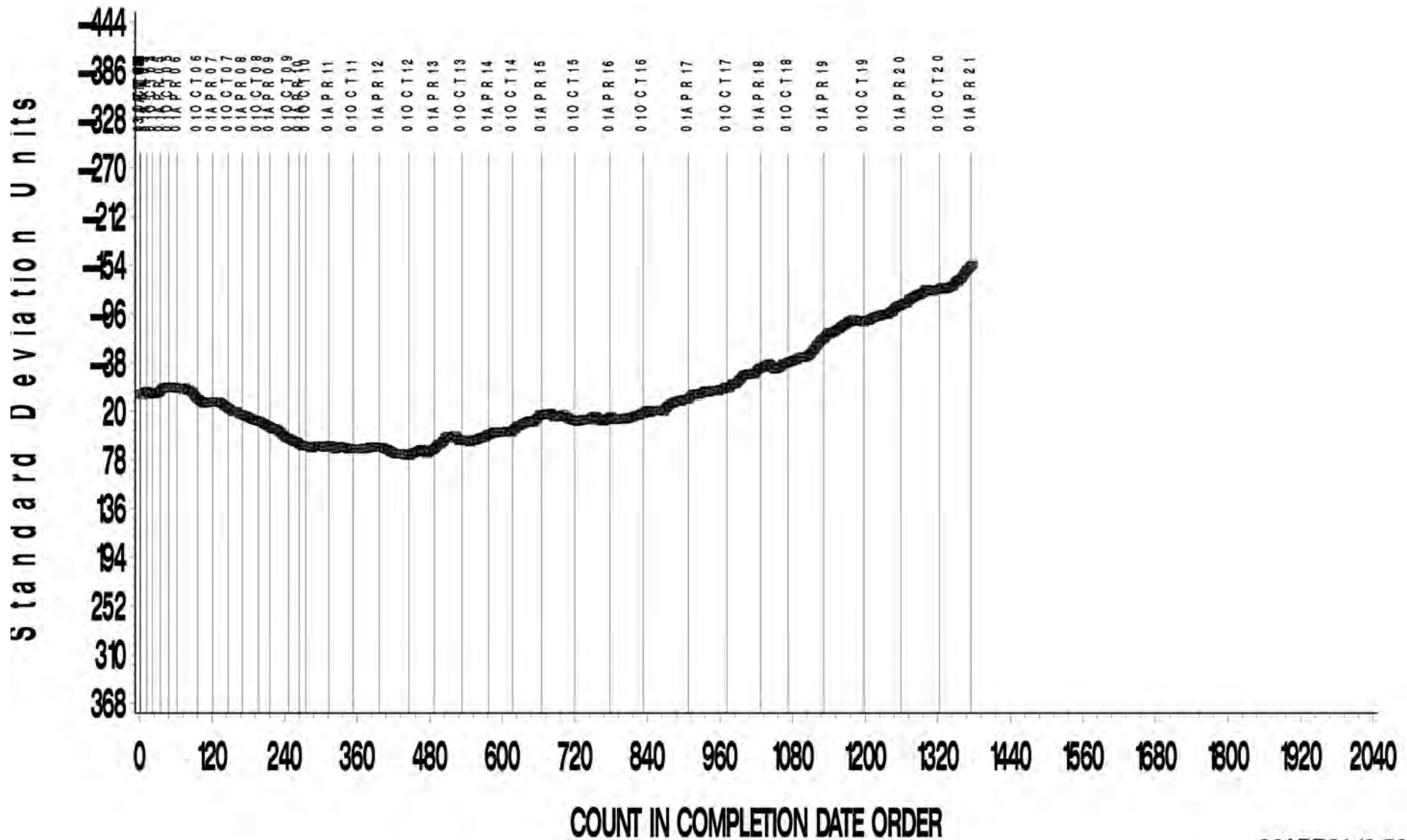
REF VAMAC G TENSILE STRENGTH CHANGE CORRECTED AVG

CUSUM Severity Analysis

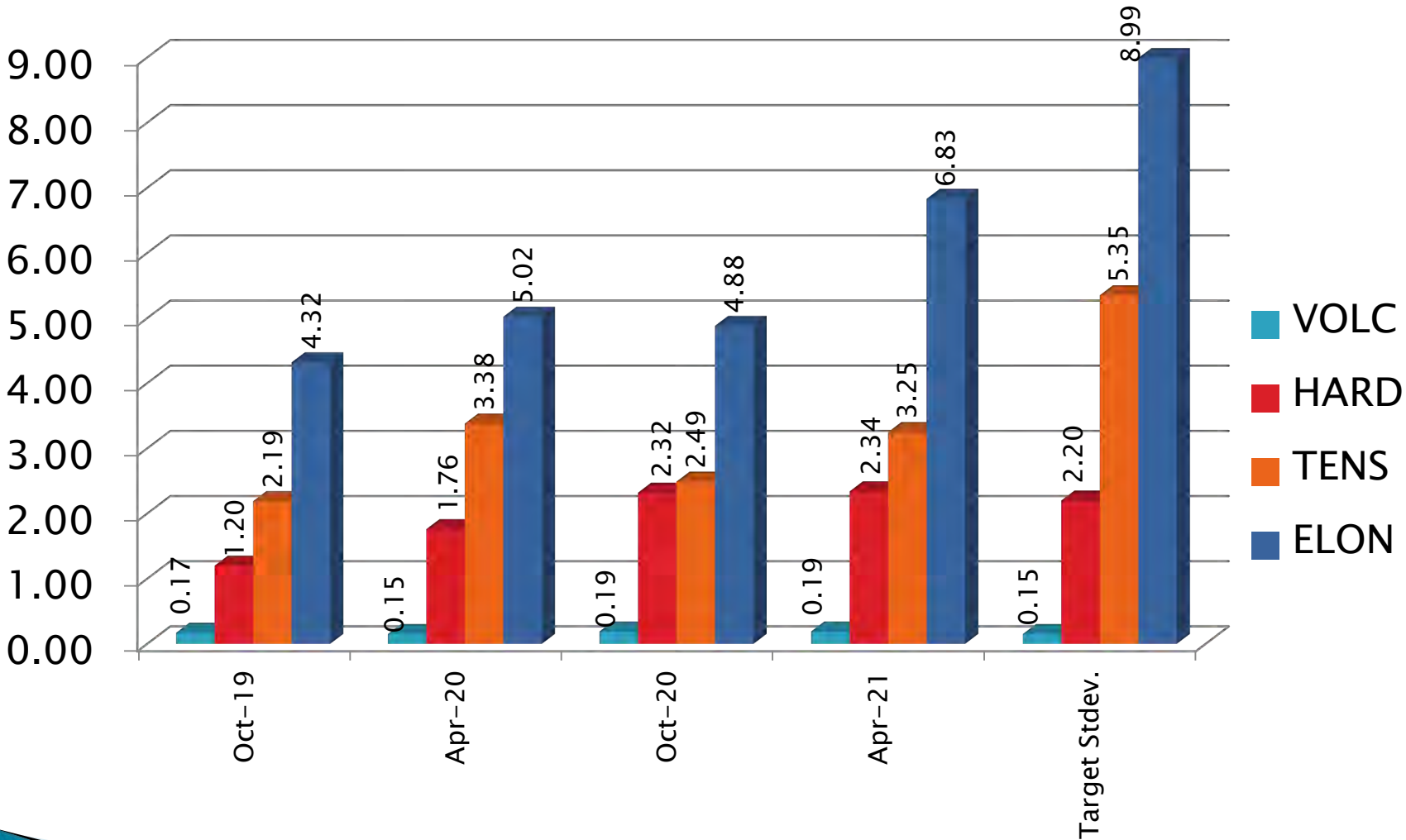


REF VAMAC G ELONGATION CHANGE CORRECTED AVG

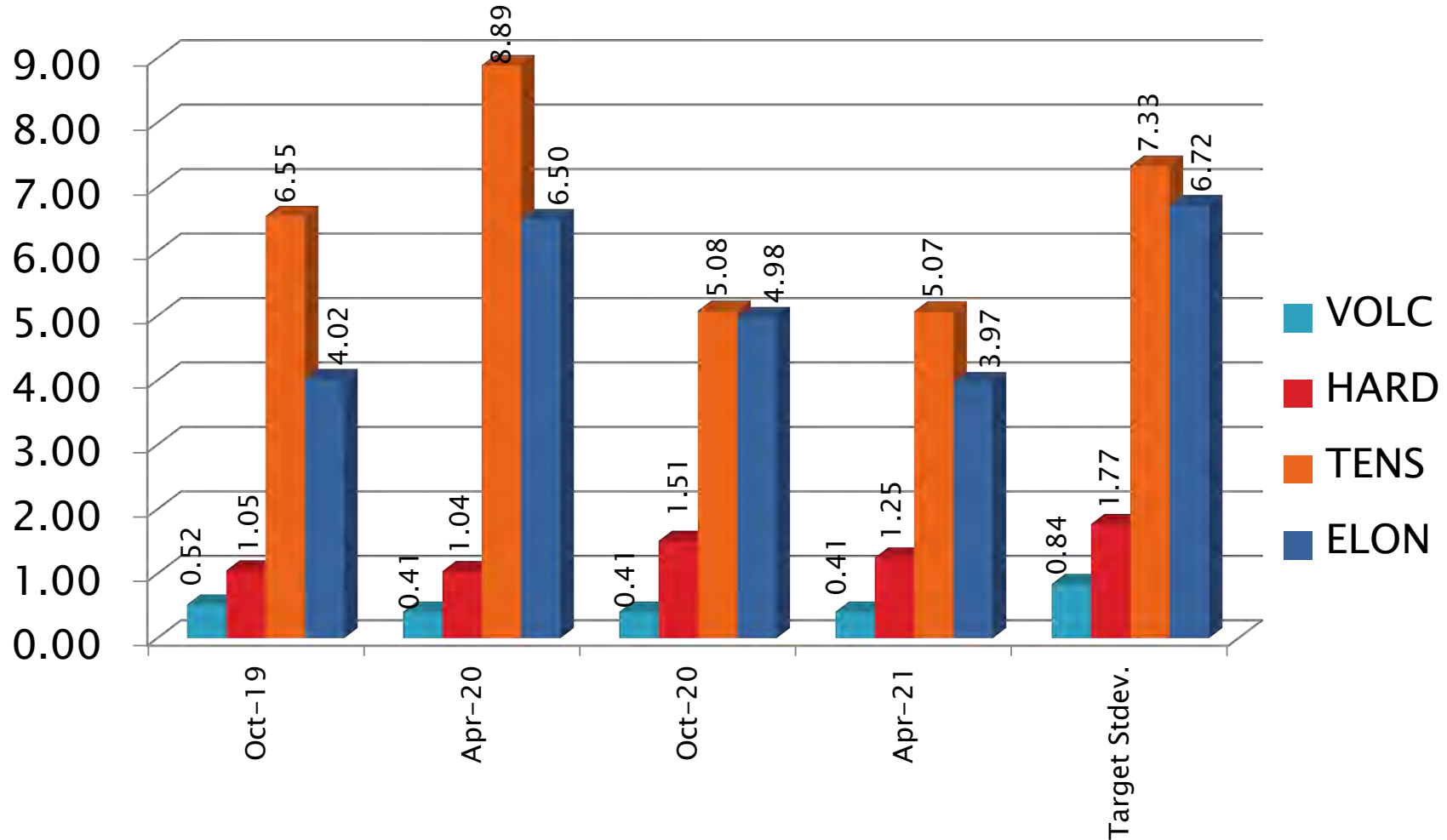
CUSUM Severity Analysis



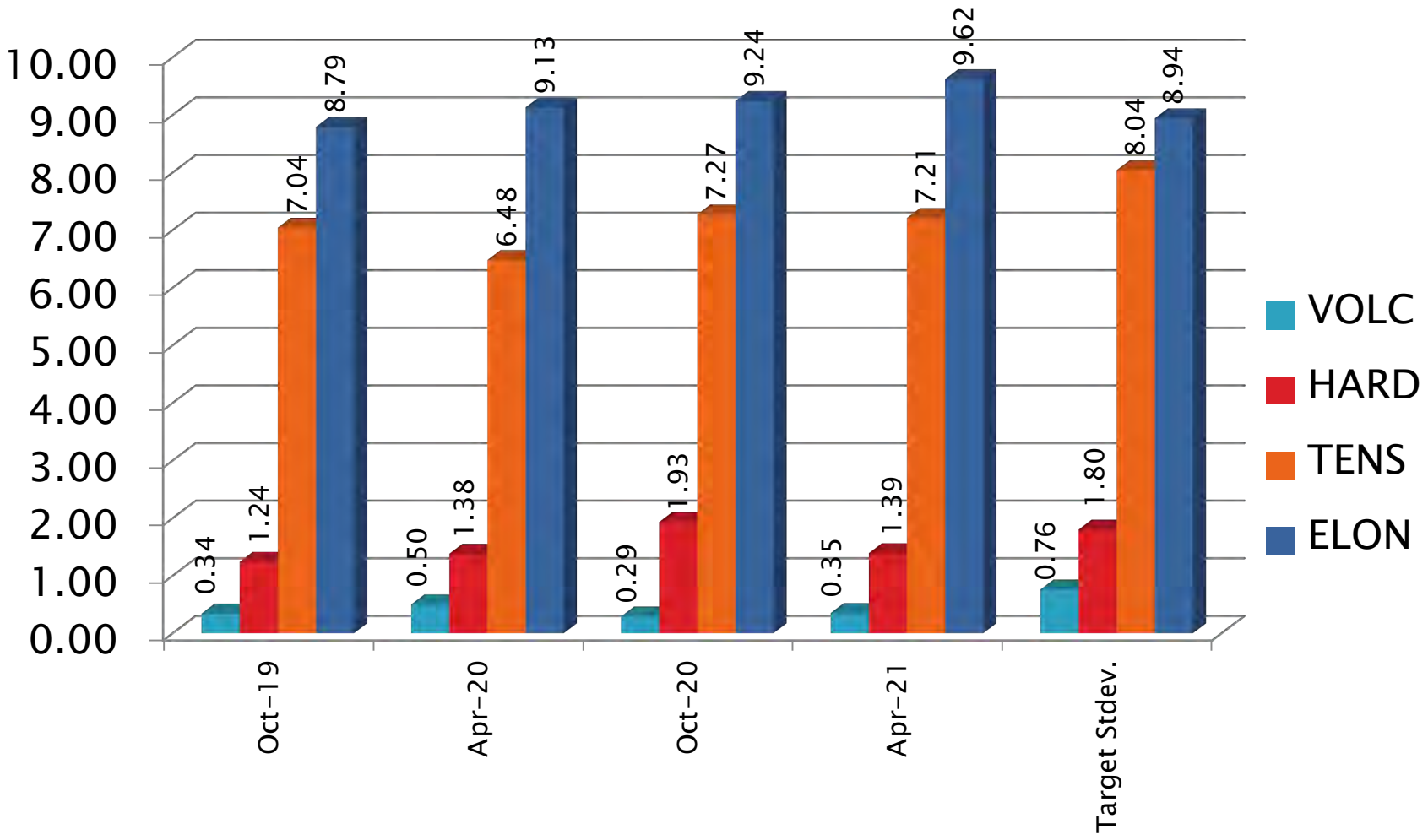
EOEC Precision Estimates - Fluoroelastomer



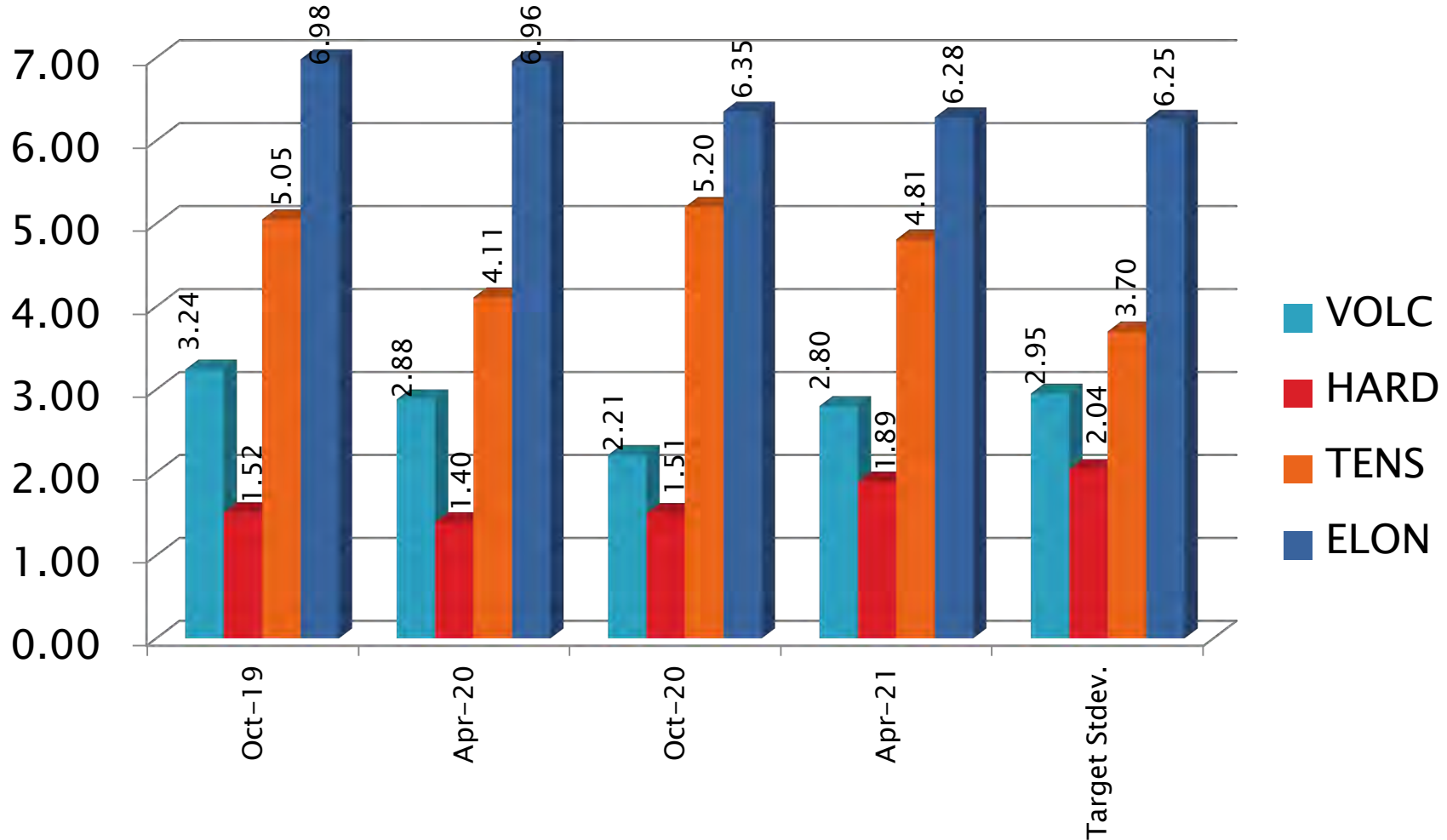
EOEC Precision Estimates - Nitrile



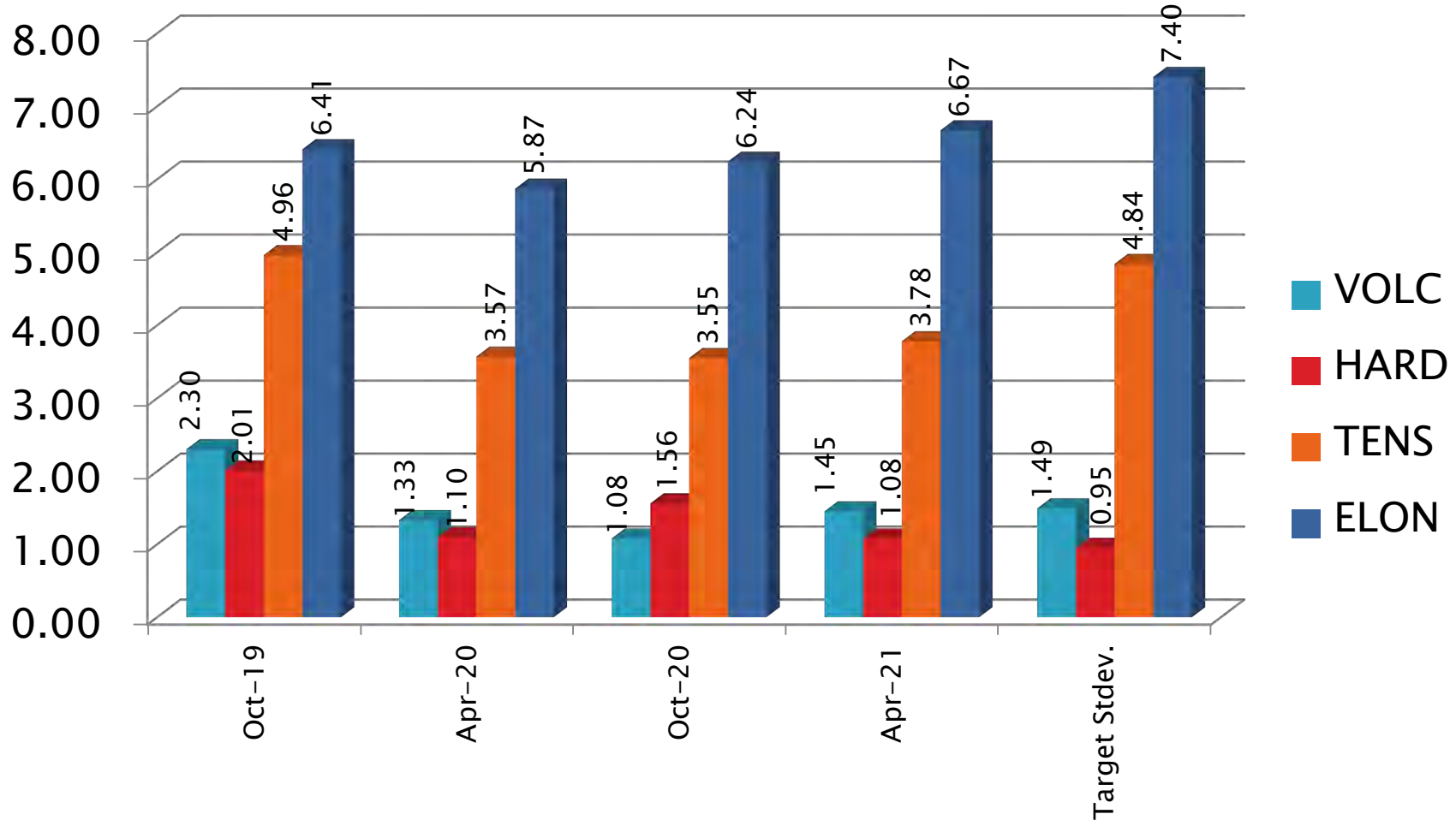
EOEC Precision Estimates - Polyacrylate



EOEC Precision Estimates - Silicone



EOEC Precision Estimates - VAMAC



Information Letters & Technical Updates*

Test	Date	IL or Memo Number	Topic
EOEC		None	Nothing issued this report period

*Available from TMC Website

Reference Oil Inventory Estimated Life

Oil	TMC Inventory Gallons	Gallons Shipped Past 12 Months	Estimated Life
SL107 ^{A, B}	3155	386	5+ years

^ATMC Inventory is used across several test methods

^BSL107 replaces oil 1006; still assigning existing lab inventories of 1006 batches where available.

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Miscellaneous Information

- ▶ Available on TMC Website:
 - Oil Assignment Request and Test File Upload
 - Live Reference Test Data Bases
 - Surveillance Panel Meeting Minutes
- ▶ www.astmtmc.cmu.edu



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