



Test Monitoring Center

6555 Penn Avenue
Pittsburgh, PA 15206-4489
(412) 365-1000

MEMORANDUM: 06-032

DATE: May 1, 2006

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

FROM: Donald Lind

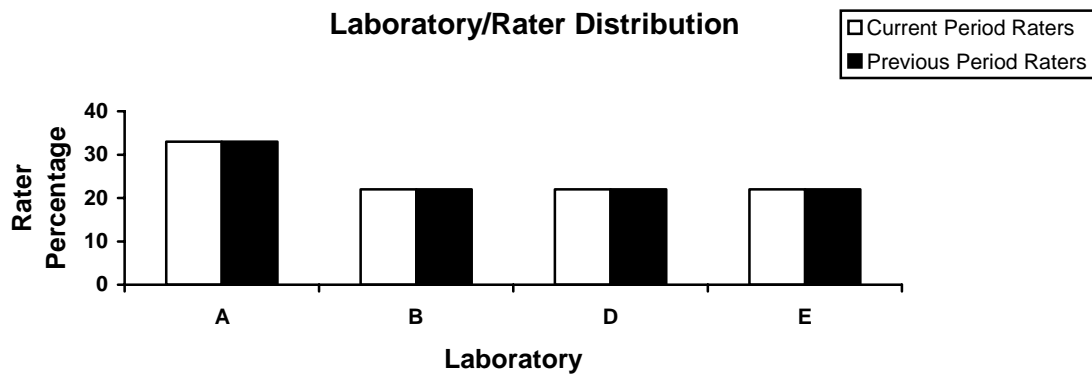
SUBJECT: L-37 Rater Calibration Status from October 1, 2005 through March 31, 2006

The following is a summary of the L-37 rater calibrations reported to the Test Monitoring Center during the period October 1, 2005 through March 31, 2006.

Rater Summary

	Reporting Data	Calibrated as of 3/31/06
Number of Raters	9	9

The following chart shows the laboratory/rater distribution:



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

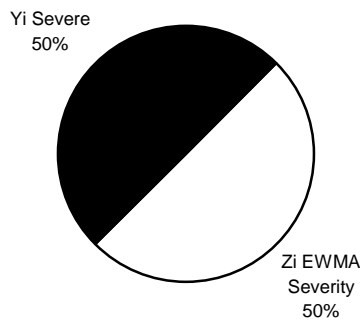
	TMC Validity Codes	No. of Calibrations
Statistically Acceptable	AC	10
Failed Acceptance Criteria	OC	2
Total		12

Summary

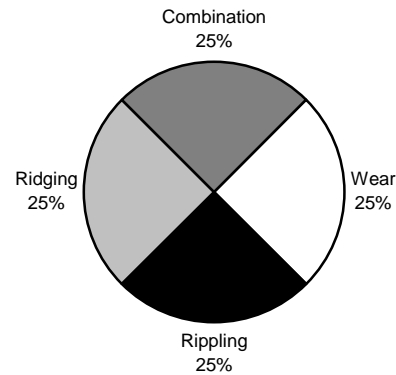
A total of 12 L-37 rater calibration results from nine different raters were reported to the TMC this period. Seven of the nine raters were within the acceptance criteria with their first set of pinions. Two of the raters needed a second set of pinions to calibrate. All nine raters are currently calibrated. Two of the nine raters had their calibration period reduced to half (3 months) due to triggering a EWMA severity alarm. One EWMA severity alarm was for the wear parameter and the other EWMA severity alarm was for the ridging parameter.

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 -0.20 severe for Wear, -0.35 severe for Rippling, -0.08 severe for Ridging, and -0.14 severe for Spitting. Precision was 0.81 for Wear, 1.12 for Rippling, 0.74 for Ridging, and 0.52 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 period:

Rater	Wear		Rippling		Ridging		Spitting	
	Yi	S.D. *	Yi	S.D. *	Yi	S.D. *	Yi	S.D. *
A	-0.56	0.99	-0.82	1.34	-0.07	0.62	-0.51	0.46
B	0.09	0.76	-0.15	0.56	-0.44	0.61	0.14	0.35
C	-0.15	0.59	0.30	0.24	-0.07	0.76	-0.13	0.53
D	-0.51	1.25	0.20	0.79	0.00	0.26	-0.29	0.54
E	-0.49	0.53	-0.15	0.75	-0.33	0.65	-0.47	0.63
F	0.00	1.03	-0.22	0.56	0.73	1.32	-0.17	0.52
H	-0.32	0.93	-0.05	0.67	0.28	0.40	0.02	0.28
I	0.36	0.92	-1.37	1.05	-0.45	0.90	0.24	0.38
K	-0.13	0.53	-0.78	1.91	-0.39	0.69	-0.19	0.75

*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. Severity and precision EWMA charts for pinion Ridging and Spitting were in control this report period. Pinion Wear triggered one EWMA severity alarm this period. This alarm does not appear to be related to any one rater. Pinion Rippling triggered two EWMA severity alarms this period. These alarms appear to be related to one rater (I). Rater (I) triggered a severity shewhart alarm of 1.4 standard deviations severe this report period. (Table 1).

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/137rc-04-2006.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 Charts of the last 20 test results for Pinion Wear

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

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

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

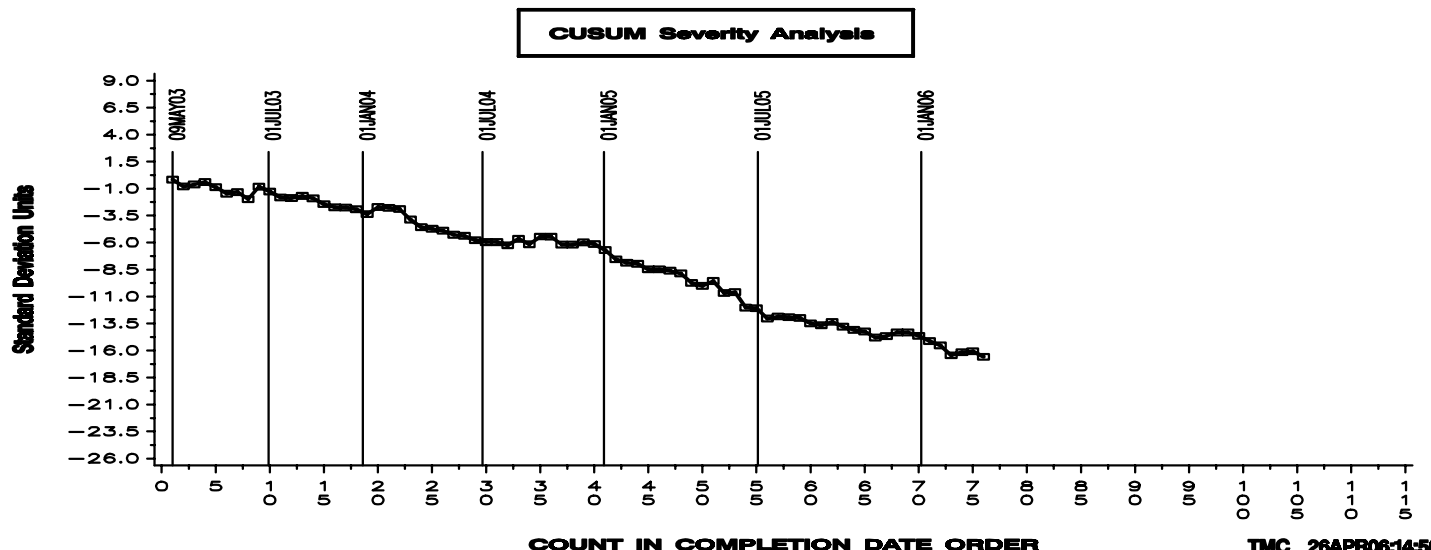
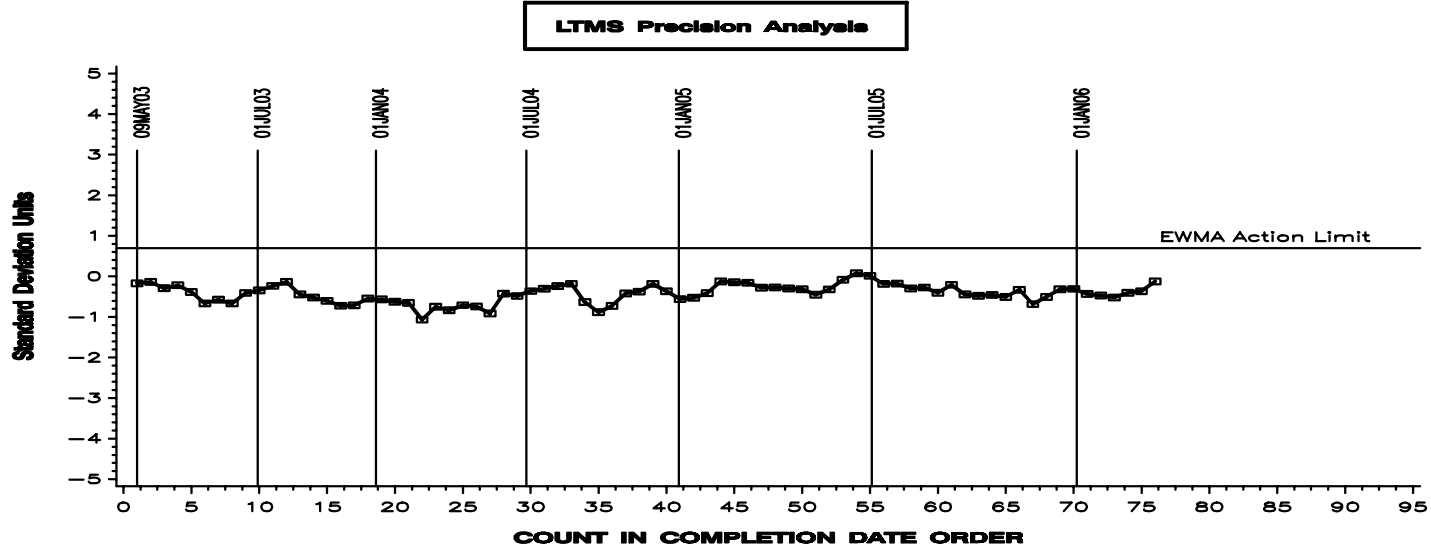
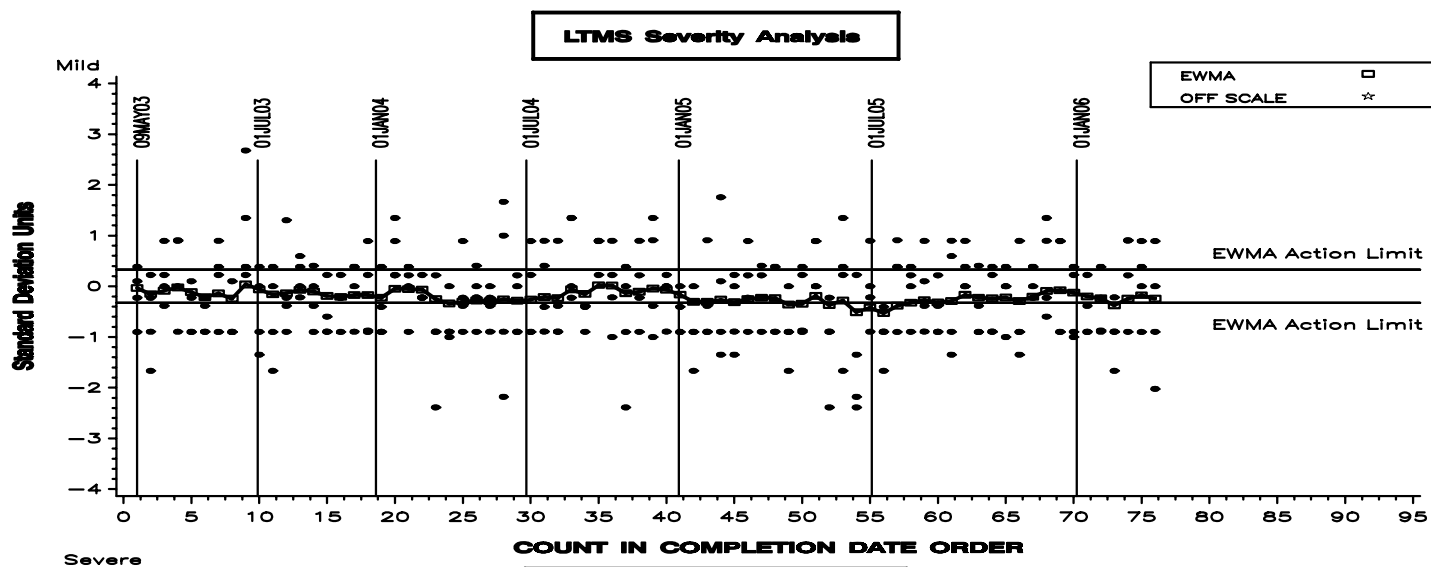
Table 1

Summary of Reasons for Rejected Tests

Lab	Rater	Reason
A	I	Rippling Shewhart Severity, Severe
A	H	Wear Shewhart Severity, Severe
D	E	Wear and Spitting EWMA Severity, Severe
E	K	Ridging EWMA Severity, Severe

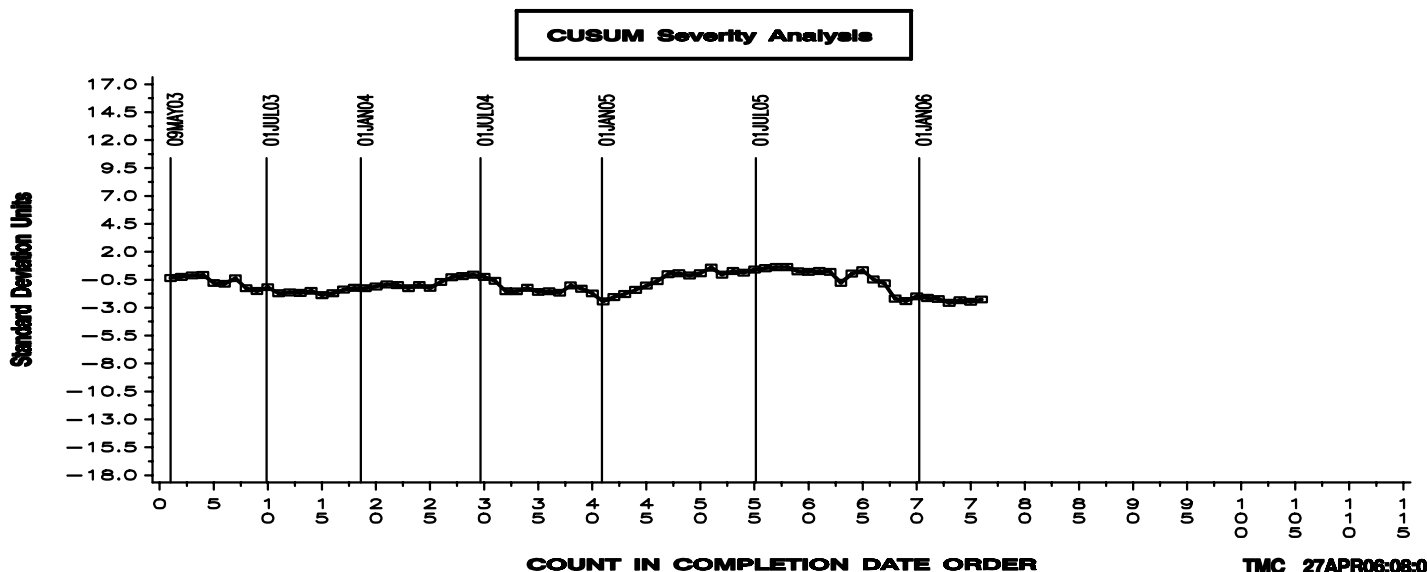
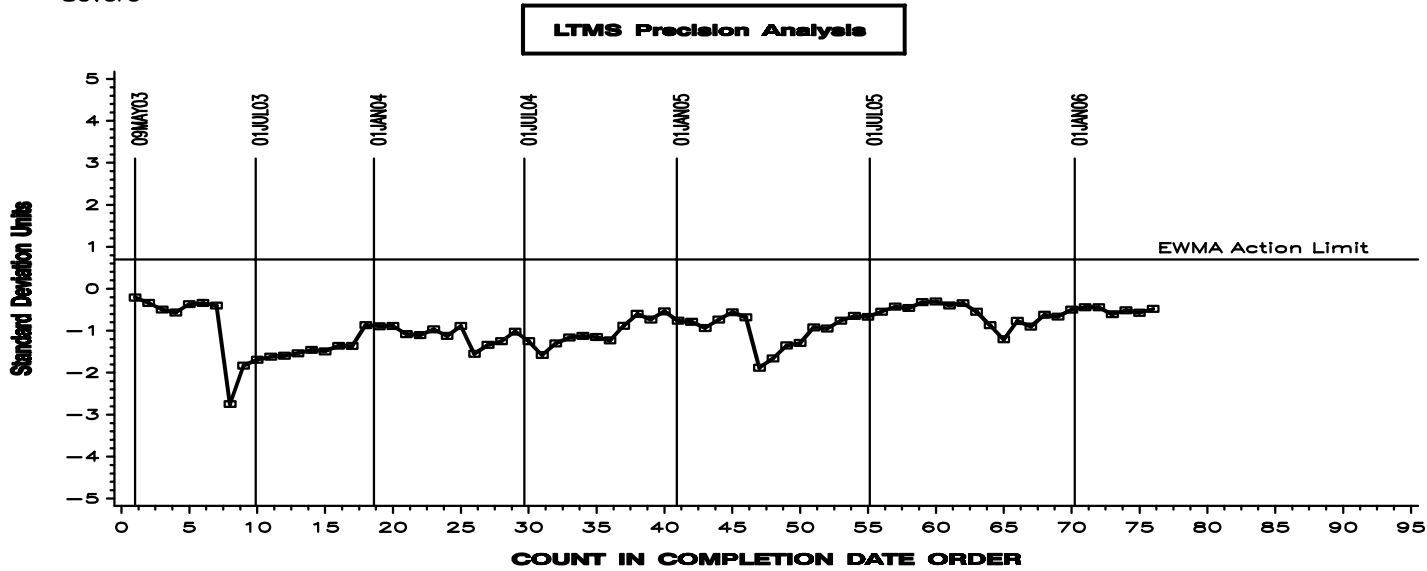
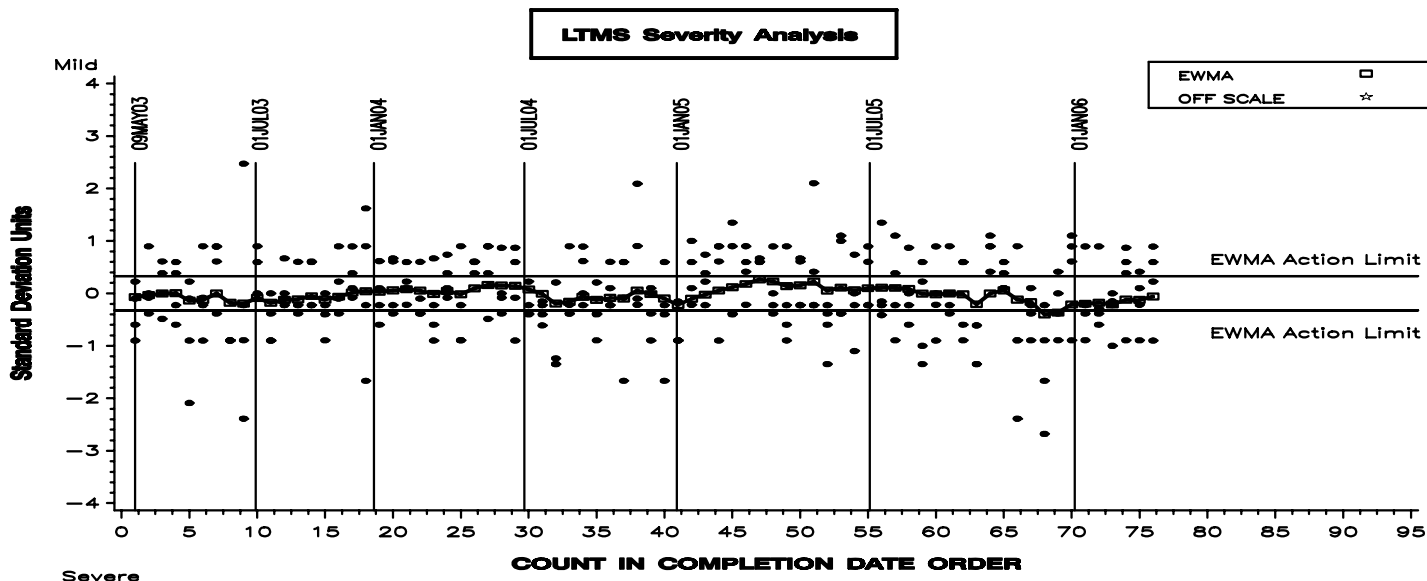
L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

WEAR



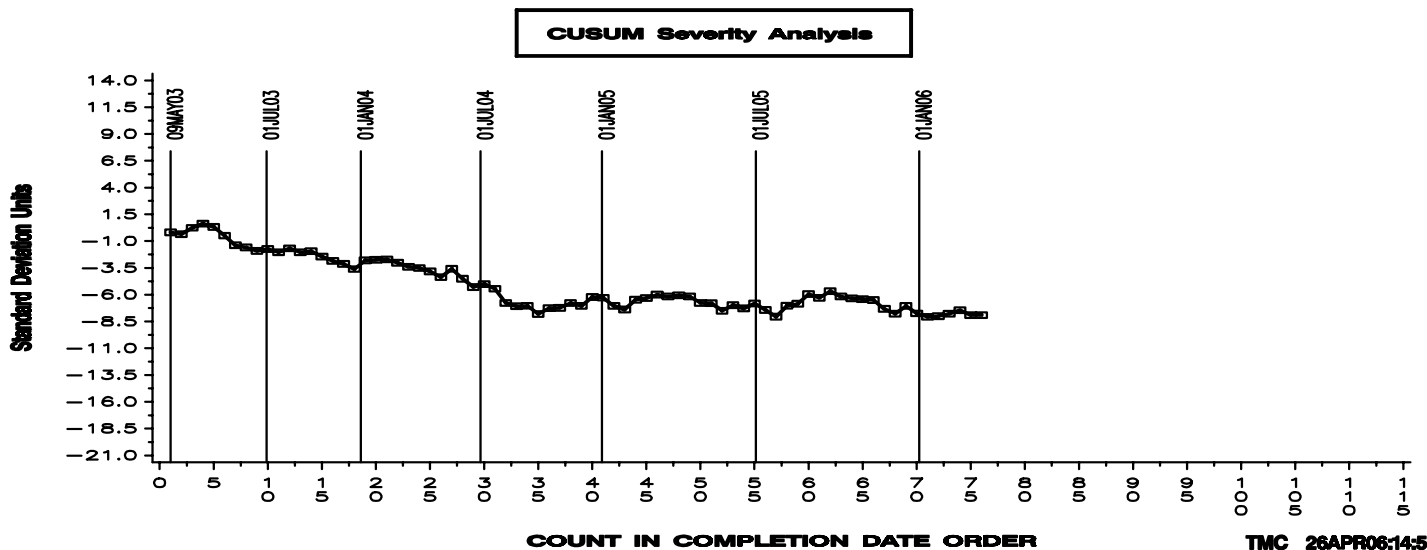
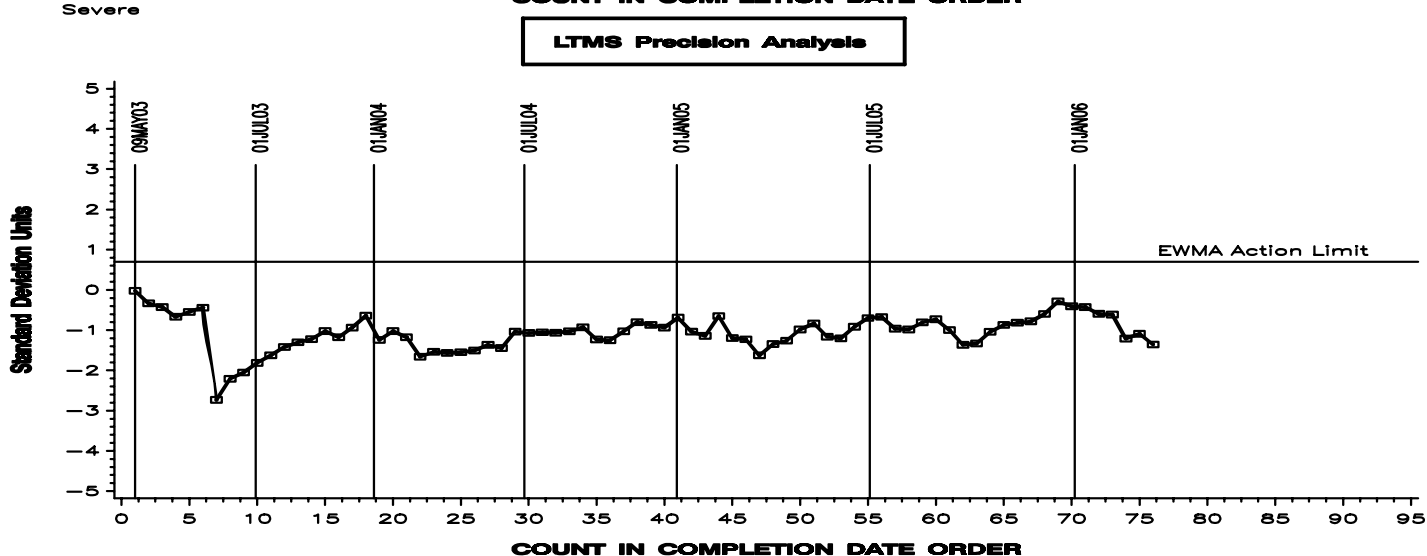
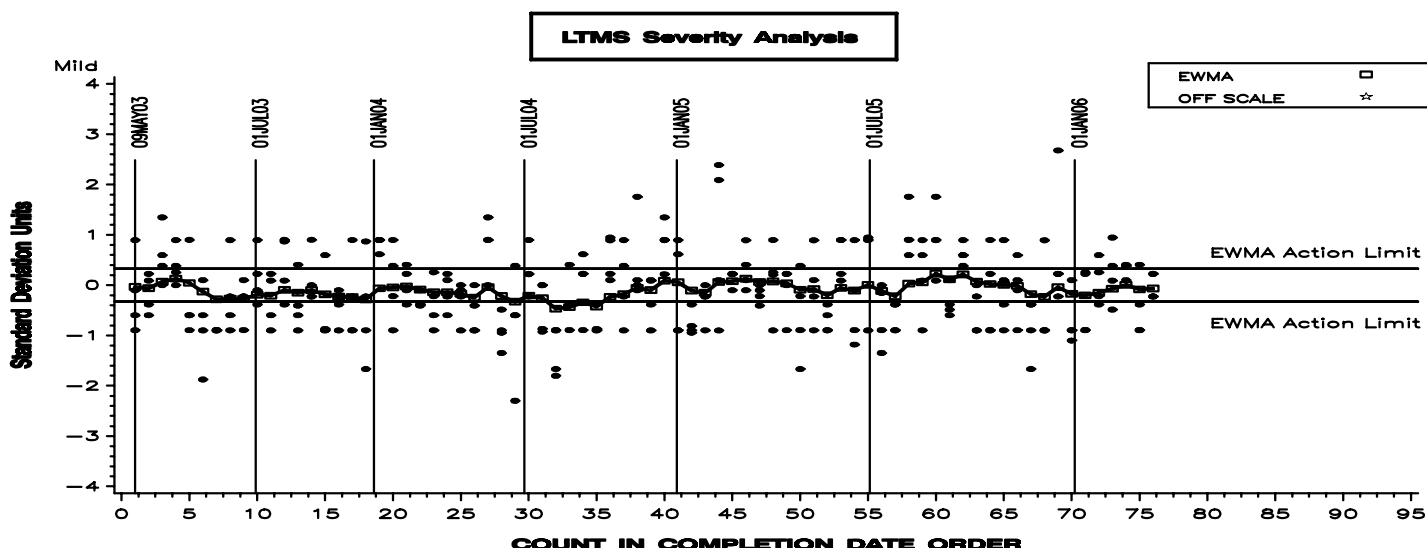
L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIPPLING



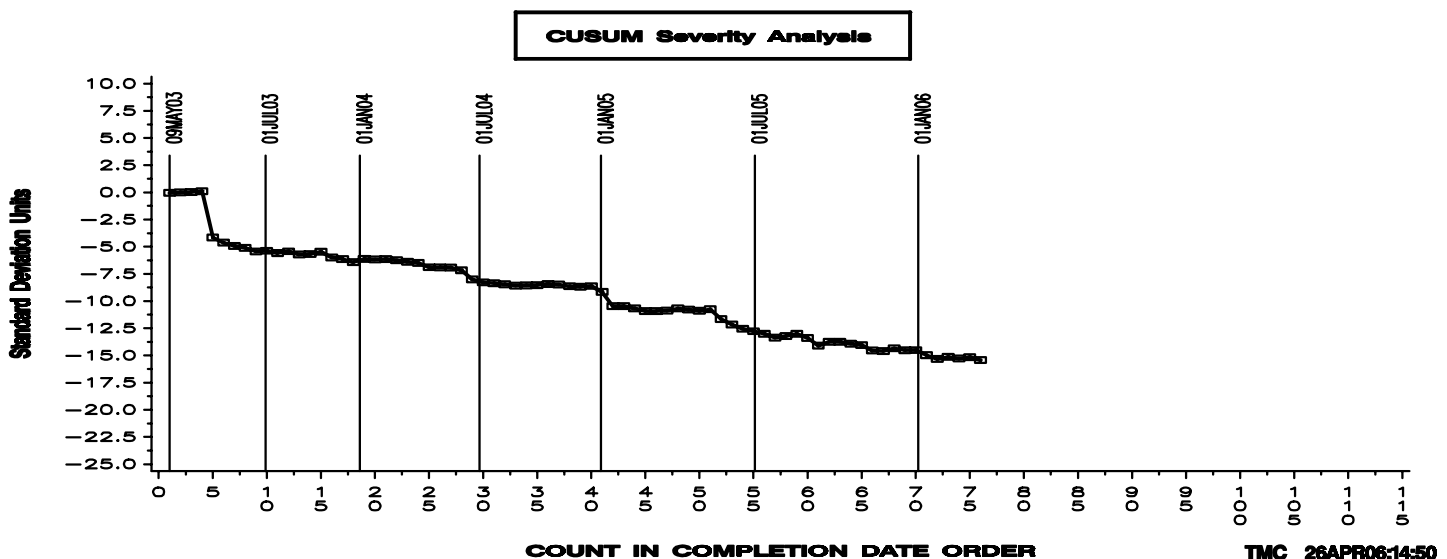
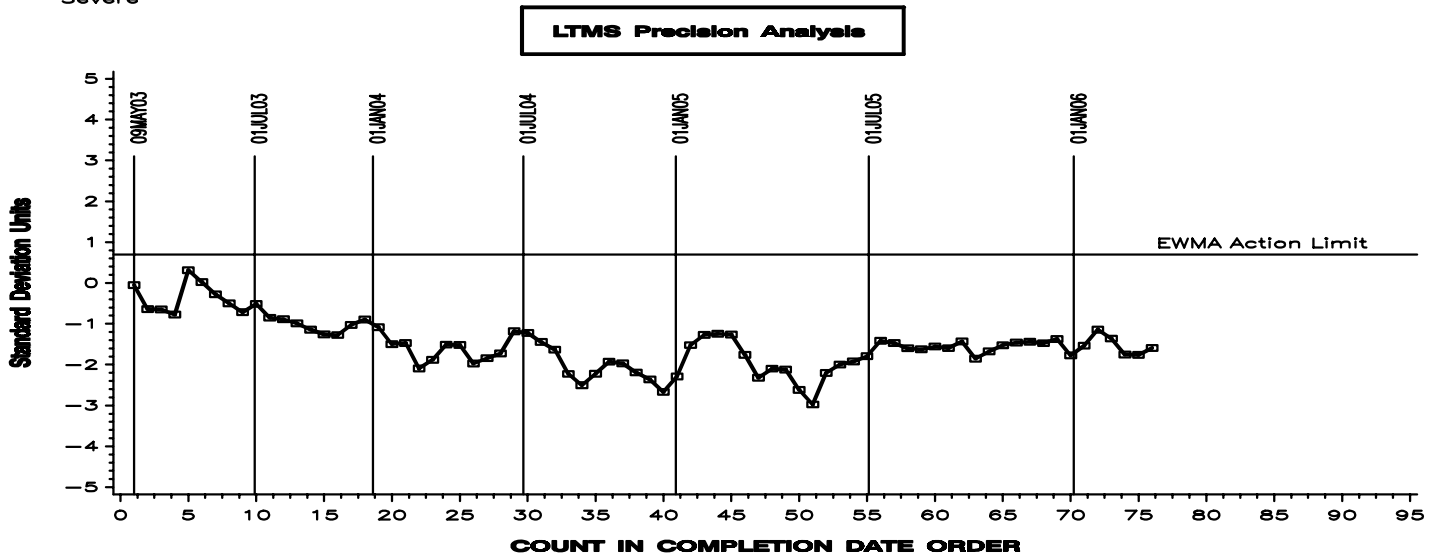
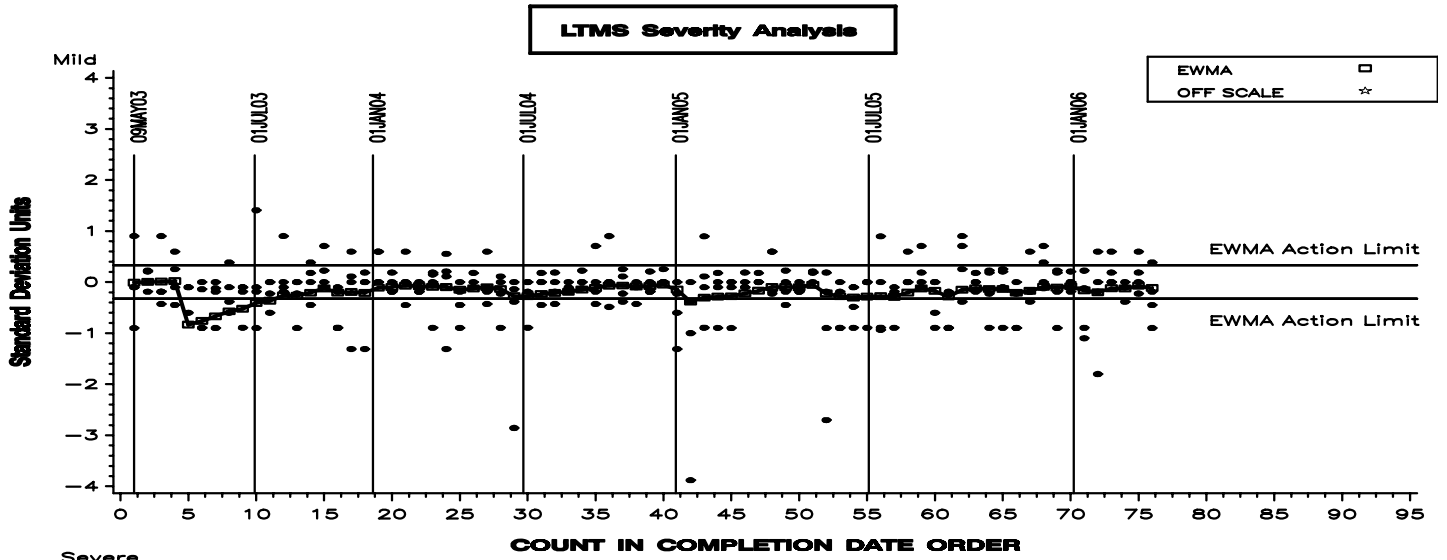
L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

RIDGING



L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

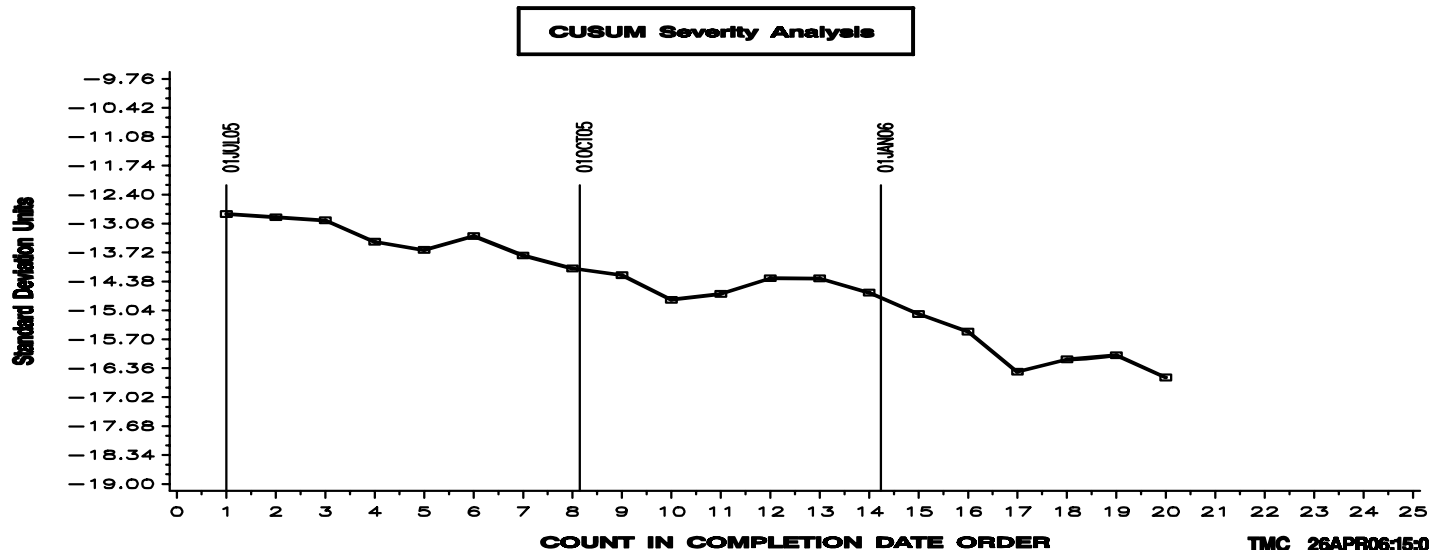
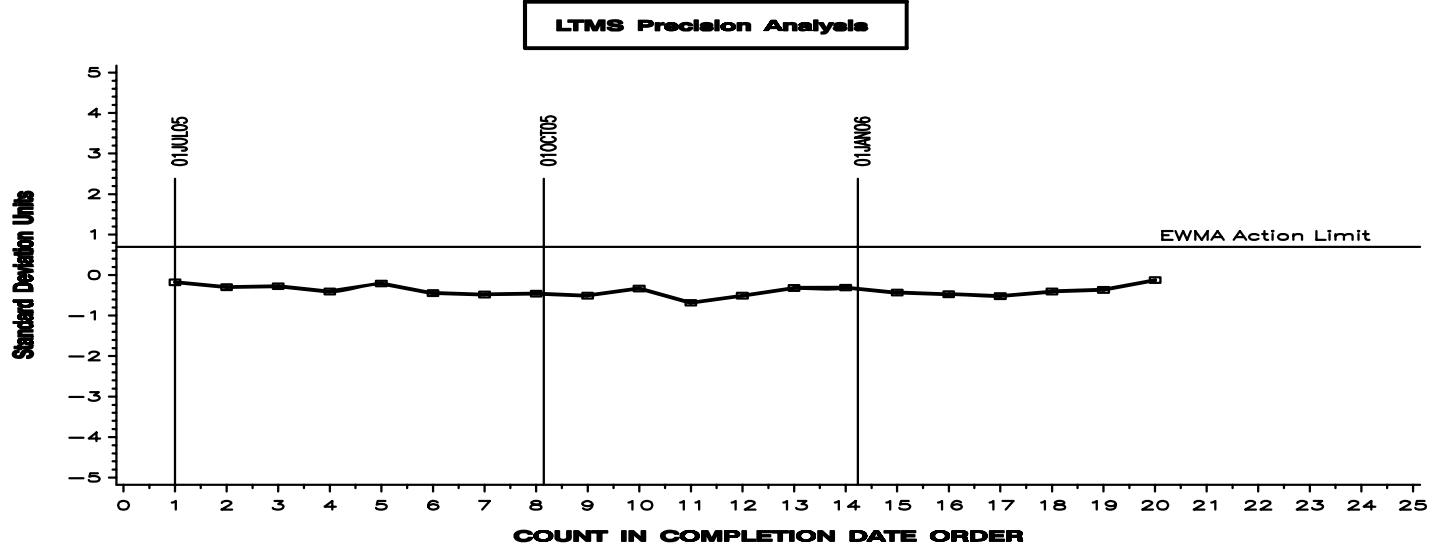
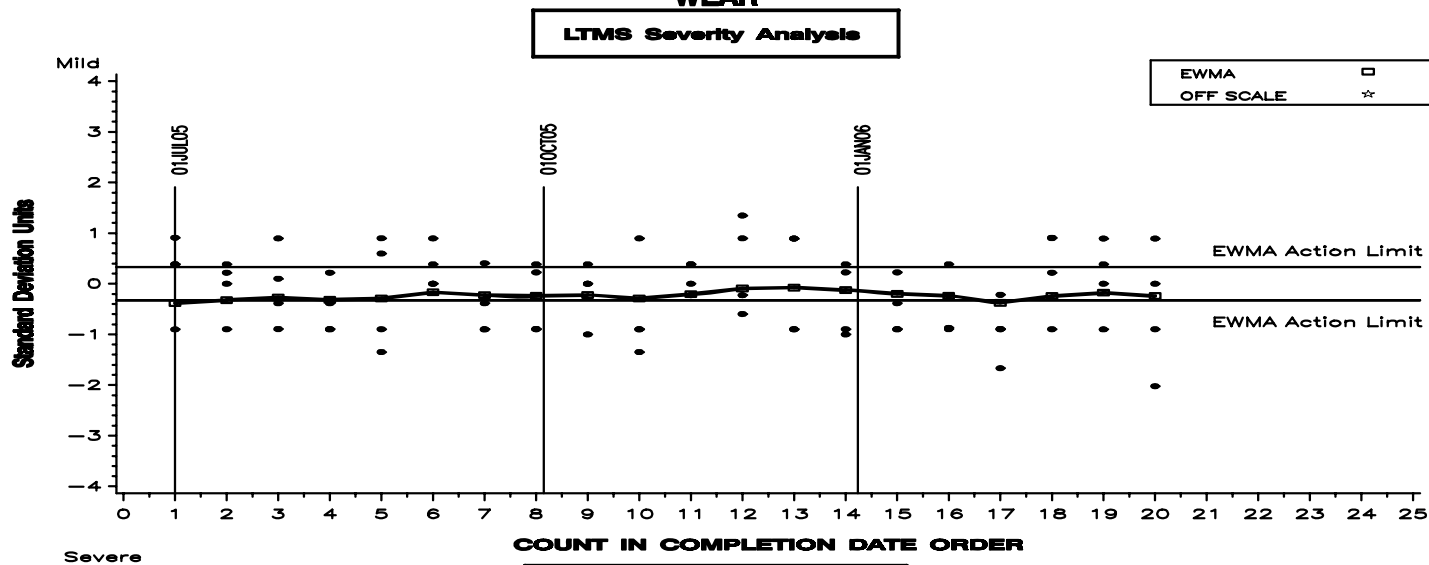
SPITTING



L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

LAST 20 DATA POINTS

WEAR

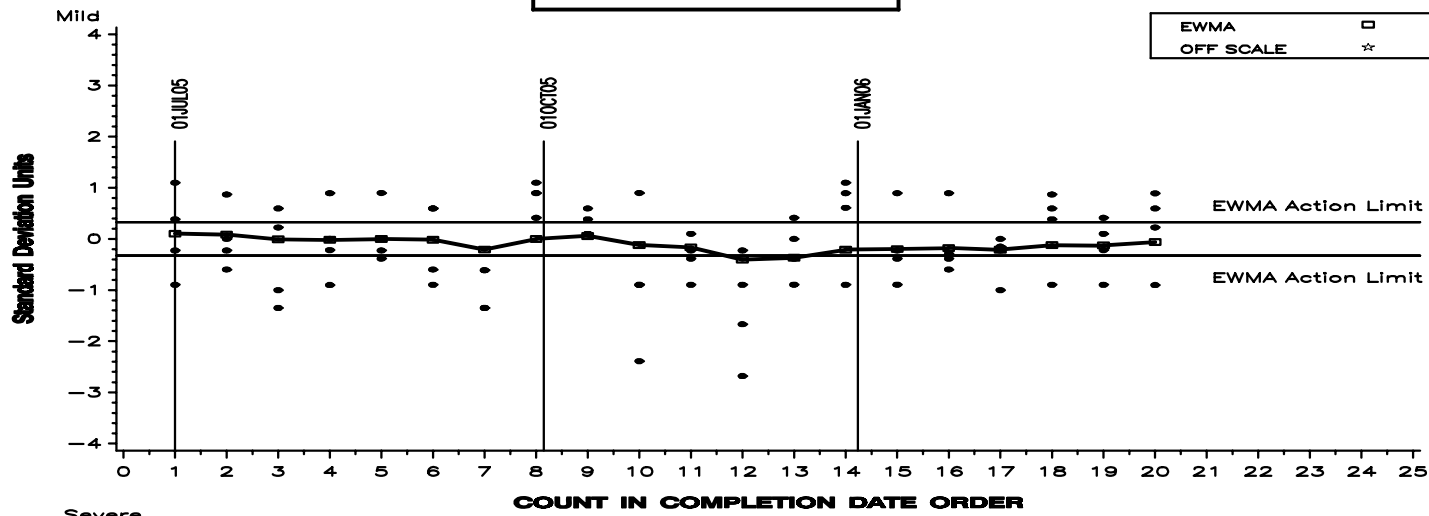


L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

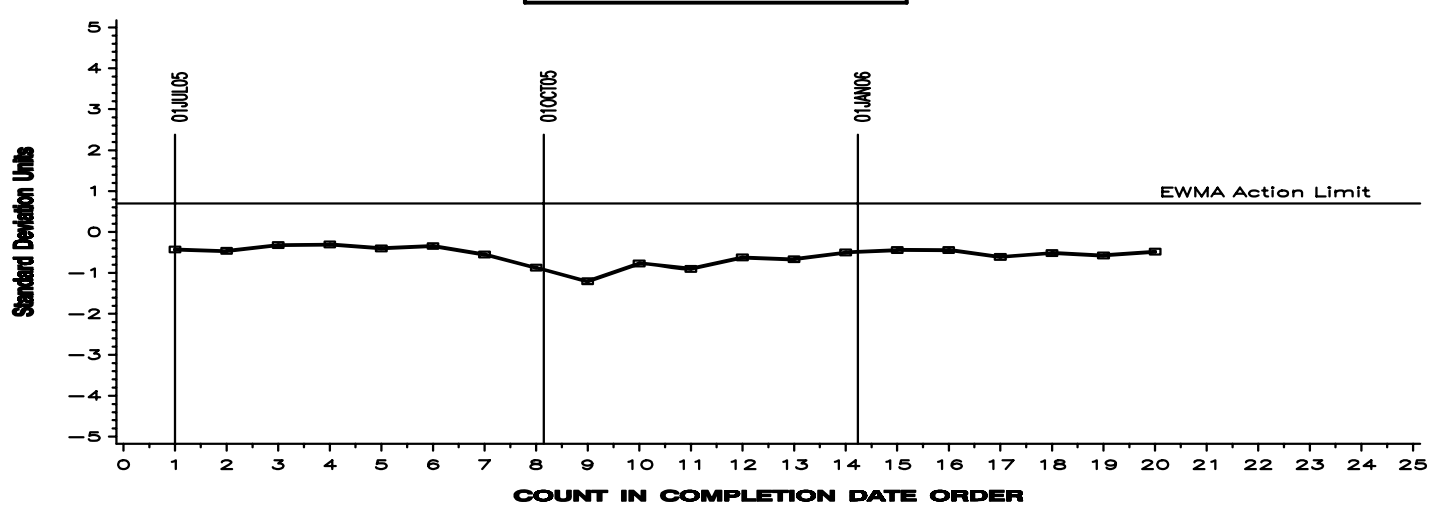
LAST 20 DATA POINTS

RIPPLING

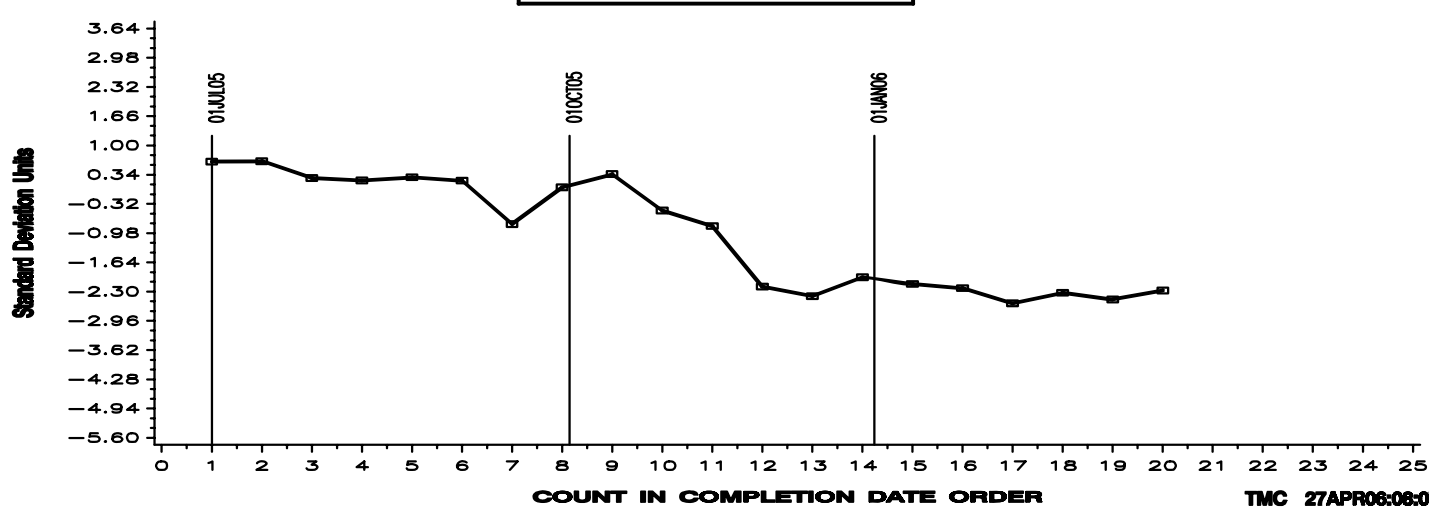
LTMS Severity Analysis



LTMS Precision Analysis



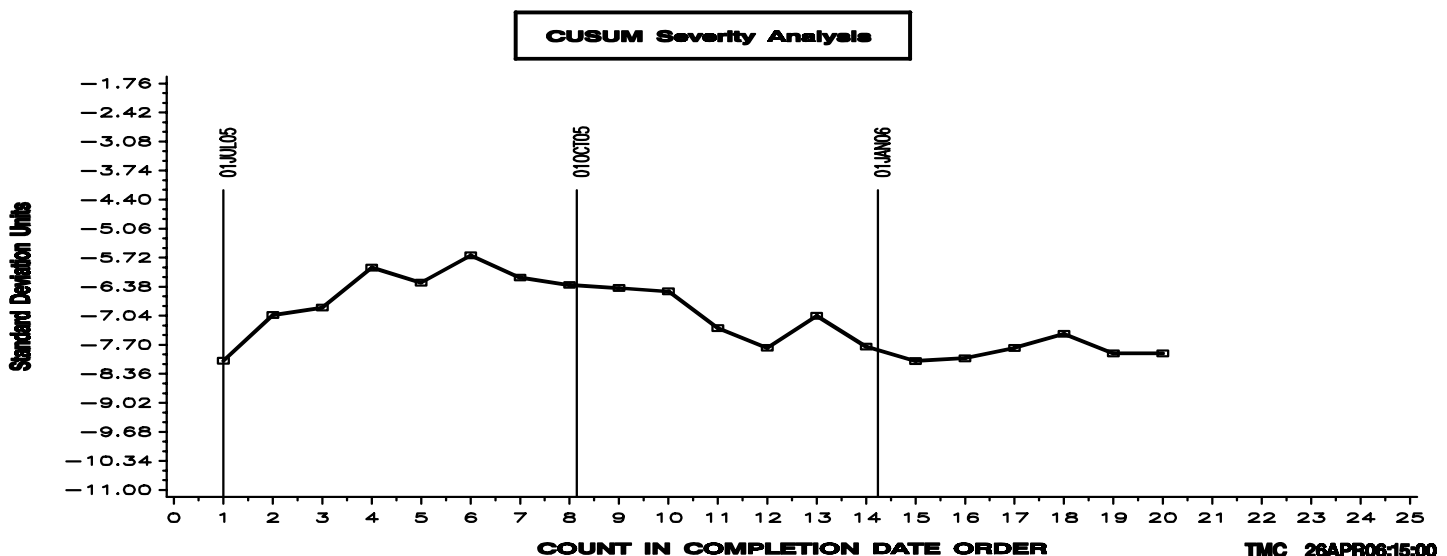
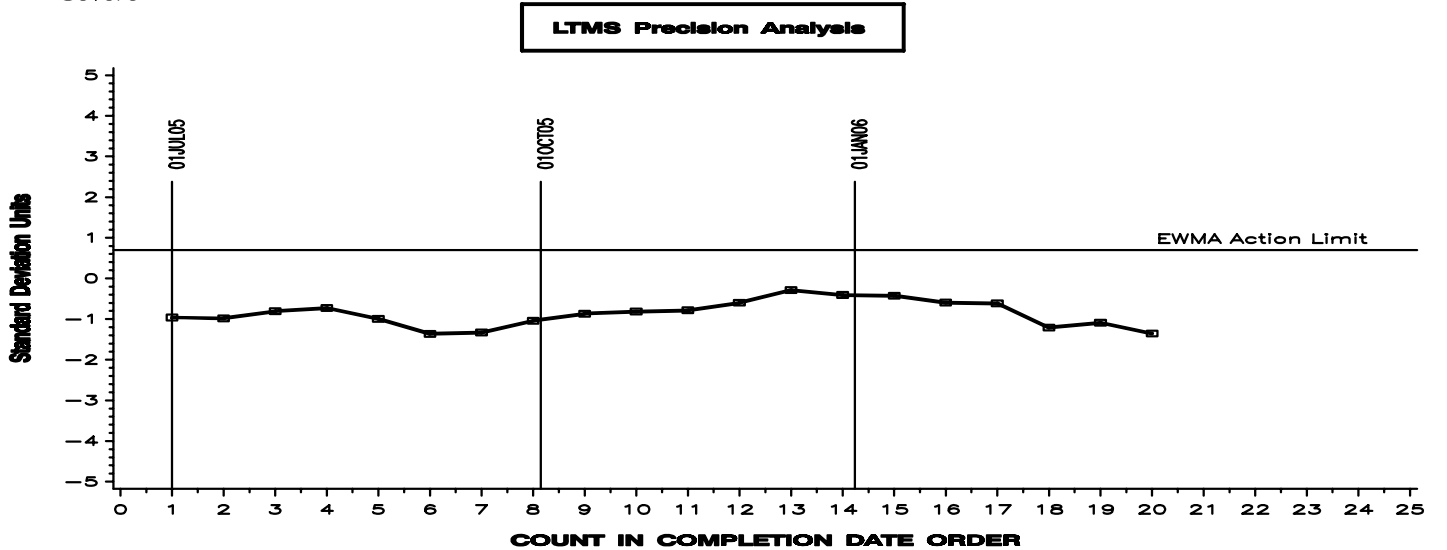
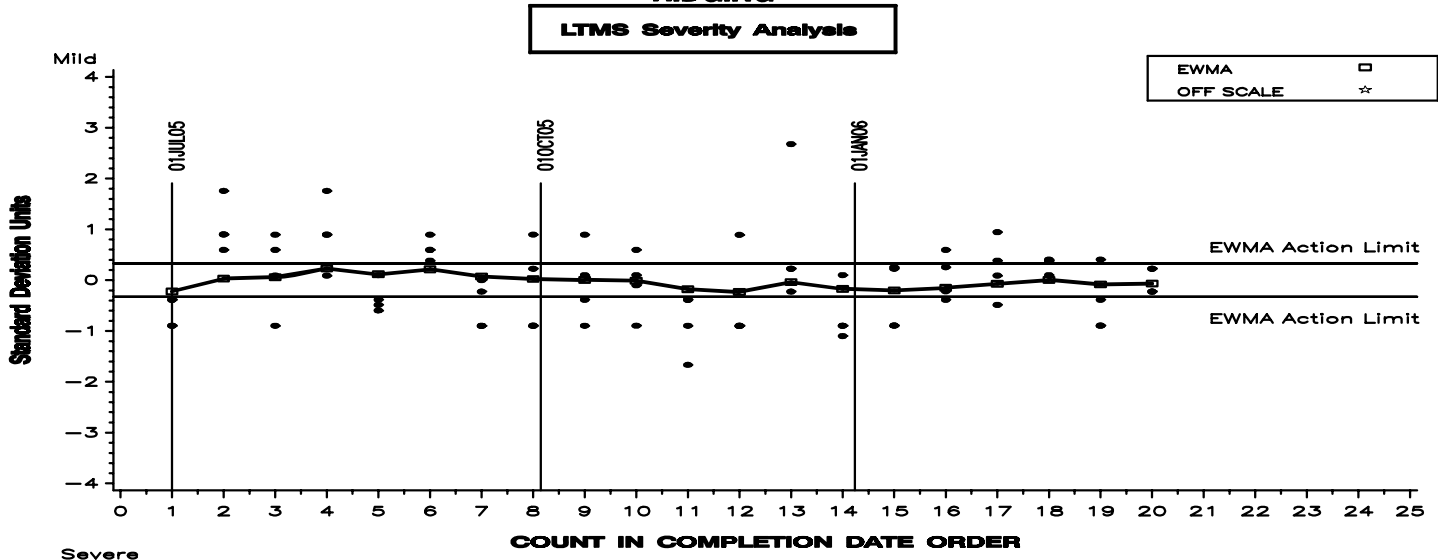
CUSUM Severity Analysis



L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

LAST 20 DATA POINTS

RIDGING



L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

LAST 20 DATA POINTS

SPITTING

