



# Test Monitoring Center

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MEMORANDUM: 03-099

DATE: October 14, 2003

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

FROM: Donald Lind

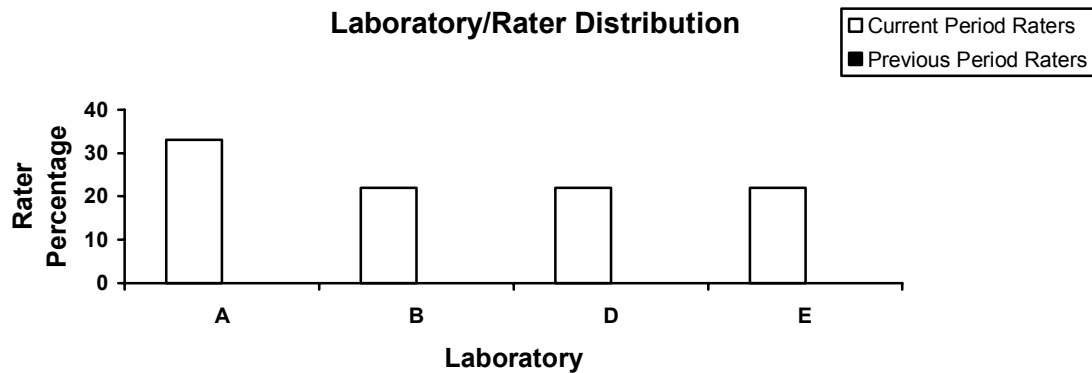
SUBJECT: L-37 Rater Calibration Test Status from April 1, 2003 through September 30, 2003

The following is a summary of the L-37 rater calibration tests that were reported to the Test Monitoring Center during the period April 1, 2003 through September 30, 2003.

### Rater Summary

	Reporting Data	Calibrated as of 9/30/03
Number of Raters	9	8

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 Tests
Statistically Acceptable	AC	9
Failed Acceptance Criteria	OC	3
Total		12

Summary

A total of 12 L-37 rater calibration test results from 9 different raters were reported to the TMC this period. Seven raters were within the acceptance criteria and two raters failed the acceptance criteria with their first set of pinions. One of the two raters outside of the acceptance criteria fell within the acceptance bands with the second set of pinions, but triggered an EWMA severity alarm. The EWMA severity alarm allows the rater to be calibrated but reduces his calibration period to half of the normal calibration period (six months to three months). The other rater has not successfully met the calibration requirements and the lab has optioned for additional training for the rater and will request calibration pinions at some later date.

Severity and Precision

For this period, the mean delta/s was -0.16 severe for Wear, -0.14 severe for Rippling, -0.14 severe for Ridging, and -0.45 severe for Spitting. Precision was 0.84 for Wear, 0.82 for Rippling, 0.69 for Ridging, and 2.37 for Spitting. A straight standard deviation of  $Y_i$  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:

Rater	Wear		Rippling		Ridging		Spitting	
	$Y_i$	S.D. *	$Y_i$	S.D. *	$Y_i$	S.D. *	$Y_i$	S.D. *
A	0.23	0.86	0.04	0.55	0.39	0.38	0.08	0.45
B	-0.64	0.83	0.11	0.55	-0.17	0.39	0.06	0.19
C	-0.16	0.55	-0.34	0.50	-0.18	0.79	-0.05	0.74
D	-0.38	0.63	-0.24	0.78	-0.25	0.86	-1.53	4.65
E	-0.47	0.80	0.35	0.48	0.16	0.55	0.06	0.97
F	-0.55	0.92	-0.55	0.44	-0.30	0.54	-0.21	0.28
H	0.18	0.54	0.13	0.48	0.58	0.57	0.02	0.59
I	0.26	1.27	-0.58	1.38	-0.26	0.59	-0.25	0.39
K	0.15	0.76	0.51	0.61	-0.90	0.00	-0.30	0.41

\* A straight standard deviation of  $Y_i$  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 Wear, Rippling, and Ridging were in control this report period. Pinion Spitting triggered seven EWMA severity alarms and no EWMA precision alarms. The seven EWMA severity alarms were a result of one rater rating that was over 16 standard deviations severe.

Attachments

- c: L-37 Surveillance Panel
- L-37 Rater Task Force
- [ftp://www.astmtmc.cmu.edu/docs/rater\\_calibration/l37rc-10-2003.pdf](ftp://www.astmtmc.cmu.edu/docs/rater_calibration/l37rc-10-2003.pdf)
- J. L. Zalar
- F. M. Farber

Distribution: Email

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

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

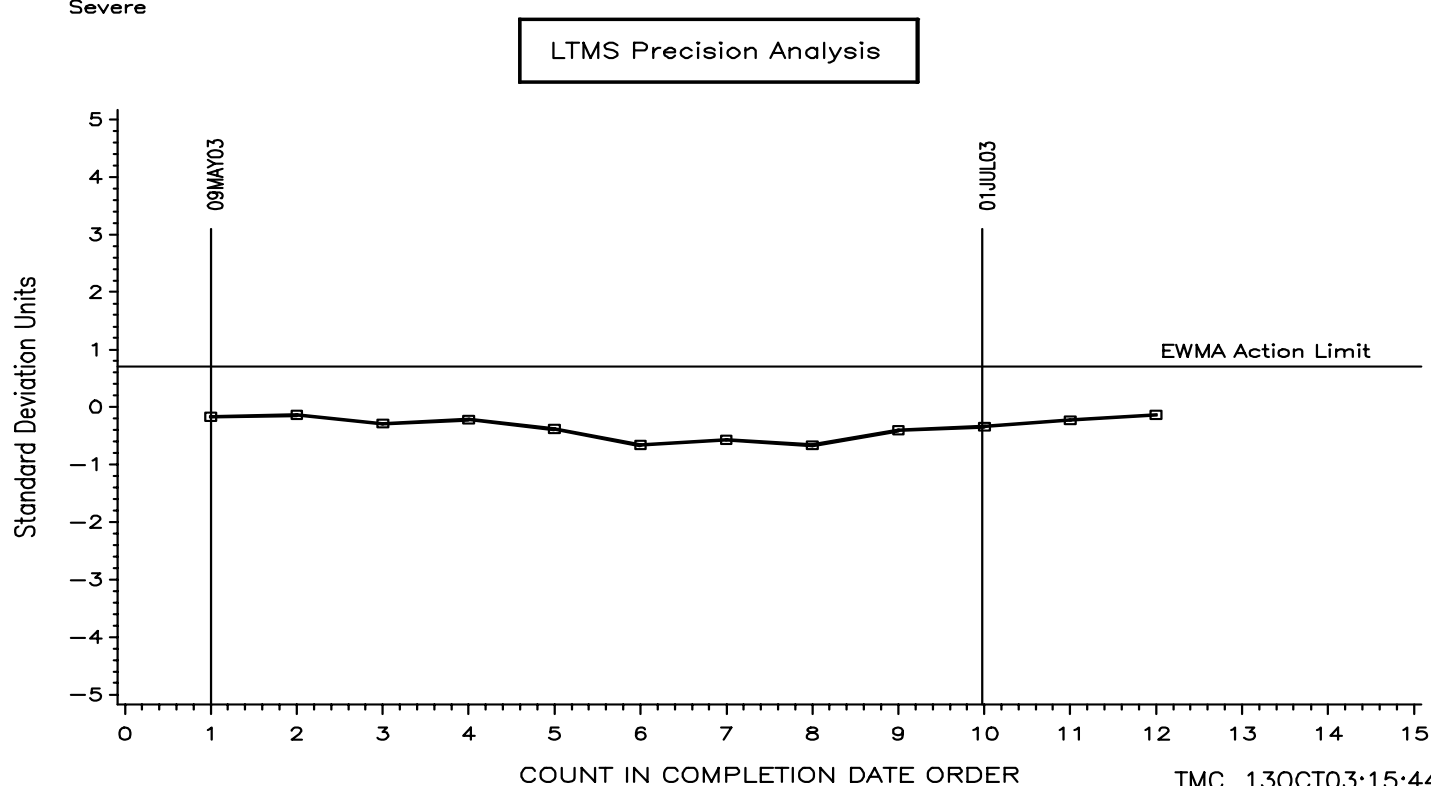
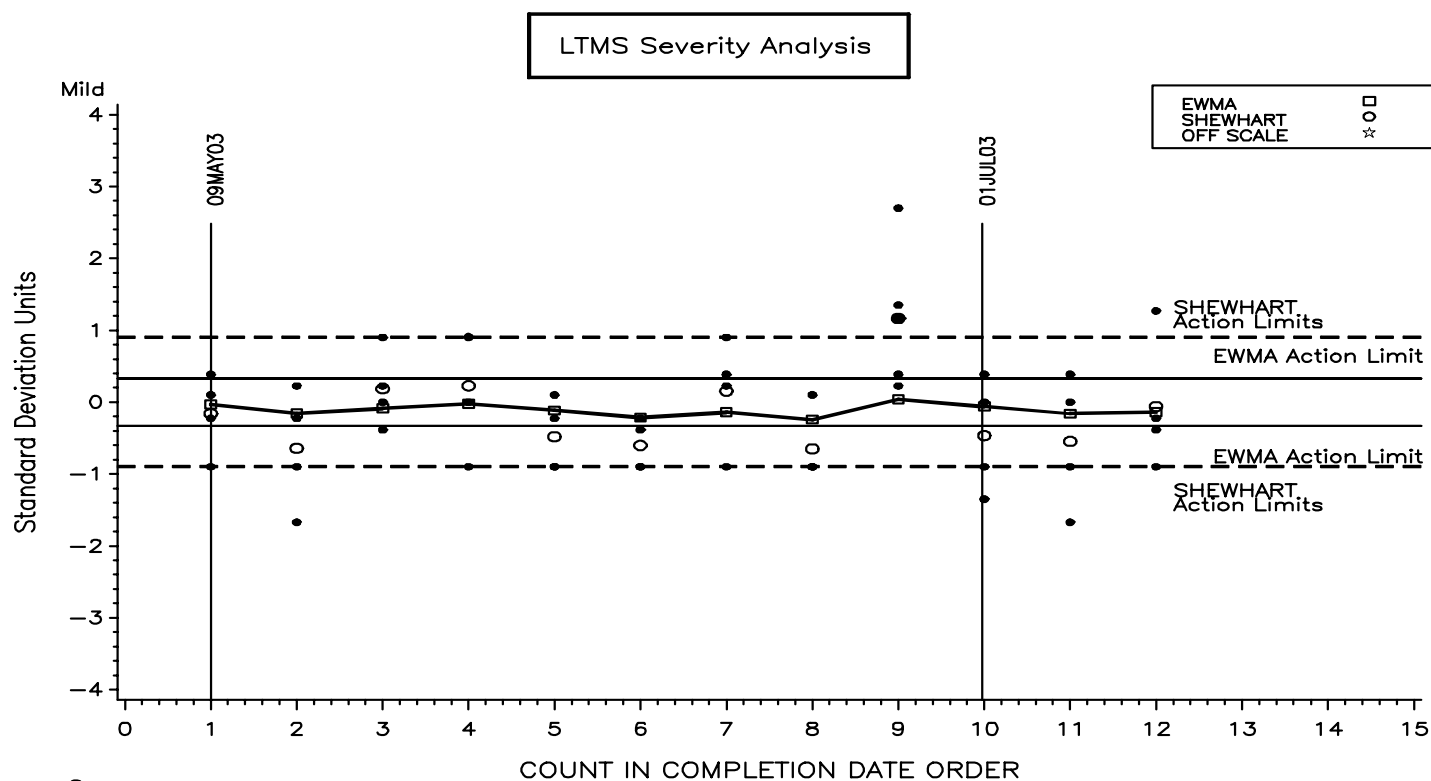
Figure 2 is the L-37 Rater Industry Control Charts for Pinion Rippling

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

# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

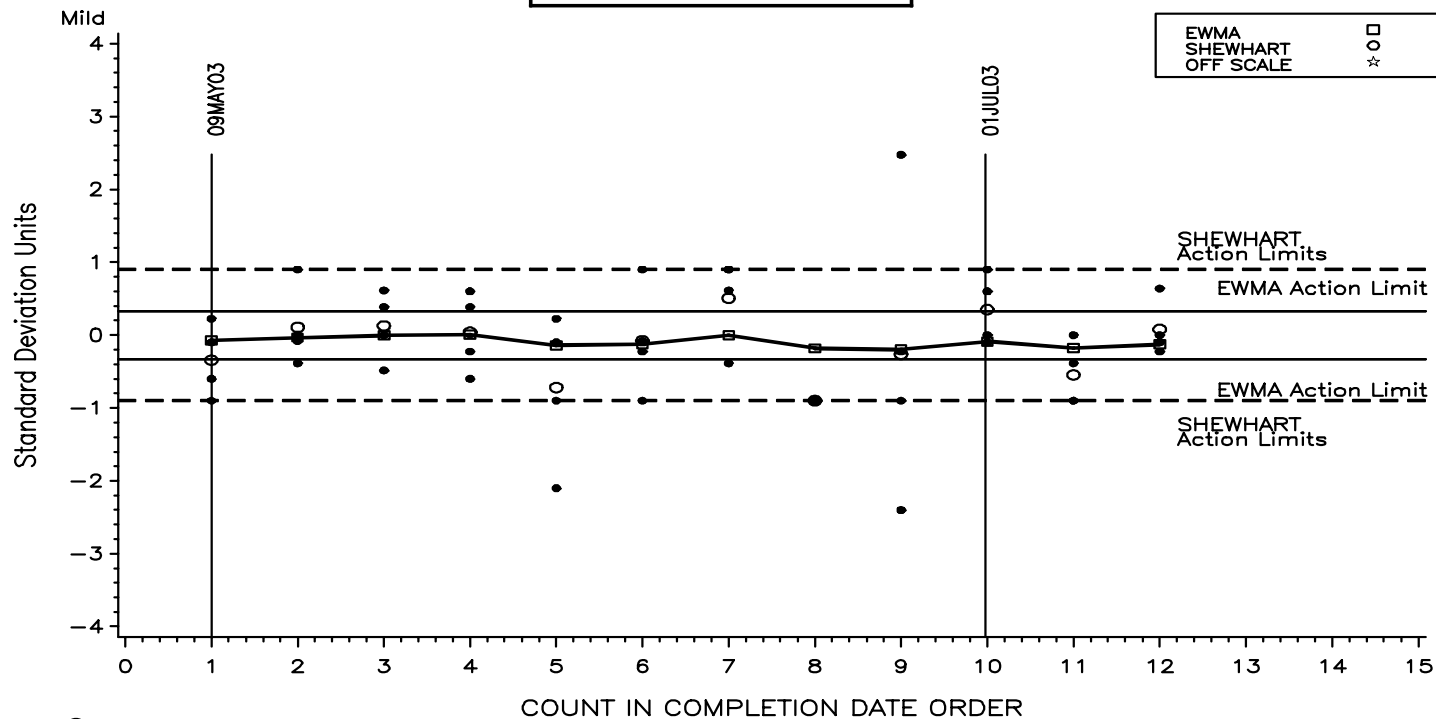
## WEAR



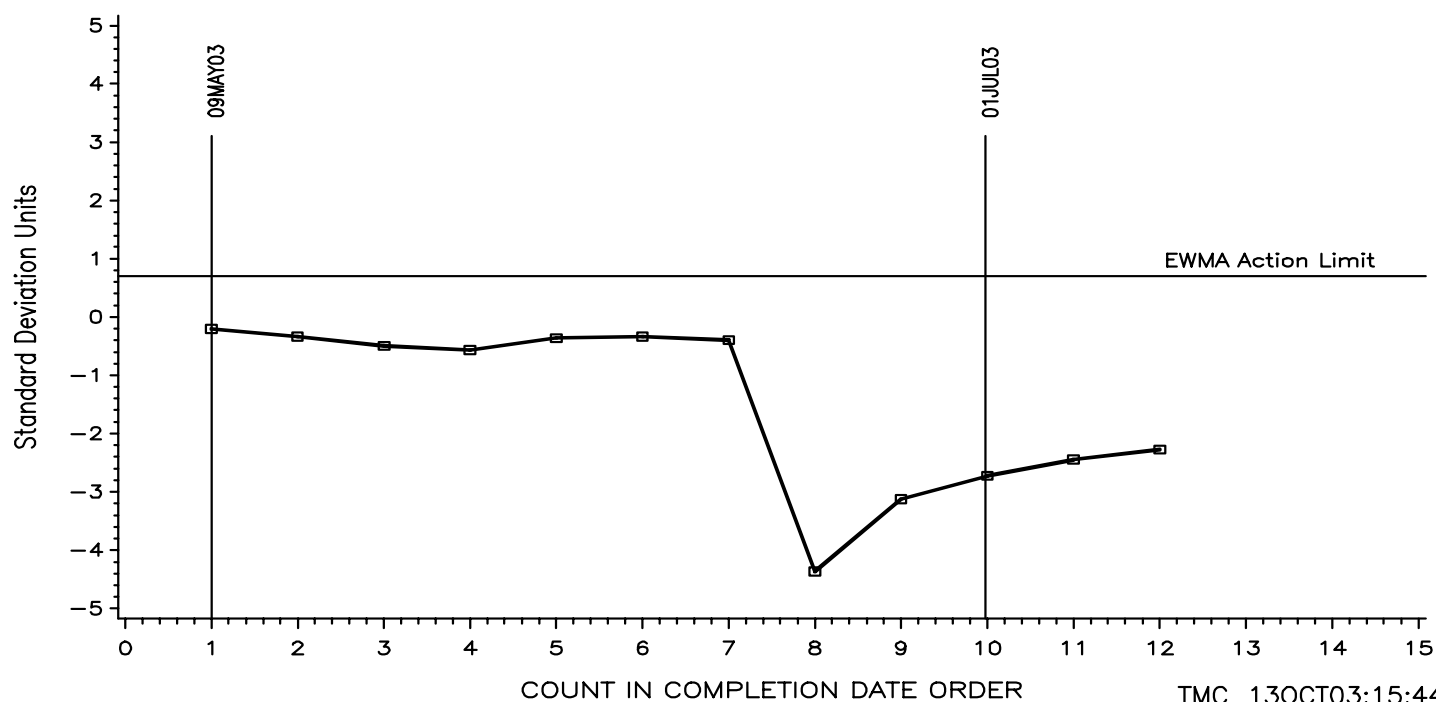
# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## RIPPLING

LTMS Severity Analysis

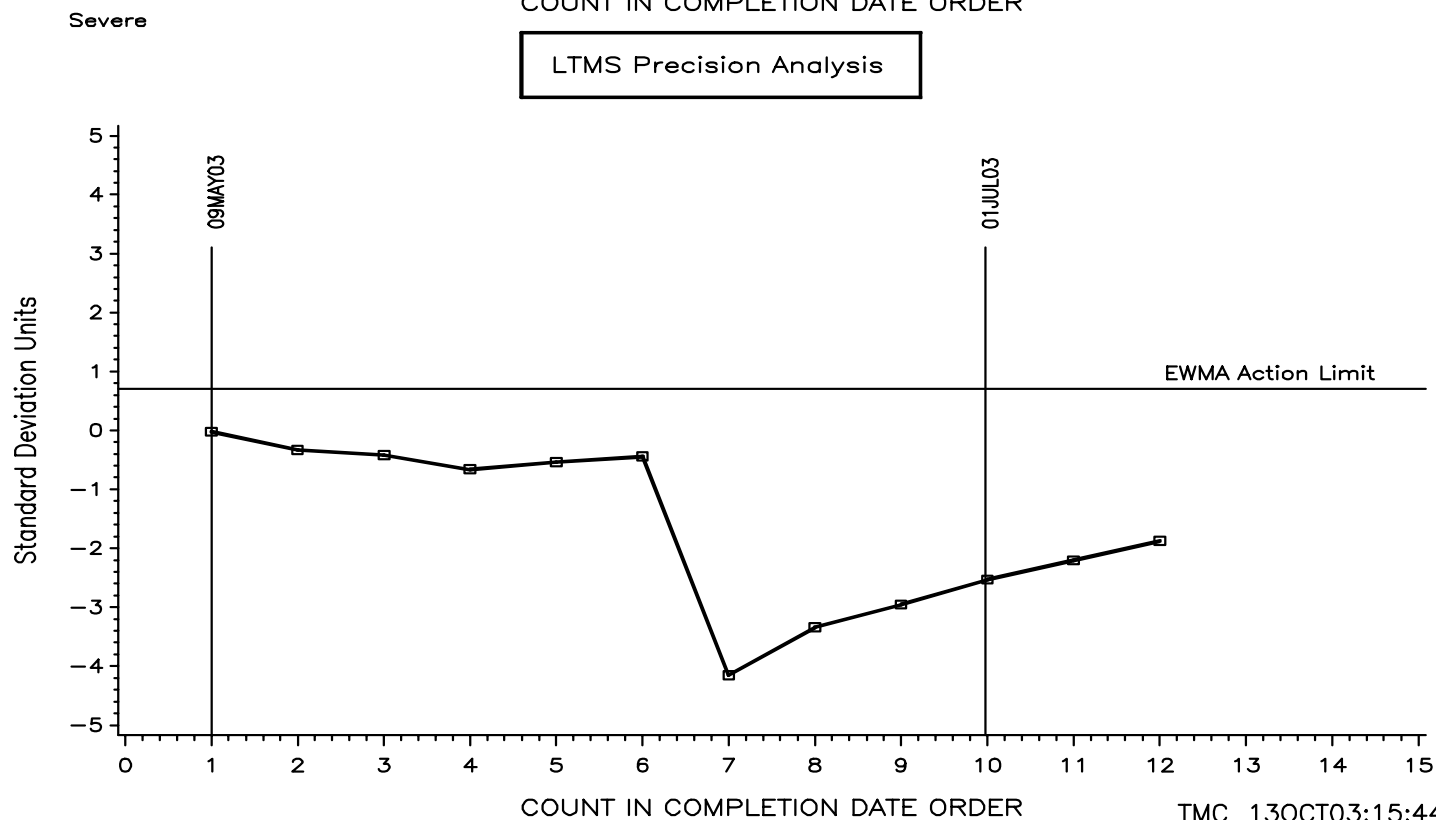
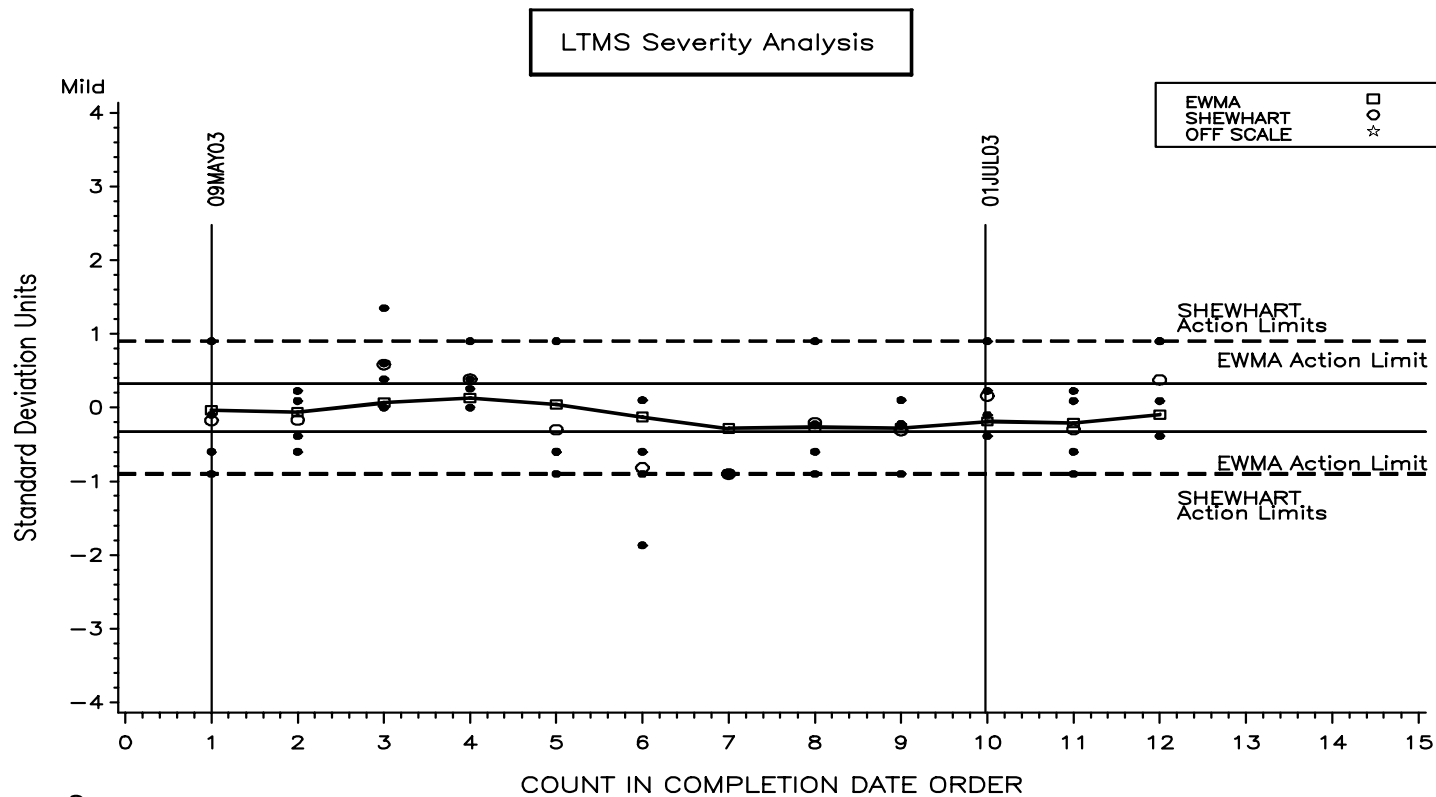


LTMS Precision Analysis



# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## RIDGING



# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## SPITTING

