



Test Monitoring Center

@ Carnegie Mellon University
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<http://astmtmc.cmu.edu>
412-365-1000

MEMORANDUM: 19-062
DATE: November 27, 2019
TO: Rob Slocum, Chairman, L-37 Surveillance Panel
FROM: Dylan Beck *Dylan Beck*
SUBJECT: L-37 Rater Calibration from April 1, 2019 through September 30, 2019

Attached is a summary of L-37 rater calibration activity this period.

DJB/djb/mem19-045.djb.doc

cc: Frank Farber
Jeff Clark

L-37 Surveillance Panel

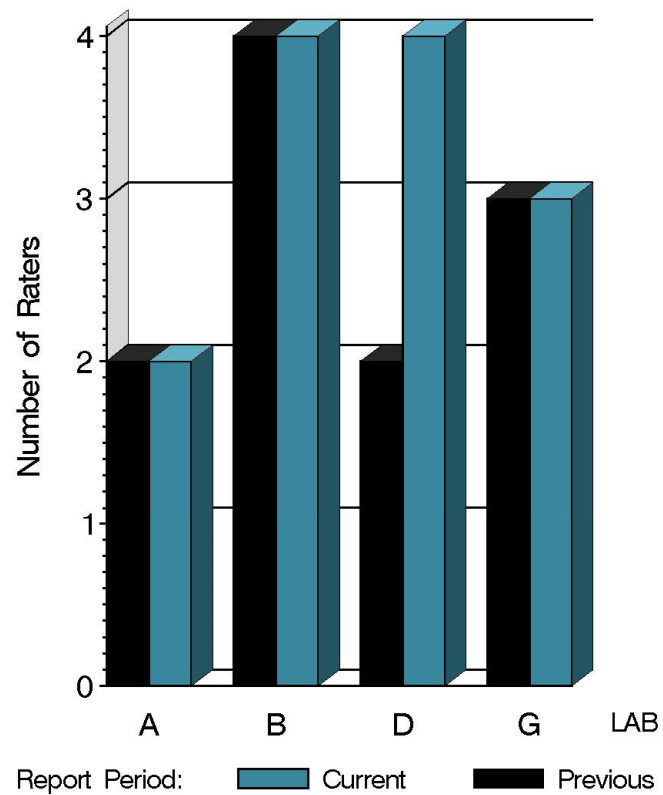
<http://www.astmtmc.cmu.edu/ftp/docs/gear/l37rc/semiannualreports/l37rc-10-2019.pdf>

Distribution: email

L-37 Rater Calibration

	Reporting Data	Calibrated on 9-30-19
Number of Labs	4	4
Number of Raters	13	13

BY-LAB RATER
DISTRIBUTION



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L-37 Rater Calibration

Test Distribution by Validity

		Totals	
		Last Period	This Period
Accepted for calibration	AC	12	17
Rejected (Mild)	OC	1	0
Rejected (Severe)	OC	3	2
Rejected (Multiple)	OC	0	2
Rejected (Precision)	OC	1	0
Invalid*	LC	1	0
Workshop data	AG	15	9
Total		33	30

* Invalid test due to damage found on pinion tooth. Pinion removed from RC inventory.

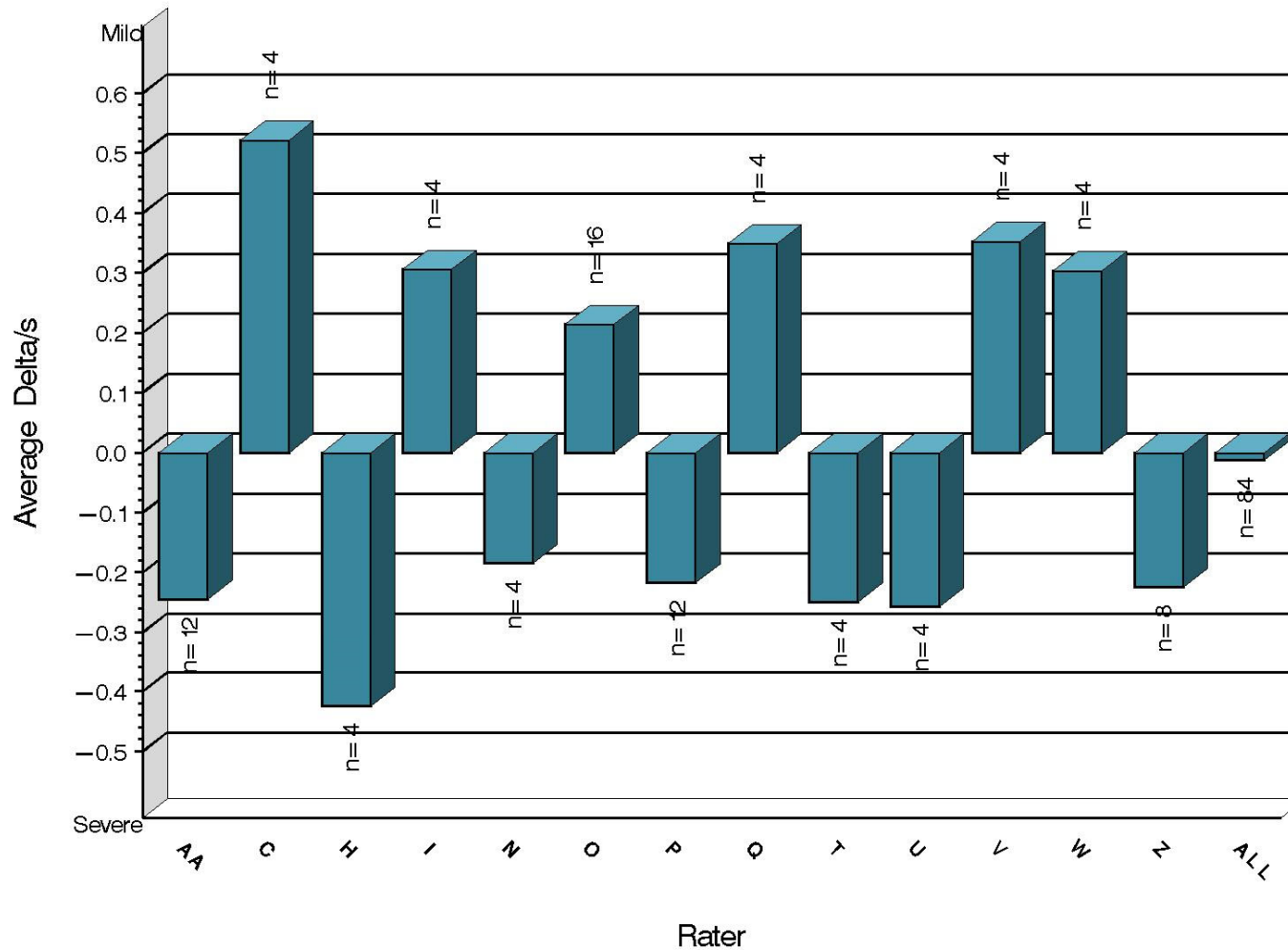
L-37 Rater Calibration

Rater	N	RIDG		RIPP		SPIT		WEAR	
		Avg Yi	STD*	Avg Yi	STD*	Avg Yi	STD*	Avg Yi	STD*
AA	12	-0.245	0.912	-0.544	1.276	0.016	0.681	0.090	1.236
C	4	0.522	0.607	0.350	0.205	-0.150	1.172	0.501	0.362
H	4	-0.424	0.724	0.391	0.551	-0.015	0.316	-0.114	0.537
I	4	0.306	0.769	-0.574	0.274	-0.017	0.418	-0.154	0.178
N	4	-0.184	0.779	0.057	0.606	-0.017	0.418	-0.219	0.480
O	16	0.214	1.588	-0.171	1.501	-0.334	1.159	-0.537	1.103
P	12	-0.217	0.655	-0.077	0.707	0.069	0.390	-0.415	0.975
Q	4	0.349	0.621	0.334	0.429	0.335	0.287	-0.094	0.677
T	4	-0.249	0.693	-0.187	0.848	-0.147	0.350	-0.500	0.507
U	4	-0.257	0.666	0.150	0.966	0.168	0.853	-0.317	0.574
V	4	0.353	0.642	0.022	1.064	0.046	0.327	0.207	0.459
W	4	0.304	0.779	0.539	0.857	-0.824	1.585	-0.548	1.060
Z	8	-0.224	0.760	-0.086	1.489	0.008	0.319	-0.338	1.081
ALL	84	-0.012	0.954	-0.078	1.065	-0.072	0.764	-0.240	0.918

* Due to the small number of ratings per pinion, the standard deviation of the Yi values is given in place of a pooled standard deviation.

L-37 Rater Calibration

RIDGING
Severity as Measured by Delta/s

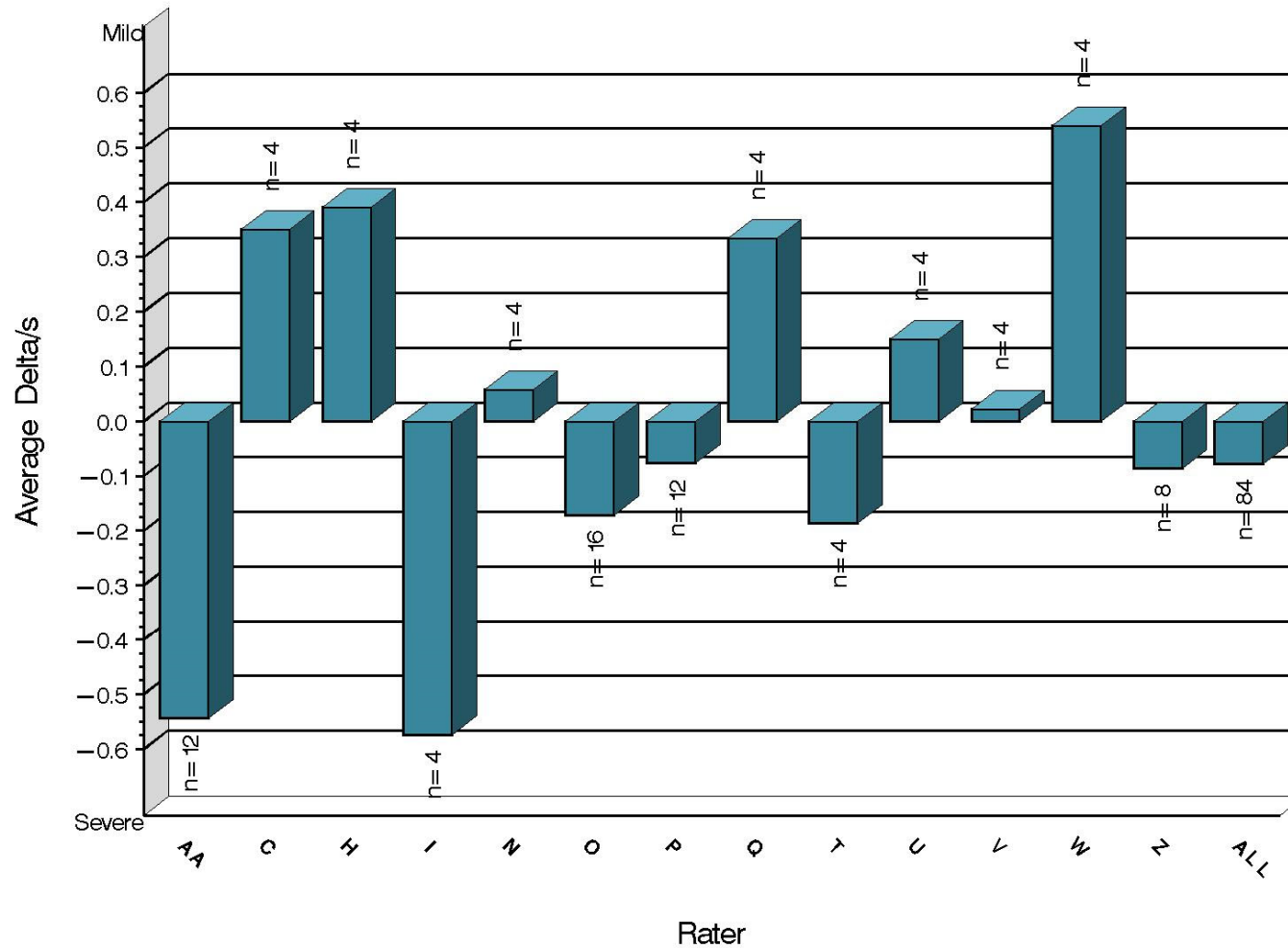


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L-37 Rater Calibration

RIPPLING

Severity as Measured by Delta/s

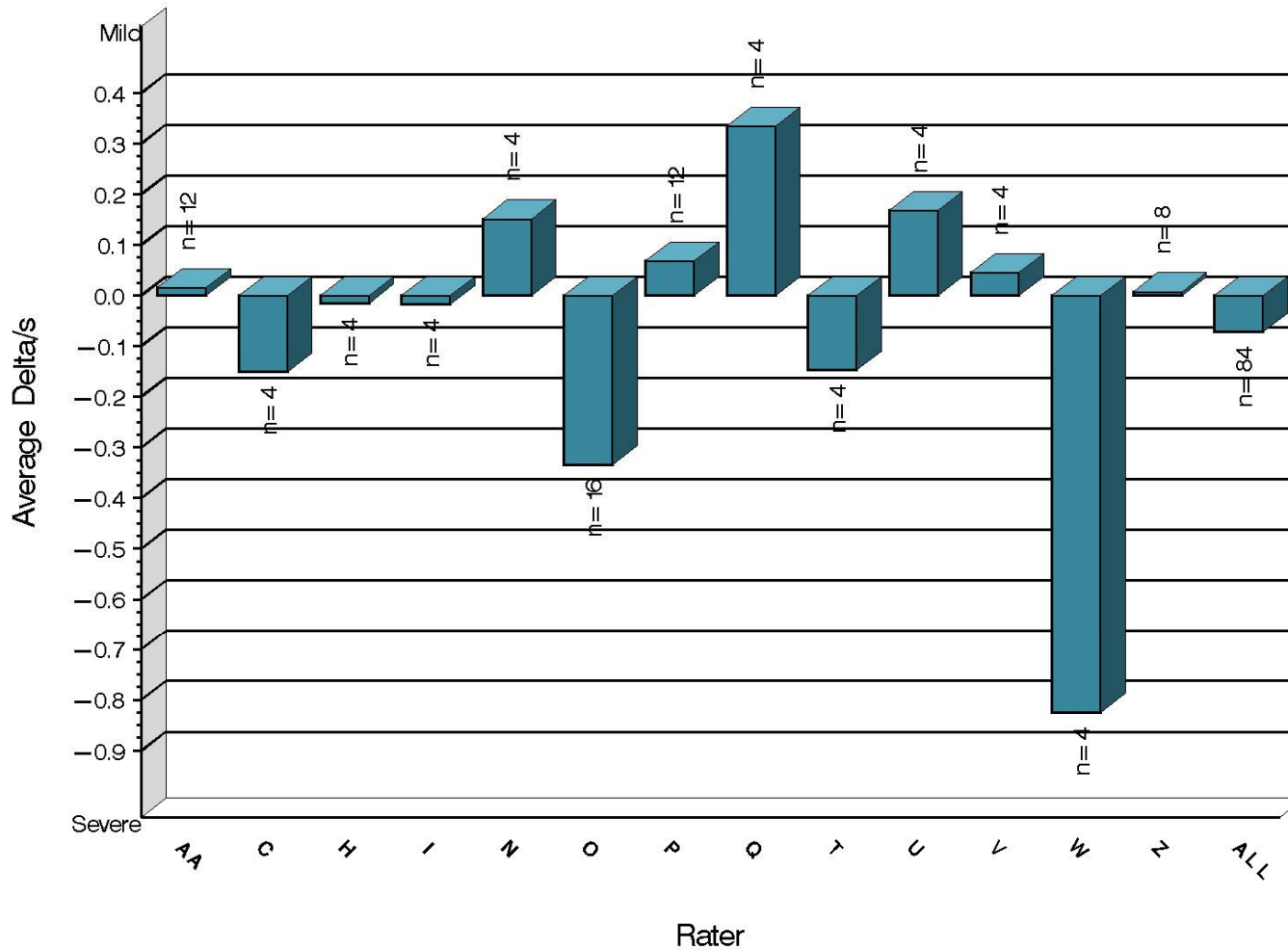


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L-37 Rater Calibration

SPITTING

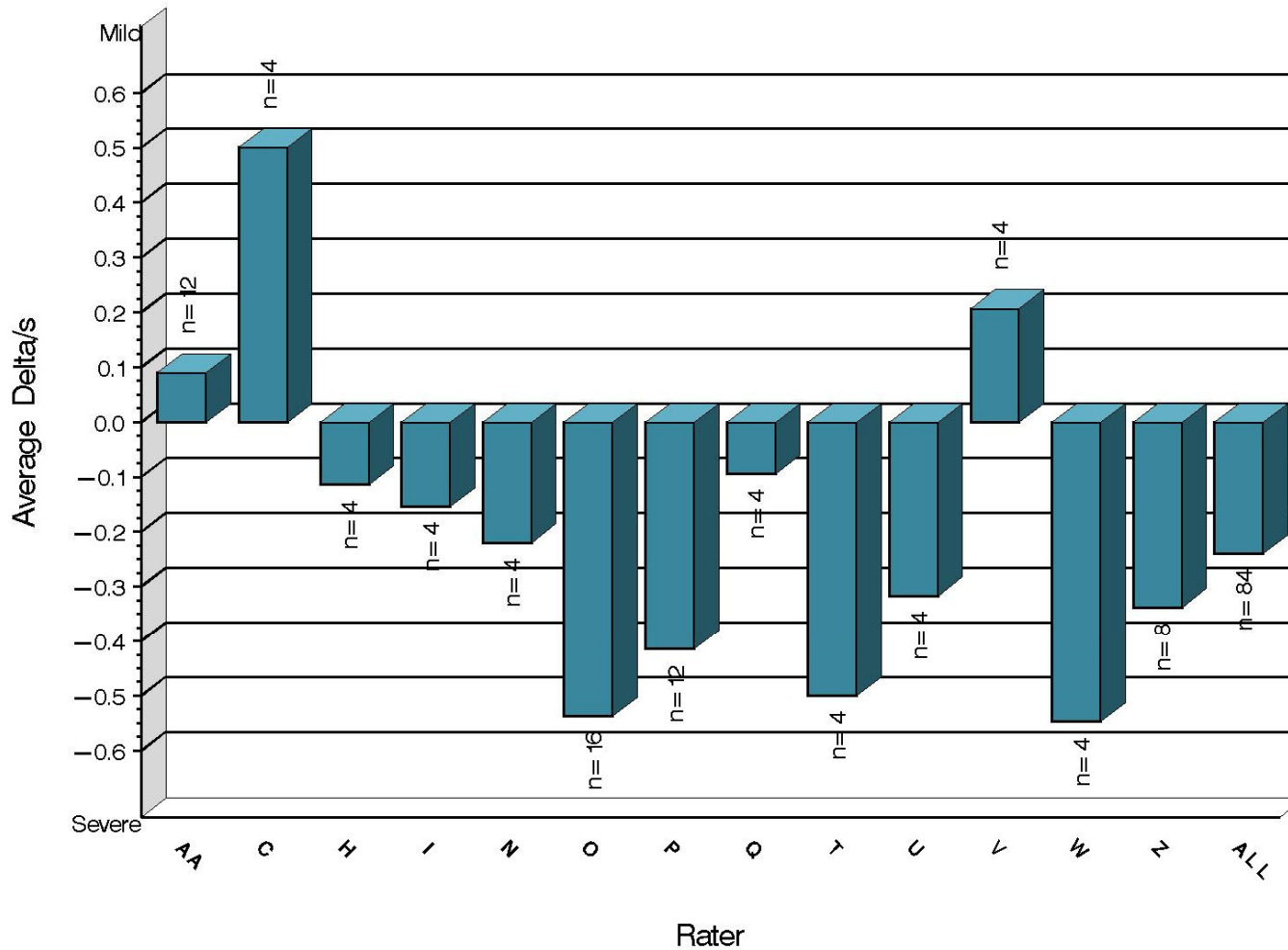
Severity as Measured by Delta/s



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L-37 Rater Calibration

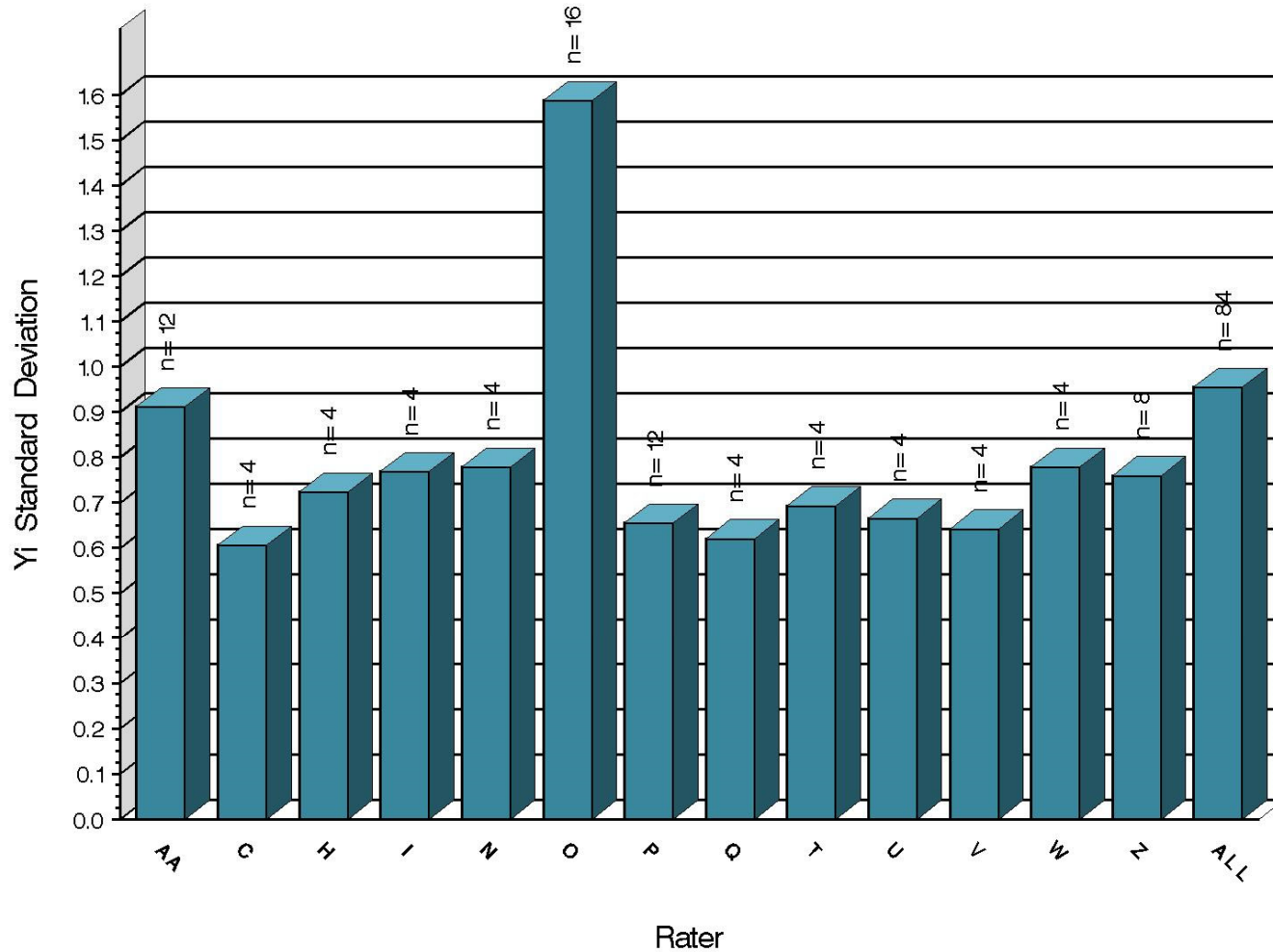
WEAR
Severity as Measured by Delta/s



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L-37 Rater Calibration

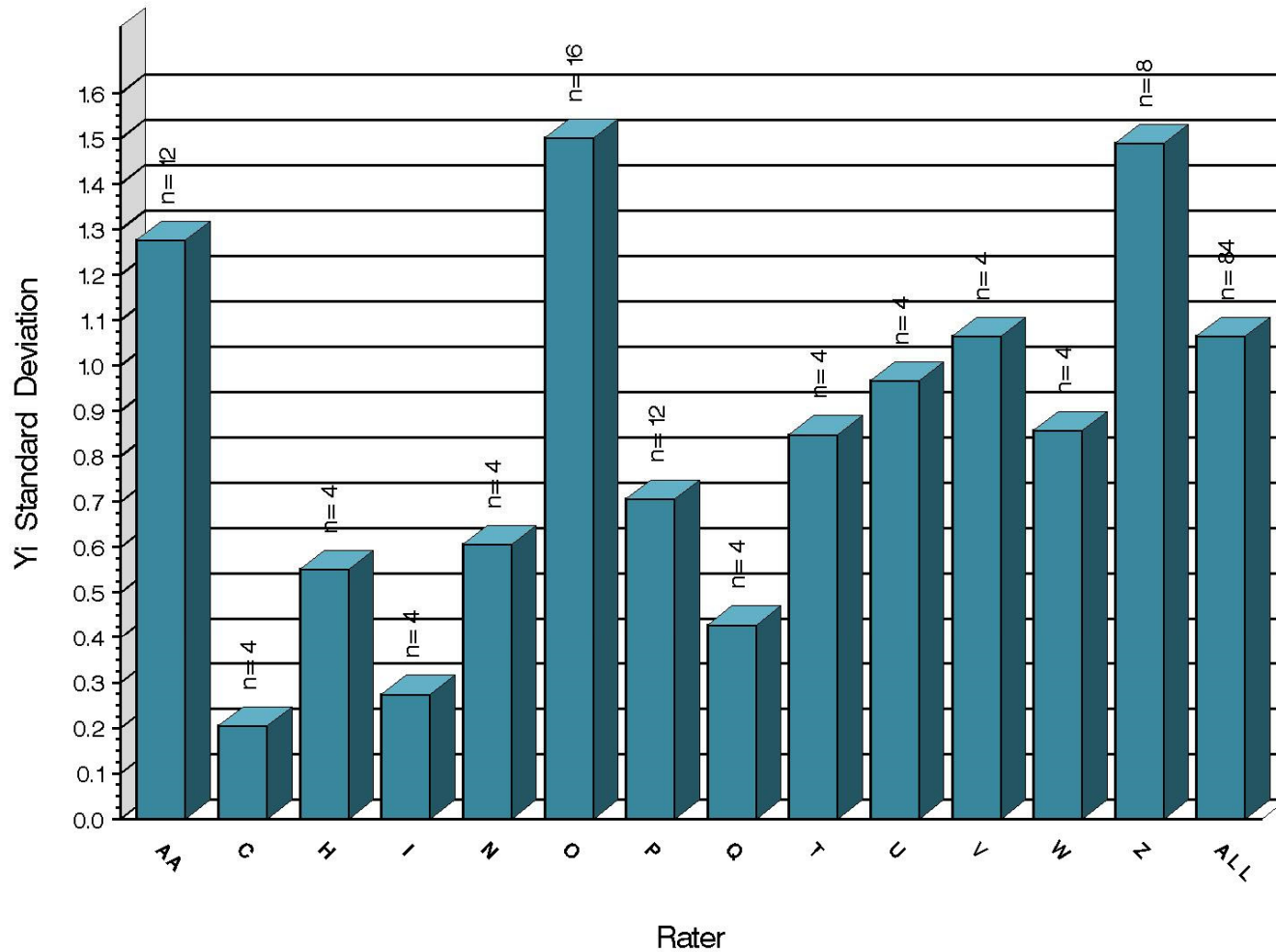
RIDGING
Precision as Measured by Y1 STD



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L-37 Rater Calibration

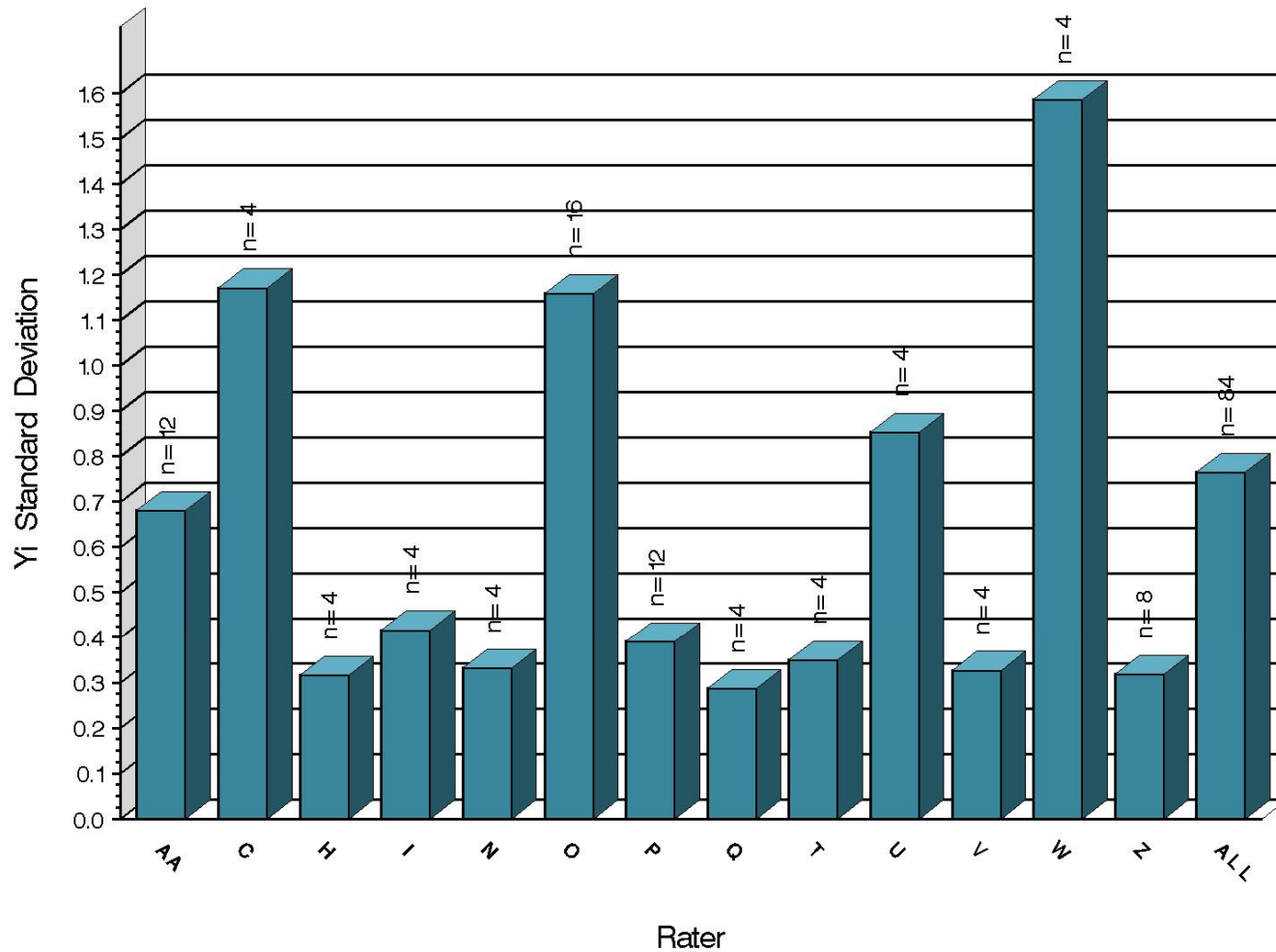
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Precision as Measured by Yi STD



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L-37 Rater Calibration

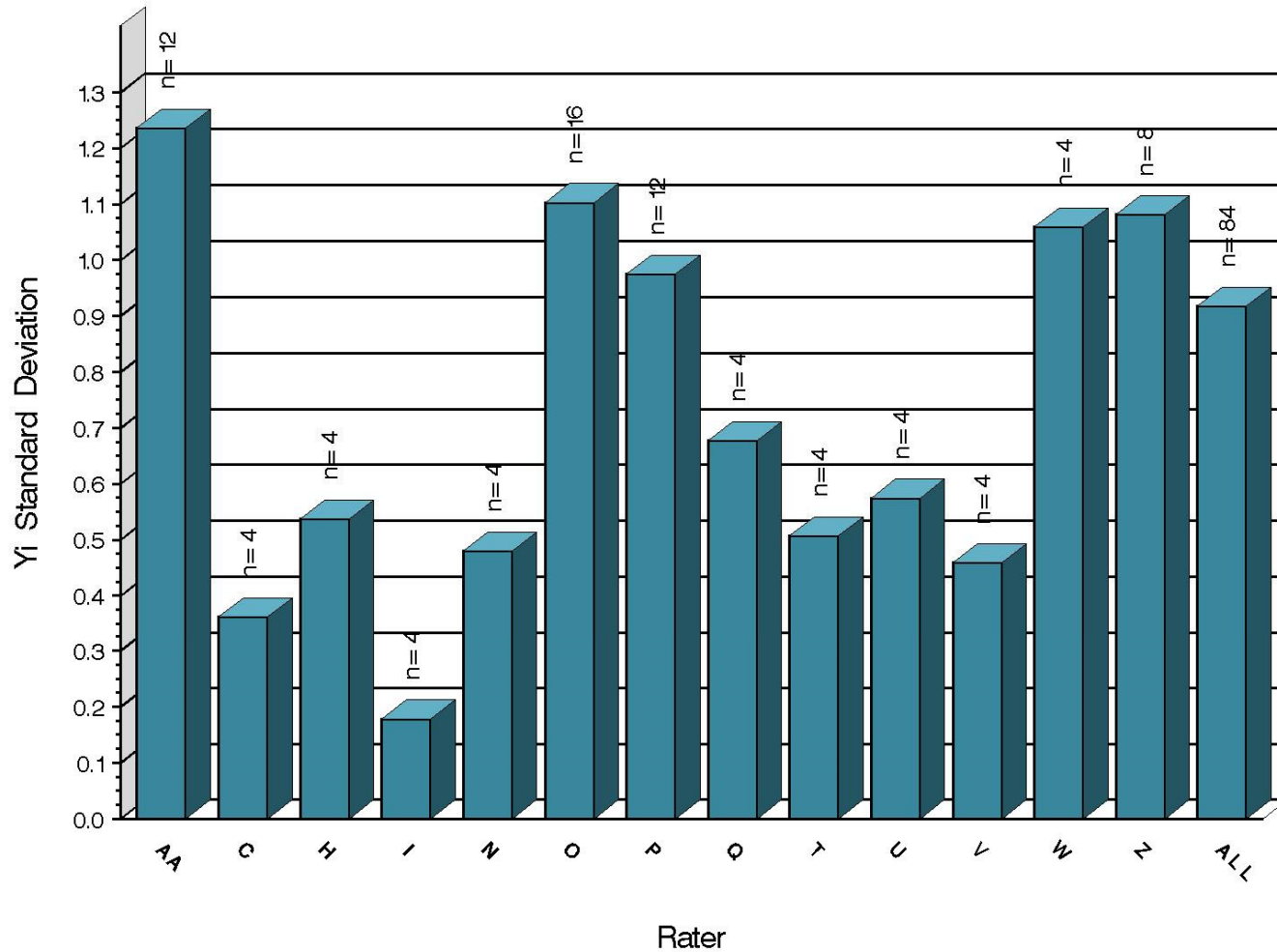
SPITTING
Precision as Measured by Yi STD



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L-37 Rater Calibration

WEAR
Precision as Measured by Yi STD



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L-37 Rater Calibration

SUMMARY OF SEVERITY & PRECISION

Severity

WEAR and RIDG both exceeded the action limit this period, both have since returned to within limits. All other parameters remained within limits throughout the period.

Precision

Industry precision for all parameters remained within limits throughout the period.

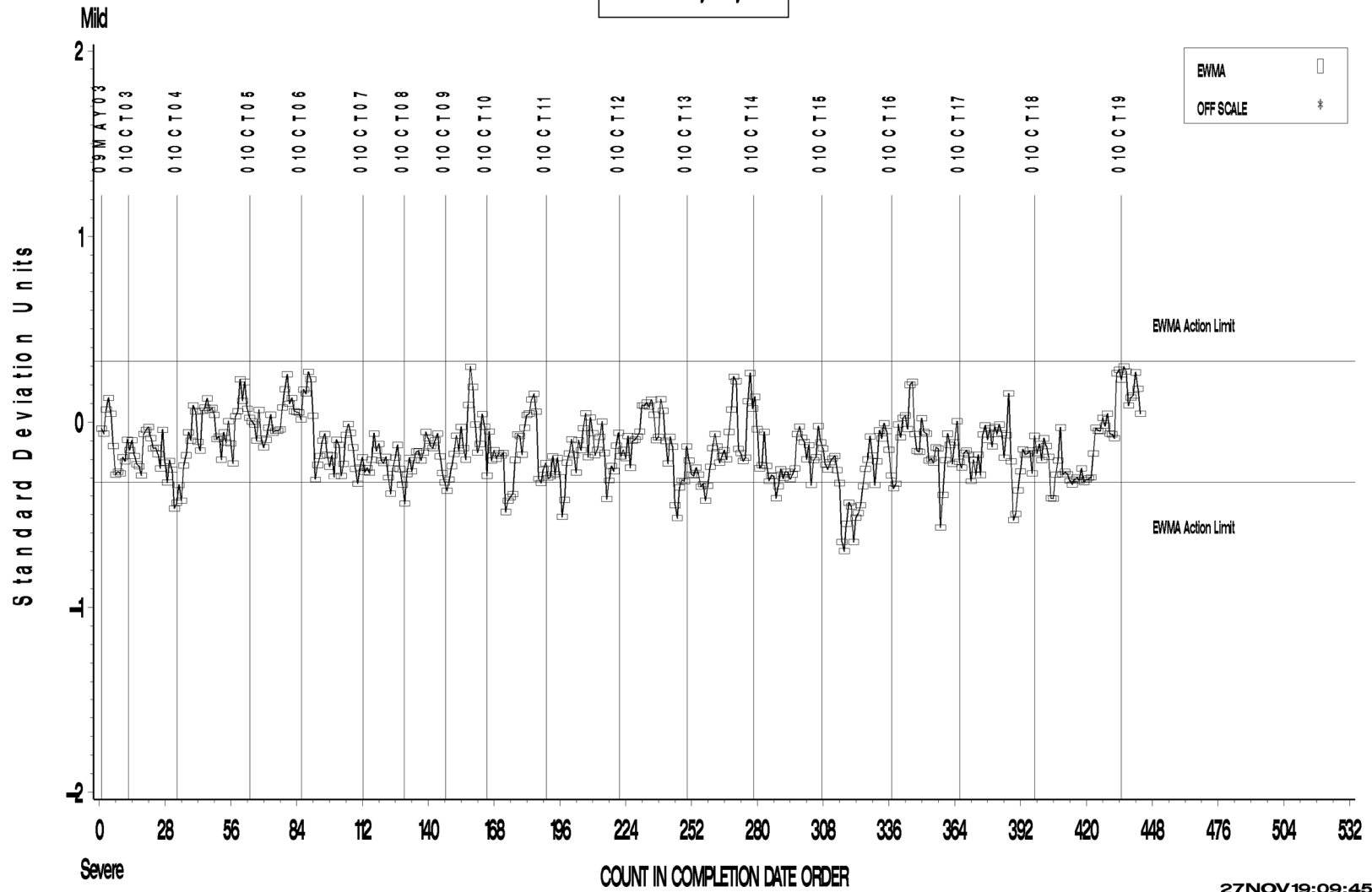
Industry rater control charts follow.

L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIDGING

LTMS Severity Analysis



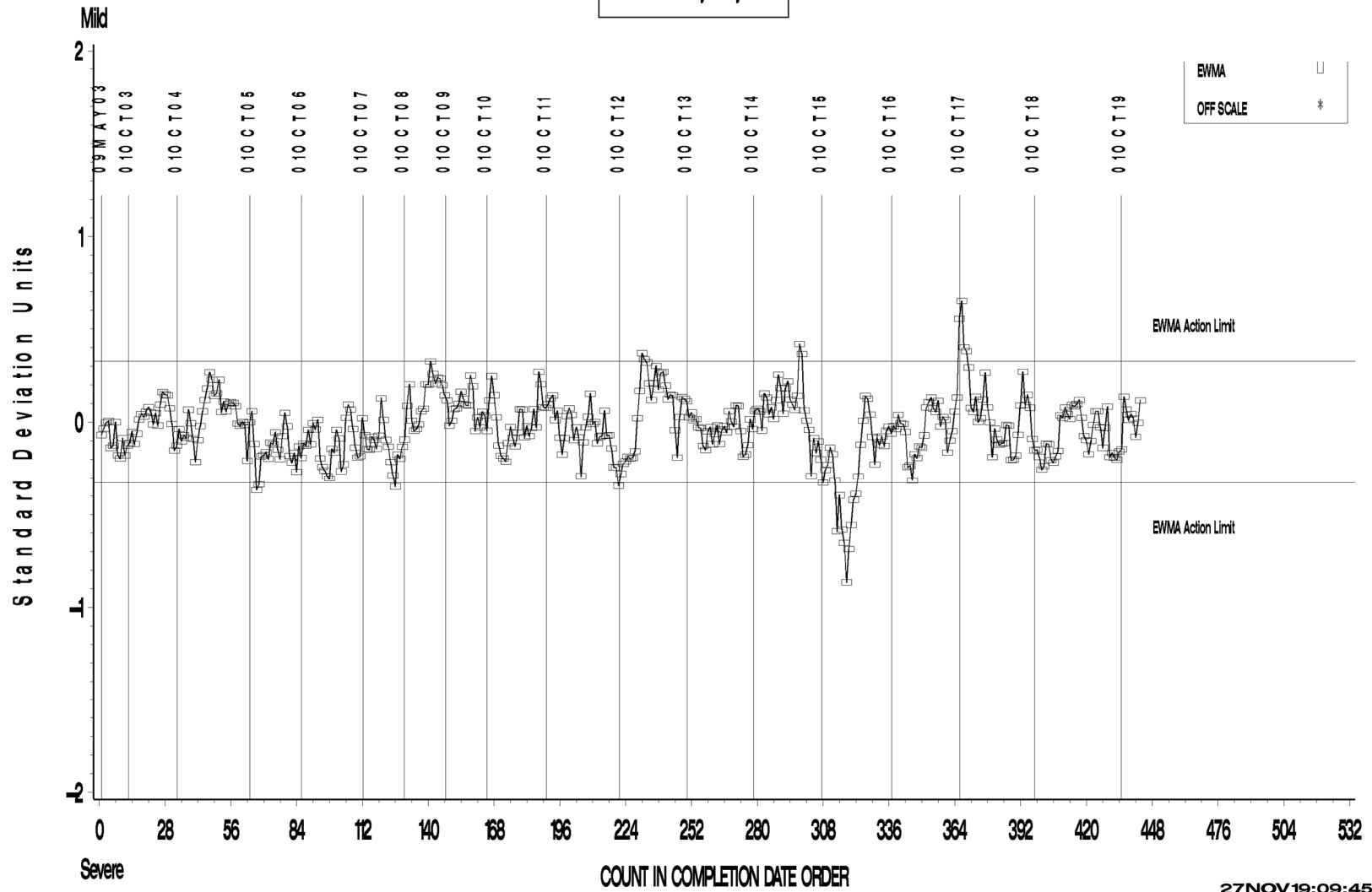
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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIPPLING

LTMS Severity Analysis



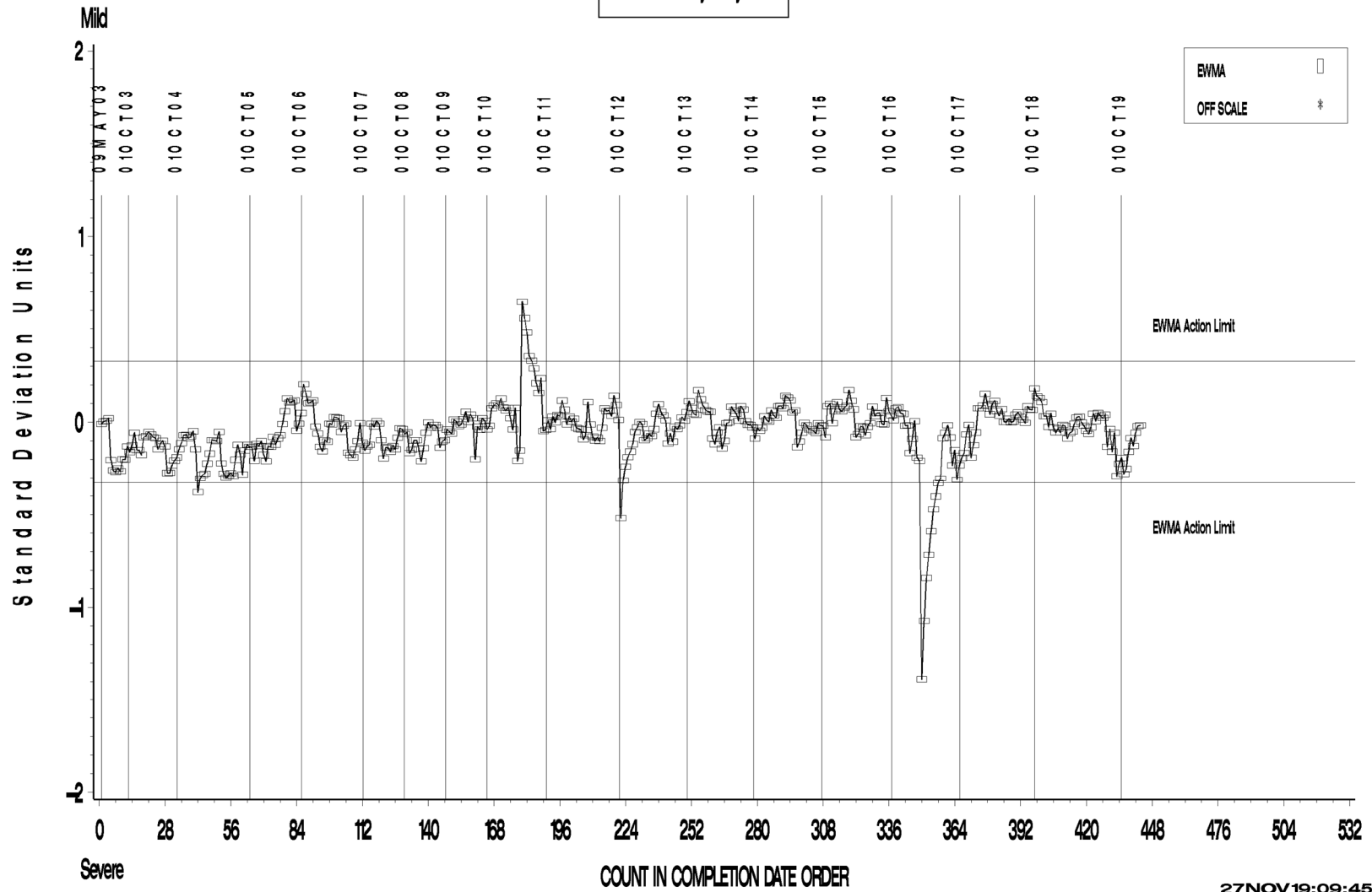
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L-37 Rater Calibration

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SPITTING

LTMS Severity Analysis

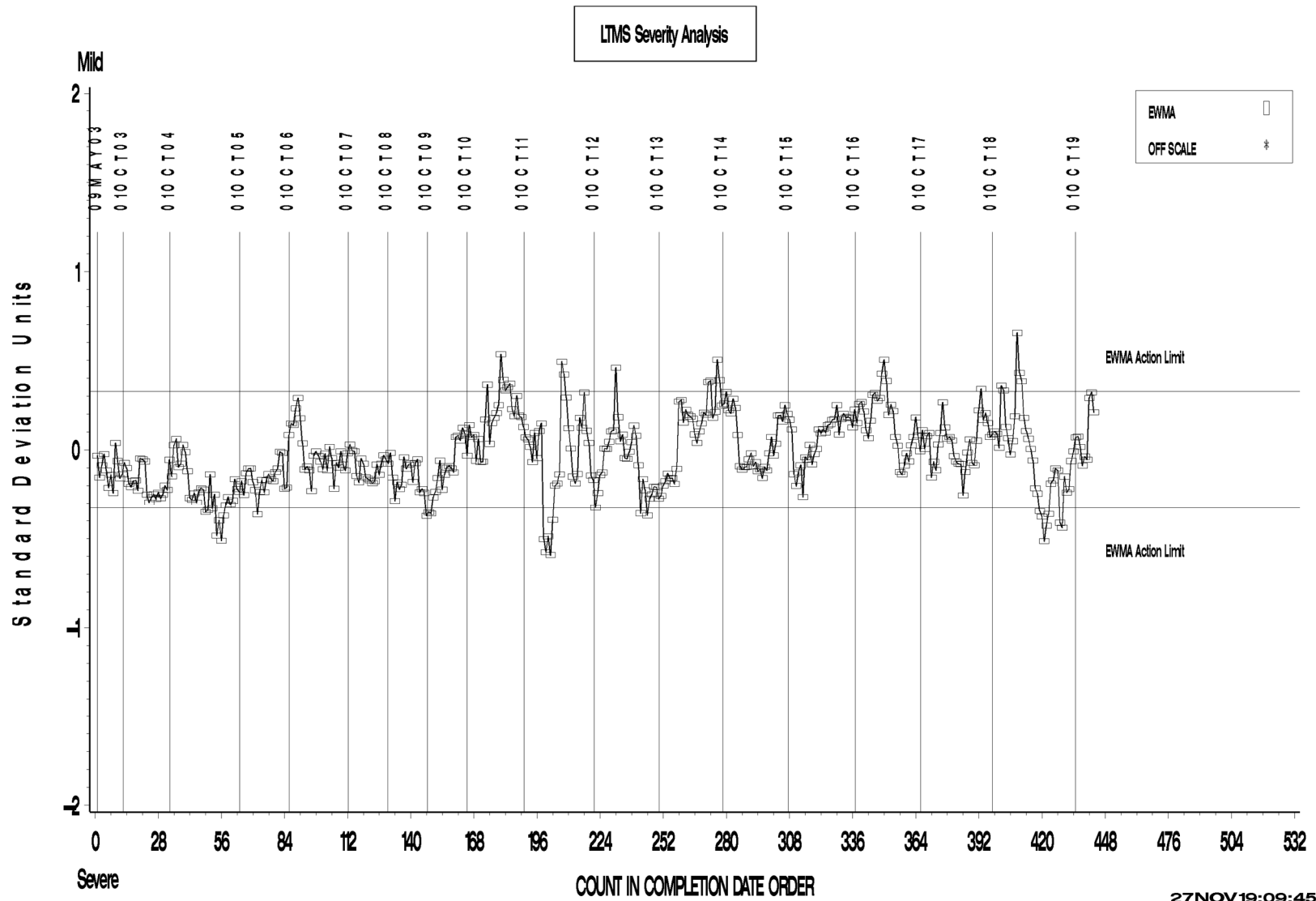


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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

WEAR



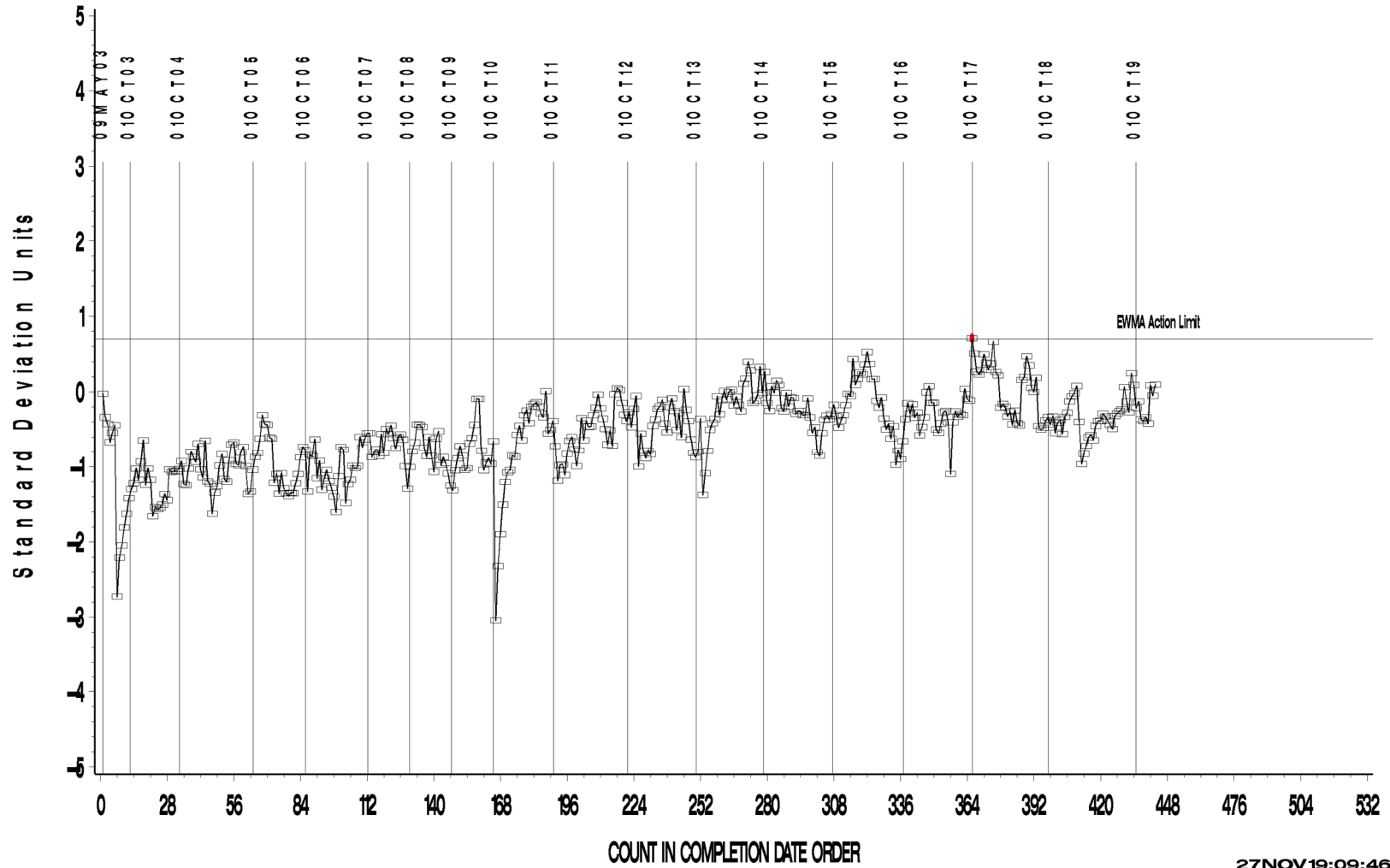
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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIDGING

LTMS Precision Analysis



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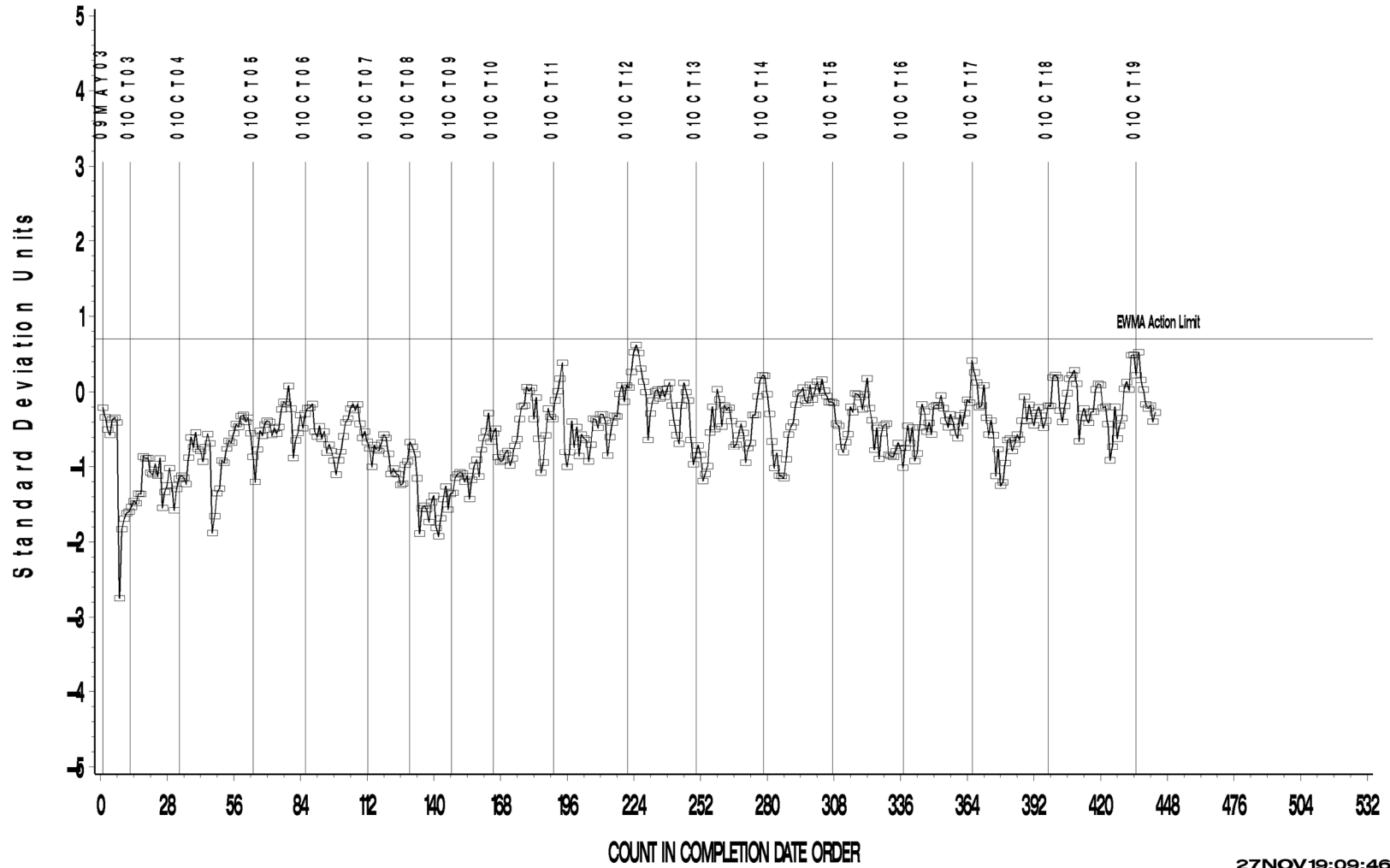
A Program of ASTM International

L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIPPLING

LTMS Precision Analysis



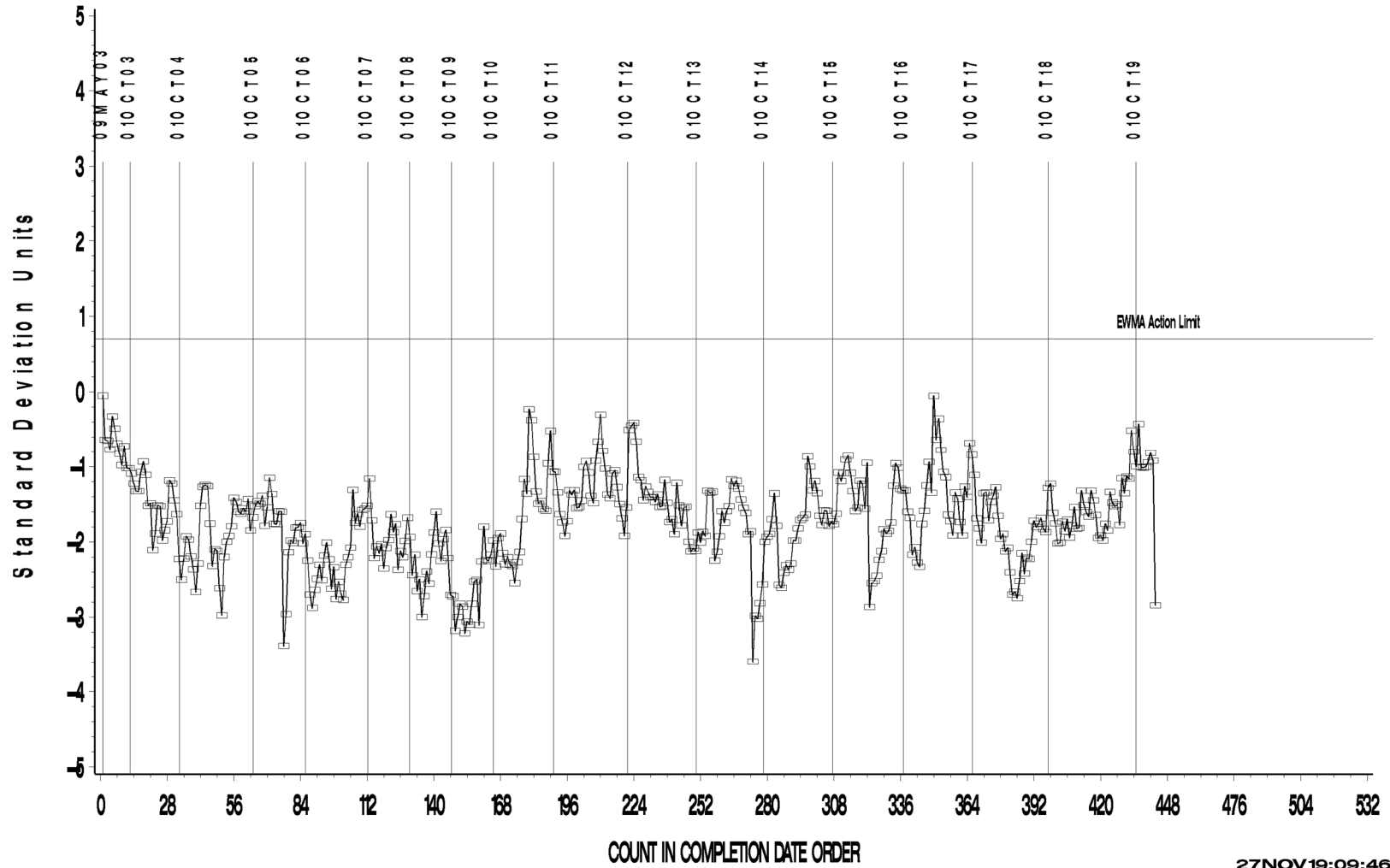
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L-37 Rater Calibration

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SPITTING

LTMS Precision Analysis



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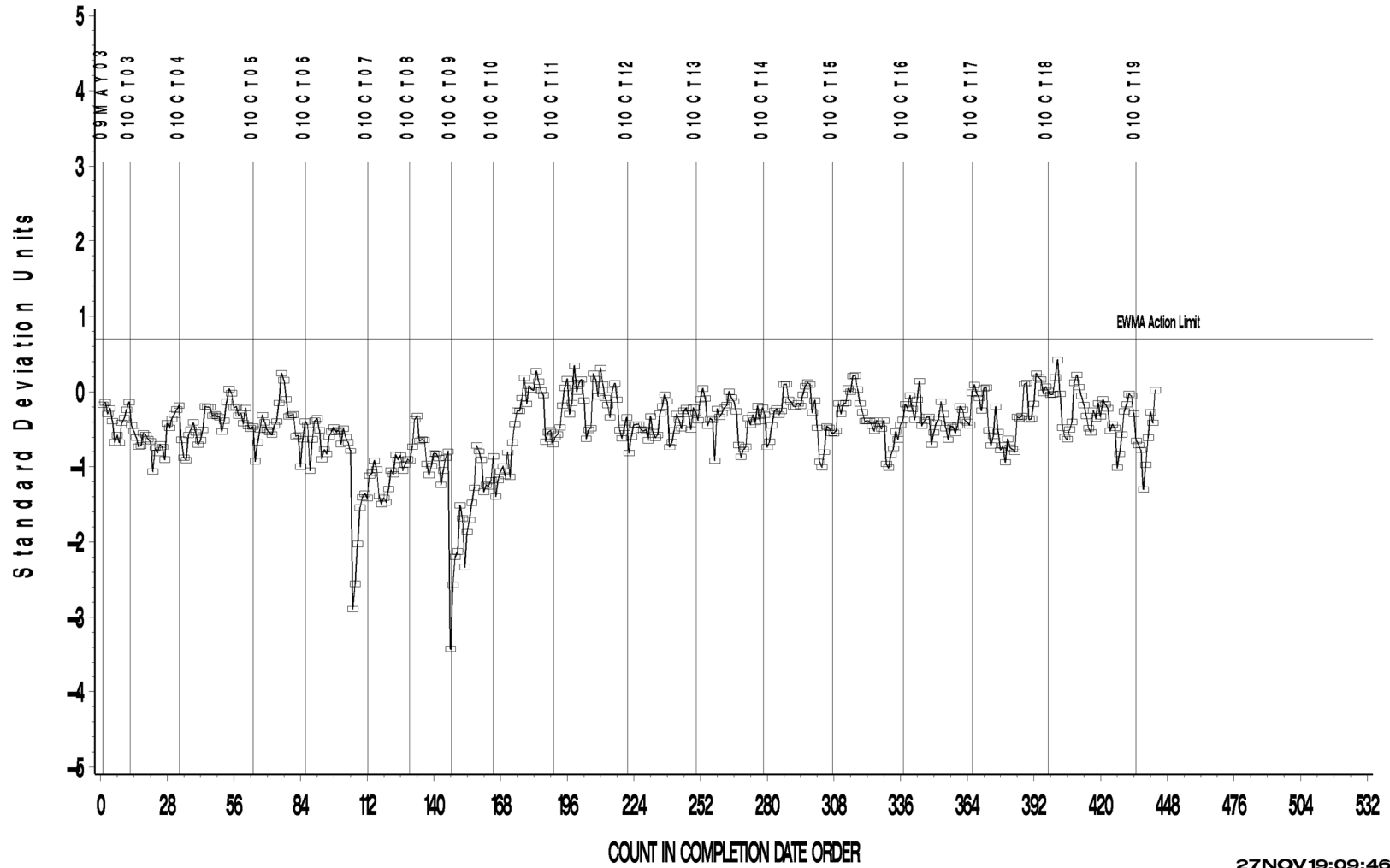
A Program of ASTM International

L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

WEAR

LTMS Precision Analysis



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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIDGING

CUSUM Severity Analysis



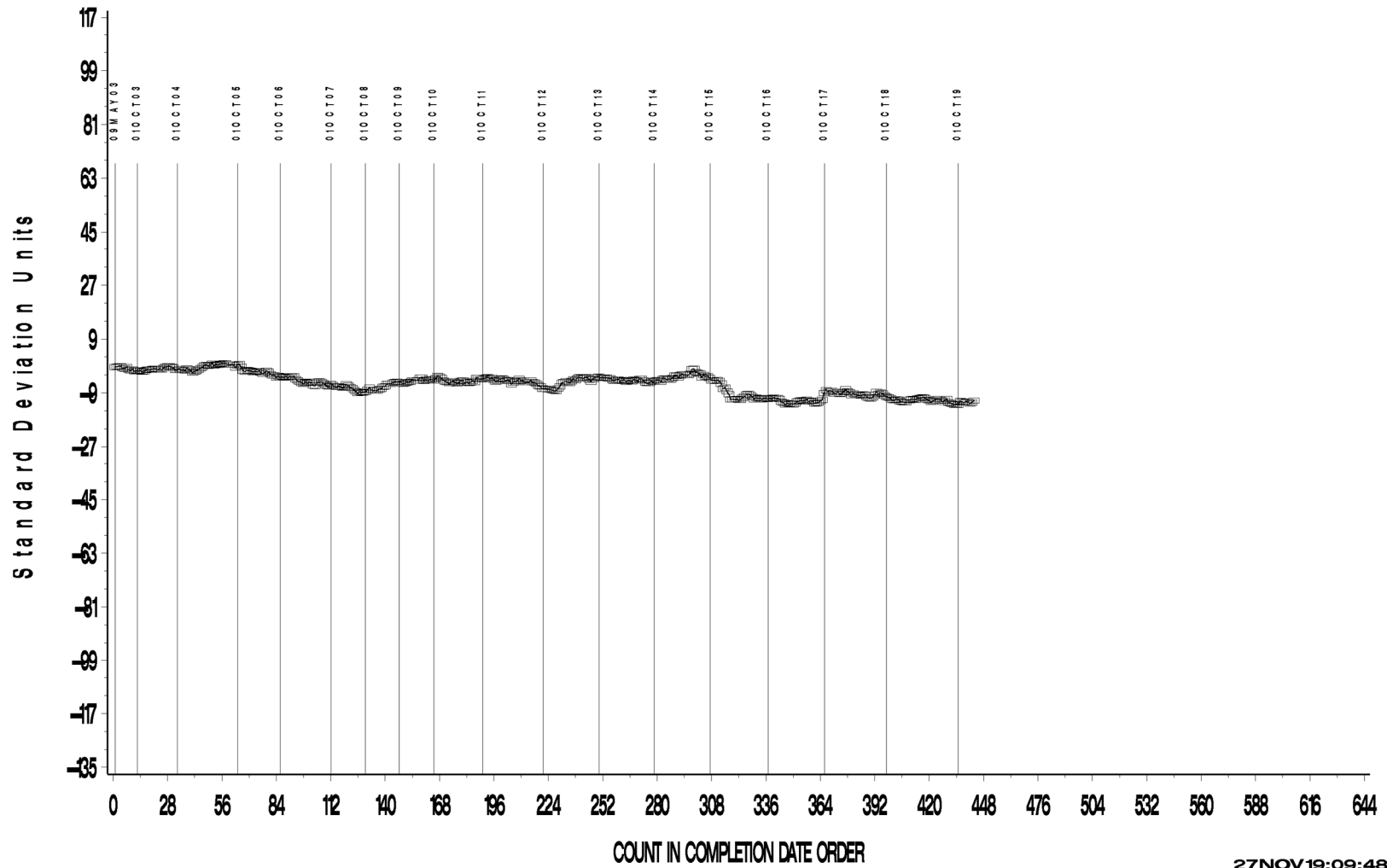
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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIPPLING

CUSUM Severity Analysis



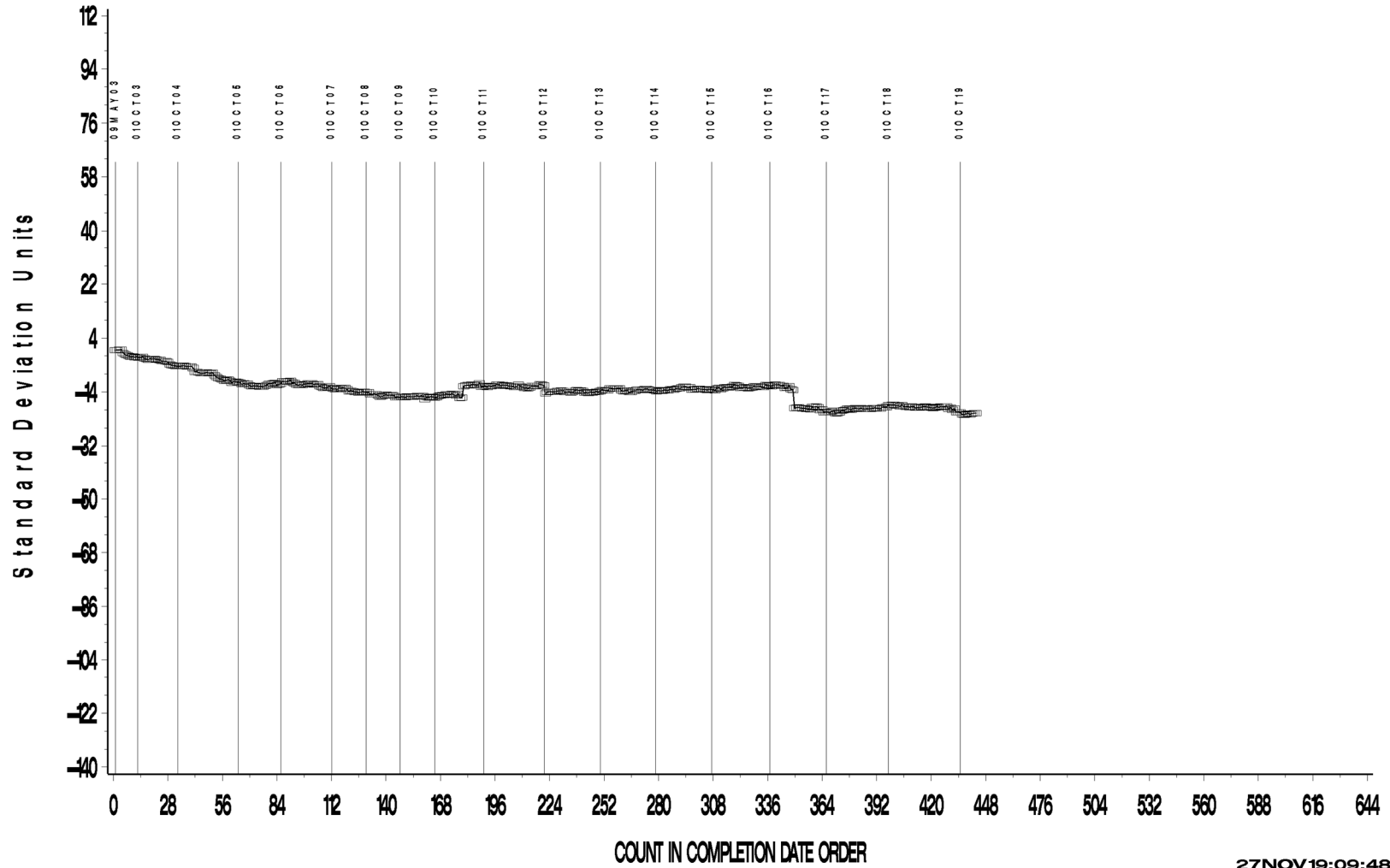
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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DAT

SPITTING

CUSUM Severity Analysis



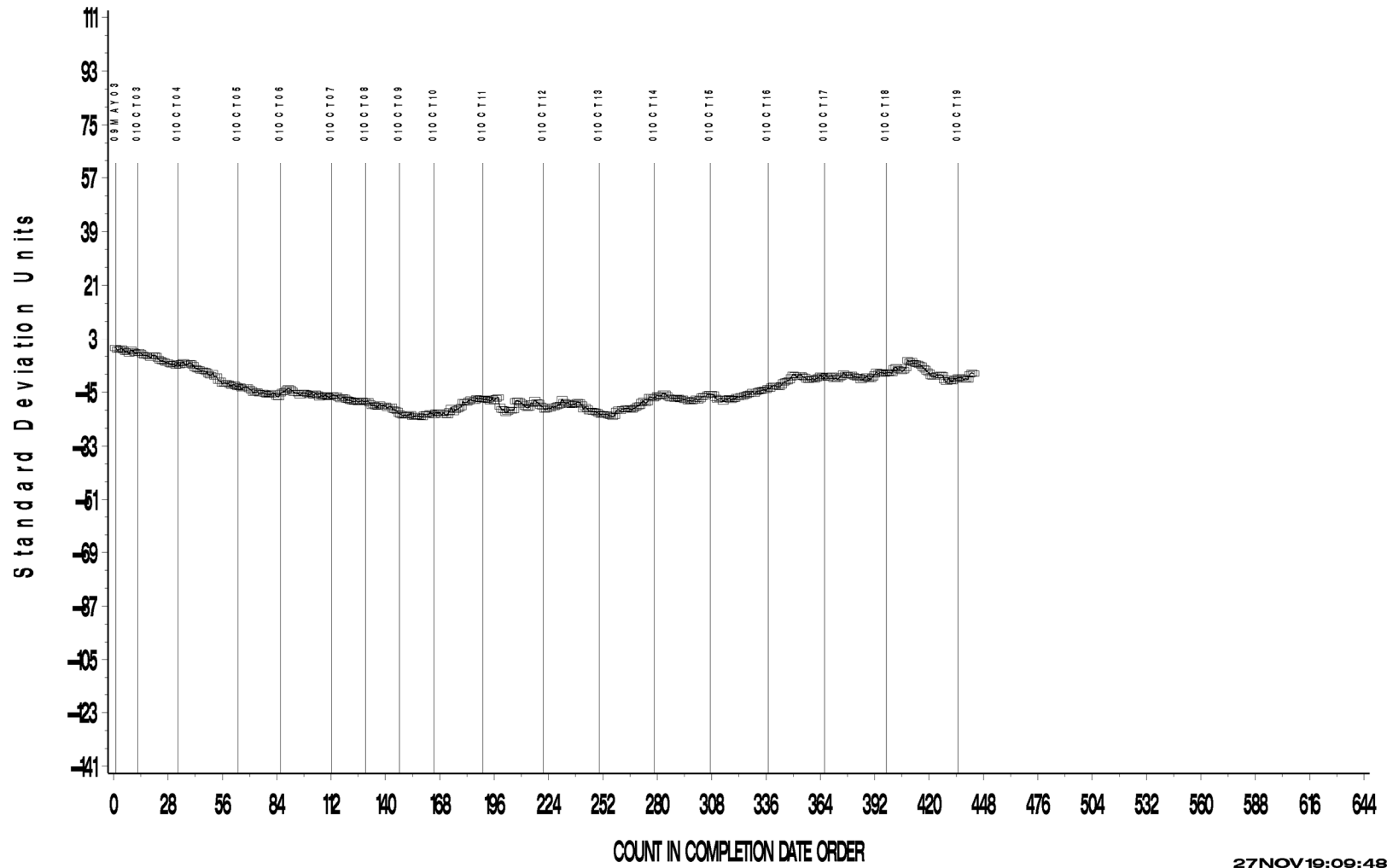
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L-37 Rater Calibration

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

WEAR

CUSUM Severity Analysis



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