



Test Monitoring Center

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Pittsburgh, PA 15206-4489
(412) 365-1000

MEMORANDUM: 06-078

DATE: October 11, 2006

TO: Don Bartlett, Chairman, L-37 Surveillance Panel

FROM: Donald Lind

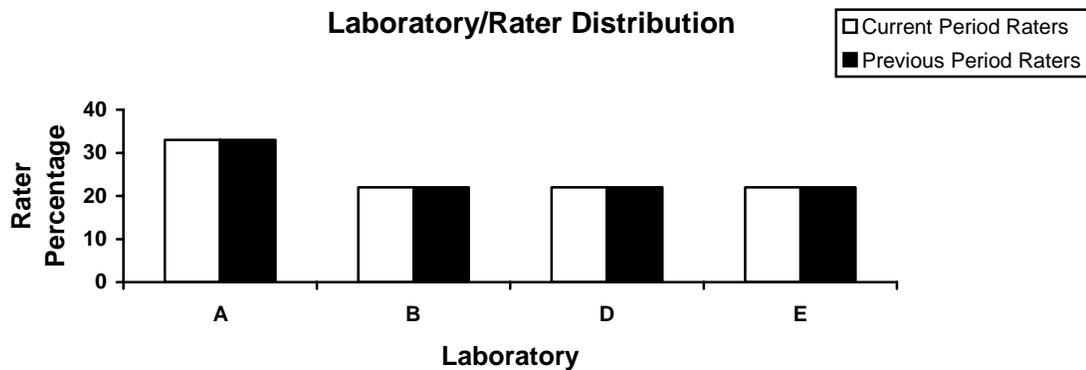
SUBJECT: L-37 Rater Calibration Status from April 1, 2006 through September 30, 2006

The following is a summary of the L-37 rater calibrations reported to the Test Monitoring Center during the period April 1, 2006 through September 30, 2006.

Rater Summary

	Reporting Data	Calibrated as of 9/30/06
Number of Raters	9	7

The following chart shows the laboratory/rater distribution:



The following summarizes the status of the rater calibration tests reported to the TMC:

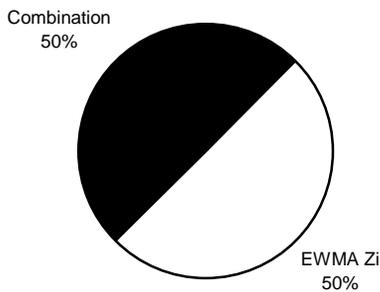
	TMC Validity Codes	No. of Calibrations
Statistically Acceptable	AC	8
Failed Acceptance Criteria	OC	1
Total		9

Summary

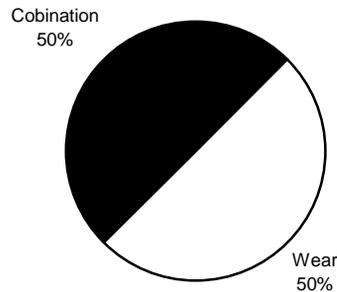
A total of nine L-37 rater calibration results from nine different raters were reported to the TMC this period. Eight of the nine raters were within the acceptance criteria with their first set of pinions. One of the raters needed a second set of pinions to calibrate. One of the nine raters had their calibration period reduced to half (3 months) due to triggering an EWMA severity alarm for the wear parameter. Seven of nine raters are currently calibrated.

A detailed list of reasons tests failed the acceptance criteria are shown in Table 1. The following charts summarize these reasons with a breakdown by parameter of the failed tests.

Distribution of RCMS Rater Alarms



Distribution of Rater Alarms by Parameter



There were no RCMS deviations written this period.

Severity and Precision

For this period, the mean delta/s was -0.11 severe for Wear, -0.23 severe for Rippling, 0.13 mild for Ridging, and 0.07 mild for Spitting. Precision was 0.84 for Wear, 0.93 for Rippling, 0.62 for Ridging, and 0.61 for Spitting. A straight standard deviation of Yi was used because the number of ratings per pinion was too small to determine a pooled standard deviation. Below is a table illustrating rater severity for this report period:

Rater	Wear		Rippling		Ridging		Spitting	
	Yi	S.D. *	Yi	S.D. *	Yi	S.D. *	Yi	S.D. *
A	-0.27	0.49	0.43	0.73	0.55	0.38	0.22	0.45
B	-0.04	0.64	0.04	0.77	-0.22	0.62	0.15	0.35
C	0.00	0.75	-0.41	0.94	-0.02	0.30	0.00	0.00
D	-1.01	0.23	-0.67	1.13	0.03	0.83	-0.70	0.40
E	0.10	2.02	-0.52	1.17	-0.04	0.83	0.05	0.38
F	-0.22	0.46	0.55	1.38	0.57	0.40	0.33	1.45
H	0.36	0.36	-0.36	0.98	0.25	0.60	0.13	0.51
I	0.08	0.74	-0.31	0.42	0.57	0.47	0.40	0.43
K	-0.02	0.73	-0.82	0.15	-0.53	0.43	0.02	0.29

*A straight standard deviation of Yi was used as the number of ratings per pinion was too small to determine a pooled standard deviation.

Industry Control Charts

Figures 1 through 4 are the L-37 rater industry control charts for pinion Wear, Rippling, Ridging, and Spitting, respectively. Figures 5 through 8 are the rater industry control charts of the last 20 test results for pinion Wear, Rippling, Ridging, and Spitting, respectively.. Severity and precision EWMA charts for pinion Wear, Rippling, Ridging, and Spitting were all in control this report period.

Attachments

c: L-37 Surveillance Panel

L-37 Rater Task Force

J. L. Zalar

F. M. Farber

ftp://ftp.astmtmc.cmu.edu/docs/rater_calibration/l37rc-10-2006.pdf

Distribution: Email

Listing of Tables and Figure Included as Part of This Report to the L-37 Rater Calibration Report

Table 1 is a Detailed List Summarizing the Reasons for Failed Tests

Figure 1 is the L-37 Rater Industry Control Charts for Pinion Wear

Figure 2 is the L-37 Rater Industry Control Charts for Pinion Rippling

Figure 3 is the L-37 Rater Industry Control Charts for Pinion Ridging

Figure 4 is the L-37 Rater Industry Control Charts for Pinion Spitting

Figure 5 is the L-37 Rater Industry Control Chart of the last 20 test results for Pinion Wear

Figure 6 is the L-37 Rater Industry Control Chart of the last 20 test results for Pinion Rippling

Figure 7 is the L-37 Rater Industry Control Chart of the last 20 test results for Pinion Ridging

Figure 8 is the L-37 Rater Industry Control Chart of the last 20 test results for Pinion Spitting

Table 1

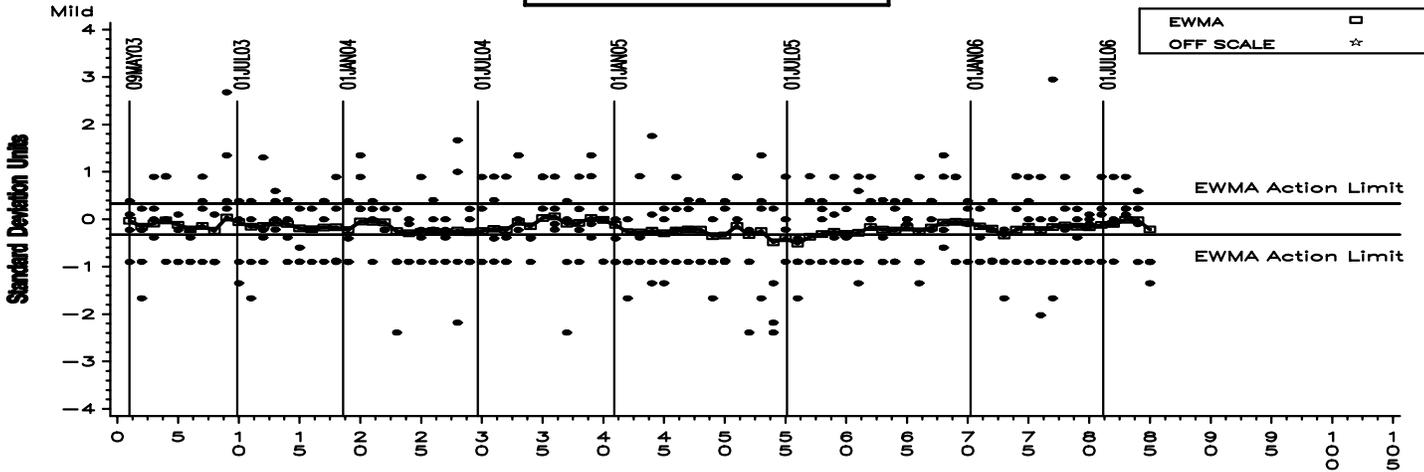
Summary of Alarms This Period

Lab	Rater	Reason
A	F	Wear EWMA Severity Warning
D	D	Wear Severe, Wear EWMA Severity Warning, and Spitting EWMA Severity Warning

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

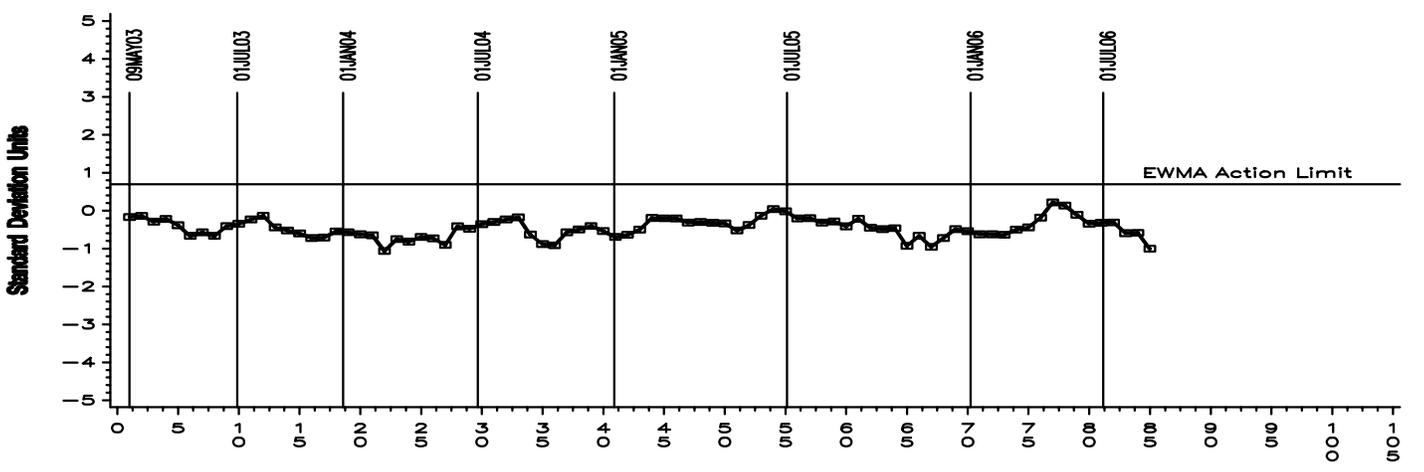
WEAR

LTMS Severity Analysis



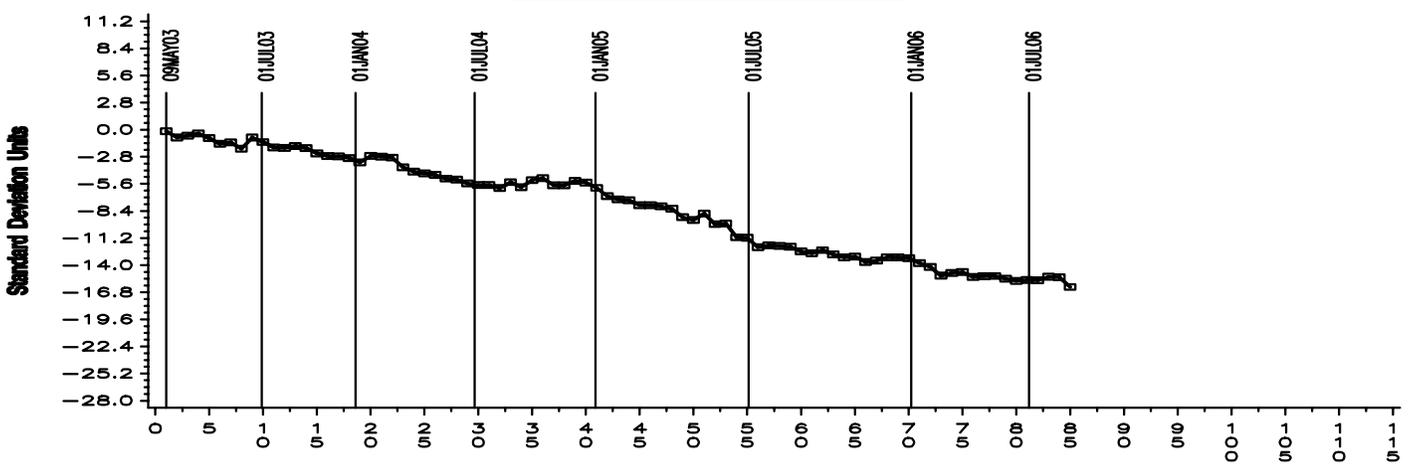
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis

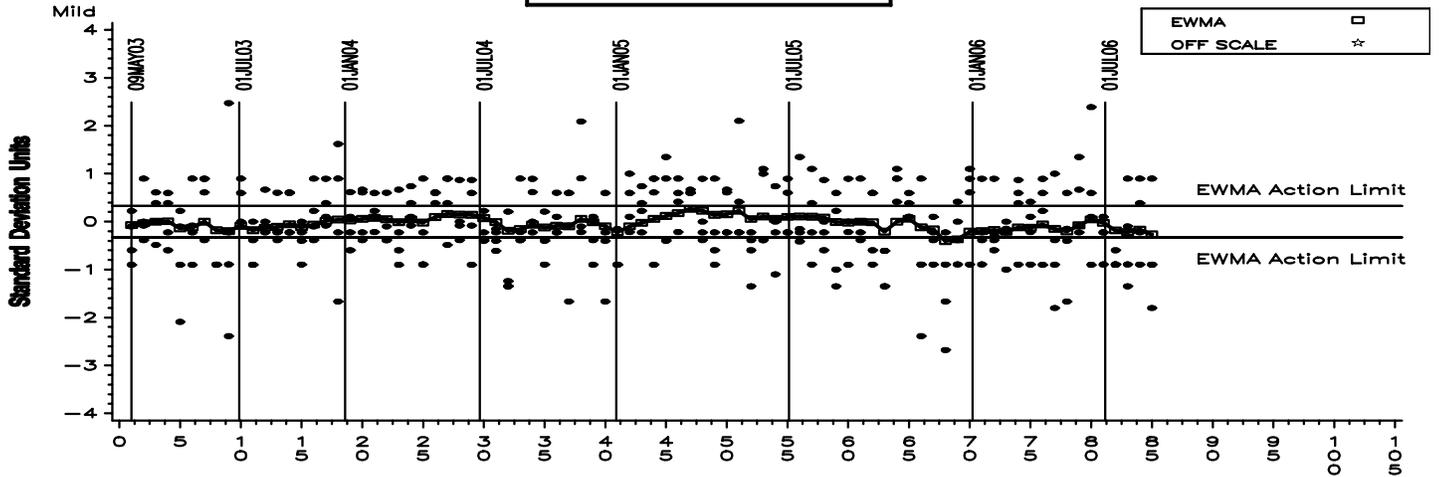


COUNT IN COMPLETION DATE ORDER

L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

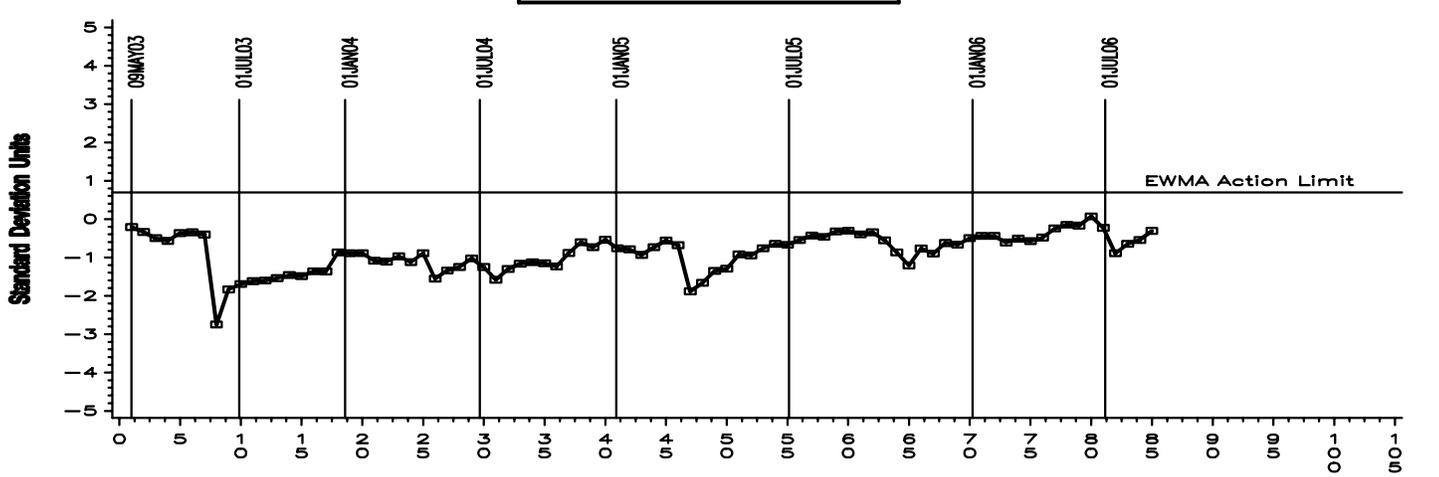
RIPPLING

LTMS Severity Analysis



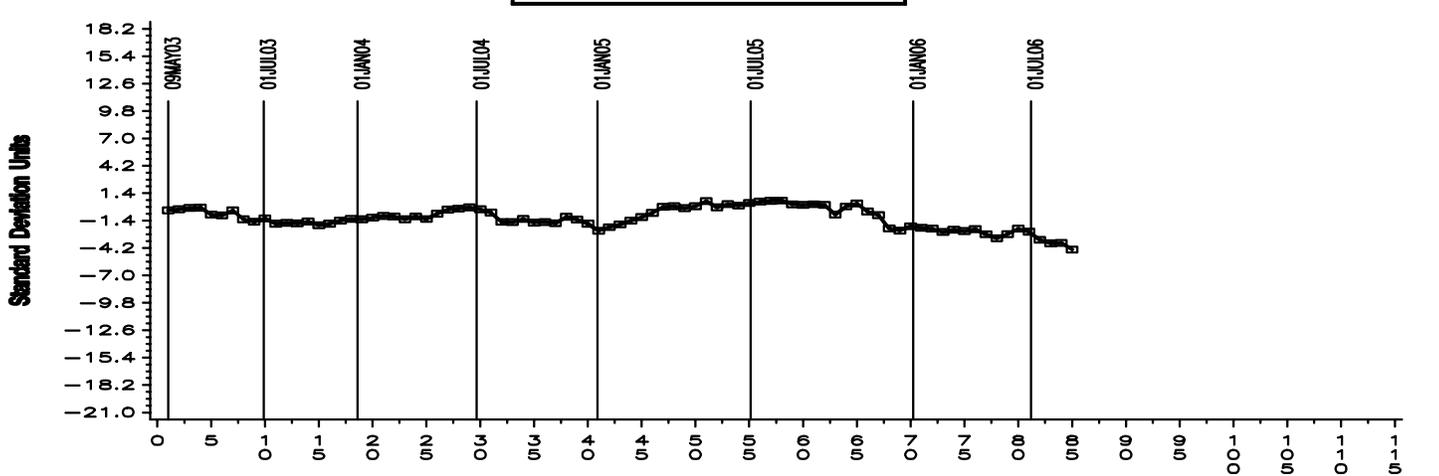
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



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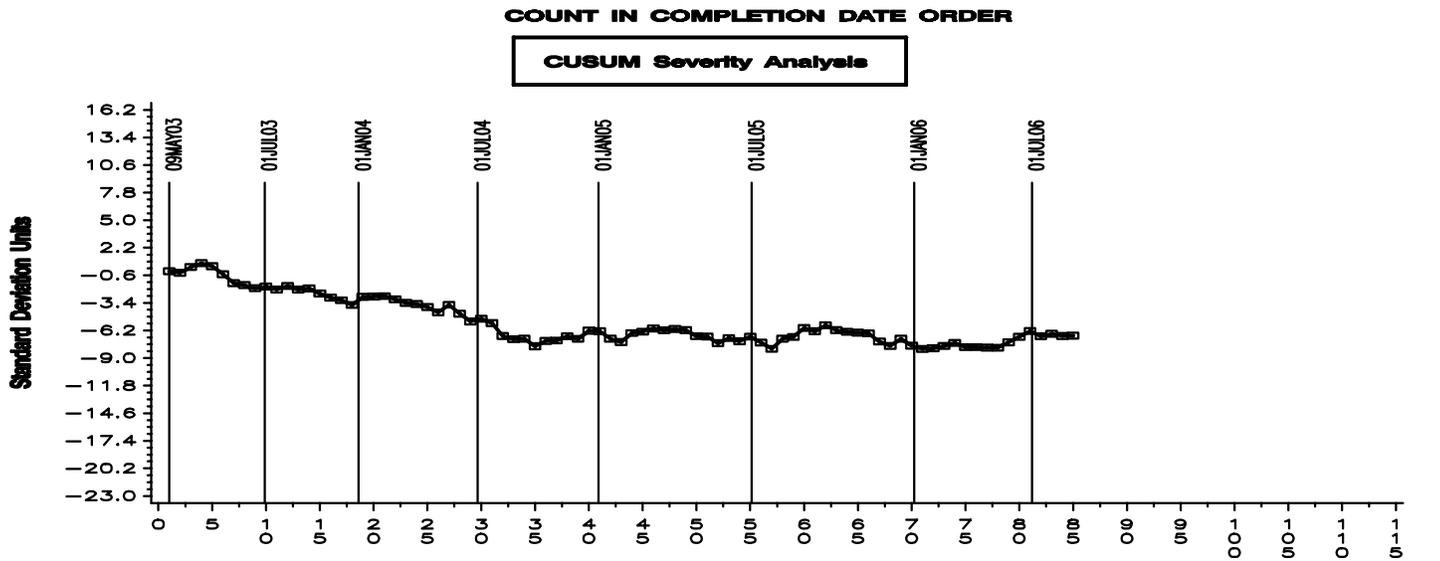
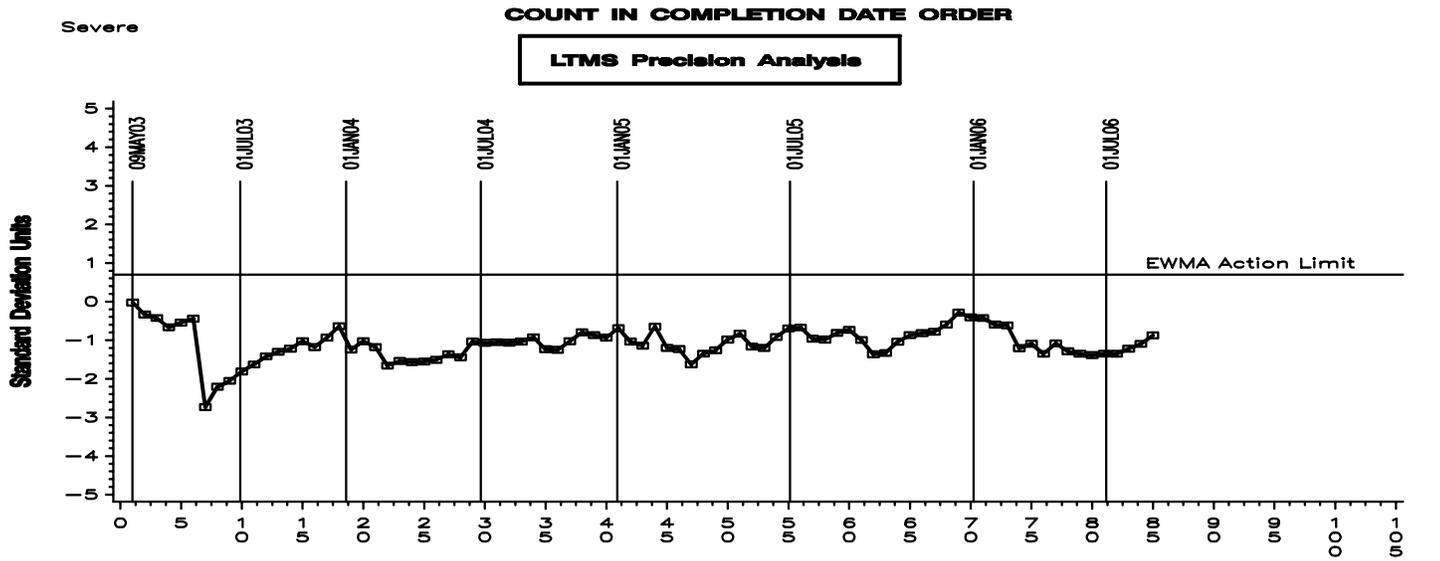
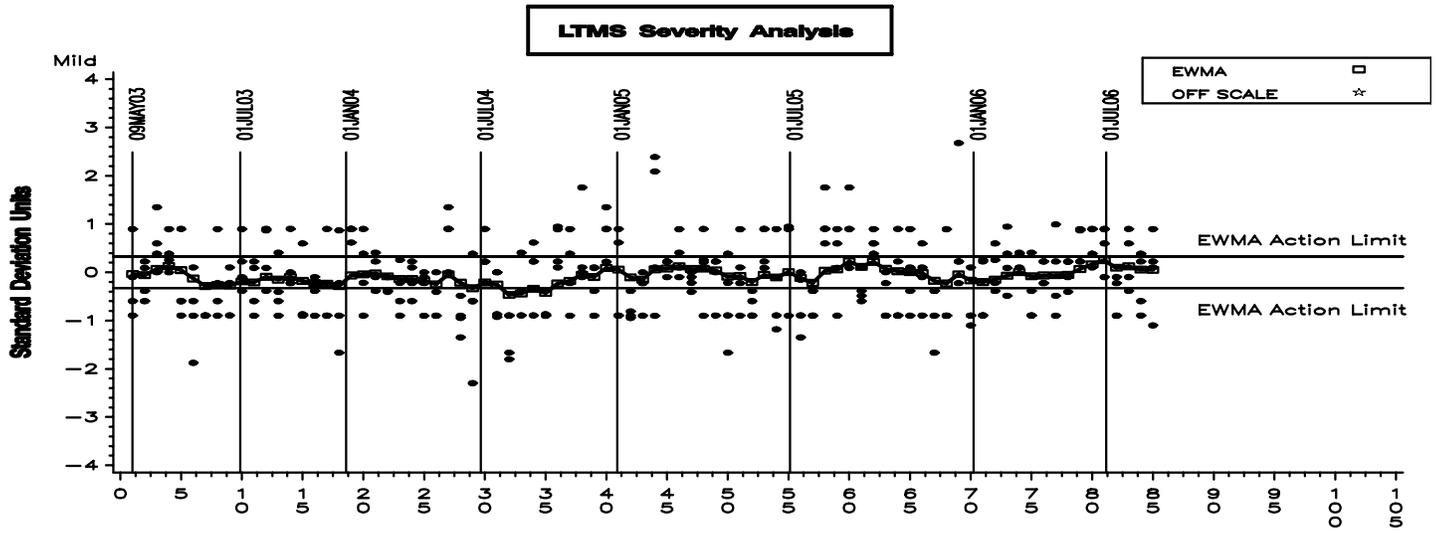
CUSUM Severity Analysis



COUNT IN COMPLETION DATE ORDER

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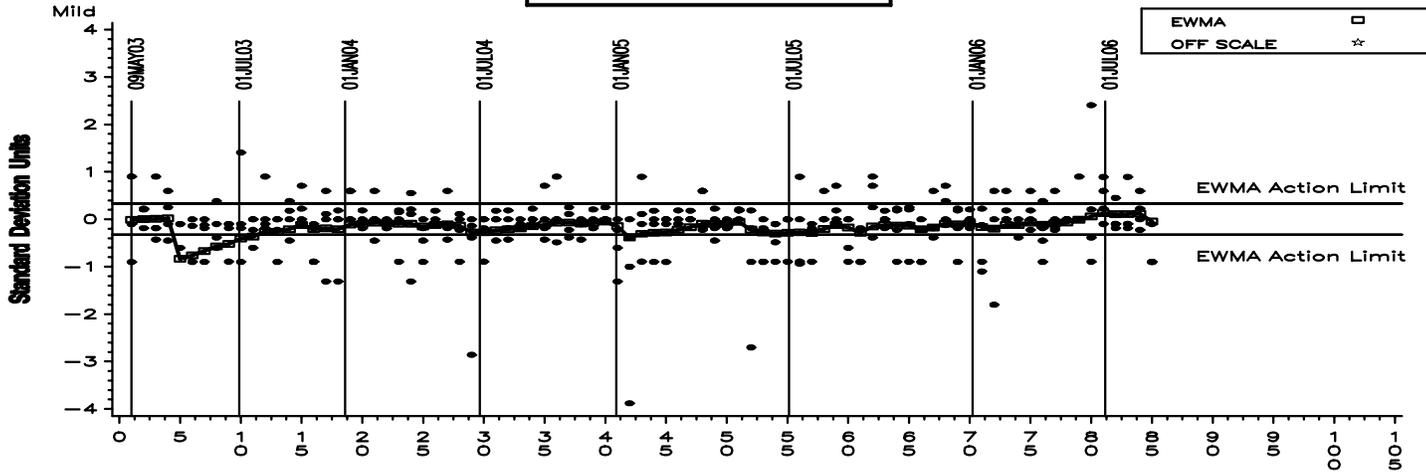
RIDGING



L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

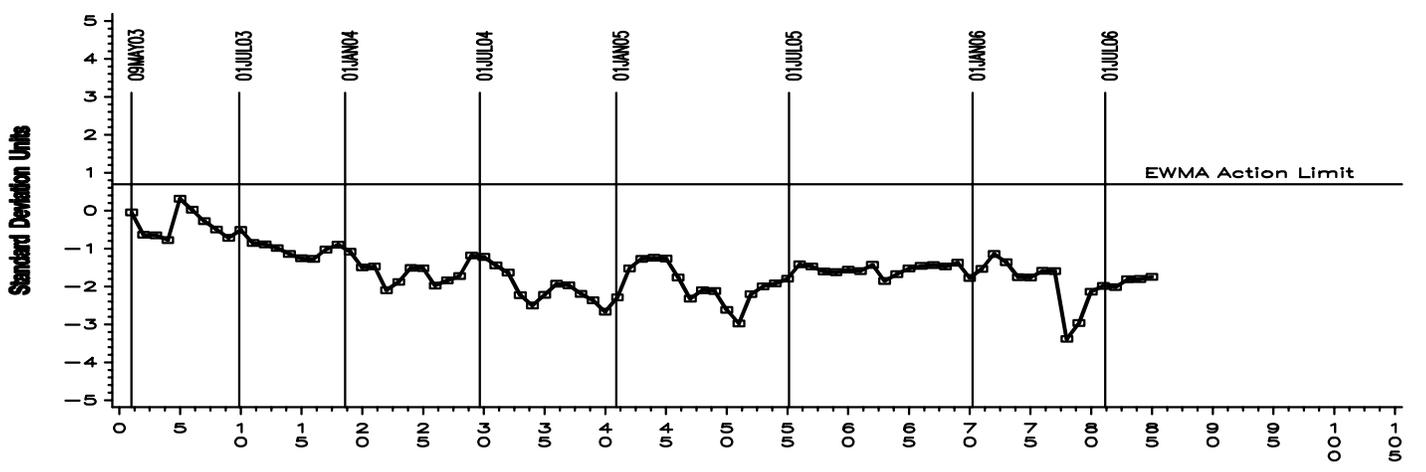
SPITTING

LTMS Severity Analysis



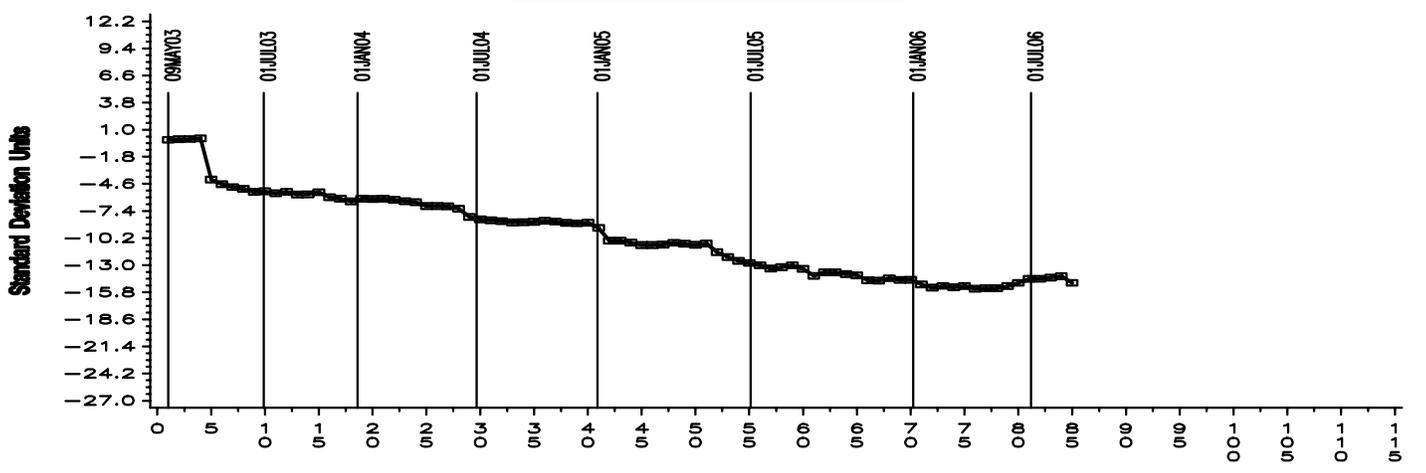
COUNT IN COMPLETION DATE ORDER

LTMS Precision Analysis



COUNT IN COMPLETION DATE ORDER

CUSUM Severity Analysis



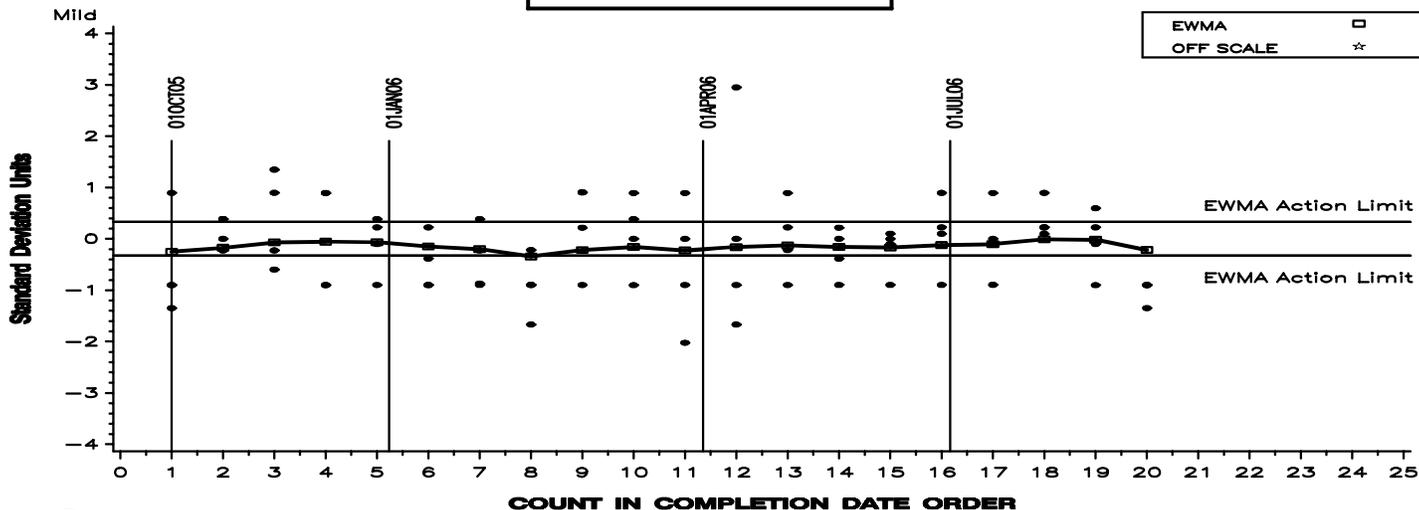
COUNT IN COMPLETION DATE ORDER

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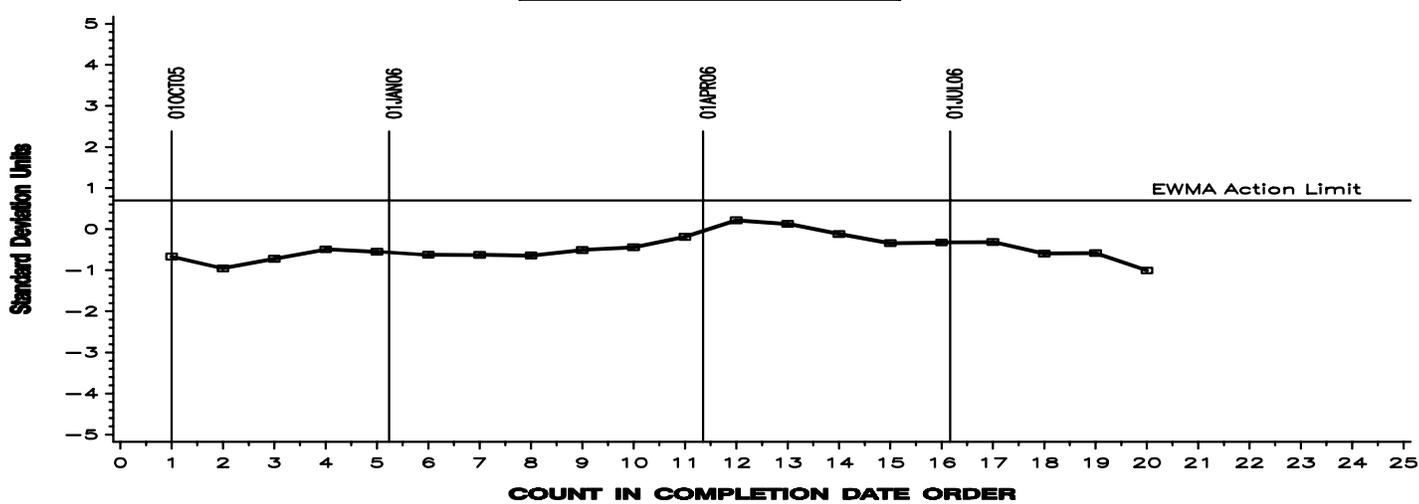
Last 20 Test Results

WEAR

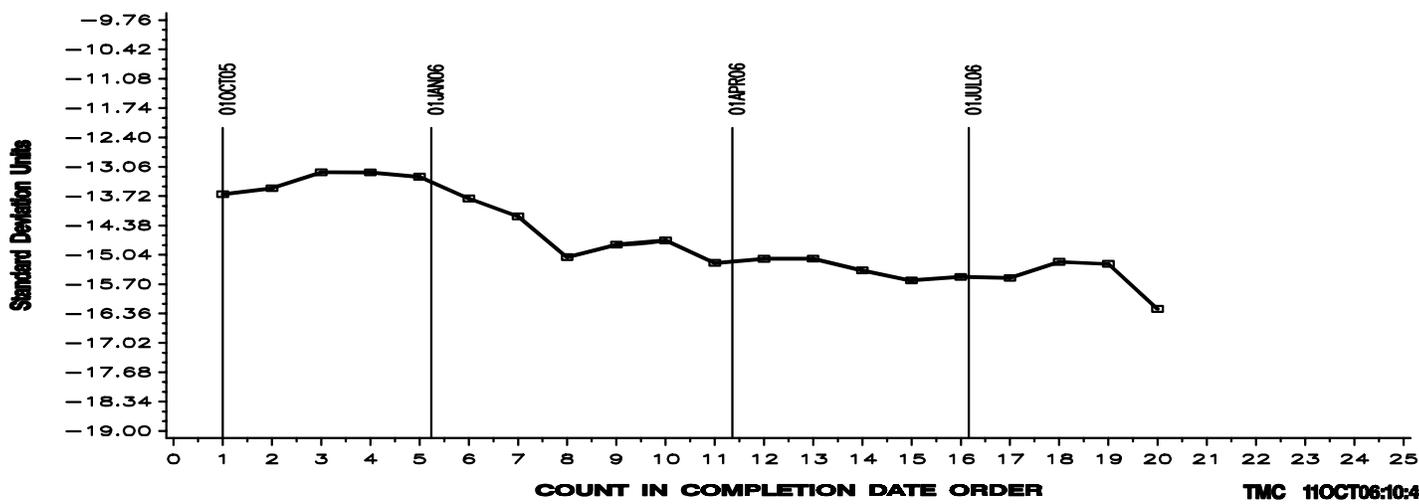
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

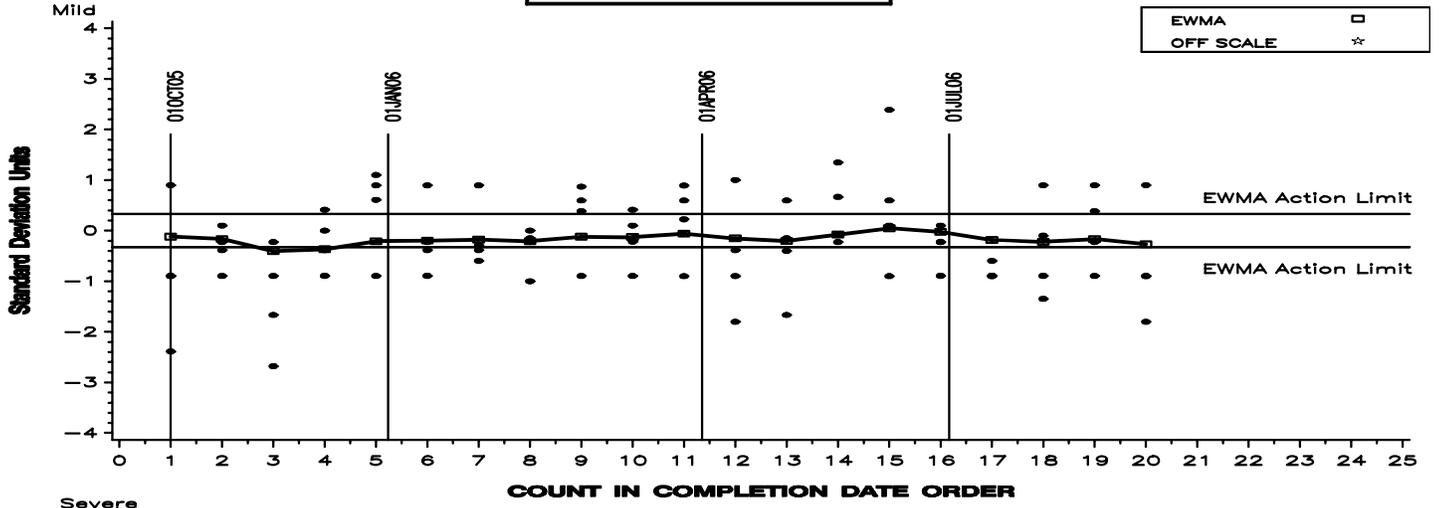


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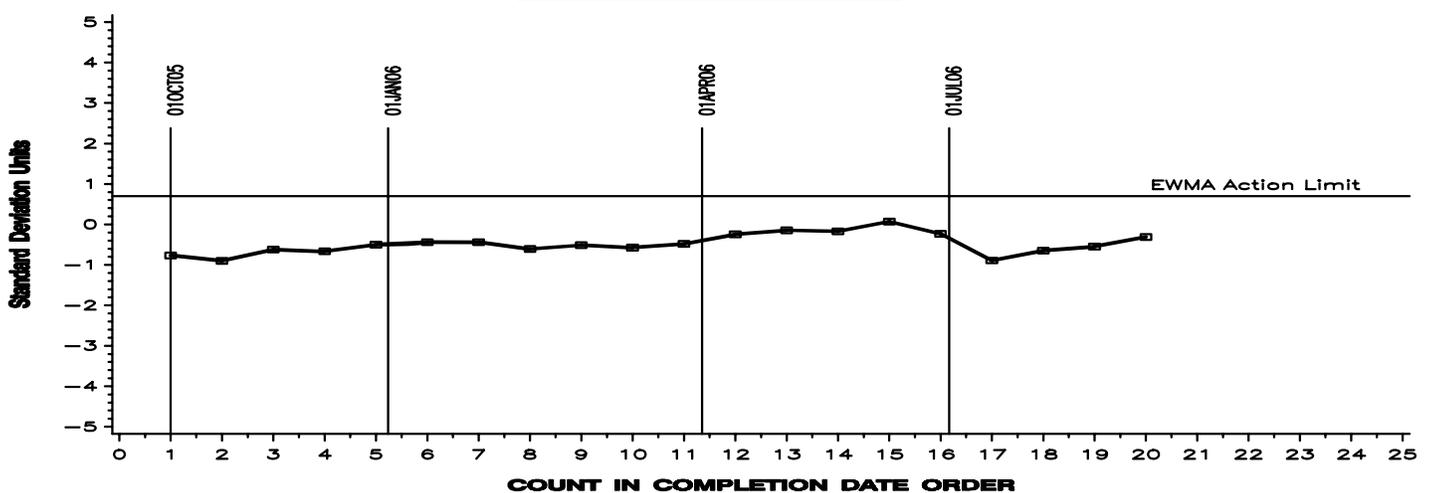
Last 20 Test Results

RIPPLING

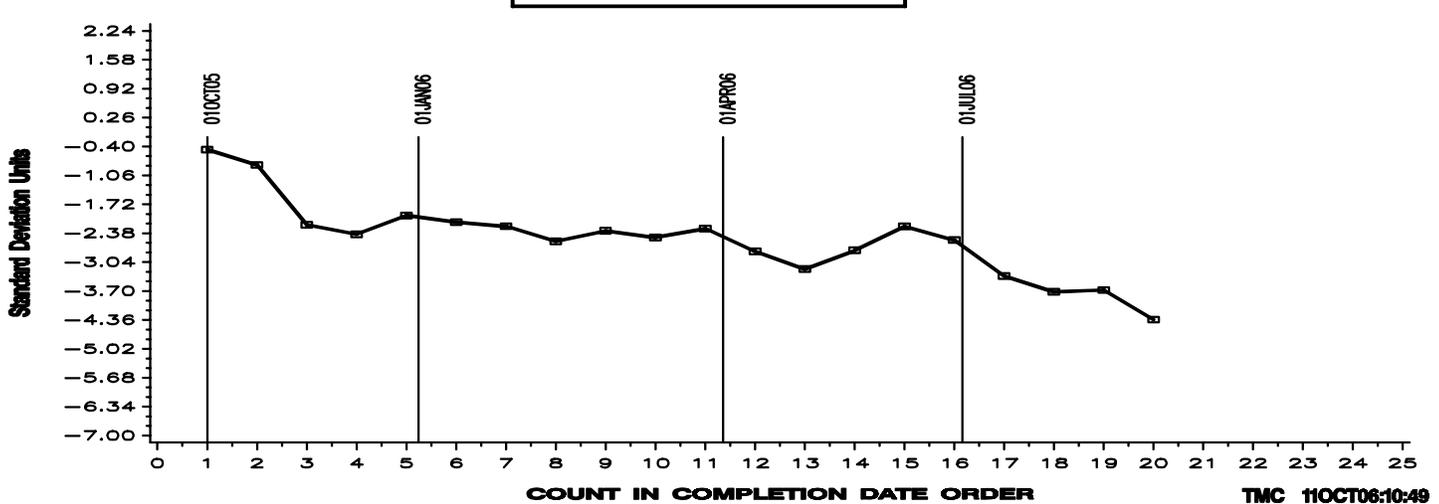
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

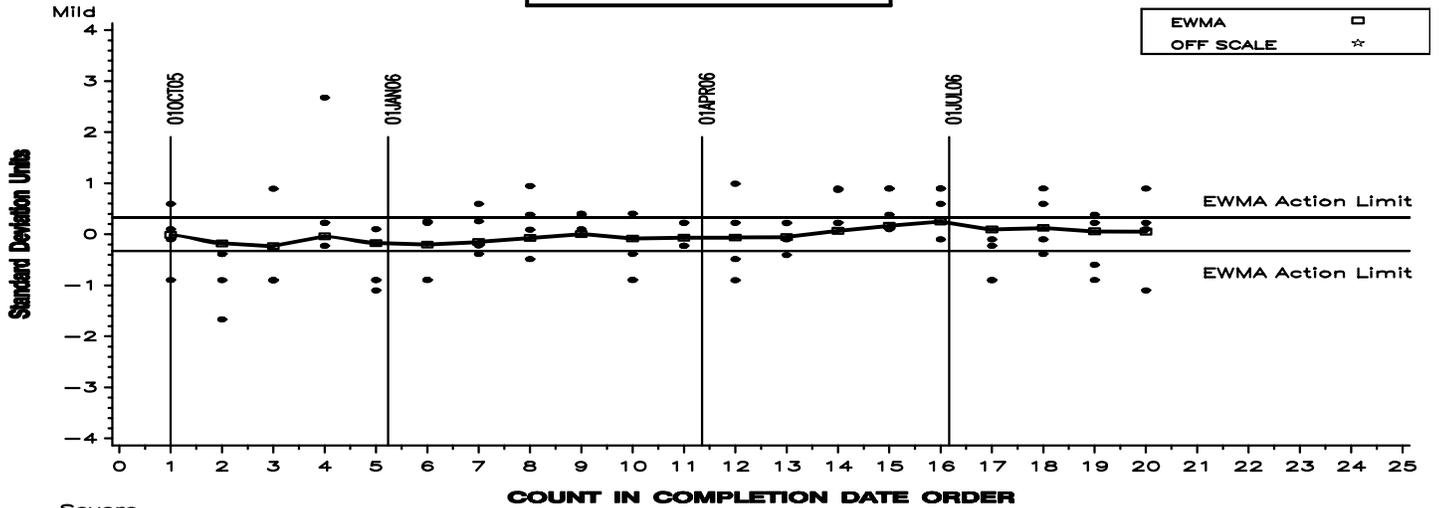


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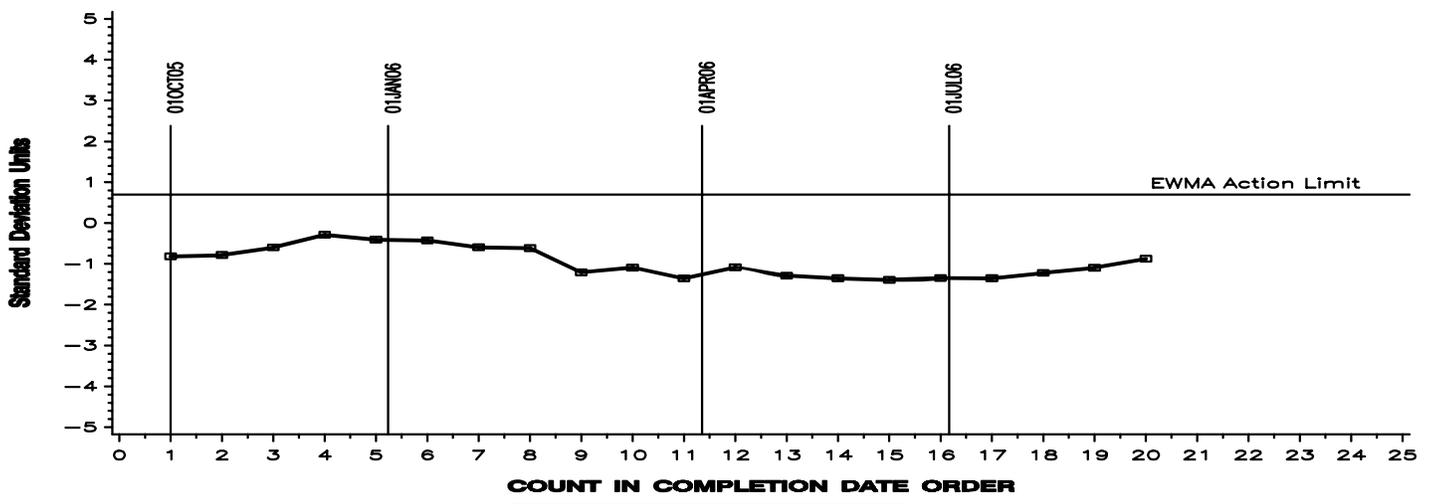
Last 20 Test Results

RIDGING

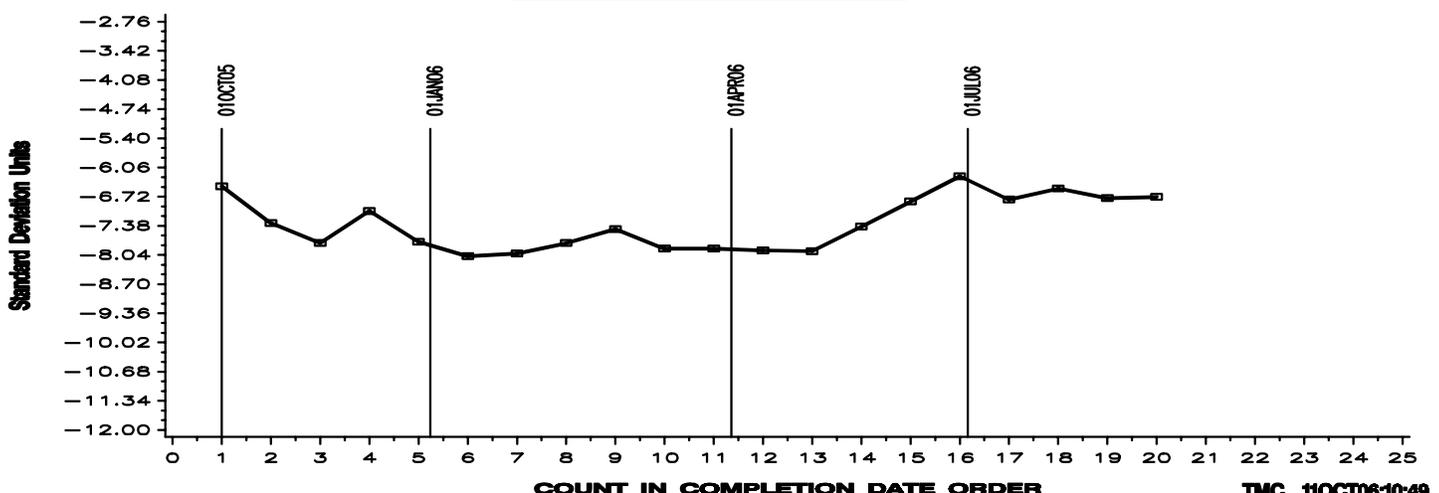
LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

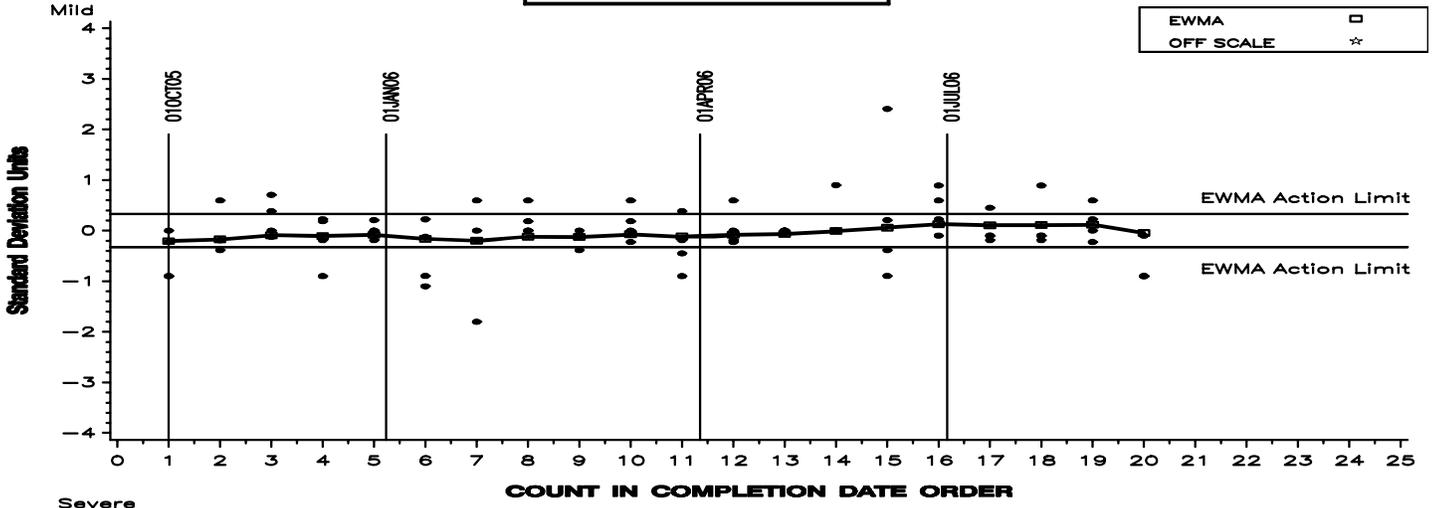


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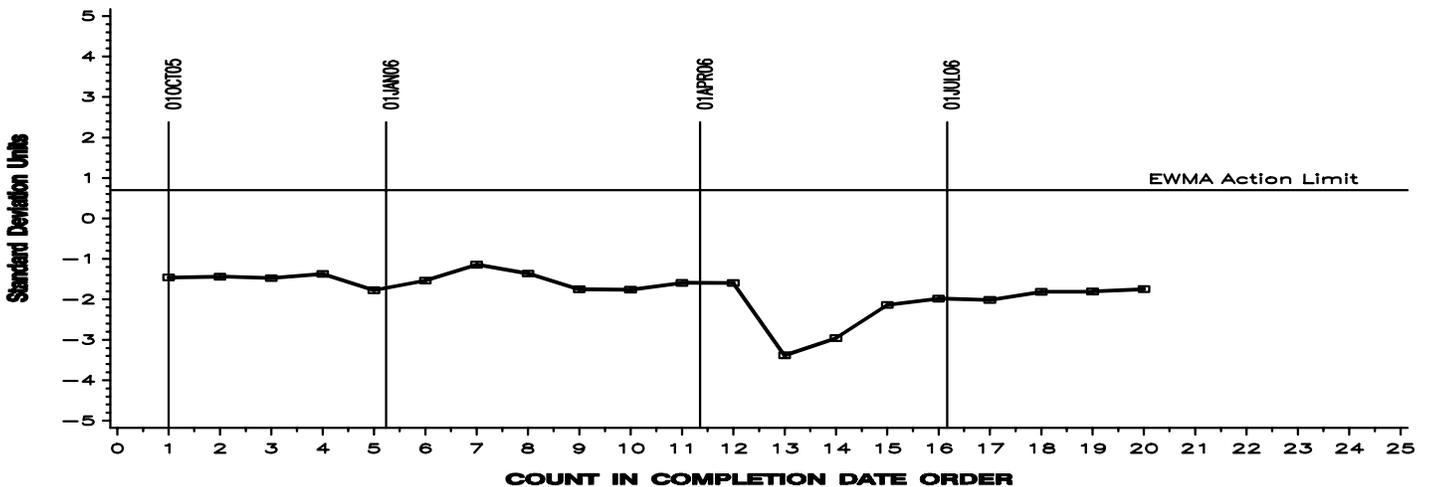
Last 20 Test Results

SPITTING

LTMS Severity Analysis



LTMS Precision Analysis



CUSUM Severity Analysis

