



# Test Monitoring Center

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MEMORANDUM: 04-099

DATE: November 15, 2004

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

FROM: Donald Lind

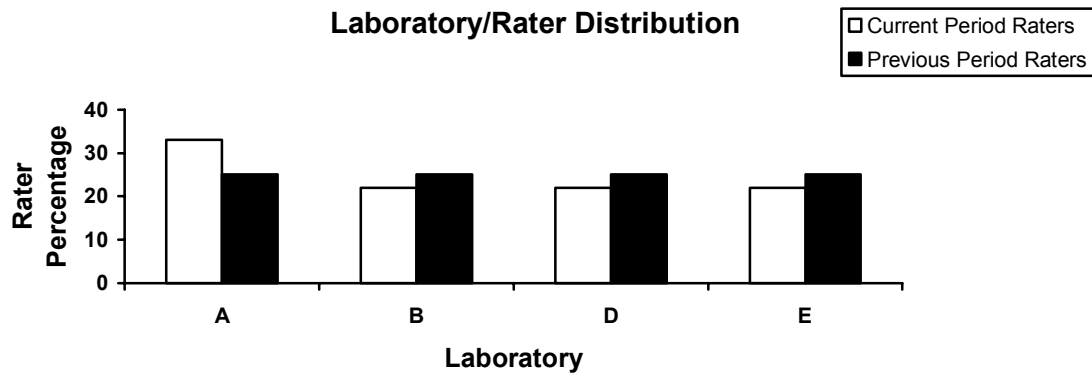
SUBJECT: L-37 Rater Calibration Test Status from April 1, 2004 through September 30, 2004

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, 2004 through September 30, 2004.

### Rater Summary

	Reporting Data	Calibrated as of 9/30/04
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 Tests
Statistically Acceptable	AC	10
Failed Acceptance Criteria	OC	3
<b>Total</b>		<b>13</b>

Summary

A total of 13 L-37 rater calibration test results from nine different raters were reported to the TMC this period. Six raters were within the acceptance criteria and three raters failed the acceptance criteria with their first set of pinions. One rater was within the acceptance criteria with the second set of pinions. Two of the raters that were outside of the acceptance criteria with their first set of pinions, fell within the acceptance bands with the second set of pinions, but triggered a EWMA severity alarm. Both of these raters were from the same lab. 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).

Severity and Precision

For this period, the mean delta/s was -0.23 severe for Wear, -0.03 severe for Rippling, -0.33 severe for Ridging, and -0.19 severe for Spitting. Precision was 0.82 for Wear, 0.62 for Rippling, 0.69 for Ridging, and 0.53 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	-0.85	0.78	0.01	0.58	-0.24	0.43	-0.13	0.64
B	-0.08	0.57	0.19	0.33	0.05	0.36	0.04	0.43
C	-0.10	0.22	-0.06	0.48	-0.33	0.15	-0.12	0.09
D	0.15	0.93	-0.47	0.81	-0.81	0.72	-0.11	0.18
E	-0.17	1.07	-0.04	0.57	-0.71	0.69	-0.39	0.83
F	-0.17	0.89	-0.21	0.30	0.27	0.47	-0.27	0.43
H	-0.15	0.76	-0.28	0.85	-0.31	0.41	-0.38	0.39
I	-0.38	0.38	0.43	0.65	0.79	0.57	-0.03	0.44
K	-0.16	0.56	0.56	0.11	-0.56	0.43	-0.01	0.13

\*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 Wear, Rippling, and Spitting were in control this report period. Pinion ridging triggered three EWMA severity alarms this period. These alarms were caused by severe results from two raters. Both raters were from the same lab.

## 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-10-2004.pdf](ftp://ftp.astmtmc.cmu.edu/docs/rater_calibration/l37rc-10-2004.pdf)

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

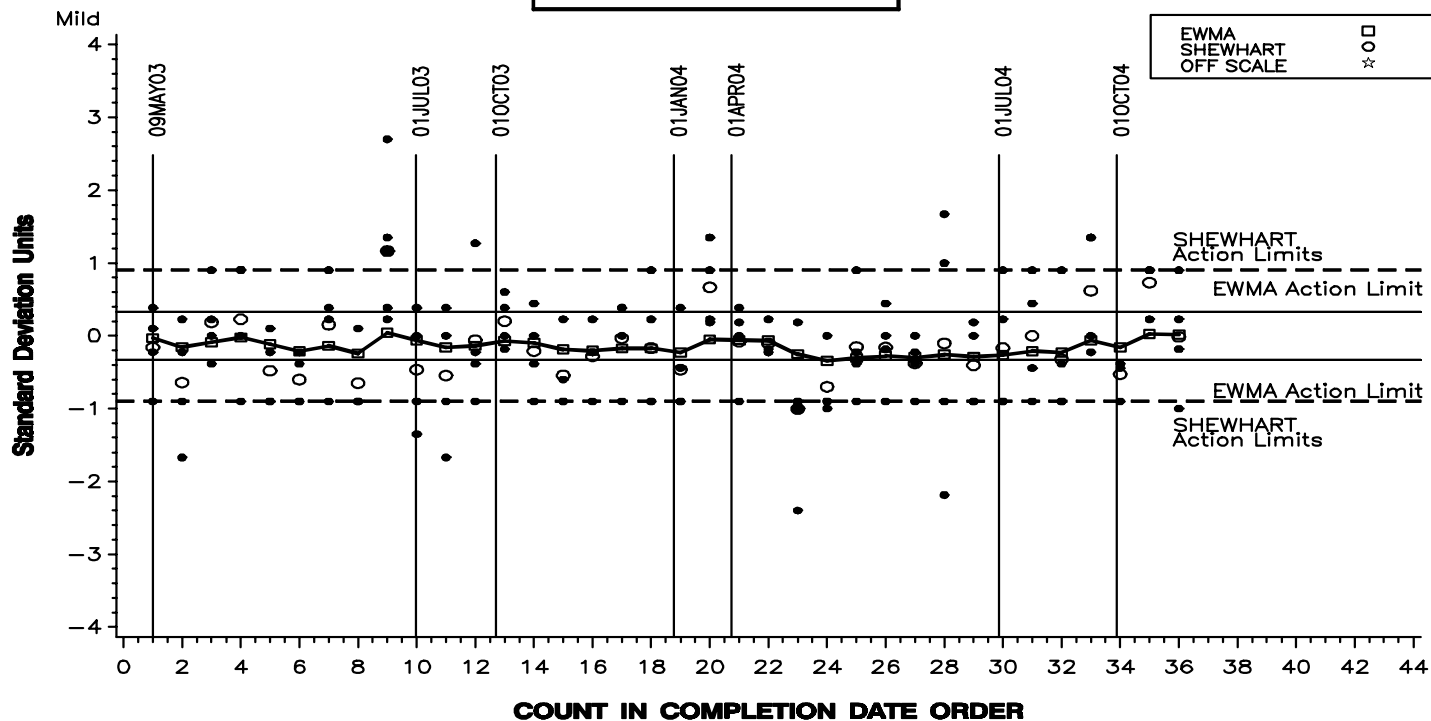
Figure 3 is the L-37 Rater Industry Control Charts for Pinion Ridging

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

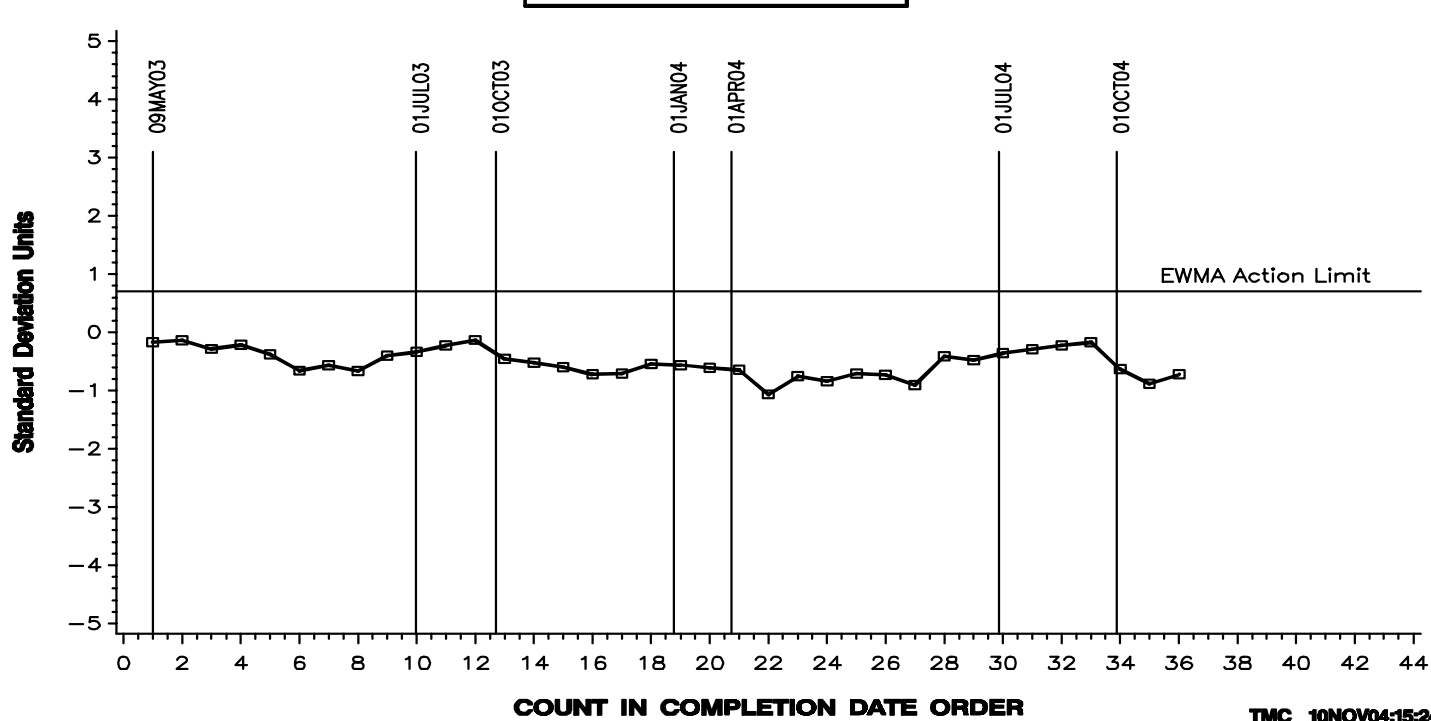
# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## WEAR

**LTMS Severity Analysis**



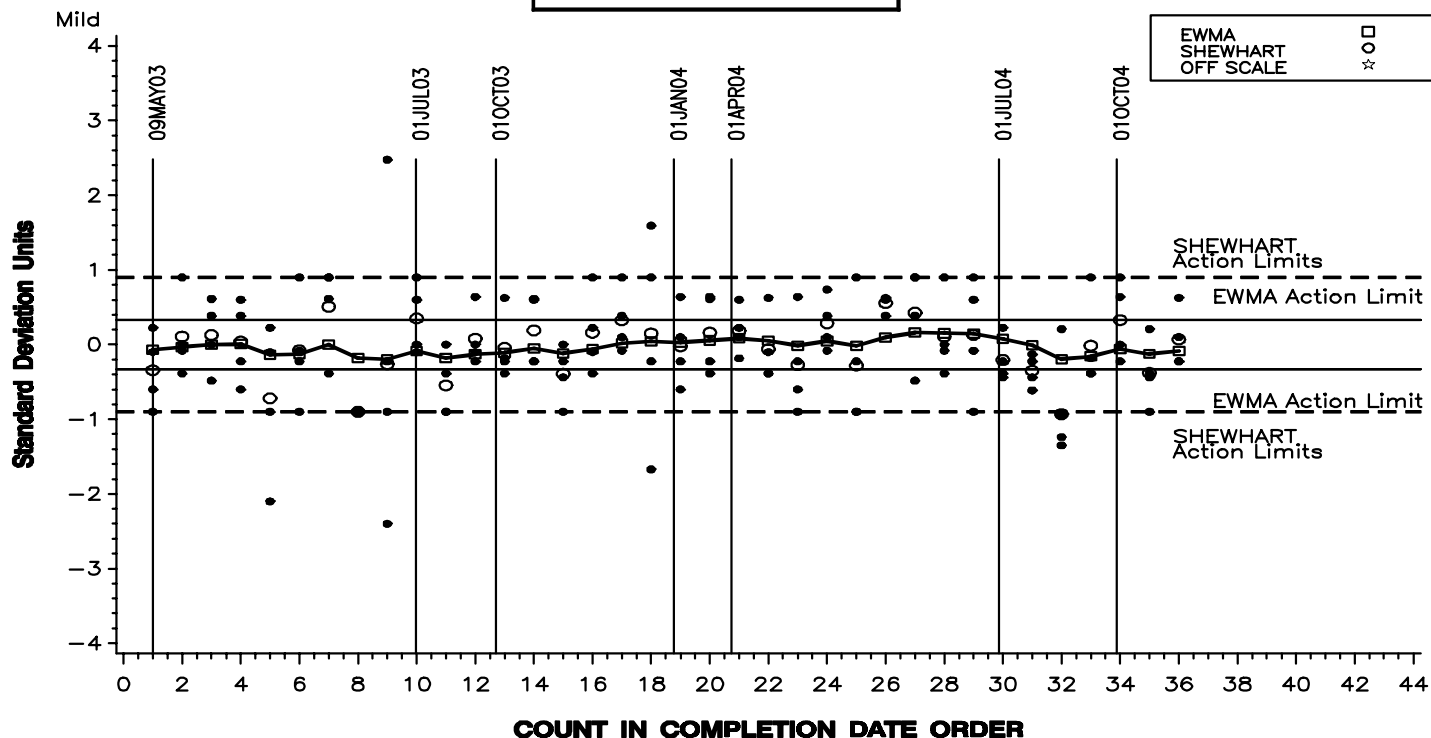
**LTMS Precision Analysis**



# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

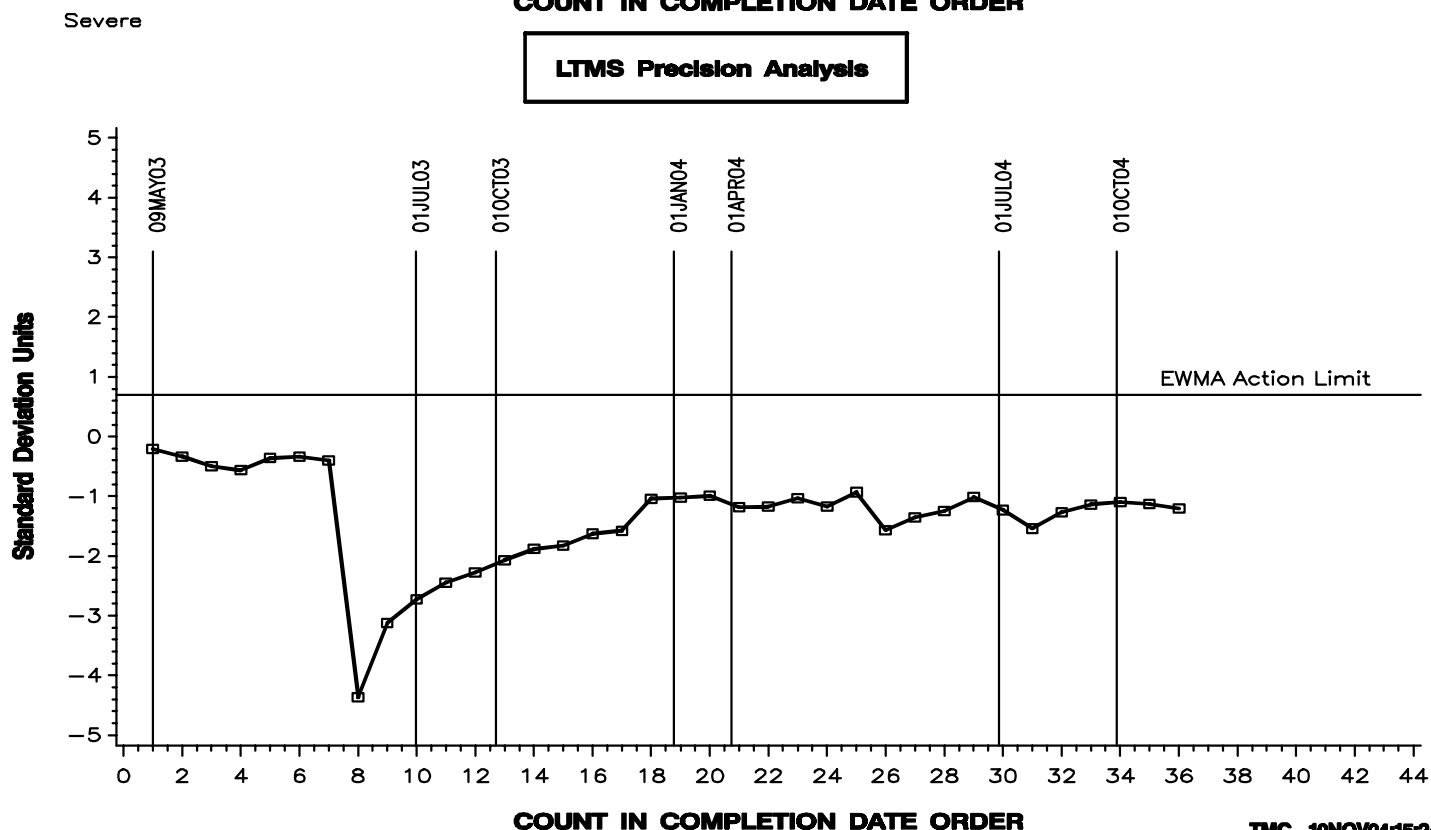
## RIPPLING

**LTMS Severity Analysis**



COUNT IN COMPLETION DATE ORDER

**LTMS Precision Analysis**

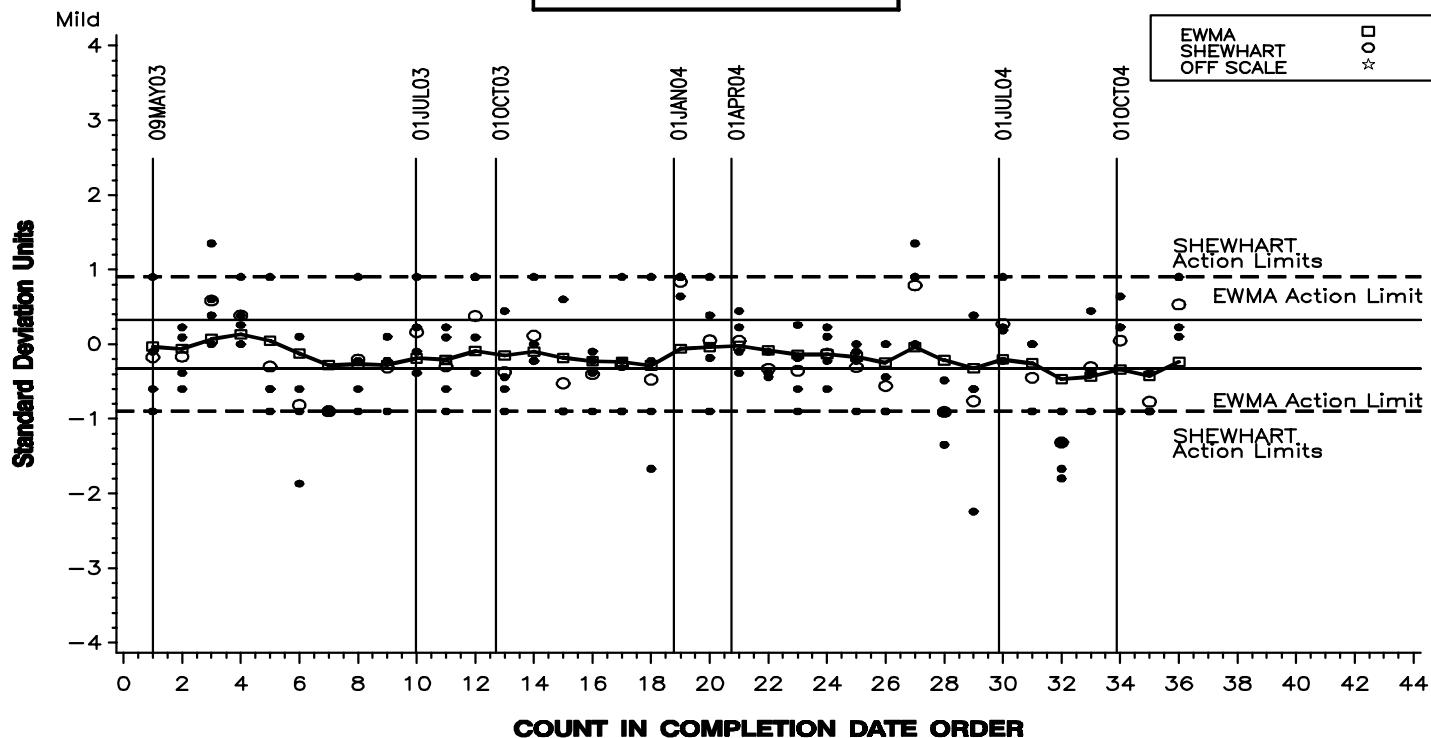


COUNT IN COMPLETION DATE ORDER

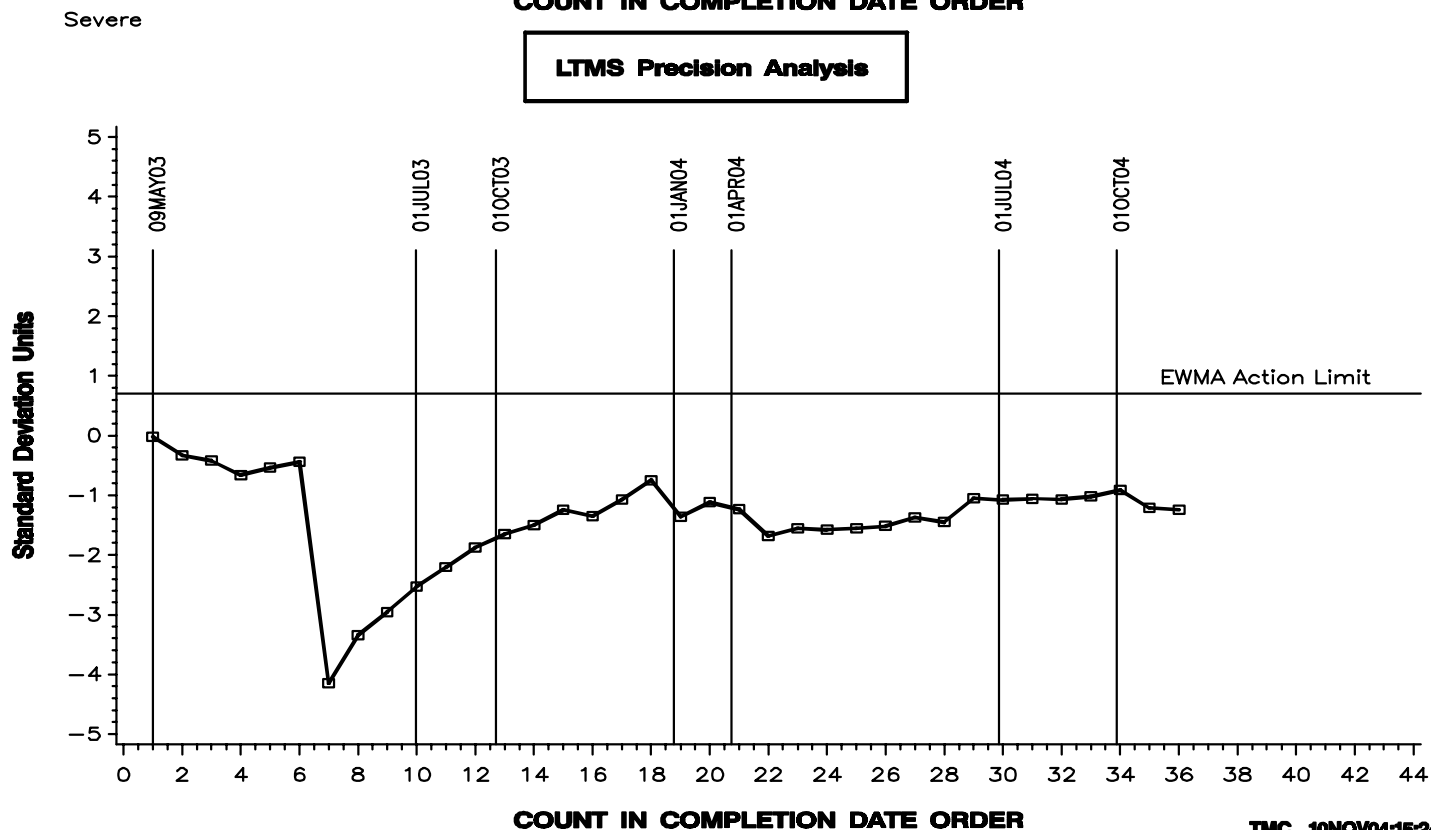
# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## RIDGING

**LTMS Severity Analysis**



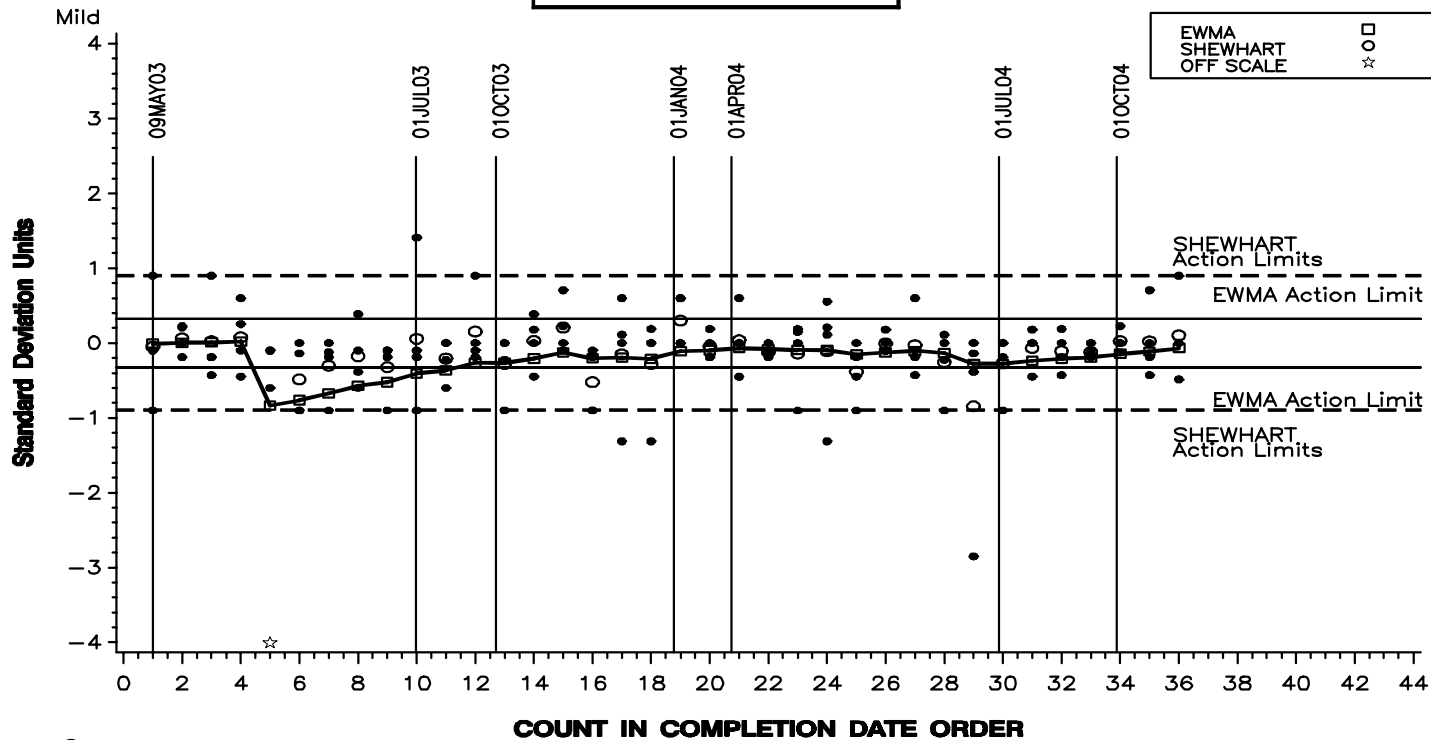
**LTMS Precision Analysis**



# L-37 RATER CALIBRATION INDUSTRY OPERATIONALLY VALID DATA

## SPITTING

### LTMS Severity Analysis



### LTMS Precision Analysis

